495/MetroWest Partnership
Leaders for Regional Prosperity

February 26, 2015

Mr. Newton Tedder
US EPA - (OEP06-4)
5 Post Office Square - Suite 100
Boston, MA 02109-3912

RE: Comments on 2014 DRAFT Massachusetts MS4 Permit

Dear Mr. Tedder:

On behalf of the 495/MetroWest Partnership, we very much appreciated your willingness to present the 2014 Draft Massachusetts MS4 Permit permit to our constituents in October 2014, as well as the subsequent extension of the comment period. Please accept the following as the Partnership's formal commentary on the 2014 Draft Massachusetts MS4 Permit.

The 495/MetroWest Partnership is a non-profit regional economic development organization serving thirty-four communities, over half a million residents, and an employment base of approximately $19 billion/year. The Partnership seeks to address regional needs through public-private collaboration by working to enhance economic vitality, improve quality of life and sustain natural resources. The Partnership focuses on helping to alleviate regional constraints and limitations, and conducts numerous initiatives on transportation, workforce housing, brownfields, and water resources.

The Partnership has a consistent record of educating our public and private sector constituents on topics related to water infrastructure, resources, and regulations both on a state and federal level through our Water Resources Committee. We have historically advocated for sustainable solutions to both environmental and economic challenges within our region and it is with the same objective that we submit these comments. While our comments will no doubt reflect those you will receive from many municipalities, we represent both public and private sector interests and are concerned about the impact the Permit will have on our thirty-four communities and on the continued economic success of our region.

The Partnership appreciates the amount of time and attention the EPA has spent reviewing comments from the 2010 Draft, but we remain concerned about the requirements and timelines in the 2014 Draft, the costs associated with those requirements, as well as unintended consequences of the newly drafted MS4 permit.

- **Requirements**
  - There appears to be a theme of different requirements for different communities depending on pollutant loads, approved TMDLs, etc. We are concerned that this does not create a standardized or watershed based approach. Costly community by community solutions will result rather than a more efficient, cost effective regional or watershed based solutions.

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- The pollutant reduction requirements for impaired waters present a serious constraint on redevelopments and new developments where on-site stormwater mitigation is not feasible. With no mechanisms in place to for credits or off-site trading, how will property owners meet such high requirements for pollutant load reductions?
- Pollutant reduction requirements also seem contradictory within the draft Permit, in some cases requiring new and redevelopment to "optimize" pollutant removal (Appendix F) vs. allowing no net increase pollutant loads to certain impaired waters (Section 2.2.2.b). We are concerned about not only the mixed message but the potentially paralyzing impact on new and redevelopments in the Commonwealth if no net increase is the requirement.
- The wet weather sampling requirements, while improved to focus more on areas of concern, are still burdensome and costly. Given that there is no cost/benefit analysis to demonstrate the effectiveness of wet weather sampling, it seems more beneficial for communities to put their time and resources into BMPs for source controls.
- The educational portion of the Permit puts the onus on communities rather than on the one organization best equipped to conduct public education and outreach, namely the EPA. We would recommend creating a *StormwaterSense* campaign similar to the successful *WaterSense* initiative to educate the public on why they should care, how they can help and how the EPA is now requiring their towns to manage stormwater. Expecting the towns to educate the public while also looking for resources to address stormwater management is unreasonable and expecting the public to accept such knowledge from the very group who is also likely to ask them for funding is illogical. Given that there is no source of federal funding identified in the Permit, it seems the least the EPA could do is take on the responsibility of education and outreach to alleviate some of the burden on the MS4 communities. Further, to ensure a unified, consistent and effective message, the EPA should conduct the public education campaign.

- **Timelines**
  - The number of plans, submittals and tasks that need to be completed in the first year of the Permit is seemingly unattainable given the lack of resources in most communities. We ask that the EPA consider extending the time frame to two years for completion of the O&M Plans, Pollutant Source ID Plans, SWPPP preparation, and the outfall/interconnection inventory and condition assessment.
  - Similarly, we are concerned about the 90-day turn-around for the new electronic Notice of Intent Form. The success of this Permit is dependent upon its implementation, therefore the timelines need to be realistic. It seems impractical and premature to require specific listings of proposed BMPs that might be used to meet water quality based effluent limitation requirements. Please consider requiring only preliminary information relative to the 6 minimum measures and allowing more than a year for developing potential BMPs.
  - The requirement for an extensive outfall /interconnection inventory of the entire MS4 system to be completed in the first year is a monumental task particularly combined with the other first year requirements and given the lack of both financial and personnel resources in our communities. An extended timeframe should be considered for this task unless the EPA is reconsidering providing resources to the MS4 communities.

- **Costs**
  - Credits for existing BMPs should be given further consideration such as those on properties discharging directly to a waterbody vs. to a storm drain.The credits for street sweeping are too low; at the very least there needs to be an incentive for communities to invest in street sweeping as an effective pollutant source control method.
  - We appreciate recognition of the Massachusetts law, Chapter 262 of the Acts of 2012, *An Act Relative to the Regulation of Plant Nutrients,* by including non-structural BMP credits for "No application of fertilizers containing phosphorus" (Attachment 2 to Appendix F). We are concerned by the language referencing a need for a "permittee...to adopt" the law. We would suggest that the credits be automatic, given the MA law and pending statewide regulations rather than requiring an extra step for permittees to adopt the law.
  - The most common concern among the communities in our region is the overall cost to meeting the requirements within the given timelines. The number of tasks to be completed by each community is substantial and there is no funding source whatsoever. While a stormwater utility may seem to be an easy solution to the revenue challenge it is not always feasible when considering Town Meeting forms of governance. The fact that there are so few examples of Stormwater Utilities in MA speaks to this point. Stormwater Utilies are more common in states where there is some level of county government to provide for more efficient and regional solutions to addressing stormwater.

In addition to the above comments, we are concerned about a potential unintended consequence, one that has been brought to our attention by many constituencies. The Permit requirement to either retain or treat the first one inch of runoff from all impervious surfaces when creating and/or reconstructing one or more acre of impervious surface will have negative and potentially costly impacts to roadway maintenance in our communities. Transportation infrastructure has been a top priority of the Partnership and we can see no useful outcome pitting one type of infrastructure investment against another. If roadway maintenance becomes unaffordable, how are communities expected to comply with the additionally unaffordable and time consuming stormwater regulations?

Moreover, we are equally concerned about the effect this Permit will have on the Complete Streets initiative. In addition to the Massachusetts Department of Transportation (MassDOT) adopting a Complete Streets Policy, several of the Partnership's communities have adopted or are considering adoption of Complete Streets policies, guidelines or resolutions. Such a policy should be seen as complementary to the EPA's overall goals rather than in competition with them. Please give further consideration to how the impervious pavement requirements effect similarly worthy Green initiatives by other agencies. We would encourage some level of coordination with Federal Highway and MassDOT going forward.

Given the significant workloads expected of communities in the currently drafted timeframes, we ask the EPA to recognize the lack of any funding and adjust requirements and timelines as outlined above.

The Partnership appreciates the open dialogue we have had with the EPA Region 1 office through both the MS4 and RDA draft permits and processes. The Partnership recognizes the relevance of this Permit to our mission of ensuring the region's quality of life and economic prosperity. We urge you to give strong consideration to not only our comments but to those of our MS4 communities in the 495/MetroWest region.

Sincerely,

Paul F. Matthews
Executive Director
495/MetroWest Partnership

Jessica Strunkin
Deputy Director
495/MetroWest Partnership

Town of Abington
500 GLINIEWICZ WAY
ABINGTON, MA 02351

December 22, 2014

Mr. Newton Tedder
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, Massachusetts, 02109-3912

Via E-mail: Tedder.Newton@epa.gov

RE: Draft NPDES General Permit for Stormwater Discharges From Small Municipal Separate Storm Sewer Systems in Massachusetts – Public Comment Letter

Dear Mr. Tedder:

This letter is submitted to you in accordance with public comment procedures related to the proposed NPDES General Permit referenced above. The concerns enumerated below constitute "reasonably ascertainable issues" developed on the basis of review of the draft General Permit, supporting documentation provided by EPA (including fact sheets, appendices, technical guidance and reports), and practical experience implementing the program over the preceding eleven (11) years of the existing permit term. These are significant issues that warrant response by EPA and consideration for modifications in the final General Permit. The initial comments refer to conditions associated with "Requirements to Reduce Pollutants to the Maximum Extent Practicable" (the six Minimum Control Measures [MCM]); the latter comments refer to conditions related to "Water Quality Based Effluent Limitations (WQBELs)." General comments follow thereafter.

Comments

Minimum Control Measures / Maximum Extent Practicable Requirements

1. **MCM 1 – Public Education and Outreach**: Although not explicitly required under the permit, EPA has repeatedly suggested that introducing stormwater quality-related topics in school curricula would be an appropriate and cost-effective means of achieving MCM-1 objectives. Experience has demonstrated that statutory subject requirements within most school systems makes it very difficult to introduce non-mandatory (or non-MCAS related) material. Cost estimates related to achieving the minimum requirements of this MCM appear to be under-representing the broad audience targets and should not assume school programs as the basis for cost estimates.

conducted on the basis of observed conditions during physical investigation of catchments rather than the system vulnerability factors presented in the permit. Actual conditions as the trigger for further investigation will mitigate the low threshold ("one or more") and the breadth of the factors that, as proposed, will result in a disproportionate number of outfalls requiring wet weather screening.

c. **Catchment Investigation Procedure:** The storm drain network investigation as proposed, including the physical inspection of all key junction manholes irrespective of evidence of dry weather flow or other illicit connections at the point of outfall discharge, is new, excessive, and will fail to provide environmental benefit for the additional labor and expense required. *Proposed Modification:* Allow local MS4 operators to implement a manhole inspection methodology appropriate to the complexity of their system, to be documented in their IDDE plan, with results reported annually as required in the current permit.

3. **MCM 3 - Sanitary Sewer Overflows**: The inclusion of sanitary sewer infrastructure management or monitoring (such as reflected in Section 2.3.4.4 – Sanitary Sewer Overflows) as a component of MS4 permit compliance is a redundant requirement since communities that operate sanitary sewer systems are already regulated in this regard under existing wastewater NPDES permits. The manner in which the condition is incorporated into the MS4 permit potentially subjects communities to multiple penalties under separate permit programs in the event of an SSO excursion. *Proposed Modification:* Elimination of this requirement.
4. **Affordability; Estimated Program Cost Increases**: EPA directs MS4 owners to the 2011 "*Sustainable Stormwater Funding Evaluation*" Final Report for reference regarding anticipated program cost increases (administrative, operating and capital) under a variety of scenarios. This document, and subsequent evaluations conducted for other Upper Charles River watershed communities, indicates that program administrative/operational costs alone will range from double to quadruple existing expenditures. More recent updates to these figures for the communities that were the subject of EPA's detailed analysis indicate that, if anything, these estimates are under-representing the magnitude of cost increases. Capital costs to comply with the TMDL requirements embedded in the permit are estimated in the tens of millions of dollars. The enormous gains in water quality under the Clean Water Act in the first two decades after passage were achieved through a locally affordable program aimed at primarily wastewater-related point source discharges, and underwritten by state and federal funding equivalent in many cases to 90% of the program capital cost. Stormwater-related pollutant contributions to receiving water bodies are much more difficult to control and will achieve an incremental water quality improvement compared to the wastewater discharges that were the target of initial infrastructure investments. It is inconceivable that the estimated costs of this MS4 program can be affordably sustained by a limited number of property owners within communities subject to the most stringent pollutant reductions. Water quality improvements have local, state and national benefits. A

2. **MCM 3 - IDDE Investigations**: Level of effort to achieve all of the elements of the Illicit Discharge Detection and Elimination (IDDE) Program is significantly higher than currently experienced and not significantly reduced from previous drafts despite prior concerns expressed in this regard. Several specific issues include:
    a. **Catchment Prioritization:** We recognize the value of categorizing and ranking/prioritizing catchments as a means of identifying more likely pollutant sources early in the program. Protocols for ranking catchments (and continually re-evaluating rankings) require significant knowledge about storm drain and sanitary sewer system condition and characteristics, which are elements drawn from mapping and investigations that are executed after the initial prioritization is completed at the end of year 1. The methods described in the permit provide some latitude based on "existing knowledge," however, it is important that absence of specific information regarding a catchment does not default to "High" categorization or prioritization within a category. We are concerned that "unknown" conditions related to screening factors may result in a disproportionate number of catchments being categorized as Problem or High, which in turn places these catchments on a faster-tracked investigation schedule with implications for labor and costs for communities. *Proposed Modification:* Ranking and prioritization factors are highly specific, and cover a broad spectrum of infrastructure condition, land use, laboratory analytical results and development age/characteristics. We suggest simplifying the procedure and allowing communities to categorize catchments as either "excluded" or "problem" as defined in the permit, with all other catchments falling into "other" to be investigated on a prioritized basis developed through local operator knowledge. Investigations can be performed within the 10-year timeframe currently established in the permit, with documentation on investigation results provided in annual reports. For those communities that have already undertaken a prioritization exercise on the basis of guidance provided in the 2010 Draft Permit, that ranking ought to be allowed as the basis for execution of the plan.
    b. **Wet Weather Monitoring:** The Fact Sheet accompanying the general permit indicates that the revised wet weather monitoring requirements were modified to reduce the number of outfalls that would require labor intensive sampling/monitoring. However, the twelve (12) specified "System Vulnerability Factors" provided as the basis for inclusion in a wet weather monitoring program encompass a broad swath of infrastructure system characteristics and the "one or more" threshold trigger for categorizing a catchment as a wet weather monitoring candidate will capture the vast majority of outfalls in many if not most communities. This fails to provide the relief communities requested during the 2010 Draft General Permit comment period, and which the fact sheet accompanying the 2014 Draft General Permit implies has been provided. *Proposed Modification:* Wet weather screening of catchments should be

program that EPA and other environmental organizations (regulatory, advocacy/non-profit or commercial) recognize as this important should have some kind of legislative or Congressional support that provides adequate funding to promote programs that can achieve water quality improvements in a more equitable and financially sustainable manner.

5. **Regional or Alternative Implementation Opportunities**: Many of the sustainable funding alternatives explored in the 2011 report refer to opportunities for working with designated dischargers (DD) in some capacity. The Residual Designation Authority (RDA) Draft Permit has not progressed in some time, and there is little information available as to the likelihood of this permit ever becoming final. In addition, under current conditions, it applies to a very small number of communities (Bellingham, Franklin and Milford). Private properties are a major contributor of pollutants to MS4 discharges, however, this RDA mechanism is an unwieldy approach to incorporating private activity into pollutant control. If the permit were to be finalized as it currently stands, these three communities are likely to experience detrimental economic development impacts due to the additional cost of operating in their towns compared to immediately abutting communities. Without passage, however, private property owners have no incentive to collaborate with local authorities regarding operation of sites that were designed and constructed in accordance with local stormwater regulations in place at the time of development. It is unrealistic to include any of the funding scenarios that include cooperation or collaboration with a group of designated dischargers that do not exist today, are unlikely to be designated in the near future, and are unlikely to voluntarily engage in a complex and costly program without measurable benefit to them directly.
6. **Affordability; Integrated Planning (IP):** The water quality protection objectives of the NPDES stormwater and wastewater programs are recognized and supported by the regulated community. However, inclusion of an increasing number of the sanitary sewer management elements into the MS4 permit program suggests that EPA is migrating towards an integrated planning model as presented in your "Integrated Municipal Stormwater and Wastewater Planning Approach Framework." As provided for in the conditions of this draft permit, however, the effect is to import compliance conditions suitable for wastewater management programs while failing to provide permit relief or incentives to the regulated community for employing an integrated management approach to community water resource assets, including stormwater management infrastructure. The result is the equivalent of "double jeopardy" under dual permits without schedule, affordability or reporting relief. *Proposed Modification*: EPA should integrate an affordability assessment component into the Permit that will allow communities to determine the extent to which they and their constituents can afford to implement Clean Water Act requirements associated with both storm and sanitary sewer permit obligations, including operational and capital costs. If EPA is committed to the IP approach, general permits such as this should be explicitly incorporating elements of the

framework on an iterative basis (i.e. every term renewal moving closer to the ideal). Ultimately, a model of risk-based decision making relative to infrastructure investments can recognize greater water quality benefit for the dollars spent without the current regulatory liability associated with multiple permits addressing water quality through different program frameworks.

7. **Definitions – Redevelopment**: The term "redevelopment" is nowhere defined in the permit or appendices. Given that EPA is requiring "redevelopment" projects to meet the new development design guidelines for stormwater management (and particularly in reference to the one-inch retention/treatment provision), it is important to know what constitutes redevelopment versus rehabilitation, restoration, maintenance or repair projects. This is particularly of concern as it relates to transportation-related projects such as pavement programs (full depth reconstruction, pavement overlays, chipping, etc.), and the possibility that routine maintenance could trigger requirements for significant drainage improvements that would not otherwise be appropriate or necessary for operational purposes. *Proposed Modification*: Define redevelopment to exclude roadway projects that do not add significant new paved acreage.
8. **MCM 5 – Roadway Projects:** The revised Stormwater Management in New Development and Redevelopment MCM presents several challenges. Primary among these is the requirement to retain the first inch of runoff (or treat the equivalent pollutant load) from all impervious areas on site. This requirement will pose a significant challenge as it relates to roadway projects (either new or redeveloped) and will contribute to significant escalation of costs associated with drainage and/or treatment from roadways. *Proposed Modification*: Include an exemption or waiver from this permit condition for roadway projects.
9. **MCM 5 - BMP Sizing:** Language in this permit provision states that "all impervious area" is subject to the capture, infiltration or treatment requirements and specifically that flow volumes [for retention or treatment] are calculated based on "multiplying the area of impervious area on site by one inch." We seek clarification that BMPs on site need not be sized to reduce "calculated" pollutant loads that theoretically are contained in flow from disconnected impervious area on-site that is not otherwise directed to the MS4.
10. **MCM 5 – EPA and DEP Consistency:** With the encouragement of the Massachusetts Department of Environmental Protection (MassDEP) and EPA, many communities have adopted the Massachusetts Stormwater Management Standards either directly or by reference into existing municipal design standards and by-laws. This permit represents a divergence from the MassDEP stormwater standards and complicates compliance for regulated entities. We request EPA and MassDEP develop a consistent set of development standards that ensures that exemptions or waivers provided under federal NPDES permits will ensure similar treatment under MassDEP surface water discharge regulations.
11. **MCM 5 - 1-inch Standard:** EPA has stipulated that the one-inch retention/treatment standard applies to both new and re-development projects. As noted above, this is not

consistent with the MassDEP stormwater management standards and creates further confusion relative to application of development standards. See our comment above regarding joint approach.

12. **MCM 5 – Street Design Guidelines:** At Section 2.3.6 (b),the MCM requires development of a report assessing current street design and parking lot guidelines that affect creation of impervious cover to be due within three (3) years of the permit effective date. The intent is to identify opportunities to support low impact design options to be incorporated into local regulation and standards. Under "smartgrowth" principles with comparable environmental impact mitigation interests, the federal government, state and local agencies have promoted a "complete streets" approach to invite multi-modal use of roadways that frequently results in greater impervious area. Given the sometimes contradictory nature of these programs, the regulated community would like assurances that the federal and state government are collaborating to provide adequate guidance that achieves prioritized environmental objectives without potential penalty (either in terms of punitive fines or loss of grant/loan funding, etc.) to the regulated community. *Proposed Modification:* We propose modification of the permit term within this section to provide greater latitude to MS4 owners regarding implementation of recommendations resulting from the report. Where there are competing interests relative to "environmental street design" the MS4 owner should be allowed to make local decisions that are in it's best interest.
13. **MCM 6 – Good Housekeeping Affordability Assumptions:** The Good Housekeeping MCM as proposed will be extremely expensive for most communities to implement. The accompanying permit fact sheet states that while this is the most costly program area for most communities, these are existing functions (e.g. catch basin cleaning and street sweeping) and the costs associated with compliance under the permit will be incremental, or less, such that "these costs are likely not above and beyond what the permittee likely spends on maintenance of permittee owned property currently." The cost estimate provided fails to appreciate that most communities do not currently collect the data, analyze findings, document and report activities in the manner now required under this permit. For communities that contract these services to outside vendors, procurement of new contracts to include documentation required will undoubtedly impact bids by increasing costs significantly. It is expected that data collection from catch basin sump cleaning efforts will almost double the time per catch basin required. It is reasonable to anticipate, therefore that catch basin cleaning costs will double, regardless of whether the activity is out-sourced or done in house. Program affordability, particularly in light of requirements under Water Quality-Based Effluent Limits (WQBEL's), continues to diminish and timeframes within the permit further compromise a community's ability to meet permit requirements under the MCM's as presented in this draft permit. *Proposed Modification:* Again, we request that EPA include an affordability component into the MS4 Permit, comparable to that provided under CSO Long Term Control Plan programs.

Water Quality Based Effluent Limitations (WQBELs)

14. **New Discharger Definition:** Based on the accompanying fact sheet, the definition of "new discharger" within the permit does not include expansion of an MS4's existing system within its jurisdiction. The distinction is important since increased discharges can be covered under the General Permit, but new discharges must be covered under a separate individual permit. Please confirm that the term "adjacent" or "adjacency" within the context of this definition includes any new drainage element, including an outfall, within an MS4's jurisdiction but not otherwise connected to any other component of the MS4. For instance, the town may accept a private road that includes a "self-contained" drainage system (e.g. a series of connected catch basins discharging to a discrete outfall none of which is connected to or "adjacent to" existing drainage infrastructure) without triggering a requirement to cover that segregated outfall through a separate individual permit. Public management of the streets will generally lead to better pollutant management and on that basis the permit should not dis-incentivize acceptance of private roads.
15. **Interest in Phosphorus Requirements:** The Town of Abington is not currently subject to Phosphorus TMDL requirements, however, there are phosphorus impaired waters in Town and a TMDL may be possible in the future, which is the basis for our comments on the Phosphorus TMDL requirements. In addition, in Appendix H. II (1)(a)(i)(3), obligations associated with municipal operations where there are phosphorus impaired waters, to which the Town is subject, state that street sweeping must be increased to a minimum of twice per year throughout the community. This obligation should be restricted to the catchment areas contributing to the impaired waters.
16. **Phosphorus Load Export Rates – Appropriate Use:** Regarding Appendix F and attachments, the Phosphorus Load Export Rates (PLERs) are general and approximate at best. The composite PLERs are good for screening / planning purposes or comparative purposes. They are not accurate for determining hard design of control measures. For example, they can be used to evaluate whether a proposed change in land use is expected to increase or decrease pollutant loads. But to use a PLER to conclude that the loading rate is actually X lbs/yr, or will change from Y lbs/yr to Z lbs/yr with land use or other changes, is not a recommended technical practice. Loading rates are ordinal rather than cardinal, i.e., they can tell you if one is higher than another, but not exactly how much higher one is than another. It appears that EPA assumes that over the entire Commonwealth of Massachusetts, using PLERs will represent the average condition. That may be true, but EPA is requiring that the PLERs be used to make decisions on a much smaller watershed and sub watershed scale, which is inappropriate.
17. **PLERs - Derivation:** It is not clear how the values for PLERs in the EPA documents are derived, however, a literature search shows that there is a large range of values for any

given land use. For example, the PLER for medium density residential is given as 0.55 lb/ac/yr in Table 1-1 (App. F Attachment 1), but the range of PLERs for medium density residential in the scientific literature can be an order of magnitude around the value. Please provide further information regarding derivation of the PLERs since these values have significant impact on program implementation for regulated communities.

18. **PLERs – Blanket vs. Site Specific:** PLERs found in older literature generally do not reflect the presence of stormwater BMPs, low impact development (LID) planning, etc., and therefore may overestimate pollutant loads for current land uses. In addition, composite PLERs are a particular concern for communities that have previously instituted stricter local development standards for stormwater management many years ago (in some cases, decades) where assumed PLERs may be much greater than actual conditions. *Proposed Modification:* Rather than limiting appeals of assumed baseline watershed phosphorus loading to updates of land use information, allow permittees the option to develop their own alternative methodology for determining baseline phosphorus loads and reduction requirements based on more detailed data and/or site specific information.
19. **Phosphorus Contribution of Illicit Discharge:** It is not clear in either the permit or the fact sheet what method was employed to calculate estimated contribution of phosphorus load through illicit discharges, and consequently the load reduction that would be achieved through elimination of IDDE. Since this calculation figures into the total overall phosphorus load reduction allocated to each Charles River community, it is impossible to comment on how equitable this approach can be. Please provide further documentation regarding the method used to complete this calculation.
20. **Ambiguity in Determining Contributing Drainage Area:** It is not clear in Appendix F and its pertaining attachments whether the permittee will be using the impervious area or the directly connected impervious area (DCIA) in the PLER calculations, which includes factoring in DCIA in determining PCP area. The phosphorous loads should be determined from the DCIA of a target catchment, but this is not explicitly mentioned in either Appendix F or its attachments. The only explicit mention on DCIA is in Appendix F under sections "Phosphorous Source Identification Report" and "Nitrogen Source Identification Report" which simply state that the source identification report should include the "Impervious area and DCIA for the target catchment." There is no mention of how this DCIA information needs to be used, for example, in determining either the PCP area, total development area, impervious area (IA) for calculating phosphorous reduction credits for non-structural BMPs, or in distributing the total drainage area into impervious area for BMP load and volume calculations. In all the above instances, DCIA should be considered, rather than total impervious area. This needs to be clarified in the new permit.
21. **Determining Infiltration Rate for Structural BMPs:** Attachment 3 of Appendix F specifies identification of infiltration rate for a particular BMP when determining the design volume of a structural BMP to achieve a known phosphorous load reduction

target from a contributing drainage area. However, it is not clear how the infiltration rate needs to be determined. It is stated that the infiltration rates represent the saturated hydraulic conductivity of the soils. Since saturated hydraulic conductivity of soils is a function of its hydrologic soil group, it is important to mention how this rate needs to be determined for a combination of soil types. Please provide further guidance to determine infiltration rates for an infiltration type structural BMP, such as an infiltration trench or infiltration basin.

22. **Choosing BMP Performance Curve for Multiple Combination of BMPs:** Attachment 3 of Appendix F provides several BMP performance curves for different types of structural BMPs. However, the permittee may choose a combination of BMPs to achieve a desired phosphorous load reduction. It has been noted through literature search that a combination of BMPs may be more effective in capturing larger storms, and hence will be more effective in providing desired phosphorous load reductions from these storm events. For example, if a bio-retention system is coupled with a secondary spillway to a porous pavement, it has been found from literature that this combination is effective in capturing the first 1" rain (first flush) and higher flows, respectively. In such a situation, it is not clear what BMP performance curve should be referenced and how the curve(s) need to be used by the permittee. Please provide further documentation regarding the method to determine BMP performance curves for a combination of BMPs.
23. **Appendix H. II (1)(a)(i)(3) Additional /Enhanced BMPs for Phosphorus-Impaired Waters:** Under the Good House Keeping requirement, it requires permitees to increase frequency of street sweeping at least twice a year for **all municipal streets and parking lots.** This requirement should be related exclusively to those streets within the impaired catchment, not all streets/ parking lots in the Town. It might be what was intended, but that is not how the language reads and should be modified.

Other Issues

24. **Non-Stormwater Discharges**: At public meetings during which EPA has presented material about the new permit, there has been much discussion about the classification of sump pump discharges as an allowed "non-stormwater discharge." Explicit guidance is necessary regarding local permit programs sufficient to meet documentation of determination standards relative to sump pump discharges as a class of allowed discharges.
25. **Town Administration Outreach**: In most communities responsibility for permit compliance resides with Public Works or similar agency officials. Boards of Selectmen and/or Town Managers are often not involved in program administration outside of procurement or appropriation processes for identified projects. Their lack of understanding and support to local implementing agencies has been a continuing challenge. EPA and/or DEP must increase their involvement in educating Town officials about the extent, costs, operational impacts and policy determinations incumbent on

program administrators to ensure continued organizational support, particularly for funding strategies.

26. **Floor Drain Inventory:** It is appropriate and appreciated that this requirement has been removed from the Draft Permit.
27. **Errors:** A number of errors in referencing were noted in the document. The ones we noticed are listed below, there may be more. Please carefully check all cross references in the preparation of the Final Permit and correct the following errors:

- Page 12 – change references from Table F-5 to Table F-6
- Page 14 – change references from Table F-6 to Table F-8
- Page 14 lists reference to Buzzards Bay but there is no Nitrogen TMDL for Buzzards Bay watershed on DEP's website
- Page 14 list does not include Wareham although Wareham is in Buzzards Bay watershed
- Page 15 change reference from Table F-7 to F-9
- Page 17 – reference to Table F-10 is incorrect (that is a table of Assabet towns)
- Appendix F page 5 of 53 – footnote No. 4 incorrectly references Table F-2 for PCP area scope inclusive of MS4 only (should be Table F3) and references Table F-1 for jurisdiction-wide PCP area (should be F-2)

Sincerely,

Town of Abington, MA

Richard LaFond
Town Manager

cc: File

Tedder, Newton

From: Abbie Goodman <agoodman@engineers.org>
Sent: Friday, February 27, 2015 4:44 PM
To: Tedder, Newton
Subject: ACEC/MA Comments on Draft Small MS4 Permit
Attachments: removed.txt

General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems

February 27, 2015

ACEC/MA Comments

On behalf of the American Council of Engineering Companies of Massachusetts (ACEC/MA), I am submitting comments to EPA on the Draft Small MS4 Permit.

ACEC/MA members include over 120 firms that employs engineers and scientists engaged in stormwater systems designs, construction, permitting and performance. We, as an organization, and our member firms have met on several occasions with EPA and MA DEP staff responsible for the preparation and enforcement of stormwater permit requirements.

While we recognize the need to continue the work started during the initial permitting period, there are several issues that require clarification in the draft permit. We ask that EPA closely review the timeframes included in the draft permit to complete all of the added requirements including the impact on limited available municipal staff and budgets, as well as the ability to address certain time and weather dependent monitoring. Certain of these requirements may not be logistically capable of being addressed by the MS4.

Several of the comments listed below may have been addressed by us with and on behalf of our clients. We have attempted to provide comments that would apply to the draft permit. As such we have requested clarifications to several requirements without reference to specific municipalities or site-specific water quality concerns and improvements. Our comments are as follows:

1. Comment: Section 1.10.3, Page 9. It is anticipated that there will be some new permittees based on the 2010 Census. Please consider extending the timeframes needed for those communities to "catch up" to those communities who have completed considerable work since the original permit issuance, especially drainage system mapping and other labor-intensive requirements.
2. Comment: Section 2.1.1, Page 10. Please clarify the reference to "….tributaries in some cases". Is the MS4 subject to the same requirements as if it were discharging directly to the impaired waterbody if the tributary is not listed in the MA Integrated List of Impaired Waters as being impaired? ,
3. Comment: Section 2.3.4.5, Page 27. Please clarify if permittees are required to repeat the outfall inventory, even if the previous inventory was conducted using the minimum accuracy listed in the permit.
4. Comment: Section 2.3.4.7.d.iv. Page 32. Please review the limitation on when wet-weather screening should take place ("March to June") for IDDE. Although wet-weather screening is intended to identify illicit discharges that only occur during peak flows, whether it should be performed in conjunction with high or low groundwater is determined by the System Vulnerability Factors (SVFs). It is suggested that the permit be revised to state that wet-weather sampling should be performed during conditions appropriate for the identified SVFs for each catchment area, and provide examples to assist MS4s in making an informed decision about when to sample.
5. Comment: Section 2.3.4.7.d.iv. Page 32. Please provide details on requirements related to wet-weather monitoring. Inspection must be performed during wet weather, defined as sufficient intensity to produce a

discharge. However, it is not clear whether a discharge must be observed at every outfall to achieve compliance. Is the permittee required to repeat outfall inspections until a discharge is observed, even if it was monitored during a substantial rainfall event?

6. Comment: Section 2.3.4.7.e. Page 34. The System Vulnerability Factor (SVF) for "any sanitary sewer and storm drain infrastructure greater than 40 years old in medium and densely developed areas" appears arbitrary and overly inclusive. Infrastructure age, by itself, is not an indicator of illicit potential. It is typically other factors, such as poor structural condition, that are the source of elevated illicit potential, not solely the age of the infrastructure. Please consider revising this SVF to include only those sewers and drains that are known to have specific concerns, not all sewers/drains older than an arbitrarily selected age.
7. Comment: Section 2.3.4.7.e. Page 33. The SVF for "crossing of storm and sanitary sewer alignments" is too inclusive. On streets with both sanitary sewers and storm drains, the likelihood that a catch basin connection crosses a sanitary sewer or a sanitary sewer service connection crosses a storm drain is extremely high. This would mean that nearly all catchments would trigger this vulnerability factor and therefore require wet weather sampling. Please consider revising this SVF to include only those catchments that are known to have specific concerns, not all catchments where storm and sanitary sewer alignments cross.
8. Comment: Section 2.3.4.7.e. Page 34. The SVF for "any sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken or offset sanitary infrastructure...or other vulnerability factors identified through Infiltration/Inflow Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations" also appears to be too inclusive. Again, most sewers have minor defects, which again would mean that nearly all catchments would trigger this SVF and therefore require wet weather sampling. In most cases, individual sewer defects do not result in illicit connections.
9. Comment: Section 2.3.4.8.c. Page 36. The draft permit requires that the IDDE Catchment Investigation Procedure be implemented in "every catchment of the MS4, even where dry weather screening does not indicate evidence of illicit discharges." If there is no evidence of any sewer input at an outfall, we suggest that that outfall screening or sampling, whichever is appropriate, should be repeated only to confirm there is no sewer input. If no sewer input is confirmed during dry and wet weather screening or sampling, IDDE field investigation will not be required.
10. Comment: Section 2.3.6.a.ii.a. Page 40. The requirement to retain/treat the first one inch of rainfall applies to "runoff from all impervious surfaces on site." Without a clear definition for the term "site", this implies runoff from the entire parcel on which the one acre, or more, disturbance occurs. It may be cost-feasible to require a large parcel to treat runoff from "all impervious surfaces" on that parcel when they disturb only a small portion of it.
11. Comment: Section 2.3.6.a.ii. Page 40. This section sets different standards than those existing in the MassDEP's Storm water Policy and associated handbooks. Having two sets different sets of standards will cause conflicts for MS4s and developers and will likely subject communities to legal action. In addition, the ordinances/bylaws of most Massachusetts MS4s reference the MA Stormwater Standards. If more stringent standards are proposed, it is suggested that this be done through working with the MassDEP to affect changes to existing State regulations instead of enacting a second, different, and conflicting set of requirements through the MS4 permit.
12. Comment: Appendix A. Please provide clear definitions for several critical terms: Directly Connected Impervious Area, Disturbance, Illicit Discharge, Increased Discharger, Redevelopment, and Site. Interpretation of these terms could be a significant source of disagreement, especially for local approving authorities charged with the implementation of the requirements for new development and redevelopment.

Thank you for the opportunity to provide our input to the process. We look forward to continuing to assist you in the future. Please feel free to contact me if you have any questions.
I can be reached at 617-305-4112 or agoodman@engineers.org

Very truly yours,
AMERICAN COUNCIL OF ENGINEERING COMPANIES OF MASSACHUSETTS

Abbie Goodman
Executive Director

= =

Abbie R. Goodman, ACEC/MA Executive Director
American Council of Engineering Companies of Massachusetts (ACEC/MA)
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When Associations Need Help, They Call THE ENGINEERING CENTER EDUCATION TRUST (TECET). We provide association management and staff support services to engineering, land surveying and related associations. TECET's Sponsoring Societies are the American Council of Engineering Companies of Massachusetts (ACEC/MA), the Boston Society of Civil Engineers Section/ASCE (BSCES), and the Massachusetts Association of Land Surveyors and Civil Engineers (MALSCE). TECET's web site: www.engineers.org

TOWN OF NORTH ANDOVER
DIVISION OF PUBLIC WORKS
384 OSGOOD STREET
NORTH ANDOVER, MASSACHUSETTS 01845-2909

BRUCE D. THIBODEAU, P.E.
DIRECTOR

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Telephone (978) 685-0950
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RECEIVED
2/27/15

February 25, 2015
Mr. Newton Tedder
U. S. EPA Region 1
5 Post Office Square – Suite 100
OEP06-4
Boston MA. 02109-3912

Re: **Comments on the Draft NPDES General Permit for Stormwater Discharges from Small MS4 communities in Massachusetts**

Dear Mr. Tedder:
The Town of North Andover has prepared the following comments, both general and specifically referenced by permit section number. We believe our comments reference areas where there is substantial need for improvement to allow feasible, cost effective implementation of the Clean Water Act and NPDES program goals.

1. **<u>New MS 4 areas have been added</u> – due to data collected in the 2010 census**
   This would not be the case if permit had been renewed on time.

2. **<u>Non Delegated State Status</u> – MA. DEP should draft the permit not the EPA**
   a. MA. is one of only 4 states that is having EPA draft the new permit regulations.
   b. MA. DEP regulations contradict proposed EPA thresholds for treatment and infiltration
   c. MA. DEP regulations contradict proposed EPA requirements for stormwater management in new developments
   Two separate entities with jurisdiction over the same areas create redundancy, contradiction, conflicts, inconsistency and confusion.

3. **<u>Overall Cost</u> – this is an unfunded mandate**
   a. The permit regulations contain 59 pages with 9 separate appendices; there are 250 administrative requirements proposed. EPA's own estimate is that the compliance will cost between $80,000 and $800,000 per year depending on the community. North Andover's costs for compliance will probably be in the $200,000 to $300,000 dollars per year.
   There is no source of funding identified for compliance.

4. **Budgeting - Time to Implementation - Part 1.7.4.c**
   a. There should be sufficient time between the adoption of the new permit regulations and their implementation for municipalities to be able to budget adequately based on the various fiscal year start dates.
   Municipalities should have clear requirements before they pass their annual budget.

5. **Illicit Discharge Detection and Elimination (IDDE) Program – is financially burdensome - Part 2.3.4.7.e.ii.**
   a. Part 2.3.4.7.e.ii. requires additionally testing key manholes
      1. "…investigation of each key junction manhole within the MS4, even where no evidence of an illicit discharge is observed at the outfall."
   Manholes should only be investigated if its outfall shows evidence of a discharge.
   b. North Andover has over 900 outfalls. Required costs for testing (labor & lab costs) are estimated at $500 per outfall. Estimated budget for outfall testing alone is $450,000.
   Testing is very expensive.

6. **Waterways with Approved Total Maximum Daily Loads (TMDL) – Part 2.2.1.**
   a. North Andover has been listed as discharging to waterways with TMDL's for: Bacteria, Phosphorous, and Turbidity
   It is unclear what documents govern the interpretation of TMDL.

7. **Public Education and Outreach – is inefficient - Part 2.3.2.e**
   a. requires: "…evidence that progress toward the defined educational goals of the program has been achieved."
   Effectiveness is regional. It cannot be efficiently measured on a municipal level.

8. **Outfall/Interconnection Inventory – is overly burdensome – Part 2.3.4.5.**

North Andover has over 900 outfalls.

   a. The permittee should have more than "one (1) year to complete its outfall and interconnection inventory".
   b. Inclusion of "the inventory in each annual report" should not be mandated.
   c. The inventory shall be updated annually to include data collected in connection with the dry weather screening under Part 2.3.4.7.d. and other relevant inspections conducted by the permittee.

The permittee should not have to "physically label all MS4 outfall pipes (excluding interconnections) with their unique identifier".

1. **Many of the areas are covered in snow for 1/3 of the year.**

9. **Ranking of Catchments - is arbitrary and unfair - Part 2.3.4.7.c.ii.**

"Age of surrounding development and infrastructure – Industrial areas greater than 40 years old and areas where the sanitary sewer system is more than 40 years old will probably have a high illicit discharge potential".

Virtually 100% of older, highly urbanized, communities' infrastructures fall into this category.

10. **Catchment Investigation Procedure - absence of bacteria - is unrealisitc –Part 2.3.4.7.d and Appendix I**
    a. Presence of chlorine at "detectable levels" should not cause a catchment area to be ranked as a "High Priority Catchment".
    A catchment without the presence of bacteria should not be "High Priority".

11. **Catchment Investigation Procedure Wet weather - is overly burdensome –Part 2.3.4.7.e.ii.b**
    a. System Vulnerability Factors – describe nearly all catchment areas.
    b. Due to potential numbers of wet weather events and North Andover's 900 outfalls, monitoring per proposed regs would be impossible.
    Some reasonable cap should be placed on deadlines and number of locations per year.

12. **IDDE goals and Milestones – Are unmanageable – Part 2.3.4.8.c**
    There should be an annual cap of 5% of vulnerable outfalls for wet weather testing
        1. **Dry weather testing indicating a presence of discharge should be prioritized.**
        2. **The balance of outfalls should be ranked/tested by vulnerability factors.**

13. **Testing for Select Pharmaceuticals and Personal Care Products - is impractical – Appendix I**
    a. These products are ubiquitous in nature.
    b. Lab requirements for testing make them financially impossible.
    This should not be a priority for this MS 4 permit.

14. **Stormwater Management – this is redundant - Part 2.3.6.a.ii**
    a. Regulation already exists in MA
    b. The Commonwealth has created a handbook for this.
        a. This handbook is a product of an extensive public process
        b. Has flexibilities not allowed for redevelopment without which would preclude this redevelopment.
    c. The proposed regulation of treatment for the first 1" of runoff will preclude many roadway projects
    Local stormwater ordinances have already been adopted as part of the original MS 4 permit.

15. **Stormwater Management Directly Connected Impervious Area – annual reporting is irrelevant - Part 2.3.6.d.i**
    a. Annual tracking and reporting is difficult, time consuming and expensive
    b. Annual changes have marginal impact of water quality.
    Net change in impervious areas covered should be tracked over the life of the permit.

16. **Good Housekeeping – compliance sump cleaning regulation is unfeasible – Part2.3.7.a.iii(b)**
    a. The town does not have the depth below pipe inverts out for catch basin sumps
    b. Determining the trigger for cleaning "50% full" is impossible.
    A set distance below inverts out should be established.

Thank you for the opportunity to comment on the draft Massachusetts Small MS4 General Permit. Please contact me with any questions at 978-685-0950 ext 44021 or email at gwillis@townofnorthandover.com

Respectfully,

Eugene P. Willis P.E.
Director of Engineering

Cc file, Andrew Maylor, Town Manager; Bruce Thibodeau, Director Public Works

RECEIVED
12/24/14
NWT

TOWN OF ANDOVER, MASSACHUSETTS

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DEPARTMENT OF MUNICPAL SERVICES
WATER TREATMENT PLANT
397 LOWELL STREET 01810 -4416

December 22, 2014

Mr. Newton Tedder
US EPA-Region 1
5 Post Office Square—Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

RE: Comments on 2014 Draft NPDES General Permit for MS4 Systems in Massachusetts

Dear Mr. Tedder:

The Town of Andover has reviewed the above draft permit and wish to submit comments regarding the permit requirements. This letter outlines the comments and concerns as follows:

1. Page 7, Section 1.10.c states "The permittee is encouraged to maintain an adequate funding source for this program." It also provides reference to funding information available on the EPA website; this information recommends creating a Stormwater Utility in order to provide a funding source. Also, on page 23 of the Fact Sheet, it states" EPA recognizes that compliance with this permit will require substantial investment… and we note that many communities within Massachusetts have made the necessary investments that the Clean Water Act requires by funding a stormwater program through a utility or other means." It further states on page 24 "Stormwater utilities are beginning to appear in the Northeast, including seven in Massachusetts alone." We agree that the work will require substantial investment, however with the current economy; any additional fees requested such as a stormwater utility fee will be extremely difficult for taxpayer approval. The fact that very few communities in Massachusetts have been able to create a utility supports the difficulty that can be expected trying to establish this method of funding. These permit requirements should be revised and reduced until the Federal and State governments make other sources of funding available.
2. Page 32, Section 2.3.4.7.d.iii. includes procedures for dry weather outfall screening and sampling. The procedure states "if no flow is observed (on the first visit), but evidence of dry weather flow exists, the permittee shall revisit the outfall" to perform a second dry weather screening and sampling. This is very confusing; it is unknown how evidence of dry weather flow can be detected if there is no flow during dry weather. Are we expected

to visit each outfall more than once to see if there is any dry weather flow? Clarification is needed.

3. Page 35, Section 2.3.4.7.e.ii.(b) wet weather investigation at all outfalls where the presence of one or more System Vulnerability Factors exists is excessive; very labor intensive and expensive work when required if much of the existing sanitary sewer system is over 40 years old. Funding is problematic as written above in comment 1.
4. Page 40, Section 2.3.6.a.ii.(a) requires that the first one inch of runoff from all impervious surfaces be retained on site when a project disturbs one acre or more. This requirement makes it very difficult and much more expensive to perform routine roadway pavement work such as reclamation of existing roadway pavement when the roadway area exceeds one acre. It may be necessary to purchase/take extra land to construct required stormwater treatment areas, which will exhaust already deficient road maintenance budgets even further. There must be an exemption for pavement maintenance projects of this type. If a new road is being constructed or an existing road is being significantly widened, then the proposed requirements should apply, however if it is only maintenance such as reclamation of existing roadway pavement, this should not apply.
5. Page 45, Section 2.3.7.a.iii.(e), requires the procedure be established and implemented to minimize the use of sodium chloride and other salts and evaluate opportunities for use of alternative materials for winter road maintenance. Reducing salt usage is a goal that will provide environmental benefit but at what cost to safety. Roads are expected to be cleared and made safe for travel in the winter so that motorists are not exposed to hazardous driving conditions. The cost of road salt and deicers are a large portion of the winter storm budget and other alternatives can be much more expensive. The application of salt is based on the weather and conditions of the road and it always is the intention to apply the least amount of salt to achieve safe travel, so it is already being minimized and further reduction of salt use would be irresponsible to providing safe travel conditions.

It is understood that the goal of the permit is to help clean our waters. The town has worked diligently towards this goal to meet the requirements under the 2003 permit. We will continue to work towards this goal; however this has placed a burden on our staff and resources, which have been affected severely by budget cuts and layoffs in the difficult economic times which we are currently experiencing. The current budget situation is causing serious restrictions and the economic outlook for the near future is not expected to improve, making it very difficult to meet many of the proposed schedules and requirements of the new permit. Please consider eliminating or relaxing the requirements relative to these comments in issuing the final permit decision.

Sincerely,

Brian W. Moore

Brian W. Moore
Town Engineer

February 25, 2015

VIA EMAIL TO: Tedder.Newton@epa.gov

Mr. Newton Tedder
US EPA, Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

Re: APCC comments on draft MS4 Stormwater Permit for Massachusetts

Dear Mr. Tedder:

On behalf of the Association to Preserve Cape Cod (APCC), I am pleased to provide our comments on the draft MS4 Stormwater Permit for Massachusetts.

The Association to Preserve Cape Cod (APCC) was founded in 1968 to promote policies and programs that foster preservation of Cape Cod's natural resources. APCC is a regional non-profit environmental organization with more than 5,000 members Cape-wide. Our goals include protection of groundwater, surface water, and wetland resources; preservation of open space; promotion of responsible, planned growth; and the achievement of an environmental ethic. To achieve these goals, we provide technical assistance, outreach, advocacy, science-based policies and facilitation, working with communities, organizations, municipalities and agencies at the local, regional, state and federal levels. Our website at http://www.apcc.org describes many of our programs and achievements.

Many of our achievements relate to water resources and building community capacity to protect and restore the Cape's water and watersheds. Examples include:

- Designation of Cape Cod as a sole source aquifer;
- Designation of 15,000 acres of the Massachusetts Military Reservation as the Upper Cape Water Supply Reserve;
- Creation of the Barnstable County Water Protection Collaborative agency;
- Passage of the 1990 Cape Cod Commission Act establishing a regional planning agency with regulatory authority to manage growth;
- Passage of the Cape Cod Land Bank Act to fund purchase of open space;
- Formation and support of the Cape Cod Business Roundtable, a group of civic leaders who promote management of wastewater and growth;
- Hosting the Cape Cod regional coordinator for the Massachusetts Bays Program, which helps communities to protect and restore coastal ecosystems of Massachusetts and Cape Cod Bays,
- Helping to designate No Discharge Areas for boat sewage for Cape Cod Bay, Nantucket Sound and Vineyard Sounds.

3010 Main Street, P.O. Box 398, Barnstable, MA 02630-0398
Ph: 508-362-4226 Email: info@apcc.org Website: www.apcc.org
A non-profit organization. Dues and contributions tax-deductible as provided by law.

Our experience in working with communities to promote stormwater management includes the following:

- Providing staff support for the Barnstable County Coastal Resources Committee, a County advisory committee on coastal issues and the local governance committee for the Massachusetts Bays National Estuary Program. The CRC includes representatives from all 15 towns as well as regional, state and federal agencies involved in coastal management. The CRC assisted by APCC staff have organized a new "Cape Cod Stormwater Managers Group", an ad hoc group of municipal stormwater managers seeking to share information and outreach and exploring cost-effective approaches to stormwater management;

- Provided a Stormwater Utility Outreach Program for Cape Cod which included public workshops and training materials that led to one town (Yarmouth) undertaking a "Does It Make Sense?" or DIMS study for stormwater utilities.

- Led the advocacy effort that led to Congressional approval of the Cape Cod Water Resources Restoration Project, a 10-year NRCS watershed program to restore 7,300 acres of shellfish beds by remediating stormwater discharges, restoring 1,500 acres of degraded salt marsh and 4,200 acres of anadromous fish spawning habitat. By Fall 2013, 26 projects were completed, including 13 stormwater construction projects and 7 stormwater design projects. APCC staff continue to advocate for additional funding and are working with towns to identify the next round of stormwater projects.

- Providing technical support to towns and agencies, including identifying stormwater remediation projects and funding sources, providing grant-writing assistance, and conducting a survey of Cape Cod municipal stormwater managers to learn their needs and challenges.

Thus our comments are based upon our experience in working with communities to achieve results in the areas of water, wastewater, watershed restoration, stormwater outreach and project planning. Our comments are as follows:

1) The issuance of the draft MS4 permit for Massachusetts marks an important milestone in stormwater management. By setting a schedule for the issuance of the final permit, uncertainty is reduced, making it possible for municipalities, agencies, utilities and others to better plan for stormwater management over a longer period of time.

2) The draft MS4 permit addresses the fact that Cape Cod has a number of TMDLs for nutrients and/or bacteria. Cape Cod's primary environmental issue is eutrophication of our coastal embayments and ponds and lakes, caused by nutrient loading due mainly to septic systems but also including a component (estimated at 8% Cape-wide and in some locations as high as 22%) due to untreated stormwater runoff. Communities have developed or are developing wastewater management plans to

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reduce wastewater pollution, but implementation of these plans will be costly and will take time. Addressing this source of water pollution must remain a priority for Cape Cod communities.

The Clean Water Act Section 208 plan is a comprehensive areawide plan for improving and protecting water quality. The primary focus of the 208 plan is wastewater pollution but stormwater runoff is also one component. Coordination between the MS4 permit, the 208 plan, and individual town's stormwater permits and comprehensive wastewater plans is greatly needed in order to minimize bureaucracy and provide cost-effective management of water resources. EPA should actively work with communities to promote a streamlined coordinated cost-effective approach to managing stormwater, wastewater, drinking water and wetlands. Otherwise, the MS4 permit will represent yet another silo among many regulatory requirements, fostering public frustration, compartmentalized "not my job" responses, poor coordination and increased costs due to redundancies.

3) Cape Cod municipalities have a long history of managing stormwater runoff to reduce bacterial pollution of shellfish beds, swimming beaches, and recreational water bodies. Maintaining these resources is important for the Cape's coastal economy. These efforts and achievements began in the mid-1990s, demonstrating that Cape Cod municipalities are invested in clean water provided that appropriate technologies are available to effectively treat stormwater runoff.

4) EPA needs to allocate sufficient resources to adequately manage and enforce the MS4 permit program. If municipalities strive to meet their permit requirements, they should receive prompt feedback or guidance from EPA. To date EPA has treated stormwater permitting and management as much more a paper exercise of reporting and not a program to attenuate nutrients, pathogens and pollutants from stormwater. Because something looks good on paper does not mean water quality is necessarily improving. Cape Cod needs more change on the ground and less change in filing cabinets.

5) APCC is concerned that most Cape Cod towns will not have sufficient resources to adequately address all of the new permitting requirements. Municipalities, particularly smaller ones, will find the permit requirements very difficult to meet due to lack of funding. Small municipalities, such as those on Cape Cod, face stringent budget limitations. Despite EPA's assertion that a Proposition 2½ override is possible, overrides are infrequent and cannot be relied upon. The 2010 US Census showed the Cape's population has decreased since the last census, and reflects an older population, often on fixed incomes. Municipalities rely on property taxes for general funds. Funding for routine maintenance of stormwater infrastructure is an even more daunting fiscal challenge. EPA has been encouraging communities to adopt stormwater utilities to fund municipal stormwater programs. Based on our experience in providing public outreach on stormwater utilities, professional municipal staff support for such utilities may be high but public support for paying for stormwater management is low. EPA is in a difficult position to require so much

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and pay for so little. EPA must do a better job of educating citizens on the value of improved stormwater management.

6) In addition to lacking the financial resources, most Cape Cod towns lack the technical resources to adequately implement and operate a viable stormwater management program. In many respects the new permit asks country doctors to step up and perform brain surgery with no additional affordable training. EPA needs to do more in providing training and technical assistance to municipalities, particularly related to managing nutrients in stormwater.

7) EPA has also been slow to adopt and incorporate best management practices (BMPs) into permits. This is most apparent in snow removal and management references of the draft permit. It can be described as a "keep your powder dry" warning without incorporating known best management practices. Snow operations introduce salts, other deicing chemicals and sediment into both the surface water and groundwater. EPA should be at the forefront of advancing BMPs in this area of road maintenance.

8) EPA must improve priorities in the permit. It is critical to prioritize meaningful actions that result in improved water quality. The top priorities should be promoting stormwater implementation projects that include installation of suitable BMPs and elimination of illicit discharges.

9) Municipalities often receive stormwater runoff from properties owned by federal, state and/or regional agencies. This places a burden on municipalities to manage runoff from all of these sources as well as runoff from municipal, private and commercial properties. Federal, state and regional agencies which own impervious areas should be required to manage stormwater runoff to meet the same water quality goals as municipalities. In particular, the Massachusetts Department of Transportation (MassDOT) should be required to manage and treat runoff from state roads to the same degree or more advanced degree as municipalities.

10) Public/ private utilities and railroads which utilize pesticides for treatment of right-of-ways should be subject to stormwater standards to protect water quality.

11) While there are numerous stormwater BMPs that target bacteria, there are far fewer BMPs that address nutrients. EPA should continue to invest in research, development and monitoring of effective methods of treating nutrients and multiple pollutants using stormwater BMPs . While green infrastructure offers much promise, in coastal environments such as the Cape there are additional challenges such as high groundwater, limited land area in which to install retrofits, storm surges, and rising sea levels to contend with.

In summary, while we praise EPA for producing a draft MS4 permit that reduces uncertainty and promotes long-range planning, the substantial and extensive requirements of the MS4 permit should be better prioritized to emphasize implementation of solutions and closer coordination of multiple federal, state, regional and local permits and plans that together

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promote improvement of water quality. APCC has observed firsthand that delays and expressed uncertainty by EPA in this area have actually set stormwater management back. Local communities need certainty and time to plan. Stormwater is not an area where communities are unwilling to improve. It is an area where they have been unable to improve because of the cost of complying with federal mandates and uncertainty as to what those mandates actually are. Submitting notices of intent, permits and reports and never receiving feedback adds to the uncertainty. This is not a time to take a giant step. Progress must be continuous and incremental.

Thank you for the opportunity to provide comments. Please feel free to contact me at (508) 362-4226 ext. 13 if you have any questions or wish to discuss our comments.

Sincerely,

Edward DeWitt
Executive Director

ED/jm

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Tedder, Newton

From: Art Pinell <a.art@comcast.net>
Sent: Sunday, February 08, 2015 11:13 AM
To: Tedder, Newton
Cc: 'Bob Horacek'; 'Russ Fox'; 'Nick'; Donald.Humason@masenate.gov; kstinehart@southwickma.net
Subject: EPA Stormwater Rules for MS4 Permit/Public Comment

Dear Mr Tedder,

Please enter this correspondence into the official public comment component of the rules implementation procedure.

I live in Southwick MA. I currently serve on the town's Finance Committee. I am a former Selectman and Board of Health member.

Within our physical borders lie three large lakes, the Congamond Lakes. Underneath us is a large aquifer which supplies our public drinking water supply. The Town takes very seriously the protection of these and other valuable water resources. The Town has historically undertaken many projects to identify and mitigate point source pollution. An extensive public sewering project and utilization of many "319" grants as well as ongoing efforts to mitigate stormwater pollution through our Planning Board and Conservation Commission and Zoning Bylaws all demonstrate our Community"s commitment to protecting our valuable water resources.

The taxpayers of Southwick currently face a significant financial burden from current regulatory mandates in regards to Education, Public Safety, American Disability Act, and Enviromental issues and are committed to complying with these mandates even as the cost of all aspects of local government rapidly rise. The new MS4 rules will place yet another, more onerous financial burden on our Townspeople.

The current Draft Regulation is an unfunded mandate. No amount of "dancing around with semantics" will change any public official's mind about this aspect of the Rules.

EPA regulators need to consider allowing MS4 communities the opportunity to comply over an extended period of time, up to 20 years if necessary, through the development and implementation of a plan which is specific to each town or city. This will allow communities, which value clean water, to realize that outcome in a responsible and affordable way.

Thank you for your consideration.

Art Pinell
72 Mort Vining Rd.
Southwick,MA 01077

Town of Auburn, Massachusetts

Julie A. Jacobson
Town Manager

February 27, 2015

Newton Tedder
US EPA Region 1
5 Post Square Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

Re: Comments on the Draft MS4 NPDES General Permit for Stormwater Discharges in Massachusetts

Dear Mr. Tedder,

As Auburn's Town Manager I am pleased to have an opportunity to submit comments to the Environmental Protection Agency (EPA) regarding the National Pollutant Discharge Elimination System (NPDES) Draft General Permit (Draft Permit) for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts. I thank you for the opportunity to provide these comments. I will also note that the Auburn Department of Public Works will be submitting a separate comment letter. I am submitting these comments in an effort to bring to light the substantial impacts this draft permit will have on our community.

The Town of Auburn is a community of approximately 16,000 people and is host to Massachusetts State Routes 12, 20, I-90, I-290, and I-395.

The Town of Auburn strongly supports the goal of ensuring that the Waters of the United States are clean and are protected from untreated stormwater runoff. Since the introduction of the original Phase II MS4 General Permit in 2003, the Town has supported the underlying goal of improving the quality of the Waters of the United States located in the Town. The Town has worked diligently and successfully to implement the requirements of the original 2003 Small MS4 Permit. The Town was one of the thirteen (13) original members of the Central Massachusetts Regional Stormwater Coalition (CMRSWC). The Town continues to be a member of the CMRSWC, and works with its partner towns to develop a common message and framework for dealing with stormwater runoff.

I write to you to express the Town's concerns with the extremely large and overreaching burden that the Draft Permit will inflict upon the Town of Auburn, as well as other cities and towns in Massachusetts. The Draft Permit as currently constituted will result in large increases in compliance costs related to administratively focused tasks, studies, and reports that will create no quantifiable increase in water quality in the Town's receiving waters. Other facets of the Draft Permit impose tasks upon the Town that it would be unsuitable to perform. Further, the Draft Permit imposes strict conditions on development and redevelopment projects that are in conflict with current Massachusetts Stormwater Standards, as well as existing local bylaws and regulations.

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For instance, the Draft Permit requires the Town to craft a number of different stormwater educational messages, each tailored to a specific audience. While not an entirely unreasonable requirement, the Draft Permit then requires the Town to develop and implement ways to measure the effectiveness of those messages on the intended audience. The Draft Permit provides no suggestion as to how this should be done, but it is clear from the Draft Permit language that simply keeping track of the number of pamphlets distributed, or the number of web page views, for instance, will not be considered an adequate way of measuring effectiveness. This requirement will force the Town to hire a public relations company to design the messages, as well as to conduct surveys to determine if they are effective or not. This type of activity is simply not a good way to spend limited money on stormwater cleanup, and will provide no indication of an improvement in water quality. The EPA should remove the requirements for determining the effectiveness of the public education measures. Additionally, the EPA should work to develop a common educational campaign for the State as a whole, either working through the Massachusetts Department of Environmental Protection (MADEP), the DCR, and/or with other environmentally focused non-profit organizations. While regional efforts such as the CMRSWC will certainly help with meeting this condition of the Draft Permit, an overall state wide coordinated stormwater messaging campaign would be much more effective than numerous individual stormwater campaigns.

The Town is also concerned with the impediments to land re-development costs that the Draft Permit appears to impose. In the sections of the permit dealing with new and redevelopment land projects, the Draft Permit appears to require the upgrading of the stormwater management system of an entire site, even if only a portion of the site is actually undergoing redevelopment. Further, the requirement of the Draft Permit to treat the first 1-inch of stormwater runoff is in conflict with the MADEP Stormwater Standards, which requires the 1-inch treatment volume only for discharges to critical environmental areas. The imposition of both the 1-inch treatment volume for all new land development projects, as well as the retrofitting of the entirety of a site undergoing land redevelopment activities will greatly increase the cost of construction of both types of projects. For redevelopment projects, this requirement may make a project no longer cost effective. While the Town certainly does not encourage unchecked land development activities, the added construction costs due to the Draft Permit must be weighed against the general economic harm that may occur from those added costs. Massachusetts already has some of the highest construction costs in the United States, and these costs have had a dramatic impact upon the ability of cities and towns in the State to provide affordable housing for its citizens. We urge the EPA to reassess this requirement to treat the 1-inch stormwater runoff on the entirety of a redevelopment site. We further urge the EPA to consider the conflict created between the Draft Permit and the existing Massachusetts Stormwater Standards and other local land development bylaws and regulations. The EPA should be working conjointly with the MADEP to determine what is best for Massachusetts in term of stormwater standards for new and redevelopment projects.

The current Draft Permit provides a level of detail of the activities to be completed to achieve permit compliance that has been previously not seen. For instance, there are at least 250 different actionable items that the Town has to demonstrate compliance with. Additionally, the Draft Permit lists criminal penalties for failure to comply with these items. Many of these items are of limited benefit. For instance, requiring the Town to sweep streets a second time in the year, primarily in order to collect leaves is unreasonable. We believe the EPA needs to re-examine this list of activities. We urge the EPA to craft permit requirements that are based on quantifiable improvements in stormwater runoff quality, rather than mandating a set of actions that may or may not result in any appreciable improvement in runoff quality.

There are number of areas within the permit where it appears the EPA is using cities and towns to act as data collection surrogates for the EPA. Collecting data on volume of street sweepings, catch basins cleanings, amount of directly connected impervious areas (DCIA), and wet weather sampling serves little purpose in increasing stormwater runoff quality. While this data may be interesting to collect for research purposes, there is a cost associated with the collection efforts. The cost in money and time to collect this data should not be borne by the Town, as there is no appreciable benefit to runoff quality. It is simply an academic exercise. If the EPA is interested in collecting these types of information for further research and analysis,

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then it should bear the burden and cost of collecting the information. It should not simply be required of the Town to perform this type of work on the behalf of the EPA.

Finally, of particular concern to the Town is the overall projected cost of compliance with the Draft Permit. The Town currently spends approximately $295,000 per year on stormwater related measures. With the requirements within the current Draft permit, the Town could expect new annual costs to be approximately $260,000 per year, or an increase of 88-percent above current costs. Further, this new annual cost does not include funds necessary to perform structural retrofits on existing Town owned stormwater management systems.

The Town has been a strong supporter of improving stormwater quality, and has consistently funded the activities needed to comply with the 2003 MS4 permit. The Town did expect that the Draft Permit would require an increased expenditure of money related to new stormwater compliance costs. However, the amount of the projected increase is unreasonable, especially given the limited benefit of many of the items that are driving the increased costs, and the lack of quantifiable improvements to runoff quality. The EPA must examine further the cost implications of the Draft Permit, and work to find ways to reduce this additional burden to cities and towns. While the EPA has indicated that it understands that there will be additional permit compliance costs, it has not sought out ways to reduce that burden. Rather, the EPA champions the establishment of stormwater utilities to raise dedicated funding for stormwater management. While a stormwater utility is one way to raise money for stormwater management, such a utility simply represents a way to levy an additional tax or fee on the residents and business owners of the Town. A stormwater utility may raise money, but it does nothing to limit the amount of money that is needed by the Town to comply with the Draft Permit. The Town of Auburn proposed the formation of a stormwater utility in 2010 and encountered significant opposition by businesses, residents, and the Board of Selectmen, and was ultimately rejected. We strongly urge the EPA to examine all of the new mandates that it is requiring cities and towns to comply with in the Draft Permit.

In conclusion, the Town of Auburn is quite concerned with the large expansion of the EPA's involvement in the Town's stormwater management program. The EPA is mandating a number of activities that will be expensive to implement, are not within the core function of a municipality in Massachusetts, and will have no readily apparent increase in stormwater runoff quality. The Town of Auburn is a strong and consistent advocate for clean water, whether it is drinking water, stormwater, or wastewater. However, any increases in costs due to permit compliance must be balanced against the financial capability of Auburn, and other cities and towns to absorb those additional costs. The Town of Auburn expected that permit compliance costs would go up under the Draft Permit. However, the scale of the cost increases, as well as the reasons for those increases, is not something that can be easily defended or explained to the general public. If the EPA wishes to increase stormwater runoff quality, they must adopt a more cooperative approach to the problem, and work with the cities and towns of Massachusetts to create a permit with more realistic requirements that create measurable improvements in stormwater runoff quality. Until such time that occurs, or until the Federal and/or State governments step forward with the additional funding necessary to gain permit compliance, cities and towns will be stuck in an adversarial relationship with the EPA, and will be unable to adequately fund their stormwater management programs.

On behalf of the Town of Auburn, I thank the EPA for providing this opportunity to comment on the Draft Permit, and we look forward to working with the EPA in the future to create a more practical and cost effective stormwater permit.

Sincerely,

Julie A. Jacobson

Julie A. Jacobson
Town Manager

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Town of Auburn, Massachusetts
Department of Public Works

Julie A. Jacobson
Town Manager

William A. Coyle
Director

Engineering Division
William A. Coyle
Town Engineer

Joanna E. Paquin
Civil Engineer

February 27, 2015

Newton Tedder
US EPA Region 1
5 Post Square Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

Re: Comments on the Draft MS4 NPDES General Permit for Stormwater Discharges in Massachusetts

Dear Mr. Tedder,

The Town of Auburn Department of Public Works (DPW) has reviewed the Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Draft General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts (Draft Permit). We thank you for the opportunity to provide comments and we note that the Auburn Town Manager, will be submitting comments separately.

The Town of Auburn is a community of approximately 16,000 people and is host to Massachusetts State Routes 12, 20, I-90, I-290,and I- 395.

The DPW supports the underlying goal of the Draft Permit, which is to improve the water quality of the United States. The DPW is the implementing agency for the Town of the 2003 Phase II MS4 General Permit (2003 Permit) and we have worked diligently and successfully to implement the requirements of the 2003 Permit. To date, the Town has spent approximately $295,000 per year for compliance with the 2003 Permit.

Based on the EPA's cost estimates for complying with the Draft Permit's requirements, provided on page 76 of the Fact Sheet, the cost of compliance for the Draft Permit could vary from $78,000 to $829,000 per year, depending on the size of the municipality. The Town currently spends approximately $295,000 per year on stormwater related measures. With the requirements within the current Draft permit indicates that the Town could expect new annual costs to be approximately $260,000 per year, or an increase of 88-percent above current costs. The increased cost is substantially a result of requiring written plans, procedures, reports, policies, protocols, inventories and redundant sampling which creates a paperwork burden on the Town that does not contribute to the goal of reducing the discharge of pollutants to the waters of the United States. Further, this new annual cost does not include monies necessary to perform structural retrofits on existing Town owned stormwater management systems.

The following comments are intended to highlight the concerns that the Town has with a variety of requirements in the Draft Permit that will cause the Town to incur unnecessary costs for tasks that provide little to no appreciable increases in stormwater runoff quality. Additionally, Draft Permit items that create

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an undo regulatory burden upon the Town in terms of administrative filings, data collection, studies, etc. are discussed:

1. Within the Town of Auburn, similar to other cities in towns in Massachusetts, there are several traditional and non-traditional publicly owned MS4 systems. The Town has no responsibility for, or legal authority over, these other MS4s. However, the outreach to these other regulated entities to inform them of their responsibilities under the Draft Permit has appeared to be non-existent. We ask that the EPA reach out directly to these other regulated entities and not rely on the Town to do this work on the EPA's behalf.

2. The Notice of Intent (NOI) requires a significant amount of work that cannot be reasonably and accurately performed in the 90 days mandated in Part 1.7.2 of the Draft Permit. We note that per Part 1.7.4, the NOI will be posted and allowed to be publicly commented upon. It is important that cities and towns have an appropriate amount of time to collect the requested information in the NOI, to determine what Best Management Practices (BMPs) will be used to comply with the Draft Permit, and to determine what Town Department will be responsible for implementing the BMPs. It is assumed that the EPA and the members of the public that will be reviewing the NOI will want the NOI to be as complete and accurate as possible. In addition, Part 1.7.2. requires the Town's appropriate official to sign the NOI under the pains and penalties of perjury, and to certify that the NOI is "...true, accurate, and complete." We request that the time allowed to submit a NOI from the date of release of the Final Permit be at least 180 calendar days. This 180 calendar day schedule is similar to that provided to municipalities under the 2003 MS4 permit, and we do not see any reason why it should not be provided for this Draft Permit.

3. The public education program requires to show evidence that progress towards the defined education goals has been achieved. We request that EPA provides specific measures/methods to show evidence for achieving the educational goals. Efforts spend on designing/evaluating measures to evaluate the effectiveness of the educational program create a burden to the Town as personnel are not specialized on public relations. It does not encourage the best use of Town's resources and does not contribute to the goal of increasing knowledge.

4. It is required that all outfall and interconnections be inventory. The Town has approximately 320 outfalls and expects that adding interconnections will double or triple this number. The Town agrees that adding information such as material, size, shape, and condition to the inventory of outfalls is beneficial. However, we request that inventory of all interconnections be removed from Part 2.3.4.5.b, there is no benefit to inventorying all interconnections if the point of discharge (outfall), downstream from the interconnection, is being monitored, sampled and investigated. Inventorying the physical conditions of interconnections will create a burden to the Town by duplicating efforts unnecessarily. Additionally, we believe one year is not enough time to gather all of this information and request that the update to the inventory of outfalls be completed throughout the duration of the permit.

5. A more detailed map than the 2003 Permit is required. The new stormwater system map requires substantially more information, including but not limited to adding pipes, and catchment delineations, and the time frame to complete it is two years. The Town requests that additional time be provided for the completion of this requirement. We request that the new system map be completed throughout the duration of the permit, this will allow for a practical usage of Town resources to complete this requirement.

6. In Auburn various departments and divisions have and/or share specific responsibilities within the 2003 Permit. The draft permit requires writing a description of each department's responsibilities in a report. We believe a report that stays on the shelf, hardly gets use and creates paperwork burden is not an efficient way to create awareness. We recommend that EPA strives to outreach to more Town

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agencies/departments to increase awareness and convey the importance of implementing the Illicit Discharge Detection and Elimination (IDDE) program.

7. Outfall dry and wet weather screening and sampling requires at a minimum sampling of 7 parameters (ammonia, chlorine, conductivity, salinity, ecoli/enterococcus, surfactants and temperature) for any flowing outfall. We believe this is excessive and request that a visual screening for flowing outfalls should be allowed and sampling should be required only if visible signs of pollutants exists. This will allow the Town to focus efforts on finding/eliminating sources of non-stormwater discharges instead of potentially sampling locations where high ground water table may exist.

8. The catchment investigation (system vulnerability) consisting of dry and wet weather key junction manhole investigations seems to be repetitive to the outfall screening requirement. We agree to conduct upstream investigations if the outfall shows signs of pollutants but not to all upstream key junctions. Dry weather key junction manhole inspections should allow for a visual assessment and not require screening of 3 parameters (ammonia, chlorine and surfactants) to all catchments. We recommend that wet weather investigations be required only if the outfall/interconnection screening shows signs of pollutants, known contributions of illicit discharges exist, or where system vulnerability exists. This will allow the Town to focus efforts on finding/eliminating sources of non-stormwater discharge and will avoid expending efforts and funds where unnecessary.

9. Under Part 2.3.4.8.a, we request that completion of the screening of each outfall be extended to the duration of the permit and not to 3 years.

10. Under Part 2.3.4.9, we request that EPA provides specific guidance on reporting the IDDE program effectiveness and develops tracking indicators. Requiring permittees to identify and define tracking mechanism creates a burden to the Town by requesting a task that may be better suited to the organization receiving updates from each Town/City on compliance to the IDDE program.

11. Part 2.3.5, writing procedures for site plan review and inspection and enforcement creates a lot of paperwork burden that hardly gets used. This requirement creates additional paperwork burden, standard procedures should be provided by EPA to all permittees and the Town should continue to focus on the implementation of the site plan review and inspection and enforcement.

12. The requirement for new development and redevelopment related to retain or treat the first inch of runoff from impervious surfaces is in disagreement with and abrogates the Massachusetts Stormwater Handbook standards. We request that Part 2.3.6.a.ii.(a) be made consistent with the Massachusetts Stormwater Handbook Standards.

13. Part 2.3.6.b requires writing an assessment of current street design and parking lot guidelines to determine if changes can be made to support low impact development (LID) options. This imposes a burden to the Town by spending efforts on designing roadway standards instead of focusing on reducing the discharge of pollutants. The Town has, where appropriate, been implementing and supported LID techniques as recommended in the Massachusetts Stormwater Handbook. We recommend that additional information on LID design and impacts be provided to the Towns for its use as feasible.

14. Part 2.3.6.c requires writing an assessment of local regulations to determine the feasibility of allowing greener practices and providing a schedule for implementation. Similar to Comment 16, this creates a burden to the Town by spending efforts on Land Use Development. We recommend that this assessment be done at a larger scale and not by individual Towns.

15. To estimate the annual increase or decrease in the number of acres of impervious areas (IA) and directly connected impervious areas (DCIA) imposes a burden to the Town by spending efforts on calculations

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that do not provide a reduction of pollutants discharged through stormwater. The Town requests that this requirement be removed from the permit and recommends that EPA takes on the challenge to maintain this database.

16. The draft permit requires the inventory and priority ranking of Town-owned properties to implement a retrofitting program after Year 5 of the permit. It is unrealistic to expect that the Town will be able to spend money on retrofitting its properties to include a BMP after 5 years of the permit. Many of the Town owned properties are within areas where adding a structural BMP is nearly unfeasible. To meet this requirement, the Town will be obligated to hire an outside consultant to assess the possibility of modifying the existing infrastructure. This can be cost prohibited. The Town request that this requirement be changed to implement structural BMPs where feasible.

17. The draft permit requires to annually report the volume or mass of material removed from each catch basin draining to water quality limited waters and the total volume or mass of material removed from all catch basins. This requirement creates a burden to the Town by spending efforts on estimates that are hard to obtain with accuracy. This calculation does not prevent or reduce the pollutant runoff from town-owned operations. The Town requests that this requirement be removed.

18. The draft permit requires to annually report on the number of miles of street cleaned and volume or mass of material removed. This requirement creates a burden to the Town by spending efforts on estimates that are hard to obtain with accuracy. This calculation does not prevent or reduce the pollutant runoff from town-owned operations. The Town requests that this requirement be removed.

19. The standard permit conditions included in the draft permit are much different than the standard conditions included on other NPDES permits. It includes criminal penalties which were not listed before. The Town has and plans to continue to implement the requirements of the MS4 permit, but disagrees with the new language included in this Appendix.

20. The Town requests guidance on the allowable uses for the street sweepings and catch basin cleaning material that may not create a financial and/or paper burden to the Town.

As described above we believe there are a number of proposals found with this draft permit that are either: 1) impractical to implement, 2) add little to negligible benefit to the environment; 3) are cost prohibited; and 4) some combination thereof. We believe that a number of changes must be made to the draft permit, in order to create a regulation that will work. We believe that many of the requirements of this draft permit are best instituted on a nationwide or statewide level, given the greater amount of resources available to EPA and DEP. Without an infusion of a large amount of state and federal fiscal resources, as currently designed, this draft permit sets up small towns and cities for failure, as the required fiscal resources are simply not available to them. We strongly suggest that the draft permit be pared back to better reflect the resources available to all levels of government.

We thank EPA for providing the opportunity to comment, and look forward to working with you to create a more practical and easy to implement general permit. If you have additional questions regarding these comments feel free to contact me at 508-832-7814 or via email at wcoyle@town.auburn.ma.us.

Sincerely,

W. Coyle

William A. Coyle, P.E.
DPW Director/Town Engineer

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Re: Comments on Draft Massachusetts Small MS4 Permit

Dear Mr. Tedder:

Thank you for this opportunity for Berkshire Environmental Action Team, Inc. (BEAT) to comment on EPA's Draft General Permit for Small MS4s in Massachusetts. BEAT has been working with our communities for more than 10 years to protect the environment for wildlife in support of the natural systems that sustain us all.

Polluted stormwater is the most serious water pollution problem in Massachusetts today. EPA Region 1 has found that stormwater causes or contributes to at least 55% of the violations of water quality standards in the state's rivers, streams, and lakes. Climate change presents an additional, important reason to improve stormwater management. Most scientists expect the recent cycles of flooding and drought to become more pronounced, and Massachusetts communities need to maintain or upgrade their aging infrastructures, to safeguard both public safety and the environment into the future. **This permit is an important step in promoting these urgently-needed changes, and we strongly support its promulgation.**

The 2014 permit represents a significant improvement over the 2003 permit, and is likely to be much more effective in reducing pollution, flooding and erosion caused by stormwater in urbanized areas.

- The permit incorporates **water-quality requirements** that directly address the pollutants that are actually causing specific Water Quality Standard violations in each town.

- The permit provides **more specific requirements and deadlines** in many cases, which should result in better compliance than was achieved under 2003 permit.

- The permit gives towns **adequate time and substantial flexibility** in choosing approaches to compliance that are most appropriate for local conditions. In response to comments on the 2010 proposed permit, EPA eliminated some requirements that were believed to be overly prescriptive.

- **Permit requirements for greater public access and opportunities to comment** on towns' stormwater management programs will increase public support for these programs, which is essential if towns are to raise the resources necessary to deal with

polluted stormwater. Greater public scrutiny will also encourage more effective plans and more consistent implementation.

- **The post-construction requirements for new development and redevelopment will prevent future projects from continuing the poor stormwater management practices of the past.** EPA has chosen a balanced and effective strategy, setting a high standard for infiltration of stormwater (the most cost-effective way of removing pollutants from stormwater), providing a safety valve where site conditions make meeting that standard infeasible.

In short, the permit requirements ask municipalities to do better monitoring and planning, to improve implementation, to raise public awareness of stormwater issues, and to design and maintain better stormwater management measures. If successful, the permit **will result in major improvements in the management of urban stormwater in Massachusetts, and we will see the results in cleaner, healthier, rivers, streams, lakes, bonds, and coastal waters**.

We also note that good planning **can help towns reduce compliance costs and fund the required investments in stormwater programs and infrastructure**. Towns can take advantage of help and support from EPA, MassDEP, watershed groups and regional planning agencies; work regionally (including through storm water consortiums) to achieve economies of scale, develop and fund stormwater utilities, and ensure that private entities assume their share of the responsibility for stormwater management.

Finally, while we strongly endorse the overall approach and requirements of this permit, we **have identified some areas where improvements are needed:**

- **The stormwater bylaw requirements should apply to projects as small as a quarter of an acre.** Most urbanized towns, at least in the Boston area, have very few large development and redevelopment projects, and projects under an acre would not be required to employ *any* stormwater management measures unless they are located in wetland resource areas. This will make it exceedingly difficult for many towns to comply with the proposed prohibition against new and increased stormwater discharges from MS4s.

- In addition to conducting an annual evaluation of BMP compliance and effectiveness, **permittees should be required to take corrective action** where the evaluation shows that goals and objectives are not being met. An effective iterative approach to improving stormwater management requires that problems be addressed, and not simply identified.

- **MS4s discharging to waters impaired for bacteria or pathogens should be subject to additional requirements**. This includes requiring new development and redevelopment projects and retrofits on town-owned property to implement BMPs that are most effective at reducing bacteria where the waters they discharge to (via an MS4) do not meet bacteria Water Quality Standards. These requirements are consistent with the proposed requirements for other stormwater pollutants.

- **The new requirements proposed for projects discharging to water impaired for chloride should apply to all MS4s.** While relatively few water bodies have been assessed for chloride, evidence suggests that this is a significant problem in most, if not all, urbanized areas.

We appreciate the careful work EPA has done to improve on the 2003 permit and the 2010 proposals, based on experience with the 2003 permit and comments on the 2010 proposals. However, the process has taken a very long time. We **strongly support prompt issuance of the final permit**, to end a long period of drift and uncertainty associated with delay in issuing this permit. We urge EPA to work quickly to respond to comments and complete a final permit at the earliest possible date

Thank you for considering our comments on this very important permit.

Sincerely,

Jane Winn, Executive Director

TOWN OF BECKET
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RECEIVED 12/22/14

December 17, 2014

U.S. Environmental Protection Agency, Region 1
Attn: Newton Tedder
5 Post Office Square, Suite 100 Code OEPo6-4
Boston, MA 02109-3912

Re: Comments Regarding Proposed draft Massachusetts new EPA Storm Phase 2 regulations

Dear Mr. Tedder:

The following is a list of the most troubling portions of the proposed new Stormwater Phase Two regulations.

1) Pavement maintenance work triggers retaining first inch of stormwater or stormwater treatment. Under the new regulations, when one disturbs more than 1 acre in area or phased construction totaling one acre (translates to only ¼ mile of 30' wide pavement) or more which will include road reclamation projects, the new regulations require that the first inch of storm water be retained or all the stormwater must be treated. This essentially means one now not only has to resurface the road one has to completely redesign and re-construct the entire stormwater collection system to satisfy this requirement. This will cripple road maintenance budgets. Accordingly, cities and towns will be forced to purchase/take extra land by eminent domain for stormwater storage or pay for the expense of stormwater treatment systems on simple routine maintenance projects. This is a huge expense in downtown business districts and even in rural areas with old roads and narrow town-owned rights-of-way.

   As everyone is aware, the funds available for pavement maintenance are less than half of what are needed to simply preserve the condition of the current infrastructure. This means that Massachusetts roads are falling apart faster than they can be repaired. The above added costs will compound the problem and create more failing roads and more erosion. Municipalities will be forced to use the wrong pavement rehabilitation technique at the wrong time which will squander the available limited pavement maintenance resources.

   There must be an exemption for pavement maintenance projects. The above regulations should not be applied to maintenance projects. If a new road is being constructed or a lane is being added, these stormwater management upgrades may be able to be accommodated, depending on surrounding conditions like available right-of-way width and/or proximity of buildings to the right-of-way. Simple pavement surface maintenance projects or minor improvements should not trigger rebuilding the world.

2) Chloride Reduction. Most municipalities already are trying to limit salt/chloride usage. The cost of road salt and deicers is a large portion of the winter storm budgets. Any responsible DPW

director or winter road program manager is looking to reduce the costs in all areas that are practical. There is no objection to installing computers on the truck spreaders and training the operators in best management practices nor do we object to the EPA providing Best Management Practices or guidance suggestions; however, reducing salt usage below what is practical with the current technology is irresponsible and to do this exposes the motorists to hazardous conditions and the municipalities to legal action. Yes, usage of chlorides could all stop tomorrow, but at what cost to human life. If the EPA will protect an endangered salamander, it should be equally as concerned with the loss of human life. The chloride reduction regulations should be limited to recommending that municipalities follow the latest accepted Best Management Practices.

3) Requirement for tracking impervious area. The EPA in its permit guidance documents implicitly admits that the simple presence of impervious areas is not a direct correlation to stormwater quality. Sites with paved areas can store/detain or treat stormwater so that the presence of paved areas on stormwater quality is mitigated. Similarly, the MaDEP considers roof water runoff "clean" and can be infiltrated into the ground without pre treatment. Tracking the amount of impervious areas does not have a direct correlation to water quality; therefore the MS4's should not have to expend resources tracking changes in impervious area. As long as new development is in compliance with Best Management Practices, control of development should be under the jurisdiction and control of local planning authorities. Any attempt at limiting /restricting development through the veiled attempt at controlling impervious area is outside the purview of the Clean Water Act.

4) Cost of implementation. An article published in Construction Outlook a publication of UCANE recently published EPA cost estimates of compliance between $70,000 and $829,000 per year depending on population and size. This is very troubling because they have been known to significantly under-estimate the actual cost. At the meeting, Newton Tedder from the EPA commented that he believes most cities and towns will have to pass a stormwater utility in order to pay for the costs to comply with the new Storm Phase Two regulations. Obviously, the EPA is admitting that the new regulations are an undue burden and so costly that the municipalities cannot afford them with existing revenues. It seems unlikely that the intent of Congress in passing the Clean Water Act was to authorize the EPA to mandate additional taxes and create its own hidden tax structure to accomplish its charge of cleaning the water. The EPA was charged with cleaning the water and operating within its budget as set by Congress. The States and local cities and towns must do the same. It is unconscionable at a time when state and local governments are undergoing staff and budget cuts to capriciously raise the cost of compliance with the new regulations. The local governments will be happy to work with the EPA to achieve progress on storm water. However, the heavy handed, adversarial and punishing regulations as proposed will not encourage cooperation from state and municipal partners.

The Congress of the United States should act to restrain the EPA from imposing uncontrolled and expensive tax burdens on the subjects it regulates. Taking reasonable actions to improve water quality is one thing, but being mandated to accomplish everything overnight is unfathomable. All levels of government must be cognizant of costs. The regulations, reporting

requirements and the overall implementation costs must be reduced to a sustainable and rational level.

5) Signage at outfalls: Installation of signage at outfalls provides no tangible benefit to water quality. Installation of signs and posts will waste resources. The signs will encourage theft or vandalism and will provide little to no use in management of the stormdrain system. All regulated organizations are required to have maps with locations of all outfalls. The availability of low cost GPS devices makes these outfalls easily located by just about anyone.

William H. Elovirta, Chairman

Angela I. Hilton, Vice Chairman

Jeanne W. Pryor, Clerk

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Preliminary Draft

I am not sure how informed you our representatives in the State House, and Congress and House of Representatives in Washington of the revised regulations that the USEPA Region 1 is about to initiate. I realize you must have a thousand issues to deal with and simply want to make you aware of this program that it appears will have significant and inequitable impact on some towns in eastern Massachusetts and southern New Hampshire.

The proposed Municipal Separate Storm Sewer System (MS4) regulator changes were published for comment and for the second time of September 30, 2014. A previous draft was published in 2010 and retracted. It is an extensive technical document and I have sent my comments regarding the technical aspects directly to the USEPA Region 1 staff.
This letter does not get into the technical aspects, but tries very briefly summarize and express my concerns on the economic impacts, inequality, and fairness issues.

To very briefly summarize the regulations, cities and towns included in the region affected are required to step up their stormwater quality related procedures. The key cost elements are abbreviated into three areas. First is extensive study and monitory of stormwater systems and discharge pipes. Second is expansion of maintenance programs (street sweeping, catch basin cleaning, and the like). Third is a capital program to build stormwater treatment systems. My greatest concern is due to the fact that Bellingham is in the Charles River basin and therefore required to do more than many other cities or towns not in the basin.

The three elements do not sound terribly imposing until the dollars they will cost are added to the discussion.

The USEPA funded a study published in August 2011("Sustainable Stormwater Funding Evaluation for the Upper Charles River Communities of Bellingham Franklin & Milford MA", by Horsley Witten Group. It looked at the cost impacts for three towns. Therefore, we have a better idea of the cost than many other Charles River basin communities. Bellingham's anticipated annual operating cost increase for stormwater related activities (addressing the first and second elements noted above) is estimated to be $660,000, which is a 285% increase over current expenses. The third element or the cost of building stormwater system in Bellingham is $29.7 Million. In rough numbers the annual cost increase would amount to cost per home of about $110, and the borrowing cost for a the capital program would raise taxes by approximately $200 per year for the average homeowner. Three hundred and ten dollars is approximately equivalent to 50% of a current average water bill. This is a very costly program.

In an attempt at brevity I will summarize my concerns.

- It is a lot of money to ask just the local residents of Charles River basin municipalities to pay. It is not applied to all cities or towns; therefore, it is an economic disincentive for towns within the basin. Why move your business in Bellingham or any town with the stormwater fees, when no such fee would exists in neighboring towns Blackstone or Woonsocket RI.
- What is the direct benefit Bellingham residents will see from this new expense? I am sure Bellingham and many municipalities within the river basin will see little if any noticeable river water quality improvement within their borders. In Bellingham the Charles is a brook, meandering swamp with no clear channel, and roaring but non-navigable river. Other than a small pond with contaminated sediment (Box Pond) there is no recreational use of the river in Bellingham. Therefore, the only motivation is "pay or we will be fined".
- How will taxpayers be convinced to take on the added costs? Taxpayers have trouble enough funding new schools they can see and touch. I think it will be impossible to secure funding for a program that has a main tangible result will be to enhance fish habitat, and only motivation is fines. This program will probably trigger sizable expenses to battles against the program requirements and delay stormwater quality enhancements.
- The rules have been changed in midstream. Business owners and municipalities developed their sites in accordance with design standard at the time are now being impacted by revised regulations. The $29.7 Million cost is what is needed to retrofit impervious service for parking areas and roads (build treatment and recharge structures). Businesses will be driven out, abandon their properties leaving vacant parcels with little chance of sale. This pushes the problems to the municipality, who first lose the tax revenue when businesses leave, and are still required to retrofit impervious surface to achieve phosphorus reduction numbers.
- How are Massachusetts municipalities going to come up with these extra funds? Proposition two and a half prevents additional tax revenue without an override. Bellingham has never approved an override. That leaves cuts in other programs or creating a stormwater utility. Cuts in other programs are unlikely. Road repairs are an estimated $35 million behind; school, police, fire need are very unlikely to be trumped by stormwater. The USEPA makes it sound like an easy proposition to accept a Stormwater Utility, but taxpayers will need to vote to raise their own fees by $310 per year.
- Bellingham is also saddled with an additional complication. Only have of the Town lies within the Charles River basin. We have not even started to consider the problem this presents, but can imagine an additional battle against the appropriation of funding for this program.
- The only solution that I believe will get stormwater enhancements constructed is an extensive grant program. Surface water quality is a national concern and should be a national program. I argue that if the EPA cannot convince Congress and State Legislature of the importance of this program, local officials will have no chance to convince taxpayers.

The scope of this program is not dissimilar to that of the wastewater program of the seventies and eighties. EPA and the Clean Water Act included a $60 billion construction grants program. That program provided federal and state assistance and in the many cases amounted to 90% grants. At the ten cents on the dollar cost, the wastewater treatment and collection projects were a great success. Before the wastewater program, rivers were terribly polluted and some actually capable of supporting fire. The elimination of dumping raw sewage into our waters made sense to everyone. The elimination of untreated rain water from enters our waters is a much harder sell.

Congress reauthorized the Clean Water Act in 1987 and added the mention of stormwater. It is hard to believe that that if that Congress knew the economic impact of stormwater regulations

currently proposed, they would have included grant funding program. The EPA is using the basic language in a nearly thirty year old act to impose what will likely be crippling costs on some geographic areas. Everyone should be paying a share of the cost. The only way that works is to have the federal government fund the program. I urge our elected officials to scrap this program until such time a grant funding program can be put in place that makes it affordable.

In conclusion, I have neither the expertise nor desire to argue against the science or reports the USEPA is using to push this massive regulatory revision. I have little doubt that the program proposed would be beneficial to river vegetation and wildlife and enhance groundwater recharge. However, it is way too costly to expect just the cities and towns located in the Charles River basin to fund. This may be a great program for the environment, but it seems doomed unless a significant grant assistance program is added to the equation.

cCc: Rep. Joseph Kennedy P. Kennedy, III
Rep. James P. McGovern
Sen. Edward J. Markey
Sen. Elizabeth Warren
Senate President
Speaker of the House
State Sen. Karen E. Spilka
State Rep. Jeffrey N. Roy
State Rep. John V. Fernandes
State Sen. Ryan Fattman
State Rep. Kevin J. Kuros
State Sen. Richard J. Ross
State Rep. David P. Linskey
State Rep. Shawn Dooley
File

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February 4, 2015

Mr. Newton Tedder
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, Massachusetts, 02109-3912

Via E-mail: Tedder.Newton@epa.gov

RE: Draft NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts – Comment Letter

Dear Mr. Tedder:

This letter is submitted to you in accordance with public comment procedures related to the proposed NPDES General Permit referenced above. The concerns noted below were developed on the basis of review of the draft General Permit with assistance from a consultant regarding many technical aspects. These issues are significant.

Comments

General

The first minimum control measure is Public Education and Outreach. The EPA should take on this responsibility before moving any revision to the regulations forward. The education of the local, state, and federal elected officials of the merit of this program should be a primary task of the EPA. If the elected officials are not strong supporters of this program it will be doomed. The EPA assumes that public works and local governments will be able to convince taxpayers to contribute significant funds to a program that is widely regarded as a special interest driven, unfunded mandate to improve the health of the river's wildlife. The program has huge costs and unclear benefit for those paying the bill. Current perception is that local officials will fight rather than inflict a huge extra cost on taxpayers. Town stormwater management programs will likely be unfunded, widespread non-compliance, lead to an endless stream law suites and do nothing to improve water quality. *Proposed Modification*: Retract the draft until such time as the EPA and

MassDEP have instituted an education program directed at elected officials and convinced them that the cost is worth the benefit.

Minimum Control Measures (MCM) / Maximum Extent Practicable Requirements

1. **MCM 1 – Public Education and Outreach**: Although not explicitly required under the permit, EPA has repeatedly suggested that introducing stormwater quality-related topics in school curricula would be an appropriate and cost-effective means of achieving MCM-1 objectives. Experience has demonstrated that statutory subject requirements within most school systems makes it very difficult to introduce non-mandatory (or non-MCAS related) material. Cost estimates related to achieving the minimum requirements of this MCM appear to be under-representing the broad audience targets and should not assume school programs as the basis for cost estimates.

2. **Public Education and Outreach by the EPA**: The education of the public and public officials of the merit of this program should be a primary task of the EPA and MassDEP. The EPA and MassDEP should initiate an extensive public information campaign clearly stating the costs and benefits of the program. This education should extend to our representatives in Washington.

3. **MCM 3 - IDDE Investigations**: Level of effort to achieve all of the elements of the Illicit Discharge Detection and Elimination (IDDE) Program is significantly higher than currently experienced and not significantly reduced from previous drafts despite prior concerns expressed in this regard. Several specific issues include:
    a. **Catchment Prioritization:** We recognize the value of categorizing and ranking/prioritizing catchments as a means of identifying more likely pollutant sources early in the program. Protocols for ranking catchments (and continually re-evaluating rankings) require significant knowledge about storm drain and sanitary sewer system condition and characteristics, which are elements drawn from mapping and investigations that are executed after the initial prioritization is completed at the end of year 1. The methods described in the permit provide some latitude based on "existing knowledge," however, it is important that absence of specific information regarding a catchment does not default to "High" categorization or prioritization within a category. We are concerned that "unknown" conditions related to screening factors may result in a disproportionate number of catchments being categorized as Problem or High, which in turn places these catchments on a faster-tracked investigation schedule with implications for labor and costs for communities. *Proposed Modification*: Ranking and prioritization factors are highly specific, and cover a broad spectrum of infrastructure condition, land use, laboratory analytical results and development age/characteristics. We suggest simplifying the procedure and allowing communities to categorize catchments as either "excluded" or "problem" as defined in the permit, with all other catchments falling into "other" to be investigated on a prioritized basis developed through local operator knowledge. Investigations can be performed within the 10-year timeframe currently established in the permit, with documentation on investigation results provided in annual reports. For those communities that have already undertaken a

prioritization exercise on the basis of guidance provided in the 2010 Draft Permit, that ranking ought to be allowed as the basis for execution of the plan.

b. **Wet Weather Monitoring:** The Fact Sheet accompanying the general permit indicates that the revised wet weather monitoring requirements were modified to reduce the number of outfalls that would require labor intensive sampling/monitoring. However, the twelve (12) specified "System Vulnerability Factors" provided as the basis for inclusion in a wet weather monitoring program encompass a broad swath of infrastructure system characteristics and the "one or more" threshold trigger for categorizing a catchment as a wet weather monitoring candidate will capture the vast majority of outfalls in many if not most communities. This fails to provide the relief communities requested during the 2010 Draft General Permit comment period, and which the fact sheet accompanying the 2014 Draft General Permit implies has been provided. *Proposed Modification*: Wet weather screening of catchments should be conducted on the basis of observed conditions during physical investigation of catchments rather than the system vulnerability factors presented in the permit. Actual conditions as the trigger for further investigation will mitigate the low threshold ("one or more") and the breadth of the factors that, as proposed, will result in a disproportionate number of outfalls requiring wet weather screening.

c. **Catchment Investigation Procedure:** The storm drain network investigation as proposed, including the physical inspection of all key junction manholes irrespective of evidence of dry weather flow or other illicit connections at the point of outfall discharge, is new, excessive, and will fail to provide environmental benefit for the additional labor and expense required. *Proposed Modification*: Allow local MS4 operators to implement a manhole inspection methodology appropriate to the complexity of their system, to be documented in their IDDE plan, with results reported annually as required in the current permit.

4. **MCM 3 - Sanitary Sewer Overflows**: The inclusion of sanitary sewer infrastructure management or monitoring (such as reflected in Section 2.3.4.4 – Sanitary Sewer Overflows) as a component of MS4 permit compliance is a redundant requirement since communities that operate sanitary sewer systems are already regulated in this regard under existing wastewater NPDES permits. The manner in which the condition is incorporated into the MS4 permit potentially subjects communities to multiple penalties under separate permit programs in the event of an SSO excursion. *Proposed Modification*: Elimination of this requirement.

5. **Affordability; Estimated Program Cost Increases**: The EPA funded Horsley Whitten Group August 2011 Report "Sustainable Stormwater Funding Evaluation" indicates a cost to the Town of Bellingham of a million dollars a year in additional annual stormwater maintenance activities. In addition, it estimates a capital project program of approximately 30 Million. The enormous gains in water quality under the Clean Water Act in the first two decades after passage were achieved through a locally affordable program aimed at primarily wastewater-related point source discharges, and underwritten by state and federal funding equivalent in many cases to 90% of the program capital cost. Stormwater-related pollutant contributions to receiving water bodies are much more difficult to control and will achieve an incremental water quality improvement compared

to the wastewater discharges that were the target of initial infrastructure investments. It is inconceivable that the estimated costs of this MS4 program can be affordably sustained by a limited number of property owners within communities subject to the most stringent pollutant reductions. Water quality improvements have local, state and national benefits. A program that EPA and other environmental organizations (regulatory, advocacy/non-profit or commercial) recognize as this important should have some kind of legislative or Congressional support that provides adequate funding to promote programs that can achieve water quality improvements in a more equitable and financially sustainable manner. *Proposed Modification*: Retract the draft until such time as the EPA has convinced Congress of the merits of a stormwater program and secured a funding that makes it affordable for local communities.

6. **Affordability; Integrated Planning (IP):** The water quality protection objectives of the NPDES stormwater and wastewater programs are recognized and supported by the regulated community. However, inclusion of an increasing number of the sanitary sewer management elements into the MS4 permit program suggests that EPA is migrating towards an integrated planning model as presented in your "Integrated Municipal Stormwater and Wastewater Planning Approach Framework." As provided for in the conditions of this draft permit, however, the effect is to import compliance conditions suitable for wastewater management programs while failing to provide permit relief or incentives to the regulated community for employing an integrated management approach to community water resource assets, including stormwater management infrastructure. The result is the equivalent of "double jeopardy" under dual permits without schedule, affordability or reporting relief. *Proposed Modification*: EPA should integrate an affordability assessment component into the Permit that will allow communities to determine the extent to which they and their constituents can afford to implement Clean Water Act requirements associated with both storm and sanitary sewer permit obligations, including operational and capital costs. If EPA is committed to the IP approach, general permits such as this should be explicitly incorporating elements of the framework on an iterative basis (i.e. every term renewal moving closer to the ideal). Ultimately, a model of risk-based decision making relative to infrastructure investments can recognize greater water quality benefit for the dollars spent without the current regulatory liability associated with multiple permits addressing water quality through different program frameworks.

7. **Definitions – Redevelopment**: The term "redevelopment" is nowhere defined in the permit or appendices. Given that EPA is requiring "redevelopment" projects to meet the new development design guidelines for stormwater management (and particularly in reference to the one-inch retention/treatment provision), it is important to know what constitutes redevelopment versus rehabilitation, restoration, maintenance or repair projects. This is particularly of concern as it relates to transportation-related projects such as pavement programs (full depth reconstruction, pavement overlays, chip sealing, etc.), and the possibility that routine maintenance could trigger requirements for significant drainage improvements that would not otherwise be appropriate or necessary for operational purposes. *Proposed Modification*: Define redevelopment to exclude roadway projects that do not add significant impervious area.

8. **MCM 5 – Roadway Projects:** The revised Stormwater Management in New Development and Redevelopment MCM presents several challenges. Primary among these is the requirement to retain the first inch of runoff (or treat the equivalent pollutant load) from all impervious areas on site. This requirement will pose a significant challenge as it relates to roadway projects (either new or redeveloped) and will contribute to significant escalation of costs associated with drainage and/or treatment of roadway runoff. *Proposed Modification*: For roadway projects, add an exemption, waiver, or flexible requirements (reduction of one inch of runoff retained requirement) for this permit condition.

9. **MCM 5 - BMP Sizing:** Language in this permit provision states that "all impervious area" is subject to the capture, infiltration or treatment requirements and specifically that flow volumes [for retention or treatment] are calculated based on "multiplying the area of impervious area on site by one inch." *Request Clarification*: We seek clarification that BMPs on site need not be sized to reduce "calculated" pollutant loads that theoretically are contained in flow from disconnected impervious area on-site that is not otherwise directed to the MS4.

10. **MCM 5 – EPA and DEP Consistency:** With the encouragement of the Massachusetts Department of Environmental Protection (MassDEP) and EPA, many communities have adopted the Massachusetts Stormwater Management Standards either directly or by reference into existing municipal design standards and by-laws. This permit represents a divergence from the MassDEP stormwater standards and complicates compliance for regulated entities. *Request Revision*: We request EPA and MassDEP develop a consistent set of development standards that ensures that exemptions or waivers provided under federal NPDES permits will ensure similar treatment under MassDEP surface water discharge regulations.

11. **MCM 5 - 1-inch Standard:** EPA has stipulated that the one-inch retention/treatment standard applies to both new and re-development projects. As noted above, this is not consistent with the MassDEP stormwater management standards and creates further confusion relative to application of development standards. *Request Revision*: We request EPA and MassDEP develop a consistent set of development standards that ensures that exemptions or waivers provided under federal NPDES permits will ensure similar treatment under MassDEP surface water discharge regulations.

12. **MCM 5 – Street Design Guidelines:** At Section 2.3.6 (b), the MCM requires development of a report assessing current street design and parking lot guidelines that affect creation of impervious cover to be due within three (3) years of the permit effective date. The intent is to identify opportunities to support low impact design options to be incorporated into local regulation and standards. Under "smartgrowth" principles with comparable environmental impact mitigation interests, the federal government, state and local agencies have promoted a "complete streets" approach to invite multi-modal use of roadways that frequently results in greater impervious area. Given the sometimes contradictory nature of these programs, the regulated community would like assurances that the federal and state government are collaborating to provide adequate guidance that achieves prioritized environmental objectives without potential penalty (either in terms of

punitive fines or loss of grant/loan funding, etc.) to the regulated community. *Proposed Modification:* We propose modification of the permit term within this section to provide greater latitude to MS4 owners regarding implementation of recommendations resulting from the report. Where there are competing interests relative to "environmental street design" the MS4 owner should be allowed to make local decisions that are in its best interest.

13. **MCM 6 – Good Housekeeping Affordability Assumptions:** The Good Housekeeping MCM as proposed will be extremely expensive for most communities to implement. The accompanying permit fact sheet states that while this is the most costly program area for most communities, these are existing functions (e.g. catch basin cleaning and street sweeping) and the costs associated with compliance under the permit will be incremental, or less, such that "these costs are likely not above and beyond what the permittee likely spends on maintenance of permittee owned property currently." The Horsley Whitten Group August 2011 Report "Sustainable Stormwater Funding Evaluation" analyzed these costs. Bellingham's additional cost is estimated to be approximately $750,000 more per year effectively increasing the annual expense by a factor of four. In addition, applying the formulas in Appendix F to all Town roadways would amount to a very minimal reduction in phosphorus load. Program affordability, particularly in light of requirements under Water Quality-Based Effluent Limits (WQBEL's), continues to diminish and timeframes within the permit further compromise a community's ability to meet permit requirements under the MCM's as presented in this draft permit. *Proposed Modification:* We request that EPA include an affordability and cost effective component into the MS4 Permit.

Water Quality Based Effluent Limitations (WQBELs)

1. **New Discharger Definition:** Based on the accompanying fact sheet, the definition of "new discharger" within the permit does not include expansion of an MS4's existing system within its jurisdiction. The distinction is important since increased discharges can be covered under the General Permit, but new discharges must be covered under a separate individual permit. *Request Clarification*: Please confirm that the term "adjacent" or "adjacency" within the context of this definition includes any new drainage element, including an outfall, within an MS4's jurisdiction but not otherwise connected to any other component of the MS4. For instance, the town may accept a private road that includes a "self-contained" drainage system (e.g. a series of connected catch basins discharging to a discrete outfall none of which is connected to or "adjacent to" existing drainage infrastructure) without triggering a requirement to cover that segregated outfall through a separate individual permit. Public management of the streets will generally lead to better pollutant management and on that basis the permit should not dis-incentivize acceptance of private roads.

2. **Phosphorus Load Export Rates – Appropriate Use:** Regarding Appendix F and attachments, the Phosphorus Load Export Rates (PLERs) are general and approximate at best. The composite PLERs are good for screening / planning purposes or comparative purposes. They are not accurate for determining hard design of control measures. For example, they can be used to evaluate whether a proposed change in land use is expected

to increase or decrease pollutant loads. But to use a PLER to conclude that the loading rate is actually X lbs/yr, or will change from Y lbs/yr to Z lbs/yr with land use or other changes, is not a recommended technical practice. Loading rates are ordinal rather than cardinal, i.e., they can tell you if one is higher than another, but not exactly how much higher one is than another. It appears that EPA assumes that over the entire Commonwealth of Massachusetts, using PLERs will represent the average condition. That may be true, but EPA is requiring that the PLERs be used to make decisions on a much smaller watershed and sub watershed scale, which is inappropriate. *Proposed Modification*: Revise the draft to allow significant flexibility in the design of control measure and related phosphorus reduction calculations.

3. **PLERs - Derivation:** It is not clear how the values for PLERs in the EPA documents are derived, however, a literature search shows that there is a large range of values for any given land use. For example, the PLER for medium density residential is given as 0.55 lb/ac/yr in Table 1-1 (App. F Attachment 1), but the range of PLERs for medium density residential in the scientific literature can be an order of magnitude around the value. *Request Clarification*: Please provide further information regarding derivation of the PLERs since these values have significant impact on program implementation for regulated communities.

4. **PLERs – Blanket vs. Site Specific:** PLERs found in older literature generally do not reflect the presence of stormwater BMPs, low impact development (LID) planning, etc., and therefore may overestimate pollutant loads for current land uses. In addition, composite PLERs are a particular concern for communities that have previously instituted stricter local development standards for stormwater management many years ago (in some cases, decades) where assumed PLERs may be much greater than actual conditions. *Proposed Modification:* Rather than limiting appeals of assumed baseline watershed phosphorus loading to updates of land use information, allow permittees the option to develop their own alternative methodology for determining baseline phosphorus loads and reduction requirements based on more detailed data and/or site specific information.

5. **Phosphorus Contribution of Illicit Discharge:** It is not clear in either the permit or the fact sheet what method was employed to calculate estimated contribution of phosphorus load through illicit discharges, and consequently the load reduction that would be achieved through elimination of IDDE. Since this calculation figures into the total overall phosphorus load reduction allocated to each Charles River community, it is impossible to comment on how equitable this approach can be. *Request Clarification*: Please provide further documentation regarding the method used to complete this calculation.

6. **Ambiguity in Determining Contributing Drainage Area:** It is not clear in Appendix F and its pertaining attachments whether the permittee will be using the impervious area or the directly connected impervious area (DCIA) in the PLER calculations, which includes factoring in DCIA in determining PCP area. The phosphorous loads should be determined from the DCIA of a target catchment, but this is not explicitly mentioned in either Appendix F or its attachments. The only explicit mention on DCIA is in Appendix

F under sections "Phosphorous Source Identification Report" and "Nitrogen Source Identification Report" which simply state that the source identification report should include the "Impervious area and DCIA for the target catchment." There is no mention of how this DCIA information needs to be used, for example, in determining either the PCP area, total development area, impervious area (IA) for calculating phosphorous reduction credits for non-structural BMPs, or in distributing the total drainage area into impervious area for BMP load and volume calculations. *Suggested Modification:* In all the above instances, DCIA should be considered, rather than total impervious area.

7. **Determining Infiltration Rate for Structural BMPs:** Attachment 3 of Appendix F specifies identification of infiltration rate for a particular BMP when determining the design volume of a structural BMP to achieve a known phosphorous load reduction target from a contributing drainage area. However, it is not clear how the infiltration rate needs to be determined. It is stated that the infiltration rates represent the saturated hydraulic conductivity of the soils. Since saturated hydraulic conductivity of soils is a function of its hydrologic soil group, it is important to mention how this rate needs to be determined for a combination of soil types. *Request Clarification*: Please provide further guidance to determine infiltration rates for an infiltration type structural BMP, such as an infiltration trench or infiltration basin**.**

8. **Choosing BMP Performance Curve for Multiple Combination of BMPs**: Attachment 3 of Appendix F provides several BMP performance curves for different types of structural BMPs. However, the permittee may choose a combination of BMPs to achieve a desired phosphorous load reduction. It has been noted through literature search that a combination of BMPs may be more effective in capturing larger storms, and hence will be more effective in providing desired phosphorous load reductions from these storm events. For example, if a bio-retention system is coupled with a secondary spillway to a porous pavement, it has been found from literature that this combination is effective in capturing the first 1" rain (first flush) and higher flows, respectively. In such a situation, it is not clear what BMP performance curve should be referenced and how the curve(s) need to be used by the permittee. *Request Clarification*: Please provide further documentation regarding the method to determine BMP performance curves for a combination of BMPs.

9. **Appendix H. II (1)(a)(i)(3) Additional /Enhanced BMPs for Phosphorus-Impaired Waters**: Under the Good House Keeping requirement, it requires permittees to increase frequency of street sweeping at least twice a year for all municipal streets and parking lots. This requirement should be related exclusively to those streets within the impaired catchment, not all streets and parking lots in the Town. It might be what was intended, but that is not how the language reads and should be modified. *Suggested Modification:* Revise to require semiannual sweeping only within impaired catchment areas.

Other Issues

1. **Non-Stormwater Discharges**: At public meetings during which EPA has presented material about the new permit, there has been much discussion about the classification of sump pump discharges as an allowed "non-stormwater discharge." *Suggested*

Modification: Add Explicit guidance regarding local permit programs sufficient to meet documentation of determination standards relative to sump pump discharges as a class of allowed discharges.

2. **Legal Analysis for PCP:** EPA and MassDEP should provide greater guidance related to this requirement. This analysis is likely to have many common components from municipality to municipality and appears to be an appropriate area for regulators to expand upon the examples provided in the fact sheet and a likely topic for model by-laws/ordinances. In addition, the permit and fact sheet regularly cite the cost-benefit of regional or collaborative effort to implement many of the MS4 requirements. As such, model Inter-municipal Agreements or other legal vehicles to achieve mutual objectives should be developed and shared with regulated communities. I feel that the EPA missed a great opportunity to move the regional approach forward during the RDD Pilot. If the EPA had brought forward a sufficiently funded Pilot program to analyze a regional approach to phosphorus reduction some good experience could have been gained. The Pilot got bogged down when it tried to impose new regulations with sizable economic impacts on three isolated Towns. *Suggestion:* The EPA should go to Congress, obtain the funds needed, and proceed with to do a true Pilot of regional phosphorous reduction trading. To be an effective Pilot, it must include design and construction funding. Again, EPA must convince the Congress of the merits of this program and to provide funding assistance.

3. **Funding Source Assessment for PCP:** The language associated with this required component of the PCP is ambiguous. Although the permit does not require adoption of a stormwater utility, all of the components of this program clearly are driving the regulated community to that EPA-preferred solution. The funding source assessment does not, in fact, make an explicit connection between cost-estimates required elsewhere in the PCP and the manner by which the "funding plan" will meet those costs. This "assessment" only requires a community to identify the means through which they intend to fund the program – adequately funded or not. The "estimated cost for implementing Phase I of the PCP" requirement states that the "estimate can be used to assess the validity of the funding source assessment…." This is a circular reference that doesn't spell out what enforcement mechanism EPA will use to ensure that the "funding plan" and the "cost estimates for implementation" are essentially equivalent. It is disingenuous for EPA's fact sheet to state that "a municipality should choose the option that is right for it" when both EPA and the regulated community have expressed the recognition that traditional funding methods (e.g. General Funds) will not be adequate to meet the program demands. The permit must be definitive around the issue of costs vs. funding so that communities understand the regulatory liability associated with an inadequately funded program.

Errors: A number of errors in referencing were noted in the document. The ones we noticed are listed below, there may be more. Please carefully check all cross references in the preparation of the Final Permit and correct the following errors:

- Page 12 – change references from Table F-5 to Table F-6
- Page 14 – change references from Table F-6 to Table F-8

- Page 14 lists reference to Buzzards Bay but there is no Nitrogen TMDL for Buzzards Bay watershed on DEP's website
- Page 14 list does not include Wareham although Wareham is in Buzzards Bay watershed
- Page 15 change reference from Table F-7 to F-9
- Page 17 – reference to Table F-10 is incorrect (that is a table of Assabet towns)
- Appendix F page 5 of 53 – footnote No. 4 incorrectly references Table F-2 for PCP area scope inclusive of MS4 only (should be Table F3) and references Table F-1 for jurisdiction-wide PCP area (should be F-2)
- Appendix F Attachment 2 – Phosphorus Reduction Efficiency Factor incorrect reference in Example 2-1 (Page 5) and Example 2-4 (Page 9) table reference notes 2-2 but should be 2.3

Sincerely,

Donald F. DiMartino
Bellingham DPW Director

cc: Via Email
State Sen. Ryan C. Fattman
State Rep. Kevin J. Kuros
Franklin DPW Director, Robert A. Cantoreggi
Medway DPS Director, Thomas Holder
Millis Town Administrator, Charles J. Aspinwall
Milford Town Engineer, Vonnie Reis P.E.
Kleinfelder

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Denis C. Fraine
Town Administrator

February 26, 2015

Mr. Newton Tedder
USEPA Region 1
5 Post Office Square
Suite 100, OEP 06-4
Boston, MA 02109

Re: Town of Bellingham – Supplementary Comments
Draft MS4 Permit

Dear Mr. Tedder:

I am the duly appointed and authorized Town Administrator for the Town of Bellingham. In that capacity, I am writing to offer additional comments regarding the proposed MS4 Permit.

As you know, on February 18, 2015, the Bellingham DPW Director, Donald DiMartino, submitted written comments on behalf of the Town. I hereby endorse Mr. DiMartino's comments. To that end, I must emphasize the financial impact the proposed permit would have on the Town. The materials published by the EPA appear to assume that funding is in place for the implementation of the permit. However, any such assumption is faulty. Massachusetts is a *home-rule* State wherein each city and town is responsible for its own annual budget. Simply stated, the Town's budget has not approved and cannot accommodate the massive expense of complying with the permit. Furthermore, Bellingham, like most other small towns affected by the MS4 Permit, has Town Meeting form of government. That is, the citizens of the Town of Bellingham must vote to approve the expense that the MS4 Permit would foist upon them. Given the still-challenging economic climate, I cannot fathom that such approval will be forthcoming.

Additionally, there are elements of the MS4 Permit that appear to represent a significant overreach by the EPA. As you are aware, in 2013, in the case of Virginia DOT v. EPA, the US District Court sharply curtailed the EPA's attempted regulation of storm water. While continued analysis of the application of such case to the proposed MS4 Permit is ongoing, there can be little doubt that the Federal Court has issued a sharp caution as to the EPA's overreach on the regulation of storm water. Accordingly, before any final Permit is issued, it is imperative that the EPA examine whether the regulations contained therein will survive scrutiny in the likely event of an appeal thereof. It would be a shame if the respective stakeholders (Massachusetts municipalities and the EPA) were compelled to expend time and money on litigation rather than the common sense and feasible regulation of storm water.

Thank you for your consideration of the above comments.

Sincerely,

Denis C. Fraine

DCF/cfc
cc: Donald DiMartino
DPW Director

CITY of BEVERLY
DEPARTMENT of PUBLIC SERVICES and ENGINEERING

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Mayor
Michael P. Cahill
Commissioner
Michael P. Collins, PE
City Engineer
Gregory M. St. Louis, PE

February 24, 2015

United States Environmental Protection Agency
5 Post Office Square-Suite 100
Boston, Massachusetts 02109-3912
Attn: Thelma Murphy

RE: Comments on the 2014 Draft Small MS4 General Permit

Dear Ms. Murphy:

This letter details some of the City of Beverly's comments and concerns regarding the 2014 Draft Small MS4 General Permit.

We recognize the importance of stormwater management to the environmental health of waterways within the Commonwealth. The regulatory agencies and the regulated communities share a common mission – to ensure that our cities and towns maintain the health and quality of our natural resources. In order to accomplish these evolving goals, environmental programs must be balanced with other existing needs and community responsibilities. Since the 2003 NPDES Phase II: Small MS4 Permit, the City of Beverly has been very diligent in achieving goals and surpassing the initial 2003 BMP requirements.

Specifically, we offer the following comments on the draft regulations being promulgated:

<u>Sampling</u>

The City of Beverly in addition to the North Coastal Watershed discharges to the Ipswich River Watershed. Of the total land area 76% drains to the North Coastal Watershed. The balance drains to the Ipswich River Watershed and of this total, 59% drains to the Miles River sub-basin. The North Coastal and Miles River Sub-Basins are Category 4A and 5 respectfully. Miles River sub-basin is impaired or threatened for one or more uses and requiring a TMDL and per the October 25, 2012 "Approval of the Final Pathogen TMDL for

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the North Coastal Watershed" the North Coastal is impaired with TMDL. Therefore, 90% of the City land area discharges to a "Pathogen Impaired Segment" and subject to screening pursuant to Part 2.3.4.7.d and investigation pursuant to Part 2.3.4.7.e of the Draft permit. A related section (2.3.4.7.c) would require the City to prioritize this area as a "Problem Catchment".

To provide a sense of the impact of these sections to the City of Beverly, we can provide some Storm Sewer statistics below based upon the City's own comprehensive Storm Sewer GIS, where in addition to discharge points (outfalls) we have catch basins, manholes, gravity mains, laterals, sub-pump mains, and general features like detention basins, particle separators etc. This system also includes a feature class we label as network connector that are natural features, open channels, that convey storm water from a localized area to the larger sub-basin (catchment). From our GIS, the City has a total of 558 discharge points. If we consider just the North Coastal Watershed that discharges to a Category 4A federal waterway the following GIS data is relevant:

For North Coastal Watershed we have a total of 393 discharge points:

- Federal Outfalls account for 37 of the 393 discharge points. We define a federal outfall as where the discharge point is to a major water way (Danvers River), or Ocean,
- Local Outfalls account for 108 of the 393 discharge points. We define a local outfall as where the discharge point is an inland wetland or a non-named seasonal stream,
- Culvert Ends include 93 of the 393 discharge points. We define this as the typical culvert under a street, but also where a collection or system of drainage inlets and catch basins discharge to an open channel or non-resource area,
- Pipe Ends include 6 of the 393 discharge points. We define pipe end as a very limited number of catch basins discharging to a general land area,

It now appears to the City, based on a recent EPA meeting, that what we call Local Outfalls and Pipe Ends may also be included in the sampling program. We believe the majority of these location should be considered private outfalls, excluded from the MS4, however, per the draft permit the City may be required to sample 238 discharge points. In addition, as these discharge points may then be classified as "Problem Catchments", the City would be required to wet weather sample 80% or 190 discharge points within the first 3 years. Wet weather sampling must be done between March and June when the groundwater is relatively high, and during "first flush". This task is impossible with limited resources. The draft permit should extend the time line beyond the five year permit and limit testing to the extent practicable.

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Stormwater Retention/Treatment

The Draft Permit requires that when a project disturbs one or more acres, or is less than one acre but as part of a larger common project that disturbs more than an acre, stormwater management facilities for new development and redevelopment projects shall be designed to either retain the first one inch of runoff from all impervious surfaces or treat that stormwater.

The City has approximately 152 miles of street, of which about 133 miles are maintained by the City. In fiscal 2016 the City has budgeted 4 Million Dollars for street re-paving and at an average cost of re-paving at $200/linear foot, the City anticipates re-paving 3.79 miles. The City has inspected and rated all streets to define a priority for re-paving. A street segment with a rating of 60 or less is in need of re-paving and currently the City has 65.2 miles with a rating 60 or less. Because of the urban nature of Beverly it is not viable for the City to retain the first one inch of runoff without massive eminent domain takings to provide a location for all of these facilities. This would result in a re-paving dollars being reallocated to eminent domain takings significantly reducing actual street paving. The draft permit should be revised to exclude road paving.

Tracking of Impervious Area

The Draft Permit requires that a community estimate the annual increase or decrease in the number of acres of impervious area and directly connected impervious area. Tracking of impervious area is a burdensome requirement. This is especially burdensome based on the fact that Beverly is generally a "built out" community. Tracking changes in impervious area on private property (driveways, roofs and walkways) is not practical and does nothing to improve water quality. Tracking changes in impervious area associated with municipal facilities, large commercial and industrial projects, and roadways is a more viable alternative, but again diverts resources from improving water quality.

Increased Discharges-Section 2.1.2

New and additional stormwater flow to impaired waters regardless of concentration would be prohibited under this draft permit. As noted earlier about 90% of the Beverly land area discharges to a Category 4a or 5 water resource area. This requirement could only be overcome by demonstrating that the pollutant of concern is not present in the new/increased discharge or that the total load of pollutants to the impaired waters will not increase. Even the most innocuous "new discharge", say a new single family home with a driveway and stormwater minimizing design, will produce some pollution and will add some additional load, be it insignificant, to receiving water. The language in this section could thus be interpreted to mean no new development in MS4 areas draining to impaired waters. This section could effectively preclude new construction in 90% of Beverly. That is an impact that goes far beyond EPA and federal authority. This language must be modified to stipulate thresholds on new/additional pollutant loads being significant and not merely all new loads. Regulations should be designed to agree with the Massachusetts Stormwater Management Handbook for consistency in implementation.

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Public Education and Outreach

While EPA provides more time to conduct the public education program in this draft of the permit, it is important to keep in mind that the majority of the public does not understand how stormwater can become polluted and how it can contribute to water quality issues. Most of the public still believes that catchbasins in their roads transport stormwater to a treatment facility prior to discharge. In addition, most people do not understand the concept of a watershed, or the concepts related to the water cycle (rainfall, runoff, infiltration, and evapotranspiration). A significant amount of awareness-raising must be done across the United States prior to an individual community education/outreach campaign in order to truly stimulate behavior changes in the general public. Beverly sees a large influx of visitors during the tourist season and is a "College Town" and thus education must extend well beyond the immediate locality to be truly effective. Stormwater education is a national need and should be spearheaded by EPA nationally through a consistent education campaign and not simply left to municipalities.

We urge the EPA to amend your approach to consider goals that are more realistically attainable and within the financial constraints of the current economic climate, or wait until adequate federal funding is available to ensure that these requirements do not translate into a harmful unfunded mandate to Massachusetts Cities and Towns.

Sincerely,

Gregory M. St. Louis, PE
Beverly City Engineer

CC: Michael P. Cahill, Mayor
Seth Moulton, 6th District Representative

The Blackstone River Coalition

The Blackstone River Coalition is a partnership of numerous organizations, businesses, municipalities, agencies and individuals working to restore the Blackstone River and to improve the health of the Blackstone River watershed.

ZAP the Blackstone

www.zaptheblackstone.org

marked Feb 26 2015

RECEIVED
3/2/15
NWT

February 19, 2015

Newton Tedder
US EPA—Region 1
5 Post Office Square—Suite 100
Mail Code—OEP06-4
Boston, MA 02109-3912
tedder.newton@epa.gov

Re: Comments on Draft Massachusetts Small MS4 Permit

Dear Mr. Tedder:

Thank you for this opportunity to comment on EPA's Draft General Permit for Small MS4s in Massachusetts. The Blackstone River Coalition heartily supports the speedy issuance of the proposed Massachusetts Small MS4 Permit. Time is of the essence in getting this permit out. It is already ten years behind schedule, and the lack of a timely follow up to the first round of the Phase 2 Stormwater Permits has weakened the performance of the Towns to comply with the first permit. It would appear that the Towns are waiting to implement stormwater efforts until they know EPA is serious enough to go to the next stage. Well, EPA needs to demonstrate the seriousness of excess nutrients coming from stormwater outfall pipes all over the Commonwealth.

The good news is that with the recently issued permits for Treatment Plants that include stringent nutrient standards, we will begin to see a decline in Phosphorous levels in the River and its impoundments.. The bad news is that the eutrophication problems in and along the Blackstone River won't be solved until we control the heavy load of nutrients from stormwater, especially phosphorous, that cause excessive vegetation and low oxygen levels in the many impoundments along the river and its tributaries.While Phosphorous is the main culprit in freshwater eutrophication, it is also critically important to address the nitrogen levels coming from Massachusetts rivers & streams adding to the eutrophocation of the saline Narragansett Bay. The Draft permit calls for Phosphorus Control Plans to be developed by the Towns, then gives them quite some time to develop & implement those plans. This work needs to start as soon as possible.

In order to be successful, this permit should also be co-issued by the State of Massachusetts. The Towns need to know that these regulations will be consistent across the Commonwealth and that it is not just EPA with their limited staff that will be there to work with the Towns on the critical issue of stormwater impacts on our water resources.

In our 12 years of synoptic testing for nutrients at more than 76 sites across the Blackstone watershed, we see the need to limit phosphorous from entering all our streams, not just the main stem and its impoundments. Even with

existing TMDL's for Phosphorous around several lakes in the Upper Blackstone, without an effective stormwater permit requiring local action there is no traction for local efforts to implement stormwater improvements. Please do all in your power to issue this permit, jointly with the State and in a timely manner.

Thank you for the efforts of your Agency to enforce the Clean Water Act that will help us in our Campaign for a Fishable/Swimmable Blackstone!

Sincerely,

Peter Coffin, Coordinator
Blackstone River Coalition
414 Massasoit Road
P.O. Box 70477,
Worcester, MA 01607
Tel: 508-753-6087
Email: peter.coffin@zaptheblackstone.org

Town of Brewster

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Office of:
Board of Selectmen
Town Administrator

December 23, 2014

Mr. Newton Tedder
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, Massachusetts, 02109-3912

Via E-mail: Tedder.Newton@epa.gov

RE: Draft NPDES General Permit for Stormwater Discharges From Small Municipal Separate Storm Sewer Systems in Massachusetts – Public Comment Letter

Dear Mr. Tedder:

This letter is submitted to you in accordance with public comment procedures related to the proposed NPDES General Permit referenced above. The concerns enumerated below constitute "reasonably ascertainable issues" developed on the basis of review of the draft General Permit, supporting documentation provided by EPA (including fact sheets, appendices, technical guidance and reports), ad practical experience implementing the program over the preceding eleven (11) years of the existing permit term. These are significant issues that warrant response by EPA and consideration for modifications in the final General Permit. The initial comments refer to conditions associated with "Requirements to Reduce Pollutants to the Maximum Extent Practicable" (the six Minimum Control Measures [MCM]); the latter comments refer to conditions related to "Water Quality Based Effluent Limitations (WQBELs)." General comments follow thereafter.

Comments

Minimum Control Measures / Maximum Extent Practicable Requirements

1. **IDDE Investigations**: Level of effort to achieve all of the elements of the Illicit Discharge Detection and Elimination (IDDE) Program is significantly higher than currently experienced and not significantly reduced from previous drafts despite prior concerns expressed in this regard. Several specific issues include:
    a. **Catchment Prioritization:** We recognize the value of categorizing and ranking/prioritizing catchments as a means of identifying more likely pollutant sources early in the program. Protocols for ranking catchments (and continually re-evaluating rankings) require significant knowledge about storm sewer and sanitary sewer system condition and characteristics, which are elements drawn from mapping and investigations

that are executed after the initial prioritization is completed at the end of year 1. The methods described in the permit provide some latitude based on "existing knowledge," however, it is important that absence of specific information regarding a catchment does not default to "High" categorization or prioritization within a category. We are concerned that "unknown" conditions related to screening factors may result in a disproportionate number of catchments being categorized as Problem or High, which in turn places these catchments on a faster-tracked investigation schedule with implications for labor and costs for communities. *Proposed Modification:* Ranking and prioritization factors are highly specific, and cover a broad spectrum of infrastructure condition, land use, laboratory analytical results and development age/characteristics. We suggest simplifying the procedure and allowing communities to categorize catchments as either "excluded" or "problem" as defined in the permit, with all other catchments falling into "other" to be investigated on a prioritized basis developed through local operator knowledge. Investigations can be performed within the 10-year timeframe currently established in the permit, with documentation on investigation results provided in annual reports. For those communities that have already undertaken a prioritization exercise on the basis of guidance provided in the 2010 Draft Permit, that ranking ought to be allowed as the basis for execution of the plan.

b. **Wet Weather Monitoring:** The Fact Sheet accompanying the general permit indicates that the revised wet weather monitoring requirements were modified to reduce the number of outfalls that would require labor intensive sampling/monitoring. However, the twelve (12) specified "System Vulnerability Factors" provided as the basis for inclusion in a wet weather monitoring program encompass a broad swath of infrastructure system characteristics and the "one or more" threshold trigger for categorizing a catchment as a wet weather monitoring candidate will capture the vast majority of outfalls in many if not most communities. This fails to provide the relief communities requested during the 2010 Draft General Permit comment period, and which the fact sheet accompanying the 2014 Draft General Permit implies has been provided. *Proposed Modification:* Wet weather screening of catchments should be conducted on the basis of observed conditions during physical investigation of catchments rather than the system vulnerability factors presented in the permit. Actual conditions as the trigger for further investigation will mitigate the low threshold ("one or more") and the breadth of the factors that, as proposed, will result in a disproportionate number of outfalls requiring wet weather screening.

c. **Catchment Investigation Procedure:** The storm drain network investigation as proposed, including the physical inspection of all key junction manholes irrespective of evidence of dry weather flow or other illicit connections at the point of outfall discharge, is new, excessive, and will fail to provide environmental benefit for the additional labor and expense required. *Proposed Modification:* Allow local MS4 operators to implement a manhole inspection methodology appropriate to the complexity of their system, to be documented in their IDDE plan, with results reported annually as required in the current permit.

2. **IDDE Mapping:** New mapping requirements relating to sewer infrastructure under the IDDE MCM are a significant concern, as they not only require mapping of all storm drain components, but

now must include sanitary sewer infrastructure "where available" and knowledge of asset conditions relative to both storm and sewer systems in order to implement procedures related to prioritization and execution of catchment investigations on the basis of the System Vulnerability Factors. This level of asset inventory, condition assessment, mapping and documentation represents an effort that could take much longer than the two (2) year deadline in the permit. Based on the dynamic and cumulative documentation relative to investigations and program progress, it is also clear that communities are virtually required to develop this mapping and condition assessment as part of a GIS database. For communities that have not begun or are in early stages of GIS development, two years is certainly an inadequate amount of time. The "where available" language relative to sewer mapping (Section 2.3.4.6 (a) (ii)) is itself problematic because it is not clear to what extent the MS4 operator, who may be different than the sanitary sewer system operator, is required to obtain, develop or update sanitary sewer mapping elements that could influence catchment prioritization or wet weather screening obligations through the course of the permit term. *Proposed Modification*: Extend deadlines for storm system mapping requirements to Years 4 or 5 and make all sanitary sewer mapping voluntary or "recommended" rather than required.

3. **Sanitary Sewer Overflows**: The inclusion of sanitary sewer infrastructure management or monitoring (such as reflected in Section 2.3.4.4 – Sanitary Sewer Overflows) as a component of MS4 permit compliance is a redundant requirement since communities that operate sanitary sewer systems are already regulated in this regard under existing wastewater NPDES permits. The manner in which the condition is incorporated into the MS4 permit potentially subjects communities to multiple penalties under separate permit programs in the event of an SSO excursion. *Proposed Modification*: Elimination of this requirement.
4. **Affordability; Integrated Planning (IP):** The water quality protection objectives of the NPDES stormwater and wastewater programs are recognized and supported by the regulated community. However, inclusion of an increasing number of the sanitary sewer management elements into the MS4 permit program suggests that EPA is migrating towards an integrated planning model as presented in your "Integrated Municipal Stormwater and Wastewater Planning Approach Framework." As provided for in the conditions of this draft permit, however, the effect is to import compliance conditions suitable for wastewater management programs while failing to provide permit relief or incentives to the regulated community for employing an integrated management approach to community water resource assets, including stormwater management infrastructure. The result is the equivalent of "double jeopardy" under dual permits without schedule, affordability or reporting relief. *Proposed Modification*: EPA should integrate an affordability assessment component into the Permit that will allow communities to determine the extent to which they and their constituents can afford to implement Clean Water Act requirements associated with both storm and sanitary sewer permit obligations, including operational and capital costs. If EPA is committed to the IP approach, general permits such as this should be explicitly incorporating elements of the framework on an iterative basis (i.e. every term renewal moving closer to the ideal). Ultimately, a model of risk-based decision making relative to infrastructure investments can recognize greater water quality benefit for the dollars spent without the current regulatory liability associated with multiple permits addressing water quality through different program frameworks.

5. **MCM 5 – Roadway Projects:** The revised Stormwater Management in New Development and Redevelopment MCM presents several challenges. Primary among these is the requirement to retain the first inch of runoff (or treat the equivalent pollutant load) from all impervious areas on site. This requirement will pose a significant challenge as it relates to roadway projects (either new or redeveloped) and will contribute to significant escalation of costs associated with drainage and/or treatment from roadways. *Proposed Modification*: Include an exemption or waiver from this permit condition for roadway projects.
6. **MCM 5 - BMP Sizing:** Language in this permit provision states that "all impervious area" is subject to the capture, infiltration or treatment requirements and specifically that flow volumes [for retention or treatment] are calculated based on "multiplying the area of impervious area on site by one inch." We seek clarification that BMPs on site need not be sized to reduce "calculated" pollutant loads that theoretically are contained in flow from disconnected impervious area on-site that is not otherwise directed to the MS4.
7. **MCM 5 – EPA and DEP Consistency:** With the encouragement of the Massachusetts Department of Environmental Protection (MaDEP) and EPA, many communities have adopted the Massachusetts Stormwater Management Standards either directly or by reference into existing municipal design standards and by-laws. This permit represents a divergence from the MaDEP stormwater standards and complicates compliance for regulated entities. We request EPA and MaDEP develop a consistent set of development standards that ensures that exemptions or waivers provided under federal NPDES permits will ensure similar treatment under MaDEP surface water discharge regulations.
8. **MCM 5 - 1-inch Standard:** EPA has stipulated that the one-inch retention/treatment standard applies to both new and re-development projects. As noted above, this is not consistent with the MaDEP stormwater management standards and creates further confusion relative to application of development standards. See our comment above regarding joint approach.
9. **MCM 5 – Street Design Guidelines:** At Section 2.3.6 (b),the MCM requires development of a report assessing current street design and parking lot guidelines that affect creation of impervious cover to be due within three (3) years of the permit effective date. The intent is to identify opportunities to support low impact design options to be incorporated into local regulation and standards. Under "smartgrowth" principles with comparable environmental impact mitigation interests, the federal government, state and local agencies have promoted a "complete streets" approach to invite multi-modal use of roadways that frequently results in greater impervious area. Given the sometimes contradictory nature of these programs, the regulated community would like assurances that the federal and state government are collaborating to provide adequate guidance that achieves prioritized environmental objectives without potential penalty (either in terms of punitive fines or loss of grant/loan funding, etc.) to the regulated community. *Proposed Modification:* We propose modification of the permit term within this section to provide greater latitude to MS4 owners regarding implementation of recommendations resulting from the report. Where there are competing interests relative to "environmental street design" the MS4 owner should be allowed to make local decisions that are in it's best interest.
10. **MCM 6 – Good Housekeeping Affordability Assumptions:** The Good Housekeeping MCM as proposed will be extremely expensive for most communities to implement. The accompanying permit fact sheet states that while this is the most costly program area for most communities,

these are existing functions (e.g. catch basin cleaning and street sweeping) and the costs associated with compliance under the permit will be incremental, or less, such that "these costs are likely not above and beyond what the permittee likely spends on maintenance of permittee owned property currently." The cost estimate provided fails to appreciate that most communities do not currently collect the data, analyze findings, document and report activities in the manner now required under this permit. For communities that contract these services to outside vendors, procurement of new contracts to include documentation required will undoubtedly impact bids by increasing costs significantly. It is expected that data collection from catch basin sump cleaning efforts will almost double the time per catch basin required. It is reasonable to anticipate, therefore that catch basin cleaning costs will double, regardless of whether the activity is out-sourced or done in house. Program affordability, particularly in light of requirements under Water Quality-Based Effluent Limits (WQBEL's), continues to diminish and timeframes within the permit further compromise a community's ability to meet permit requirements under the MCM's as presented in this draft permit. *Proposed Modification:* Again, we request that EPA include an affordability component into the MS4 Permit, comparable to that provided under CSO programs.

Water Quality Based Effluent Limitations (WQBELs)

11. **New Discharger Definition:** Based on the accompanying fact sheet, the definition of "new discharger" within the permit does not include expansion of an MS4's existing system within its jurisdiction. The distinction is important since increased discharges can be covered under the General Permit, but new discharges must be covered under a separate individual permit. Please confirm that the term "adjacent" or "adjacency" within the context of this definition includes any new drainage element, including an outfall, within an MS4's jurisdiction but not otherwise connected to any other component of the MS4. For instance, the town may accept a private road that includes a "self-contained" drainage system (e.g. a series of connected catch basins discharging to a discrete outfall none of which is connected to or "adjacent to" existing drainage infrastructure) without triggering a requirement to cover that segregated outfall through a separate individual permit. Public management of the streets will generally lead to better pollutant management and on that basis the permit should not dis-incentivize acceptance of private roads.

Other Issues

12. **Brewster and the Pleasant Bay Nitrogen TMDL:** The only Cape Cod nitrogen TMDL currently relating to Brewster is the Pleasant Bay Nitrogen TMDL. The Pleasant Bay TMDL states that stormwater is an insignificant portion of the nitrogen load to the Bay. Furthermore, Brewster's MS4 does not discharge to Pleasant Bay. The requirements of Appendix F Part IV, do not apply to Brewster, therefore, it is appropriate that Brewster is not listed on Table F-9 in Appendix F. Brewster is however incorrectly listed on Table on Page 14 of the Permit in reference to Appendix F.
13. **Floor Drain Inventory:** It is appropriate and appreciated that this requirement has been removed from the Draft Permit.

14. **Errors:** A number of errors in referencing were noted in the document. The ones we noticed are listed below, there may be more. Please carefully check all cross references in the preparation of the Final Permit and correct the following errors:
    - Page 12 – change references from Table F-5 to Table F-6
    - Page 14 – change references from Table F-6 to Table F-8
    - Page 14 lists reference to Buzzards Bay but there is no Nitrogen TMDL for Buzzards Bay watershed on DEP's website
    - Page 14 list does not include Wareham although Wareham is in Buzzards Bay watershed
    - Page 15 change reference from Table F-7 to F-9
    - Page 17 – reference to Table F-10 is incorrect (that is a table of Assabet towns)
    - The table on page 14 lists Brewster, but Brewster is not listed in Table F-9 subject to a nitrogen TMDL. It is appropriate that Brewster is omitted from Table F-9 and requirements thereof (see Comment 12 above). Please remove reference to Brewster from Table 14.

Sincerely,

Charles L. Sumner
Town Administrator

cc: Kristen Ryan, Principal Scientist, Kleinfelder
Sue Leven, Town Planner
Chris Miller, Director of Natural Resources

City of Brockton
Department of Public Works

BILL CARPENTER
MAYOR

LAWRENCE ROWLEY
INTERIM DPW COMMISSIONER

RECEIVED
12/17/2014

December 11, 2014

Mr. Newton Tedder
U.S. Environmental Protection Agency
5 Post Office Square, Suite 100
Mail Code: OEP06-4
Boston, MA 02109-3912

Subject: Draft Massachusetts Small MS4 General Permit

The City of Brockton is in receipt of the 2014 Draft Massachusetts Small MS4 General Permit and appreciates this opportunity to provide comments. We recognize the importance of communicating with the Environmental Protection Agency (EPA) and Massachusetts Department of Environmental Protection (MassDEP) on issues concerning stormwater pollution reduction in our shared water resources. Following a review of the draft permit, we respectfully submit the following comments regarding the scope and time availability for tasks:

2.3.4.4 – Sanitary Sewer Overflows
Records of historic SSO discharges are spotty, and may not include the amount of information outlined in the listed inventory. This list of information should be shown as a recommendation, but not necessarily a requirement.

2.3.4.5 – Outfall/Interconnection Inventory & 2.3.4.6 – System Mapping
The draft permit requires significant sampling and monitoring tasks to be completed within an aggressive time limit. Sections 2.3.4.5 and 2.3.4.6 state that the Outfall and Interconnection Inventory and System mapping shall be completed within one (1) year and two (2) years, respectively, from the effective date of the permit. Given the size, scope, and age of our drainage system, the development of a GIS layer with this information represents a massive undertaking that will require substantial employee effort; gathering this data requires devoted time to manually field investigate every drainage structure, perform substantial research into record drawings, and obtain the expertise needed to build the GIS system. The strain on funds and resources from this endeavor is exacerbated by other required MS4 tasks with similar needs and timelines. The expenditure of resources, as well of the quality of the data being produced, would benefit from a more-realistic schedule that considers the magnitude of the task.

Section 2.3.4.7 – Written Illicit Discharge Detection and Elimination Program
Section 2.3.4.7.c states that an assessment and priority ranking of catchments must be finished as part of the written IDDE program, which must be completed at the end of year one. However, system mapping as part of Section 2.3.4.6 will take at a minimum the two years required in the general permit. Since mapping will not be completed, an accurate ranking of catchments will not be feasible in time for this deadline.

Section 2.3.4.8 – IDDE Program Implementation Goals and Milestones
Section 2.3.4.8 states that dry weather screening and sampling of every MS4 outfall and interconnection will be completed no later than three years from the permit effective date. The time allotted does not consider that this task must be implemented after the Interconnection Inventory has been finalized, and is highly seasonal and weather dependent. Setbacks in funding sources or unfavorable weather patterns could easily make it unlikely that all of the required sampling is performed. With the current economic environment it is difficult to find immediate funding for the sampling costs and employee time for the sampling program outlined. While grants and other sources of funding are available, the competition for receiving said funds are fierce, especially considering the amount of municipalities who are under the general permit jurisdiction.

Section 2.3.6 - Stormwater Management in New Development and Redevelopment
Section 2.3.6.b states that the permittee shall develop a report outlining current street design, parking lot guidelines and other local requirements that affect the creation of impervious cover. The EPA and/or MassDEP should provide guidelines for recommendations on the steps in this evaluation, along with examples of possible improvements.

Within Section 2.3.6.d, given the rate of development, it is our opinion that the number of acres of impervious area and directly connected impervious area (DCIA) will not necessarily change substantially on a year-to-year basis. At a minimum, we would request the frequency of reporting of changes in the DCIA be reduced.

Section 2.3.7 – Good House Keeping and Pollution Prevention for Permittee Owned Operations
Section 2.3.7.a.iii.(b) states that the volume of mass removed from each cleaned catch basin shall be recorded. This is a cumbersome task that would require additional, time consuming steps taken in the field.

Conclusion
The City of Brockton commends the EPA and MassDEP for the planning and long-term goals that were put into the draft general permit. The sustainability of stormwater systems in the Commonwealth will ultimately see improvements as a result of our combined efforts. However, we urge that consideration be given to modifications of the deadlines assigned to certain tasks outlined above. Given the magnitude and variability of funding needed, flexibility in goals would ultimately result in a higher quality product with less short-term budgetary strain on our citizens.

Sincerely,

Lawrence Rowley,
Interim DPW Commissioner

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February 26, 2015

Newton Tedder
U.S. Environmental Protection Agency
5 Post Office Square, Suite 100 (OEP06-4)
Boston, MA 02109

RE: Draft Massachusetts Small MS4 General Permit

Dear Mr. Tedder:

The Berkshire Regional Planning Commission (BRPC) respectfully submits these comments on the draft Massachusetts Small MS4 General Permit. BRPC serves the thirty-two cities and towns within Berkshire County, nine (9) of which are regulated under the draft permit. Three (3) of the regulated communities are newly impacted while the remaining six (6) have been subject to the 2003 permit or were granted waivers. BRPC agrees with the intent and goal of the Clean Water Act (CWA); however, we have serious concerns with regard to the schedule and associated costs to comply with the permit. BRPC takes its role as a steward of the environment for the region extremely seriously and applauds the efforts of the EPA to clean up the waters of the Commonwealth Although BRPC agrees with the intent of the draft permit, the result is an added burden to communities that are already struggling to provide necessary services.

BRPC encourages EPA to develop an appropriate program that will address stormwater and water quality concerns while balancing local needs and economic considerations. It is a mandate to municipalities without state or federal funding subsidies, which leaves the burden to comply entirely on the shoulders of the regulated communities. In these troubling economic times, many municipalities have been faced with potential cuts to vital services. For this reason, it is a very difficult time to meet the addition mandates required by the draft General Permit. Regardless of timing, the requirements are such that most of the small towns in Berkshire County that are affected by the permit do not have the staff or funding to fully comply with the permit as drafted.

Funding

In the 1970s, programs and funding were available to build wastewater treatment facilities when the Federal Water Pollution Control laws surfaced. BRPC suggests that similar funding from the state and federal governments be created to ensure the success of this program. As drafted, the regulations require professional engineering and administrative services which cannot be met

solely by municipal employees and cannot be complied with through the volunteer members of local commissions or interested and concerned citizens.

Schedule

In addition to the issue of cost, BRPC is concerned with the schedule for compliance with the general permit. The majority of the regulated communities within Berkshire County have small staffs and constrained budgets. Logistically, the schedule simply involves too much, too soon, within the same timeframe for the affected municipalities within the region to comply. It is understood and appreciated that revisions were made from the 2011 Draft Permit that allow additional time before the permit goes into effect and before the written Stormwater Management Program is due. However, municipal budgets and warrant articles are typically prepared between December and March for approval at Annual Town Meeting in May/June. In addition, many of the requirements cannot be met without hiring additional staff and/or subcontractors to perform the necessary work. Even if adequate funding was available, the addition of new staff and/or procurement for subcontractual services require long lead times to comply with hiring and bidding laws. BRPC suggests that no item in the permit be required to be completed during the first permit year except for the preparation of the Stormwater Management Plan (SWMP) in order to allow sufficient time to prepare appropriate budget requests, hire additional staff and/or procure consulting services.

Specific examples of how the schedule involves too much, too soon and within the same timeframe include, but are not limited to, the following:

- Inventory all sanitary sewer overflows within 60 days;
- Inventory all permittee-owned parks and open spaces, buildings and facilities (including storm drains), and vehicles and equipment within 6 months;
- Establish and implement a program for repair and rehabilitation of MS4 infrastructure within 6 months;
- Inventory outfalls in first year;
- Prepare written IDDE program within first year;
- Develop site inspection and enforcement of Erosion and Sediment Control measures within first year;
- Develop site plan review procedures within first year;
- Create written O&M procedures for parks and open spaces, buidlings and facilities, and vehicles and equipment within first year; and
- Prepare a Stormwater Pollution Prevention Plan (SWPPP) for maintenance garages, transfer stations and other waste-handling facilities.

Maximum Extent Practicable (MEP)

In a document prepared by AMEC Earth & Environmental, Inc. found on EPA's website, Maximum Extent Practicable (MEP) is defined as meaning addressing and mitigating all the ways pollutants get into the system including dirty stormwater, and doing so to one's maximum ability. The document further states that the MEP consists of the mix of Best Management Practices (BMPs) and measurable goals that will attain reduction of pollution to attain water quality standards as described in 40 CFR 68754, Dec. 8th, 1999, as follows:

> *The pollutant reductions that represent MEP may be different for each small MS4, given the unique local hydrologic and geologic concerns that may exist and the differing possible pollutant control strategies. Therefore, each permittee will determine appropriate BMPs to satisfy each of the six minimum control measures through an evaluative process. EPA envisions application of the MEP standard as an iterative process. MEP should continually adapt to current conditions and BMP effectiveness and should strive to attain water quality standards. Successive iterations of the mix of*

BMPs and measurable goals will be driven by the objective of assuring maintenance of water quality standards. If, after implementing the six minimum control measures there is still water quality impairment associated with discharges from the MS4, after successive permit terms the permittee will need to expand or better tailor its BMPs within the scope of the six minimum control measures for each subsequent permit. EPA envisions that this process may take two to three permit terms.

MEP should be utilized to allow regulated communities to propose a strategy to comply with the permit to their maximum ability. Proposed strategies could be subject to EPA and/or DEP approval. Customized approaches appropriate to each community may take limited financial resources, limited staffing, and the nature of the community (i.e. size, rural) into consideration as well as the nature of the watershed and water quality impairments. In addition a phased approach that becomes progressively more vigorous could be utilized to achieve the goals of the program over the five year permit. The 2003 Permit has been administratively continued by EPA for seven (7) years. With that duration of time having passed, it is unclear that it is necessary to address (or begin to address) the majority of the permit requirements within the first year of the permit. A phased approach is reasonable and may, in fact, increase compliance and result in greater water quality improvements.

Examples of specific concerns where an individually tailored program appropriate to each community should be considered include data collection and treating rainfall. Data collection for individual catch basin inspection and maintenance is very time-consuming and costly. Individualized approaches should be able to be developed with focused data collection with regard to documented water quality impairments. Treating and retaining the first 1" of rainfall on all projects 1 acre or greater is not feasible financially or practically (due to availability of land). This requirement should not be applied to *all* projects including road maintenance. As written, many towns will have no choice but to forego maintenance so as to not be in violation of this permit. Additional flexibility should be provided to road maintenance projects, rural roads, and areas with limited land available to support the treatment or retention of the first 1" of rainfall.

Streamlined Approach

A streamlined approach could be employed with regard to certain components of the draft permit rather than duplicating efforts and expense in multiple communities. The "paper burden" of the permit is staggering; the Notice of Intent (NOI), Stormwater Management Program (SWMP), Illicit Discharge Detection and Elimination Program (IDDE), Stormwater Pollution Prevention Plan (SWPPP), in addition to reporting requirements. Having streamlined, generic, preformatted templates generated by one agency instead of the many individual communities working independently would standardize and expedite the permit process. Many of the data collection tasks relate to regional or state-wide efforts, such as water quality classifications, identified impairments and endangered species habitats. This data should be made available to all regulated communities rather than imposing a highly redundant effort on individual communities.

Additional examples of ways in which to ease the burden of permit requirements are as follows:

- Provide flow charts or other graphs to guide laypeople through the permit process;
- Provide technical assistance, via phone or web;
- Provide templates, models or examples of the required plans, procedures, reports, etc.;
- Provide guidance regarding acceptable methodologies - for example, methods used to evaluate the effectiveness of educational messages and overall education as well as to demonstrate that a defined goal has been achieved.
- Provide regional or state-wide resources to support NOI submission: endangered species, historic properties, impaired water bodies, etc.; and

- Provide training resources and classes to meet the training requirements for in-house personnel– live classes, webinar training programs, or pre-recorded video.

Urbanized Area

We recognize that the method of designation is not necessarily an issue that can be addressed through the Draft Permit, but it should be of concern to the program. We believe that utilizing the U.S. Census derived urbanized areas to determine regulated communities is a flawed approach. The regulated areas do not correlate well to the areas that are most likely to generate significant stormwater discharges. MS4 area identification appears to rely too heavily on data with regard to people and not enough on the existence of concentrated areas of impervious surface. The validity of the MS4 program is undermined in the minds of some local officials because of this poor correlation - where large areas of commercial strip development are outside the MS4 area, yet relatively benign areas of low and moderate density residential development are included. We would urge EPA to consider a more refined method of MS4 area determination - and going forward, include a mechanism or process for municipalities, with adequate rationale, to modify their MS4 boundaries.

BRPC is dedicated to improving the quality of stormwater runoff and only seek to ensure that the permit requirements will result in a successful and effective program. It appears that the proposed program will have many issues with regard to compliance and that many of the towns and cities in Massachusetts will not be able to fully comply by the end of the five year permit period unless this program has some subsidies provided for it on the state and federal levels. In the absence of, or in addition to subsidies, modifying the schedule and increasing the flexibility may ease the burden and increase the level of compliance. We respectfully request that the EPA give more consideration as to how this permit can both preserve the environment and use limited, local resources wisely and provide an additional opportunity for public comment.

Sincerely,

Nathaniel W. Karns, AICP
Executive Director

Cc: Congressman Richard Neal
Senator Benjamin Downing
Representative Gailanne Cariddi
Representative Tricia Farley-Bouvier
Representative Paul Mark
Representative Smitty Pignatelli

Campus Consortium for Environmental Excellence

www.C2E2.org

February 24, 2015

By email (tedder.newton@epa.gov)

Newton Tedder
United States Environmental Protection Agency – Region 1
5 Post Office Square – Suite 100
Mail Code – OEP 06-4
Boston, MA 02109

Re: Draft National Pollution Discharge Elimination System ("NPDES") General Permit for stormwater discharges from small Municipal Separate Storm Sewer Systems ("MS4s") in Massachusetts

Dear Mr. Tedder:

The Campus Consortium for Environmental Excellence ("C2E2") appreciates the opportunity to comment on the Draft NPDES General Permit for stormwater discharges from small MS4s in Massachusetts ("draft permit")

C2E2 was formed in the mid-1990s, and is comprised of 20 colleges and universities, predominately from the Northeast but with some members from other parts of the country. The mission of C2E2 is to support the continued improvement of environmental performance in higher education through environmental professional networking, information exchange, the development of professional resources and tools, and the advancement of innovative regulatory models.

Environmental performance includes campus regulatory compliance, environmental management, and sustainability initiatives. Stormwater is an increasingly complex issue for the C2E2 membership and other institutions of higher education.

C2E2 would like to highlight the following issues in the draft permit and bring them to the attention of EPA.

1. **Due to the considerable differences between colleges and universities ("C/U") and other regulated entities, C2E2 requests that EPA consider C/U separately in the requirements that the stormwater permit will impose and how those requirements will need to be implemented.**

The first comment focuses on the nature and structure of C/U that can make complying with permit requirements different from other entities. The C/U sector is fundamentally different from industrial and commercial entities in several key ways:

a. Unlike industrial and commercial entities, which generally own fairly small pieces of property and whose properties are usually largely developed with buildings and paved areas, C/U own large areas of land and the property is often partially developed and partially undeveloped.

b. Unlike industrial and commercial entities, which generally conduct one type of industrial activity, or a set of closely related activities at a facility, C/U conduct a wide variety of educational and recreational activities, and often provide housing and athletic fields. Unlike industrial and commercial entities, which are generally in one building or in a small number of buildings near each other, most C/U own or operate large numbers of buildings and parking areas of varying sizes, spread out over a considerable area.

c. Years ago, EPA recognized the special challenges schools face that are different from other entities and created a separate compliance assistance center to help C/U. In addition, in the context of RCRA hazardous waste compliance, EPA recognized that laboratories are quite different from industrial facilities and adopted RCRA Subpart K to provide an alternative framework for complying with RCRA. C2E2 is willing to partner with EPA to implement a similar compliance initiative.

2. There is a new emphasis on non-traditional MS4s such as State Colleges and Universities, which poses significant compliance challenges. C2E2 requests a deadline extension for comments to review impacts of the new regulations, as well as an extension for illicit discharge detection and elimination program (IDDE) implementation.

Traditional and non-traditional MS4s have interconnected drainage structures. C2E2 requests clarification on how the division of responsibilities are allocated for traditional and non-traditional MS4s specifically as it relates to the following:

- TMDL/Impaired Water implementation plans and other applicable requirement;
- Regulations and permitting, inspections, recordkeeping and enforcement for construction site runoff and general stormwater runoff; and
- In Section 5.1.4, "new dischargers" provisions may be applicable to many university storm water discharges and require application for an individual permit as opposed to a general permit. This section should be clarified for non-traditional MS4s. EPA should provide outreach specific to new permittees and non-traditional MS4s on whether they will be able to obtain coverage under the general permit.

In addition, C2E2 requests clarification on the following:

- In Section 1.10.2, the permit requires that the Storm Water Management Plan (SWMP) to be submitted in Year 1 shall contain a "listing of all interconnected MS4s," but system wide mapping, which would include detailed pipe connectivity mapping necessary for interconnection identification, is not required until the end of Year 2. C2E2 asks that this requirement should be clarified. C2E2 also requests an extension on this requirement because C/U will require more time to complete this interconnectivity mapping to coincide with updated mapping efforts of the municipalities in which non-traditional MS4s are located;
- In Section 2.3.4.7.c.iii, there is a requirement to conduct the assessment and priority ranking of all catchment areas within one year. This provision is inconsistent with other mapping requirements, where two years is the given timeframe. Catchment delineation requires detailed infrastructure mapping. C2E2 suggests that EPA offer flexibility in how colleges and universities prioritize catchment areas and illicit discharge detection and elimination efforts as land use is quite different on campuses than within traditional municipalities; and
- In Section 2.3.6., a specific definition of "Redevelopment" is not included in the permit and should be added. Also, the reference in this section to "retain" is assumed to mean equivalent to infiltration of the first one inch of runoff. C2E2 requests that this be clarified.

3. **C2E2 requests that EPA insert a provision into the permit that municipalities be required to engage C/U and work together in the development and implementation of the comprehensive stormwater management program (SWMP).**

The draft permit requires small MS4s to develop and implement a SWMP. C/U are often among the largest landowners in those municipalities where they are located. They also are often among the largest employers, and owners of buildings, parking facilities, and outdoor athletic/recreational facilities. The current draft permit does not specify how municipalities need to develop and implement their SWMPs.

4. **C2E2 strongly supports the inclusion of a water quality trading program as part of the proposed permit and volunteers to partner with EPA to pilot a program for C/U.**

The fourth comment concerns a possible credit system as a means of making the proposed stormwater protection program more efficient and effective. Stormwater programs in various locations have included or considered a credit system that provides entities with the ability to obtain credit for stormwater measures that they implement. Credits may encourage institutions to implement both a greater number of stormwater measures and a greater scope or breadth to the measures. The C2E2 membership is well organized and can mobilize quickly to pilot a program in Massachusetts.

5. **C2E2 strongly supports allowing stormwater compliance options to adjust as technology and an understanding of addressing stormwater issues evolves.**

The fifth comment concerns the evolving technology and approaches to addressing storm water concerns. Technology constantly evolves and allows for improvements in how to reduce the amount of pollutants in storm water, and improvements in how to measure and track pollutants. C/U are studying and developing new approaches to address concerns involving storm water and other environmental issues. It is important that the Permit allow for regulated entities to adjust their efforts to comply with the storm water permit as technology evolves and as information and understanding of issues concerning storm water change.

In Section 2.3.6., the requirement to retain the first one (1) inch of runoff for new or redeveloped areas is a good goal but the requirement to have pollutant removal equivalent to that of a bio-filtration system should be removed; a “one size fits all” requirement for pollutant removal is too restrictive and is not consistent with emerging technologies. A campus setting also provides the opportunity for stormwater master planning where site by site development of stormwater treatment systems may be inefficient and less effective than system treatment options. Infiltration in redevelopment areas may be limited by site characteristics, particularly on urban campuses, and the “maximum extent practicable” principle should be applied in this instance.

The provisions in Section 4.1 b are helpful in providing the flexibility that C2E2 considers to be necessary and appropriate.

Thank you for the opportunity to comment. C2E2 looks forward to continued dialogue with EPA and MS4 permittees concerning the best approaches to improve the effectiveness of stormwater regulatory programs, with the goal of restoring and maintaining New England’s waters.

Sincerely,

Peter T. Kelly-Joseph, President
C2E2

4 RIVERS
Chicopee-Ware-Quaboag-Swift

One River System

Newton Tedder
US EPA—Region 1
5 Post Office Square—Suite 100
Mail Code—OEP06-4
Boston, MA 02109-3912 tedder.newton@epa.gov

Re: Comments on Draft Massachusetts Small MS4 Permit

Dear Mr. Tedder:

Thank you for this opportunity to comment on EPA's Draft General Permit for Small MS4s in Massachusetts. The Chicopee 4Rivers Watershed Council is a new voice for rivers in the central portion of Massachusetts. We have reviewed the draft MS4 permit and comments of similar watershed organizations and we too wish to voice our support of these improved protections for rivers and streams. We concur with the following statements:

Polluted stormwater is the most serious water pollution problem in Massachusetts today. EPA Region 1 has found that stormwater causes or contributes to at least 55% of the violations of water quality standards in the state's rivers, streams, and lakes. Climate change presents an additional, important reason to improve stormwater management. Most scientists expect the recent cycles of flooding and drought to become more pronounced, and Massachusetts communities need to maintain or upgrade their aging infrastructures, to safeguard both public safety and the environment into the future. **This permit is an important step in promoting these genuinely-needed changes, and we strongly support its promulgation.**

The 2014 permit represents a significant improvement over the 2003 permit, and is likely to be much more effective in reducing pollution, flooding and erosion caused by stormwater in urbanized areas.

- The permit incorporates **water-quality requirements** that directly address the pollutants that are actually causing specific Water Quality Standard violations in each town.
- The permit provides **more specific requirements and deadlines** in many cases, which should result in better compliance than was achieved under 2003 permit.
- The permit gives towns **adequate time and substantial flexibility** in choosing approaches to compliance that are most appropriate for local conditions.
- **Permit requirements for greater public access and opportunities to comment** on towns' stormwater management programs will increase public support for these programs, which is essential if towns are to raise the resources necessary to deal with polluted stormwater.
- **The post-construction requirements for new development and redevelopment will prevent future projects from continuing the poor stormwater management practices of the past.** EPA has chosen a balanced and effective strategy, setting a high standard for

infiltration of stormwater providing a safety valve where site conditions make meeting that standard infeasible.

In short, the permit requirements ask municipalities to do better monitoring and planning, to improve implementation, to raise public awareness of stormwater issues, and to design and maintain better stormwater management measures. If successful, the permit **will result in major improvements in the management of urban stormwater in Massachusetts, and we will see the results in cleaner, healthier, rivers, streams, lakes, bonds, and coastal waters**.

We also note that good planning **can help towns reduce compliance costs and fund the required investments in stormwater programs and infrastructure**. Towns can take advantage of help and support from EPA, MassDEP, watershed groups and regional planning agencies; work regionally (including through storm water consortiums) to achieve economies of scale, develop and fund stormwater utilities, and ensure that private entities assume their share of the responsibility for stormwater management.

Finally, while we endorse the overall approach and requirements of this permit, we **have identified some areas where improvements would offer more water resource protections:**

- **The stormwater bylaw requirements should apply to projects as small as a quarter or half an acre.** Most urbanized towns have very few large development and redevelopment projects, and projects under an acre would not be required to employ *any* stormwater management measures unless they are located in wetland resource areas. This will make it exceedingly difficult for many towns to comply with the proposed prohibition against new and increased stormwater discharges from MS4s.
- In addition to conducting an annual evaluation of BMP compliance and effectiveness, **permittees should be required to take corrective action** where the evaluation shows that goals and objectives are not being met. An effective approach to improving stormwater management requires that problems be addressed, and not simply identified.
- **MS4s discharging to waters impaired for bacteria or pathogens should be subject to additional requirements**. This includes requiring new development and redevelopment projects and retrofits on town-owned property to implement BMPs that are most effective at reducing bacteria where the waters they discharge to (via an MS4) do not meet bacteria Water Quality Standards.
- **The new requirements proposed for projects discharging to water impaired for chloride should apply to all MS4s.** While relatively few water bodies have been assessed for chloride, evidence suggests that this is a significant problem in most, if not all, urbanized areas.

We appreciate the careful work EPA has done to improve on the 2003 permit and the 2010 proposals. We **support prompt issuance of the final permit**. We urge EPA to work quickly to respond to comments and complete a final permit at the earliest possible date

Thank you for considering our comments on this important permit.

Keith Davies
Keith Davies-Coordinator C4RWC
100 Beaver Rd, Ware, MA 01082 chicopeewatershed@gmail.com

City of Cambridge
Richard C. Rossi • City Manager

Executive Department
Lisa C. Peterson • Deputy City Manager

February 25, 2015

Newton Tedder
U.S. Environmental Protection Agency
5 Post Office Square, Suite 100 (OEP06-4)
Boston, MA 02109

RE: Draft General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts

Dear Mr. Tedder,

The City of Cambridge appreciates the opportunity to comment on the Environmental Protection Agency's (EPA) Draft National Pollution Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts. We also acknowledge and appreciate the modifications made to the previous draft permit that are aimed at simplifying compliance with respect to annual reporting and Notice of Intent filing.

We would like to express our strong support for some of the changes included in this draft of the MS4 General Permit, specifically:

- Extended schedule for implementation. The requirements for the permit are extensive and it will take time to implement them in a comprehensive and thoughtful way. The 20-year schedule provides the opportunity for communities to develop an appropriate plan for their individual circumstances.
- Allowing all BMPs installed to date (p. 40 of the Fact Sheet) to count towards the phosphorous reduction requirements. Cambridge has been implementing a significant number of BMPs and supports having these clearly work towards the phosphorous reduction requirements.
- EPA's commitment to developing tools to help permittees track the BMPs installed to date and the associated phosphorous removal. It will be important that these be in place as soon as possible so as to allow communities to begin planning.

We would like to provide comments and suggestions for some of other provisions of the Draft MS4 General Permit, specifically:

- Section 2.1.2 Increased Discharges: how will newly separated stormwater from combined sewer areas be viewed under this permit? If stormwater is considered an "increased discharge" to an impaired receiving water listed on the MA Integrated Report of waters pursuant to the Clean Water Act section 303(d), then it will be virtually impossible to move forward with sewer separation projects in an existing developed urban area and meet anti-degradation standards. It is important that the permit does not discourage or prohibit sewer separation projects.

- Section 2.3.6 Stormwater Management in New Development and Redevelopment:
    - How is a "common plan of development or redevelopment" defined? The provision to require projects that disturb less than one acre if the project is part of a " larger common plan of development or redevelopment which disturbs one or more acres" to retain (or treat) the first one inch of runoff from all impervious areas is unclear and potentially prohibitive, if the stormwater management system requirements are not broken up over the phasing of the "common plan" or redevelopment program.

    - The requirement to store or treat one inch of runoff from street and roadway reconstruction projects is prohibitive for projects that are necessary to maintain safe and accessible rights of way. Recently Cambridge designed and is nearing completion of a sewer separation project where struggled to achieve treatment of 1/2" of runoff with biobasins and porous pavement due to poor soil conditions, high groundwater and potential negative groundwater mounding impacts to existing structures. A requirement to treat the full one inch of runoff would not have been feasible. The requirement needs to provide flexibility for projects that cannot store or treat one inch of runoff due to site conditions such as high ground water table, contaminated soils, and soil conditions.

- Section 2.3.7.iii (b) Good House Keeping and Pollution Prevention for Permittee Owned Operations: Prioritization of areas for cleaning and maintaining catch basins should be based upon land use and other factors best determined by the local municipality and not on the depth of debris in a sump. A more effective measure would be remaining free space in catch basin. For example, if the desire is to retain 2' of sump, a 6' sump basin would be required to be clean when it is 2/3 full, instead of ½.

Sump	Sediment when ½ full	Remaining Sump when ½ Full
4'	2'	2'
6'	3'	3'

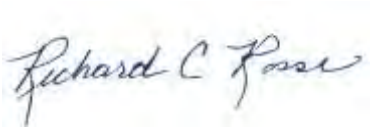
- Appendix F Requirements for Discharge to Impaired Waters with an Approved TMDL, Section A.I: While adjustments were made to the phosphorous loading baseline to account for illicit discharges, we believe the reduction associated will illicit discharges should be greater than the proposed 3,009 Kg/yr detailed in Appendix F. Please see the attached examples.

- Appendix F Requirements for Discharge to Impaired Waters with an Approved TMDL, Attachment 3: Cambridge has implemented a progressive program to require private developments to treat phosphorous through various structural Best Management Practices. Several of these methods (such as as Imbrium "jelly fish") are not included in the listed Structural Best Management Practices and thus would require "Alternative Methods" to calculate phosphorous load reductions. It would be beneficial if more methods could be included in the list.

- It is critical that communities be allowed to take credit for all BMPs implemented to date, as these were not accounted for in the budget allocations and it is important to incentivize their on-going maintenance.

Thank you for the opportunity to comment on this important regulation. Please feel free to contact Katherine F. Watkins, City Engineer, kwatkins@cambridgema.gov / 617-349-4751, for any additional information.

Sincerely,



Richard C. Rossi
City Manager

Attachment (1)

ATTACHMENT 1

Baseline Adjustment TP Loading Associated With Illicit Connections:

It is the City of Cambridge's opinion that the portion of phosphorous associated with illicit connections (10%) is likely understated. The TP loading baseline reduction should be greater than the proposed 3,009 Kg/yr.

A few examples and sample calculations of illicit connections that have been removed in Cambridge are provided below:

A. Example of Illicit Connection Removals between 2002 and 2014:

It was discovered during the renovation of the Rindge- Latin High School in 2005 that the sanitary flows from this building were connected to the storm drain system discharging to the Quincy Street storm outlet. Upon discovery this illicit connection was immediately corrected. The estimated annual TP loading reduction to the Charles River is calculated as follows:

Annual TP loading reduction = $1{,}784\ people \times \frac{20gal}{person \times day} \times \frac{3.78L}{1gal} \times \frac{7mgTP}{L} \times \frac{1Kg}{10^6 mg} \times \frac{250\ days}{1\ school\ year} = 236Kg/year$

B. Example of Defective Common Manhole (CMH) Removals between 2002 and 2014:

In 1999 MassDEP filed a Court Order against Cambridge for excessive wet weather communication of CMHs in the 496 acre Cambridgeport storm drainage area (extending up to Main Street). At the same time the City and MIT desired to improve surface /underground infrastructure on Sidney Street. Between the period of July 2000 – April 2001 MWH inspected 104 CMHs as part of the design effort. Forty nine CMHs (47%) had severe plate misalignments (ajar) and 21 CMH (20%) had missing plates. Altogether 67% of all CMHs would transfer sewage to storm drains during wet periods.

Since both sewer and storm systems were shallow and vertically close to each other it was assumed that at least 20% of the total 496 acre catchment system would communicate for storms larger than 0.5in. In reality this percentage is probably higher.

In order to compute the annual TP load removed due to common manhole separation the following was computed or assumed:

1. The sanitary sewage TP generation for commercial/industrial/high residential loading for Cambridge is approximately 65kg/ha-yr
2. The time in a year with storms exceeding 0.5 inches is approximately 27 days.
3. Fifty percent of the sanitary flow is transferred to the storm flow during these storms.
4. Twenty percent of the 496 acres in Cambridgeport had common manholes that transferred flows to the storm system. This equates to 99 acres.

Therefore, the annual TP loading reduction from removal of these common manholes is computed as follows:

$$\text{Annual TP loading reduction} = \frac{65Kg}{ha \times yr} \times \frac{0.4\ ha}{1\ acre} \times 99\ acres \times \frac{1yr}{365\ days} \times 27 days \times 0.5 = 95Kg/yr$$

Repair of the CMH obvious problems were performed in 2003-2004 during construction of the Sidney St program. Between 2004-2010 the City has removed all CMHs within this area.

C. **Example of TP reduction due to roofs draining to the ground:** Assuming institutional and other buildings within Cambridge draining to the ground have a total roof area of 50 acres (assumed value) and assuming a TP export ratio of 0.56Kg/ha-yr (medium density residential), the following annual reduction would be achieved:

$$\text{Annual TP loading reduction} = \frac{0.56Kg}{ha \times yr} \times \frac{0.4Ha}{1acre} \times 50\ acres = 11.2\ kg/Year$$

CONCLUSION

Adding A+B+C = 236KG/y + 95Kg/y + 11.2Kg/y = 342.2Kg/yr in TP loading reduction is achieved with just these three examples. The proposed TP EPA associates with all illicit connections in the watershed, 3,009 kg/yr, would appear too low. It is critical that EPA continue to evaluate the illicit load reduction and update permits accordingly.

Town of Canton, Massachusetts
OFFICE OF THE SELECTMEN

BOARD OF SELECTMEN

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TOWN ADMINISTRATOR
WILLIAM T. FRIEL

December 5, 2014

RECEIVED 12/4/14 MLA

Mr. Newton Tedder
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, Massachusetts, 02109-3912

Via E-mail: Tedder.Newton@epa.gov no email

RE: Draft NPDES General Permit for Stormwater Discharges From Small Municipal Separate Storm Sewer Systems in Massachusetts – Public Comment Letter

Dear Mr. Tedder:

This letter is submitted to you in accordance with public comment procedures related to the proposed NPDES General Permit referenced above. The concerns enumerated below constitute "reasonably ascertainable issues" developed on the basis of review of the draft General Permit, supporting documentation provided by EPA (including fact sheets, appendices, technical guidance and reports), ad practical experience implementing the program over the preceding eleven (11) years of the existing permit term. These are significant issues that warrant response by EPA and consideration for modifications in the final General Permit. The initial comments refer to conditions associated with "Requirements to Reduce Pollutants to the Maximum Extent Practicable" (the six Minimum Control Measures [MCM]); the latter comments refer to conditions related to "Water Quality Based Effluent Limitations (WQBELs)." General comments follow thereafter.

Comments

Minimum Control Measures / Maximum Extent Practicable Requirements

1. **IDDE Investigations**: Level of effort to achieve all of the elements of the Illicit Discharge Detection and Elimination (IDDE) Program is significantly higher than currently experienced and not significantly reduced from previous drafts despite prior concerns expressed in this regard. Several specific issues include:
    a. **Catchment Prioritization:** We recognize the value of categorizing and ranking/prioritizing catchments as a means of identifying more likely pollutant sources early in the program. Protocols for ranking catchments (and continually re-evaluating rankings) require significant knowledge about storm sewer and

sanitary sewer system condition and characteristics, which are elements drawn from mapping and investigations that are executed after the initial prioritization is completed at the end of year 1. The methods described in the permit provide some latitude based on "existing knowledge," however, it is important that absence of specific information regarding a catchment does not default to "High" categorization or prioritization within a category. We are concerned that "unknown" conditions related to screening factors may result in a disproportionate number of catchments being categorized as Problem or High, which in turn places these catchments on a faster-tracked investigation schedule with implications for labor and costs for communities. *Proposed Modification:* Ranking and prioritization factors are highly specific, and cover a broad spectrum of infrastructure condition, land use, laboratory analytical results and development age/characteristics. We suggest simplifying the procedure and allowing communities to categorize catchments as either "excluded" or "problem" as defined in the permit, with all other catchments falling into "other" to be investigated on a prioritized basis developed through local operator knowledge. Investigations can be performed within the 10-year timeframe currently established in the permit, with documentation on investigation results provided in annual reports. For those communities that have already undertaken a prioritization exercise on the basis of guidance provided in the 2010 Draft Permit, that ranking ought to be allowed as the basis for execution of the plan.

b. **Wet Weather Monitoring:** The Fact Sheet accompanying the general permit indicates that the revised wet weather monitoring requirements were modified to reduce the number of outfalls that would require labor intensive sampling/monitoring. However, the twelve (12) specified "System Vulnerability Factors" provided as the basis for inclusion in a wet weather monitoring program encompass a broad swath of infrastructure system characteristics and the "one or more" threshold trigger for categorizing a catchment as a wet weather monitoring candidate will capture the vast majority of outfalls in many if not most communities. This fails to provide the relief communities requested during the 2010 Draft General Permit comment period, and which the fact sheet accompanying the 2014 Draft General Permit implies has been provided. *Proposed Modification:* Wet weather screening of catchments should be conducted on the basis of observed conditions during physical investigation of catchments rather than the system vulnerability factors presented in the permit. Actual conditions as the trigger for further investigation will mitigate the low threshold ("one or more") and the breadth of the factors that, as proposed, will result in a disproportionate number of outfalls requiring wet weather screening.

c. **Catchment Investigation Procedure:** The storm drain network investigation as proposed, including the physical inspection of all key junction manholes irrespective of evidence of dry weather flow or other illicit connections at the point

of outfall discharge, is new, excessive, and will fail to provide environmental benefit for the additional labor and expense required. *Proposed Modification:* Allow local MS4 operators to implement a manhole inspection methodology appropriate to the complexity of their system, to be documented in their IDDE plan, with results reported annually as required in the current permit.

2. **IDDE Mapping:** New mapping requirements relating to sewer infrastructure under the IDDE MCM are a significant concern, as they not only require mapping of all storm drain components, but now must include sanitary sewer infrastructure "where available" and knowledge of asset conditions relative to both storm and sewer systems in order to implement procedures related to prioritization and execution of catchment investigations on the basis of the System Vulnerability Factors. This level of asset inventory, condition assessment, mapping and documentation represents an effort that could take much longer than the two (2) year deadline in the permit. Based on the dynamic and cumulative documentation relative to investigations and program progress, it is also clear that communities are virtually required to develop this mapping and condition assessment as part of a GIS database. For communities that have not begun or are in early stages of GIS development, two years is certainly an inadequate amount of time. The "where available" language relative to sewer mapping (Section 2.3.4.6 (a) (ii)) is itself problematic because it is not clear to what extent the MS4 operator, who may be different than the sanitary sewer system operator, is required to obtain, develop or update sanitary sewer mapping elements that could influence catchment prioritization or wet weather screening obligations through the course of the permit term. *Proposed Modification:* Extend deadlines for storm system mapping requirements to Years 4 or 5 and make all sanitary sewer mapping voluntary or "recommended" rather than required.
3. **Sanitary Sewer Overflows**: The inclusion of sanitary sewer infrastructure management or monitoring (such as reflected in Section 2.3.4.4 – Sanitary Sewer Overflows) as a component of MS4 permit compliance is a redundant requirement since communities that operate sanitary sewer systems are already regulated in this regard under existing wastewater NPDES permits. The manner in which the condition is incorporated into the MS4 permit potentially subjects communities to multiple penalties under separate permit programs in the event of an SSO excursion. *Proposed Modification:* Elimination of this requirement.
4. **Affordability; Integrated Planning (IP):** The water quality protection objectives of the NPDES stormwater and wastewater programs are recognized and supported by the regulated community. However, inclusion of an increasing number of the sanitary sewer management elements into the MS4 permit program suggests that EPA is migrating towards an integrated planning model as presented in your "Integrated Municipal Stormwater and Wastewater Planning Approach Framework." As provided for in the conditions of this draft permit, however, the effect is to import compliance conditions suitable for wastewater management programs while failing to provide permit relief or incentives to the regulated community for employing an integrated management

approach to community water resource assets, including stormwater management infrastructure. The result is the equivalent of "double jeopardy" under dual permits without schedule, affordability or reporting relief. *Proposed Modification*: EPA should integrate an affordability assessment component into the Permit that will allow communities to determine the extent to which they and their constituents can afford to implement Clean Water Act requirements associated with both storm and sanitary sewer permit obligations, including operational and capital costs. If EPA is committed to the IP approach, general permits such as this should be explicitly incorporating elements of the framework on an iterative basis (i.e. every term renewal moving closer to the ideal). Ultimately, a model of risk-based decision making relative to infrastructure investments can recognize greater water quality benefit for the dollars spent without the current regulatory liability associated with multiple permits addressing water quality through different program frameworks.

5. **MCM 5 – Roadway Projects:** The revised Stormwater Management in New Development and Redevelopment MCM presents several challenges. Primary among these is the requirement to retain the first inch of runoff (or treat the equivalent pollutant load) from all impervious areas on site. This requirement will pose a significant challenge as it relates to roadway projects (either new or redeveloped) and will contribute to significant escalation of costs associated with drainage and/or treatment from roadways. *Proposed Modification*: Include an exemption or waiver from this permit condition for roadway projects.
6. **MCM 5 - BMP Sizing:** Language in this permit provision states that "all impervious area" is subject to the capture, infiltration or treatment requirements and specifically that flow volumes [for retention or treatment] are calculated based on "multiplying the area of impervious area on site by one inch." We seek clarification that BMPs on site need not be sized to reduce "calculated" pollutant loads that theoretically are contained in flow from disconnected impervious area on-site that is not otherwise directed to the MS4.
7. **MCM 5 – EPA and DEP Consistency:** With the encouragement of the Massachusetts Department of Environmental Protection (MaDEP) and EPA, many communities have adopted the Massachusetts Stormwater Management Standards either directly or by reference into existing municipal design standards and by-laws. This permit represents a divergence from the MaDEP stormwater standards and complicates compliance for regulated entities. We request EPA and MaDEP develop a consistent set of development standards that ensures that exemptions or waivers provided under federal NPDES permits will ensure similar treatment under MaDEP surface water discharge regulations.
8. **MCM 5 - 1-inch Standard:** EPA has stipulated that the one-inch retention/treatment standard applies to both new and re-development projects. As noted above, this is not consistent with the MaDEP stormwater management standards and creates further confusion relative to application of development standards. See our comment above regarding joint approach.

9. **MCM 5 – Street Design Guidelines:** At Section 2.3.6 (b), the MCM requires development of a report assessing current street design and parking lot guidelines that affect creation of impervious cover to be due within three (3) years of the permit effective date. The intent is to identify opportunities to support low impact design options to be incorporated into local regulation and standards. Under "smartgrowth" principles with comparable environmental impact mitigation interests, the federal government, state and local agencies have promoted a "complete streets" approach to invite multi-modal use of roadways that frequently results in greater impervious area. Given the sometimes contradictory nature of these programs, the regulated community would like assurances that the federal and state government are collaborating to provide adequate guidance that achieves prioritized environmental objectives without potential penalty (either in terms of punitive fines or loss of grant/loan funding, etc.) to the regulated community. *Proposed Modification:* We propose modification of the permit term within this section to provide greater latitude to MS4 owners regarding implementation of recommendations resulting from the report. Where there are competing interests relative to "environmental street design" the MS4 owner should be allowed to make local decisions that are in it's best interest.
10. **MCM 6 – Good Housekeeping Affordability Assumptions:** The Good Housekeeping MCM as proposed will be extremely expensive for most communities to implement. The accompanying permit fact sheet states that while this is the most costly program area for most communities, these are existing functions (e.g. catch basin cleaning and street sweeping) and the costs associated with compliance under the permit will be incremental, or less, such that "these costs are likely not above and beyond what the permittee likely spends on maintenance of permittee owned property currently." The cost estimate provided fails to appreciate that most communities do not currently collect the data, analyze findings, document and report activities in the manner now required under this permit. For communities that contract these services to outside vendors, procurement of new contracts to include documentation required will undoubtedly impact bids by increasing costs significantly. It is expected that data collection from catch basin sump cleaning efforts will almost double the time per catch basin required. It is reasonable to anticipate, therefore that catch basin cleaning costs will double, regardless of whether the activity is out-sourced or done in house. Program affordability, particularly in light of requirements under Water Quality-Based Effluent Limits (WQBEL's), continues to diminish and timeframes within the permit further compromise a community's ability to meet permit requirements under the MCM's as presented in this draft permit. *Proposed Modification:* Again, we request that EPA include an affordability component into the MS4 Permit, comparable to that provided under CSO programs.

Water Quality Based Effluent Limitations (WQBELs)

11. **New Discharger Definition:** Based on the accompanying fact sheet, the definition of "new discharger" within the permit does not include expansion of an MS4's existing system within its jurisdiction. The distinction is important since increased discharges can be covered under the General Permit, but new discharges must be covered under a separate individual permit. Please confirm that the term "adjacent" or "adjacency" within the context of this definition includes any new drainage element, including an outfall, within an MS4's jurisdiction but not otherwise connected to any other component of the MS4. For instance, the town may accept a private road that includes a "self-contained" drainage system (e.g. a series of connected catch basins discharging to a discrete outfall none of which is connected to or "adjacent to" existing drainage infrastructure) without triggering a requirement to cover that segregated outfall through a separate individual permit. Public management of the streets will generally lead to better pollutant management and on that basis the permit should not dis-incentivize acceptance of private roads.
12. **Phosphorus Load Export Rates – Appropriate Use:** Regarding Appendix F and attachments, the Phosphorus Load Export Rates (PLERs) are general and approximate at best. The composite PLERs are good for screening / planning purposes or comparative purposes. They are not accurate for determining hard design of control measures. For example, they can be used to evaluate whether a proposed change in land use is expected to increase or decrease pollutant loads. But to use a PLER to conclude that the loading rate is actually X lbs/yr, or will change from Y lbs/yr to Z lbs/yr with land use or other changes, is not a recommended technical practice. Loading rates are ordinal rather than cardinal, i.e., they can tell you if one is higher than another, but not exactly how much higher one is than another. It appears that EPA assumes that over the entire Commonwealth of Massachusetts, using PLERs will represent the average condition. That may be true, but EPA is requiring that the PLERs be used to make decisions on a much smaller watershed and sub watershed scale, which is inappropriate.
13. **PLERs - Derivation:** It is not clear how the values for PLERs in the EPA documents are derived, however, a literature search shows that there is a large range of values for any given land use. For example, the PLER for medium density residential is given as 0.55 lb/ac/yr in Table 1-1 (App. F Attachment 1), but the range of PLERs for medium density residential in the scientific literature can be an order of magnitude around the value. Please provide further information regarding derivation of the PLERs since these values have significant impact on program implementation for regulated communities.
14. **PLERs – Blanket vs. Site Specific:** PLERs found in older literature generally do not reflect the presence of stormwater BMPs, low impact development (LID) planning, etc., and therefore may overestimate pollutant loads for current land uses. In addition, composite PLERs are a particular concern for communities that have previously instituted stricter local development standards for stormwater management many years ago (in some cases, decades) where assumed PLERs may be much greater than actual

conditions. *Proposed Modification:* Rather than limiting appeals of assumed baseline watershed phosphorus loading to updates of land use information, allow permittees the option to develop their own alternative methodology for determining baseline phosphorus loads and reduction requirements based on more detailed data and/or site specific information.

15. **Phosphorus Contribution of Illicit Discharge:** It is not clear in either the permit or the fact sheet what method was employed to calculate estimated contribution of phosphorus load through illicit discharges, and consequently the load reduction that would be achieved through elimination of IDDE. Since this calculation figures into the total overall phosphorus load reduction allocated to each Charles River community, it is impossible to comment on how equitable this approach can be. Please provide further documentation regarding the method used to complete this calculation.

Other Issues

Non-Stormwater Discharges: At public meetings during which EPA has presented material about the new permit, there has been much discussion about the classification of sump pump discharges as an allowed "non-stormwater discharge." Explicit guidance regarding local permit programs sufficient to meet documentation of determination standards relative to sump pump discharges as a class of allowed discharges is necessary.

Public Education: In most communities responsibility for permit compliance resides with Public Works or similar agency officials. Boards of Selectmen and/or Town Managers are often not involved in program administration outside of procurement or appropriation processes for identified projects. Their lack of understanding and support to implementing agencies has been a continuing challenge. EPA and/or DEP must increase their involvement in educating Town officials about the extent, costs, operational impacts and policy determinations incumbent on program administrators to ensure continued organizational support, particularly for funding strategies.

Sincerely,

Victor D. Del Vecchio,
Chairman

cc: Board of Selectmen

Town of Canton, Massachusetts

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RECEIVED 3/13/15 NWT Postmark 2/26/15

February 26, 2015

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Re: Comments on Draft MS4 General Permit for Massachusetts
Submitted by the Town of Canton, Massachusetts

Dear Mr. Tedder:

On behalf of the Town of Canton, we submit the following comments on the draft "General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts" and Appendices F and H. These comments are being submitted prior to the close of the extended public comment period on February 27, 2015 and reflect the numerous concerns that the Town of Canton has with the proposed permit conditions. Our comments are referenced by permit section where appropriate.

Section 1.10.2: the permit requires that the SWMP (to be submitted in 1 year) shall contain "listing of all interconnected MS4s" but system wide mapping which would include detailed pipe connectivity necessary for interconnection identification is not required until the end of Year 2. The Town of Canton received stormwater flow from numerous MS4 permittees outside of our municipal control. These include the Town of Milton, the Town of Sharon, the Town of Randolph, MDOT, CDR, and the MBTA / Amtrak Commuter Rail. We request clearer language and responsibilities regarding upstream MS4s outside the control of the permittee. Discharges from these upstream entities should not become the responsibility of the Town of Canton.

Section 1.10.3: the extended deadlines for some of the permit elements for new permittees (those not part of the 2003 permit) are warranted and USEPA should reach out to those communities to provide financial and technical assistance in the MS4 permitting process. We have found the USEPA a source of mandates and penalties, rather than assistance on most matters. The annual budgetary impact for minimal compliance may exceed $150,000 per year, excluding capital projects and other increased efforts possibly to be mandated as the permit period evolves (see next comment).

Section 2.0: the permit is based upon meeting "Maximum Extent Practicable" (MEP) goals; we encourage USEPA to provide further definition of MEP as it can be viewed differently by many people and should be defined as clearly as possible. The Town of Canton will continue to perform stormwater management activities to the maximum extent practicable, which accounts for the available technical, manpower, and financial resources; however, the USEPA's

definition of "practicable" may be overly broad and financially unsustainable. The Town of Canton has endure significant cost and delays on projects because of differing definitions / interpretations and conflicting permit conditions between Federal regulators and State regulators. Clarify on terms such as "Maximum Extent Practicable" is imperative.

Section 2.1.2...: the "Increased Discharges" provision appears to require the Town to obtain authorization of increased discharges from MassDEP. It is not clear what this "authorization" will entail. Furthermore, as written, this provision would essentially end any new construction or redevelopment within Cantons impaired watersheds (Category 5 or 4b). Without historic benchmarks, is not possible to measure increased discharge of pollutants from re-developed land in our Town. Please consider modifying this provision to include assumptions that permittee meeting provisions of this permit will be assumed to meet antidegradation provisions through pollutant load reductions across the Town of Canton.

Section 2.3.4.4.b.: the permittee is required to identify all past SSOs over the previous 5-year period within 120 days; the Town of Canton already reports all SSO's to the USEPA and MassDEP in accordance with current MassDEP and USEPA guidelines. We see no value in looking backwards on these previously events already properly documented to your agency.

Section 2.3.4.4.c.: 24-hour oral notice to USEPA of an SSO is required; We recommend that this provision be rewritten and consistent with current MassDEP requirements for SSO reporting as stated here: http://www.mass.gov/eea/agencies/massdep/service/approvals/sanitary-sewer-overflow-bypass-backup-notification.html These procedures for reporting are well established and allow both verbal or email notification. We see little value to creating a new methodology.

Section 2.3.4.5.b.: the physical labeling of all outfalls within 5 years is problematic for the Town of Canton given outfall locations and the potential safety risks of adding a bronze plate to pipes located in inaccessible and unobservable locations. We fail to see the value of such physical labeling.

Section 2.3.4.7.c.iii: the Town will require more than the proposed one year for the assessment and priority ranking of all catchment areas, as catchment delineation requires mapping. We also feel that this provision is inconsistent with mapping requirements, which are required within two years.

Section 2.3.4.7.e: wet weather sampling is required if only one "vulnerability factor" is triggered; the list of vulnerability factors is overly broad and we believe that a majority of our stormwater system contains at least one triggering factor, thus requiring all of the Town's outfalls to be sampled for a wet weather events. We suggest programmatic wet weather sampling be conducted in two priority catchment areas per year, rather than one-time random wet weather sampling across the Town. This approach facilitates incremental and targeted improvements.

Section 2.3.6.: better define redevelopment in the permit definitions. The requirement to have pollutant removal equivalent to that of a bio-filtration system must be removed as a "one size fits all" model for pollutant removal is too restrictive. A "MEP" principle is more appropriate so long as properly defined. For example, the Town's annual roadway reclamation or re-surfacing projects do not fit into the "one inch recharge" scenario as all are typically greater than one acre of disturbance requirement. Meeting the proposed infiltration goals is not practical. We request a better definition of the requirements for roadwork in a new appendix and clarity on lateral projects that do not fit cleanly into the post-construction arena.

Section 2.3.6.d.iii: The requirement to inventory all Town owned properties for possible recharge areas is not practical. At most, the Town can select five priority sites to evaluate which will result in a better assessment of viable sites.

Section 2.3.7.b: The Town suggests that one, single comprehensive SWPPP be allowed for all municipal properties and operations. Requiring individual SWPPPs for each municipal site is repetitive and overly burdensome.

Section 5 (and fact sheet): the discussion of "Non-Traditional" MS4's is very limited and does not provide sufficient information for Canton to determine which federal or state facilities within or adjacent to the Town may be "Non-Traditional" MS4s.

Appendix H-section I.2: the element to demonstrate that an outfall having no nitrogen would require at least 30 discrete sampling events over a 2-3 year period; such an effort seems beyond practical efforts and should be removed from the appendix.

Very Truly Yours,

James Donovan, P.E.
Town Engineer
Town of Canton, Massachusetts

cc: Thelma Murphy, USEPA

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CAPE COD
COMMISSION

February 27, 2015

Newton Tedder
Head Permit Writer
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Re: Draft MS4 permit

Dear Mr. Tedder:

Thank you for the opportunity to provide comment on the pending Draft MS4 permit and its requirements. As Director of the Cape Cod Commission, the regional planning agency tasked with updating the Section 208 Areawide Water Quality Management Plan for Cape Cod (the "208 Plan Update", or "Plan"), I have some suggestions which may assist in our shared goal of improved water quality on Cape Cod.

The Section 208 Areawide Water Quality Management Plan for Cape Cod

The 208 Plan Update is primarily focused on non-point sources of nitrogen that have caused eutrophication of many Cape Cod marine embayments. Because stormwater runoff is one of three "controllable" nitrogen sources to the impaired watersheds on Cape Cod, the Plan promotes stormwater management opportunities to achieve TMDL compliance. The Plan recommends that towns receive a "nitrogen-credit" as a result of the efforts that they undertake to manage stormwater including compliance with the Small MS4 general permit. The nitrogen credit can be used to off-set the extent of other structural approaches to reduce watershed nitrogen loads. This credit can be applied via a Massachusetts Department of Environmental Protection "Watershed Permit" recently authorized by changes to Massachusetts General Laws, Chapter 21. The Watershed Permit will allow credits for structural and non-structural technologies, so long as monitoring confirms nitrogen reductions in the watershed. We suggest that stormwater management efforts aimed at achieving MS4 standards may earn stormwater reduction credits through the Watershed Permit, authorizing reduction in nitrogen loading. This emerging regulatory approach will allow for more comprehensive planning and enforcement to achieve water quality goals on Cape Cod.

Nitrogen Reduction in Watersheds With a Final TMDL

The draft general permit does not require nitrogen reductions from stormwater waste load allocations from MS4s. Instead of requiring reduction to current loads, the draft permit only ensures that current nitrogen loads from MS4 stormwater runoff does not increase. Because stormwater is specifically identified in Cape Cod Nitrogen TMDLs as a source of nitrogen to impaired bodies, the draft permit should require reducing current nitrogen loads from MS4s if discharges occur to TMDL water bodies.

Nitrogen Reduction in Watersheds Without a Final TMDL

The draft general permit proposes to require compliance when a TMDL has been adopted by the EPA. Many impaired watersheds without a final TMDL have been identified as nitrogen sensitive through Massachusetts Estuaries Project (MEP) Technical Reports. We recommend that the general permit recognize and incorporate the nitrogen thresholds from MEP Technical Reports. Stormwater management efforts in these watersheds should also be able to obtain reduction credits towards the Watershed Permit.

Regional Support of Municipal Compliance

Most Cape municipalities participated in several regional stormwater project initiatives to partially achieve compliance with the 2003 Small MS4 permit. I anticipate similar regional opportunities to assist towns in the formulation and dissemination of materials to support the new permit's required public education and outreach to the required audiences.

The Commission can assist the towns by developing model bylaws, regulations, design guidelines, and site plan review requirements consistent with the new permit requirements. These models might include procedures for proper sediment and erosion control management practices, LID principles and technologies, and green infrastructure options for new development and redevelopment.

In the area of illicit discharge detection and catchment rankings, the Cape Cod Commission conducted a regional flyover of the Cape, which could assist with Capewide mapping of catchment areas; this could assist with tracking and screening purposes for the required IDDE permit actions.

I note that AmeriCorps Cape Cod, in its 16th year of providing environmental and disaster preparedness services to Cape Cod, may be in a position to assist communities with implementing the MS4 permit. The grant which supports AmeriCorps Cape Cod requires that the program support community environmental management goals. There is potential for AmeriCorps members assisting with stormwater education and monitoring activities, possibly also mobilizing volunteers to assist with these tasks.

MassDOT NPDES Stormwater Management

On a related note, EPA is expected to release a separate Small MS4 Permit for MassDOT. According to MassDOT's most recent MS4 Annual Permit Report (NPDES Phase II Small MS4 General Permit Annual Report – Permit Year 11), MassDOT has not yet considered its stormwater contributions to nitrogen-impaired embayments on Cape Cod. Review by MassDOT has focused primarily on phosphorous and pathogen-impaired waters elsewhere in the state and has not included review of any waters on Cape Cod with nitrogen impairments and/or nitrogen TMDLs.

We respectfully suggest that the MassDOT MS4 Draft Permit should take into consideration the nature and extent of nitrogen sensitivity in the Cape Cod region. We understand that MassDOT is working with EPA to develop a methodology for assessing its stormwater contributions to water bodies with a nitrogen TMDL. The Commission is presently preparing the Cape Cod Regional Transportation Plan in which water resources staff is developing specific guidance to highlight roadways where stormwater management and treatment is necessary due to nutrient sensitive marine and fresh water resources, including drinking water. We respectfully request that EPA include Commission technical staff directly in these discussions in order to ensure full coordination of EPA permit requirements and the 208 Plan Update.

Thank you for the opportunity to provide comment on this important issue.

Sincerely,

Paul Niedzwiecki
Executive Director
Cape Cod Commission

cc: Jo Ann Muramoto, Barnstable County Coastal Resources Committee, and APCC
Kevin M. Walsh, Director, Environmental Services, MassDOT

CONNECTICUT FUND FOR THE ENVIRONMENT / SAVE THE SOUND
AND
SAVE THE BAY

COMMENTS ON THE MASSACHUSETTS GENERAL PERMIT FOR DISCHARGE OF STORMWATER FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS

February 27, 2015

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Connecticut Fund for the Environment ("CFE") is a non-profit environmental organization with over 5,500 members in Connecticut and New York. The mission of CFE, and its bi-state program Save the Sound, is to protect and improve the land, air and water of Connecticut and Long Island Sound. We use legal and scientific expertise and bring people together to achieve results that benefit our environment for current and future generations.

Save The Bay represents thousands of members and supporters committed to preserving, restoring, and protecting the ecological integrity and value of Narragansett Bay and coastal Rhode Island. Our mission is to protect and improve Narragansett Bay and to create a swimmable, fishable, healthy Narragansett Bay accessible to everyone.

We are pleased to submit the following comments on Environment Protection Agency ("EPA") Region 1's, Draft General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts, Permit Nos. MAR041000, MAR042000, MAR043000 ("Draft MS4 Permits"). These permits will authorize discharges from Small MS4s regulated under section 402(p) of the Clean Water Act and relevant federal and state regulations.

Summary of Recommended Permit Changes

We ask that EPA Region 1 strengthen the permit to include, inter alia, (1) clear green infrastructure retrofit standards and requisite goals for implementation; (2) a specified maximum time from the date of discovery, by which all illicit discharges and sanitary sewer overflows ("SSOs") must be eliminated; (3) a more extensive list of low impact development ("LID") measures, as specific as possible, that permittees must incorporate into their local codes, and; (4) more robust public participation in the development of Stormwater Management Plans ("SWMPs") including an extended comment period and the opportunity for a public hearing.

Stormwater Impacts to the Waters of Long Island Sound and Narragansett Bay

Stormwater runoff is one of the most serious problems facing water quality in New England today. Every time it rains, water runs off impervious surfaces such as roofs, driveways, roads, and parking lots, collecting pollutants. This polluted runoff flows through storm sewers into streams, lakes, and tributaries, many of which lead into downstream states, and eventually into Long Island Sound or Narragansett Bay, degrading water quality in each. Stormwater has been identified by EPA as "contribut[ing] to poor surface water quality, including altered flow regime (shoreline erosion and stream channel alteration), the presence of pollutants, and the destruction of healthy populations of fish and other aquatic life." [1] Stormwater pollution leads to waterbodies that cannot adequately sustain fish and other marine life, closed beaches and shellfish beds, and an unhealthy Long Island Sound.

As EPA is aware, much of the tidal and coastal waters of Long Island, Long Island Sound and Narragansett Bay are identified on the relevant state Section 303(d) list as waters impaired by nitrogen or pathogens. Moreover, all of Long Island Sound is subject to a nitrogen TMDL for dissolved oxygen. Finally, most of the Connecticut coastal and tidal reaches are the subject of bacterial TMDLs. In Long Island Sound, nearly 70% of our fresh water inputs are delivered by the Connecticut River, the Thames River and the Farmington River. These rivers have substantial watersheds located in Massachusetts, the pollution of which impacts our rivers downstream and the Long Island Sound receiving waters.

Over 60% of the Narragansett Bay watershed is in the state of Massachusetts, and the largest contributors of fresh water to the Bay are the Taunton and Blackstone Rivers. The upper Bay watersheds of the Palmer and Kickemuit Rivers are subject to a phosphorus TMDL, and other waters in the Blackstone River and Mount Hope Bay are subject to a TMDL for pathogens. These waters are also impaired by nitrogen. Following a devastating fish kill in the Bay in 2003, the Rhode Island General Assembly passed legislation that set a goal of reducing nitrogen from Upper Narragansett Bay wastewater treatment plants by 50% in 10 years. We are close to achieving that goal, but reductions are still needed in riverine inputs from the upper watershed.

In the Taunton watershed specifically, recently-released draft NPDES permits for wastewater treatment plants in Taunton, Bridgewater and Brockton state that there is a 51% reduction in nitrogen needed to meet water quality standards in Mount Hope Bay. In the permit fact sheet, EPA states that a reduction of 20% from non-point sources of pollution is a reasonably aggressive target, leaving the remaining reduction to come from municipal wastewater treatment

upgrades. The needed reduction in non-point source load, according to EPA calculations, would be 286 lbs/day from the Taunton watershed. Without a program to retrofit existing directly connected impervious areas, it will be unlikely that this target can be met. In addition, any clearly identified illicit discharges or sanitary sewer overflows should be eliminated in a timely matter, on a schedule set forth in the permit.

Implementing a strong General MS4 Permit is a vital step to protecting these waters. The current Draft MS4 Permit is should be strengthened to protect of Massachusetts' and downstream states' valuable natural resources. We offer the following comments to improve the Draft MS4 Permit and ensure that it fulfills the requirements of both state and federal laws and regulations.

Specific Recommendations

1. Develop and require clear green infrastructure retrofit standards focused on deploying proven "green infrastructure" retrofit technologies to capture, infiltrate, and treat stormwater in urbanized areas that would otherwise discharge to waters impaired for nutrients and bacteria.

CFE/Save the Sound has retained nationally known stormwater expert, Richard Claytor, PE (President, Horsley Witten Group) to provide expert testimony to the ongoing Connecticut MS4 General Permit proceeding. While his written comments are focused on the Connecticut MS4 permit, many of his comments are equally applicable to the Massachusetts Draft MS4 Permits. A relevant portion of his testimony, quoted below, highlights the need for specific green infrastructure retrofit applications to existing impervious surfaces, in order to improve water quality.

> It is now widely accepted that in order to ultimately restore water quality in water bodies for which nitrogen or phosphorus is the stormwater pollutant of concern, runoff from existing development that was built prior to modern stormwater control techniques must be effectively managed through a stormwater retrofitting program. In order for these programs to be effective and enforceable, the methods for retrofitting must be defined, the amount of existing development requiring management must be defined, and the timeframe for implementation must be specified. Examples of jurisdictions where this is being required include:
>
> - Maryland's MS4 permit program requires municipalities to implement a retrofit program for 20% of their impervious cover over the permit term.
> - Vermont's MS4 General Permit requires the development of flow restoration plans and retrofitting for 12 watersheds where TMDLs have been approved to manage uncontrolled stormwater runoff.
> - Long Creek in southern Maine is in its fifth year of an aggressive retrofit program in an attempt to meet water quality standards by 2020. Long Creek is being restored through a cooperative agreement through its Watershed Management District, and is now being viewed as a model for other communities.

Mr. Claytor offers the following general comments regarding the value of green infrastructure retrofits in removing bacterial (pathogen) pollutants:

> Waters impaired for which Bacteria is a stormwater pollutant of concern will also benefit from a concentrated stormwater retrofit program for existing development, but the important of source controls are doubly important. Bacteria are difficult to reduce or remove from stormwater using most stormwater treatment practices at the

high levels necessary to meet water quality standards. Only infiltration practices offer consistently robust removal capabilities for bacteria.

The Draft MS4 General Permit appropriately distinguishes between requirements for MS4s that discharge into non-impaired waters versus water quality impaired waters, both with and without TMDLs and directly references currently-in-place TMDLs. Section 2.1.1 of the permit also requires that "the permittee shall reduce the discharge of pollutants such that the discharge from the MS4 do not cause or contribute to an exceedance of water quality standards."

However, we believe that to be meaningful or enforceable, EPA must be clearer as to how a permittee shall meet the requirement of Section 2.1.1. Where an MS4 discharges a pollutant to a waterbody impaired for that pollutant, it has contributed to the impairment. Therefore the only reasonable interpretation is that the MS4 must be required to discharge "no net pollutants"—meaning that they must account for any of the pollutant that they cannot eliminate before the end of the pipe and provide means to eliminate the same pollutant in other ways.

Consistent with Mr. Claytor's expert opinion above and the requirement that the permittee not cause or contribute to the exceedance or water quality standards, CFE/Save the Sound and Save the Bay request that permittees be required to develop, fund, and implement a green infrastructure retrofitting program to meet TMDL requirements within a specified timeframe and to use control practices documented to reduce or eliminate the pollutant of concern. Like Maryland, the permit must identify the amount of impervious surfaces that must be retrofitted and the standards to which they must be retrofitted.

The Draft MS4 General Permit does not require either a clear impervious surface treatment mandate or a clear timeframe to achieve this goal. We request that this permit include such a requirement for urbanized localities containing high impervious surface coverage draining into water bodies associated with either an impairment for or TMDL associated with nutrients or bacteria. We recommend that the permit indicate an initial standard at least ten percent (half as stringent as the Maryland permit's requirement). Therefore we recommend that appropriate and up-to-date stormwater retrofit design standards be identified and that the permit require that at least ten percent of the impervious surfaces within the applicable permittee's location be retrofitted to such standards within the five year permit cycle.

2. Specify a maximum time from the date of discovery, by which all illicit discharges and SSOs must be eliminated, require ongoing "rolling" outfall and interconnection inspections, regularly test known dry weather flows that do not trigger elimination procedures, and mandate the development of a mechanism for acting upon citizen reports.

In general, we are pleased by the IDDE control measures included in the MS4 General Permit, specifically by the outfall and catchment sampling and investigation procedures, but we offer comment on specific areas where these programs could be strengthened, especially the inclusion of a maximum time from the date of discovery, by which all illicit discharges and SSOs must be eliminated.

The Draft MS4 Permit makes it clear that permittees shall diligently pursue elimination of *all* illicit discharges. (Section 2.3.4.2.) The permits requires an inventory of all outfalls and interconnections within one year of the effective date of the permit. (Section 2.3.4.5.) It requires system mapping be developed within two years of the effective date of the permit. (Section 2.3.4.6.) And it requires that permittees complete dry weather screening and sampling of every MS4 outfall and interconnection no later than three years from the effective date of the permit.

(Section 2.3.4.8.) We believe that this is a reasonable procedure and timeframe for inspecting outfalls and interconnections the first time through the process. We ask that EPA include some discussion of ongoing outfall and interconnection monitoring, such as requiring that one third of the outfalls and interconnections be similarly investigated every year under the program. This sort of "rolling" investigatory procedure would be more likely to discover illicit discharges by completing two passes through the entire MS4 every six years rather than a program that completes a single pass during each five-year permit cycle.

The Draft MS4 Permit states that the permittee shall eliminate illicit discharges "as expeditiously as possible," and then provides that any such discharge that cannot be eliminated within 60 days requires "an expeditious schedule." (Section 2.3.4.2.) Similarly, "upon detection of an SSO, the permittee shall eliminate it as expeditiously as possible." (Section 2.3.4.4.) While the intent is clear, this language allows significant uncertainty and no certain end-date. Many illicit discharges probably will not be eliminated in the first 60 days which means many will be subject to unique schedules. We would rather have a more realistic time frame with more consistency and enforceability. We recommend a set maximum of 180 days from the date of discovery to eliminate either an illicit discharge or an SSO. This provides more time to the permittee, but also an enforceable, consistent end-date.

This permit should clarify the procedures for regular testing of known dry weather flows that do not trigger elimination procedures when discovered under Section 2.3.4.3. Since the Draft MS4 Permit allows certain discharges of non-stormwater to the MS4, dry weather flows cannot be assumed to be prohibited. However, when dry weather flows are discovered and tests do not indicate that the discharge requires immediate action, regular testing ought to be required to ensure that illicit discharges are not occurring. We recommend this testing occur semi-annually.

This permit should also require that permittees implement a mechanism for acting on citizen reports. Citizens that use waterways frequently – such as CFE/Save the Sound members who engage in numerous water-related activities, including fishing, sailing, rowing, sightseeing, hiking, and wildlife watching – are in a position to identify and report illicit or suspicious discharges. Currently there is no mandate for the permittee to investigate or respond to these reports. Each permittee should be required to respond to citizen reports through investigation and determinations as to whether the reported discharge is illicit (and if so, enforcement). We suggest the following language be added to the permit:

> "The permittee shall maintain a website with clear instructions for the public describing how citizens can submit an overflow report. The website shall provide an email address and/or a phone number for submissions. The permittee shall affirmatively investigate and eliminate any dry weather flow reported to it by any citizen or organization, provided that such report incorporates at least a time and location of an observed overflow. The permittee shall commence inspection of such a reported outfall or manhole within 5 business days of receiving such a report, and incorporate those reported outfalls into its IDDE program subject to all provisions of Section 2.3.4. All citizen reports and the responses to those reports shall be included in the Annual Report."

3. Include a more extensive list of low impact development ("LID") and runoff reduction measures that permittees must incorporate into their local building codes or ordinances, and be as specific as possible about what is required.

Section 2.3.6 of the Draft MS4 Permit contains requirements for stormwater management in new development and redevelopment. This section lays out the skeleton of a good LID program with

the goal of reducing the amount of runoff from developed areas, and requires retaining or filtering the first inch of rainfall. However, we again recommend that the permit be more specific in what exactly is required and leave less up to the discretion of the permittee. In addition, we suggest some specific measures that should be included to strengthen the program.

One of the primary tools of a successful LID program is the minimization of impervious surfaces. Section 2.3.6 (b) of the draft permit requires permittees to develop a report to assess the impact of existing street design and parking lots and implementation of the report's recommendations. But the permit does not provide specific guidelines, guidance, or mandates to ensure that permittees actually reduce runoff. It leaves too much up to the discretion of the permittee. It also leaves out other impervious surfaces, such as rooftops, sidewalks, recreational surfaces such as basketball or tennis courts, and paved courtyards or forums to name a few. Elsewhere in the section, it mentions green roofs, rain garden, and pervious pavement but contains no real, nor enforceable mandate that permittees change local codes and ordinances to affirmatively require these.

The West Virginia (WV) Small MS4 Permit offers a prime example of an approach that goes beyond Massachusetts's Draft MS4 Permit to ensure that permittees develop a true LID program. The West Virginia model combines "watershed protection elements," such as:

- Requirements to minimize the creation of impervious cover from parking lots, paved road, and rooftops;
- Provisions to preserve, protect, create, and restore ecologically sensitive areas that provide water quality benefits and serve critical watershed functions;
- Implementation of stormwater management practices that prevent or reduce thermal impacts to streams, including requiring vegetated buffers along waterways, and disconnecting discharges to surface waters from impervious surfaces such as parking lots;
- Measures to avoid or prevent hydromodification of streams and other water bodies caused by development, including roads, highways, and bridges;
- Implementation of standards to protect trees and other vegetation with important evapotranspirative qualities; and
- Implementation of policies to protect native soils, prevent topsoil stripping, and prevent compaction of soils.

The WV model requires permittees to incorporate the above provisions, among others into their local ordinances within specified timeframes. Furthermore, the WV permit requires permittees to incorporate "site and neighborhood design measures" to be implemented in tandem with the watershed protection elements identified above.

Finally, it is not enough to simply require permittees to establish a local code that "requires or allows the use of runoff reduction and LID practices." Instead, the final permit must provide specific language that identifies what runoff reduction and LID practices must be required.[ii] The permit and resulting building codes should tie certain common development practices to required runoff retention or infiltration techniques.

4. Include in the Draft MS4 Permit the Full Opportunity for the Public to Provide Comment and to Request a Public Hearing on NOIs and SWMPs.

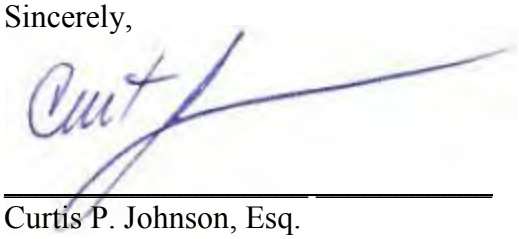
EPA must provide a full opportunity for public to submit comments and request hearings on NOIs and SWMPs before permit coverage is granted. The Draft MS4 Permit does contemplate an opportunity for the public to comment on submitted material. However, the time allowed is

severely insufficient. Although most permittees must submit registration materials 90 days before the effective date of permit, the public is given an unreasonably short period of a minimum of 30 days from submission in which to review and comment to DEEP upon all of these submissions. In light of the length of time that DEEP has a permittees' registration materials, citizens can and should be provided more than 30 days to provide full and thoughtful comments.

While the Draft MS4 Permit allows for limited public comment, it fully fails to provide the public with a hearing on registrations and SWMPs, or any other forum for response to those comments, as is required under the Clean Water Act's public participation provisions.[iii] DEEP should include in an opportunity for public hearings on registration materials before permit coverage is granted.

Thank you for this opportunity to comment on these important matters. We look forward to engaging in a discussion.

Sincerely,



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[i] EPA Website, EPA New England Topics, *Stormwater*, http://www.epa.gov/region1/topics/water/stormwater.html.
[ii] As another example, we again refer to Maryland's MS4 permit program that requires municipalities implement a retrofit program for 20% of their impervious cover over the permit term.
[iii] *See* 33 U.S.C. §§ 1251(e), 1342(b)(3).

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December 17, 2014

Mr. Newton Tedder
US EPA Region 1
5 Post Office Square – Suite 100-Mail Code OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

At the December 15, 2014 Board of Selectmen meeting, it was unanimously voted to endorse the letter submitted to you by the Chelmsford Department of Public Works, dated December 9, 2014, which included comments on the 2014 Draft General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts.

We encourage the EPA to consider the points made in that letter. As noted, the Town of Chelmsford would be unable to meet the new requirements as outlined, while still providing necessary local services, without significantly increasing the allocation of resources, which is not practical or possible at this time. We appreciate the intent of the new regulations; however, we ask that implementation rules be modified to allow a more reasonable plan for achieving the desired results.

Thank you in advance for your attention to this matter.

Sincerely,

Pat Wojtas

Pat Wojtas, Chairman
Chelmsford Board of Selectmen

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DEPARTMENT OF PUBLIC WORKS

9 Alpha Road
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Gary J. Persichetti, CFM
Director

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December 9, 2014

Mr. Newton Tedder
US EPA Region 1
5 Post Office Square – Suite 100-Mail Code OEP06-4
Boston, MA 02109-3912

RE: Town of Chelmsford, MA Comments on the 2014 Draft General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts

Dear Mr. Tedder:

The Town of Chelmsford appreciates the opportunity to review and comment on the 2014 Draft General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts.

The Town of Chelmsford would like to express gratitude to the EPA for taking the time to clarify many of the issues raised in the first draft permit in 2010. The revisions have made it easier to identify which municipalities have discharges to water quality limited water bodies. The Town also appreciates that the new permit allows up to 90 days to submit the NOI after the effective date of the permit.

On a different note, it was expected that the requirements of the 2010 permit would be reduced for the 2014 permit. This was not the case. The funds required to meet the permit, and to continue the maintenance required greatly exceed The Town's resources. More flexibility should be allowed to each town to use their existing resources to achieve the permit requirements to the maximum extent practicable.

In this letter, we have outlined our major concerns and offer suggestions that we feel could make this permit more manageable and effective at removing illicit discharges.

Reporting requirements

- The level of reporting required in the 2014 Draft permit is time consuming and does not benefit the Town of Chelmsford. The new permit will not only continue to require the current 2003 permit reporting and record keeping standards but in addition requires the preparation of extensive supporting documentation that will need to be included in annual reports to demonstrate permit compliance. These additional requirements will burden our existing staff. The resulting annual reports are expected to be more than ten times the size of current annual reports. Consider reducing or eliminating the need to include extensive supporting documents with annual reports. A summary should be adequate for municipalities to confirm compliance within each report. Additional required data and information does not add value.
- Provide guidance documents to help municipalities fully understand and meet the increased reporting and record keeping requirements of the new permit and to better understand EPA's permit expectations. Documents that would provide better guidance and direction for municipalities include: a summary table of major changes between the current and draft permits (this was provided following the previous draft permit), a simplified summary of permit requirements (this was also provided following the previous draft permit), permit checklists, standardize reporting and record keeping templates, examples of completed forms and reports to show level of detail expected and FAQ sheets.

Impervious Area

- The requirements to measure and monitor changes in impervious area provides little benefit to the municipality. Most of the development in Chelmsford is redevelopment. The Massachusetts DEP Stormwater Standards are being followed in the design of these projects. This results in significantly lower rates of change in impervious area and directly connected impervious area. This exercise will be burdensome and will take staff away from more valuable functions. The EPA should consider utilizing satellite imagery, and estimating the amount of impervious area every ten years and track it on their own. Municipalities should not be charged with gathering data that does not provide them with useful information.

Stormwater Standards

- We are concerned about the requirement to infiltrate the first 1-inch of runoff from impervious surfaces on new and redevelopment sites. Compliance is difficult to achieve. Our current stormwater regulations (required in the 2003 Permit) references the MA DEP Stormwater Standards. Many developments, including municipal improvements, have been designed, reviewed and built while complying with the Stormwater Standards. For consistency, the new MS4 permit should follow the DEP Stormwater Standards.
- The permit is unclear about whether or not roadway reconstruction projects greater than one acre would be required to provide storage and/or treatment for the first inch of stormwater runoff. This needs clarification.

- Consider municipal roadway projects. In most cases, municipalities are disturbing less than one acre of roadway per project, however there are many projects going on concurrently. Please clarify if roadway projects less than one acre are to be considered part of a jurisdiction's "common plan" for maintenance. Clarify the types of projects that trigger this requirement. Consider making linear projects exempt.

Outfall Inventory

- We are required to do an outfall inventory and physically visit each outfall within one year of the permit. This timeline is not reasonable. Chelmsford has over 600 outfalls. It will take at least 2-3 years to visit all the outfalls. Consideration should be given to allow 3 years for the completion of the inventory.

Mapping

- The permit requires a full map of our drain system to be completed in two years. It is our opinion that we will need at least five years to fully map our system given that many structures will need to be located or uncovered. Consideration should be given to allow five years for the full map of the drain system to be completed.
- For similar reasons, the full map of the sanitary sewer system will also take five years to be completed. Some of the recommended elements are unrealistic. We gather our information from as-built plans. In many cases, these do not have seasonal high water table elevations. Consideration should be given to revising this requirement to be completed in five years.

Catchment mapping

- Catchment mapping is time consuming. The EPA has contradicted itself by saying that municipalities may use the MASS GIS catchments but also need to map their own catchments to outfalls. The MASS GIS catchments are approximate areas, and do not take into consideration new development and infrastructure. The only way to accurately map catchments is by hand. To do so, the municipality must already have their entire drainage system mapped. Mapping the entire drainage system was not a requirement of the 2003 Permit. It will take one full-time staff member months to map the catchments after the drainage system is completed. This task will take time away from other tasks. Before Municipalities spend countless hours and funds on mapping catchments, consider including this as a "recommended element" and removing it from being a "required" element. Allow each municipality to determine the best method for isolating catchments to potential illicit discharges.
- Mapping the catchments will be inaccurate until the field inspections are completed. If the goal is to eliminate illicit discharges, consider revising the permit to allow municipalities to map the catchments as they are being inspected. It will yield a more accurate catchment map, which in turn, will provide more accurate ranking of catchments.
- Catchment mapping is not necessary in all circumstances. If the outfall inspections yield a clean result, the outfall should be exempt from the catchment mapping requirement. Consider revising the permit to require catchment mapping only for High Priority outfalls.

Illicit Discharge Program

- Written IDDE Program – Section 2.3.4.7.c.ii. - We disagree that *Catchments that were once serviced by septic systems, but have been converted to sewer connections may have a high illicit discharge potential.* Once properties are properly connected to sewer, the illicit discharges are eliminated. For example, properties that once discharged their laundry wash water to the back yard are now connecting them to sewer. This includes our entire town, where the sewers are all less than 30 years old. Consider eliminating this comment.

Water Quality Sampling

- The System Vulnerability Factors for Wet Weather Sampling encompass most, if not all, of our outfalls (over 600). Please consider revising the Vulnerability Factors to have less factors, or different levels of factors. For instance, group them by sensitivity.
  - Level 1 factors = Catchments with at least 1 of the factors
  - Level 2 factors = Catchments with at least 2 of the factors
  - And so on…

Good Housekeeping

- The permit requirements will more than double our time spent on Catch Basin cleaning and street sweeping.
- The requirement to clean all catch basins when they are 50 percent full is difficult to quantify and difficult to execute. Town departments responsible for catch basin cleaning strive to maximize efficiency in light of local budgets and staff shortages. For the roadways, it is most efficient to clean the catch basins by following a path along a road. The cost to clean only a select few in spots all over town will be more than twice that of conventional cleaning methods. Cleaning catch basins when they become 50 percent full is not an efficient use of staff and funds, and cannot be implemented in a practical way. Consider allowing more flexibility in this requirement.
- The requirement to maintain a record and report on the volume of material removed from catch basins does not benefit the municipalities. This not only drives up the cost to clean catch basins, it also creates more paperwork. It is difficult to execute and not an effective use of staff time. Consideration should be given to eliminate this requirement.
- Appendix H – Requiring municipalities to increase street sweeping to twice a year will require additional resources and staff.
  - It is our concern that some municipalities may eliminate street trees in an effort to reduce the amount of leaves. In addition, proposals for planting street trees may be denied. Trees are important to the environment.
  - Contrary to what the Permit states, the street sweepers will not pick up all of the leaves on the side of the road in the fall. Sweeping in the fall will be costly and it is not an effective method for removing the leaves.
  - Consideration should be given to eliminating this requirement or offering a more effective and economical method of leaf removal.

- The Permit requires quarterly inspection of facilities under a Stormwater Pollution Prevention Plan (SWPPP). This requirement is inefficient and wasteful. Chelmsford has 30 buildings. Quarterly inspections could require a full-time staff member. The Town recommends one annual inspection of facilities.

General Comments

- EPA and MassDEP regulations need to be more aligned. We recommend that MassDEP co-issue the permit with EPA.
- We recommend that EPA reach out to other Town officials to better educate them on the interdepartmental coordination required under the new permit.

Please understand that Chelmsford cares about the quality of water, however, as outlined in this letter, we are limited by our budget. We understand the need for some of the permit requirements, but we are concerned that the cost to implement the new permit will far exceed our capabilities. In particular, the costs associated with water quality sampling, catchment investigations, mapping, good housekeeping, and reporting may be extensive. Please consider revising the permit to make it possible for municipalities to execute while maintaining the core principles of the permit.

Sincerely,

Christina Papadopoulos, E.I.T.
Assistant Town Engineer

Stephen E. Jahnle
Town Engineer

CC: Paul Cohen, Chelmsford Town Manager
Gary Persichetti, Chelmsford Director of Public Works

CITY OF CHICOPEE

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Jeffrey A. Neece
Superintendent of Public Works

Steven J. Frederick, P.E.
City Engineer

December 26, 2014

Mr. Newton Tedder
US EPA Region 1
Suite 100 Code OEPo6-4
5 Post Office Square,
Boston, MA 02109-3912

Re: Massachusetts Draft EPA Storm Phase 2 Regulations
Dear Mr. Tedder,
The City of Chicopee Department of Public Works is writing to provide our concerns regarding the proposed new Storm water Phase Two regulations. The following is a list of the most troubling portions of the proposed new Storm water Phase Two regulations.

1) Pavement maintenance work triggers retaining first inch of storm water or storm water treatment. Under the new regulations, when one disturbs more than one acre in area or phased construction totaling one acre (translates to only ¼ mile of 30' wide pavement) or more which will include road reclamation projects, the new regulations require that the first inch of storm water be retained or all the storm water must be treated. This essentially means one now not only has to resurface the road one has to completely redesign and re-construct the entire storm water collection system to satisfy this requirement. This will cripple road maintenance budgets. Accordingly, cities and towns will be forced to purchase/take extra land by eminent domain for storm water storage or pay for the expense of storm water treatment systems on simple routine maintenance projects. This is a huge expense in downtown business districts and even in rural areas with old roads and narrow town-owned rights-of-way.

   As everyone is aware, the funds available for pavement maintenance are less than half of what are needed to simply preserve the condition of the current infrastructure. This means that Massachusetts roads are falling apart faster than they can be repaired. The above added costs will compound the problem and create more failing roads and more erosion. Municipalities will be forced

to use the wrong pavement rehabilitation technique at the wrong time which will squander the available limited pavement maintenance resources. There must be an exemption for pavement maintenance projects. The above regulations should not be applied to maintenance projects. If a new road is being constructed or a lane is being added, these stormwater management upgrades may be able to be accommodated, depending on surrounding conditions like available right-of-way width and/or proximity of buildings to the right-of-way. Simple pavement surface maintenance projects or minor improvements should not trigger rebuilding the world.

2) Chloride Reduction. Most municipalities already are trying to limit salt/chloride usage. The cost of road salt and deicers is a large portion of the winter storm budgets. Any responsible DPW director or winter road program manager is looking to reduce the costs in all areas that are practical. There is no objection to installing computers on the truck spreaders and training the operators in best management practices nor do we object to the EPA providing Best Management Practices or guidance suggestions; however, reducing salt usage below what is practical with the current technology is irresponsible and to do this exposes the motorists to hazardous conditions and the municipalities to legal action. Yes, usage of chlorides could all stop tomorrow, but at what cost to human life. If the EPA will protect an endangered salamander, it should be equally as concerned with the loss of human life. The chloride reduction regulations should be limited to recommending that municipalities follow the latest accepted Best Management Practices.

3) Requirement for tracking impervious area. The EPA in its permit guidance documents implicitly admits that the simple presence of impervious areas is not a direct correlation to storm water quality. Sites with paved areas can store/detain or treat storm water so that the presence of paved areas on storm water quality is mitigated. Similarly, the MaDEP considers roof water runoff "clean" and can be infiltrated into the ground without pretreatment. Tracking the amount of impervious areas does not have a direct correlation to water quality; therefore the MS4's should not have to expend resources tracking changes in impervious area. As long as new development is in compliance with Best Management Practices, control of development should be under the jurisdiction and control of local planning authorities. Any attempt at limiting /restricting development through the veiled attempt at controlling impervious area is outside the purview of the Clean Water Act.

4) Cost of implementation. An article published in Construction Outlook a publication of UCANE recently published EPA cost estimates of compliance between $70,000 and $829,000 per year depending on population and size. This is very troubling because they have been known to significantly under-estimate the actual cost. At the meeting, Newton Tedder from the EPA commented that he believes most cities and towns will have to pass a storm water utility in order to pay for the costs to comply with the new Storm Phase Two regulations. Obviously, the EPA is admitting that the new regulations

are an undue burden and so costly that the municipalities cannot afford them with existing revenues. It seems unlikely that the intent of Congress in passing the Clean Water Act was to authorize the EPA to mandate additional taxes and create its own hidden tax structure to accomplish its charge of cleaning the water. The EPA was charged with cleaning the water and operating within its budget as set by Congress. The States and local cities and towns must do the same. It is unconscionable at a time when state and local governments are undergoing staff and budget cuts to capriciously raise the cost of compliance with the new regulations. The local governments will be happy to work with the EPA to achieve progress on storm water. However, the heavy handed, adversarial and punishing regulations as proposed will not encourage cooperation from state and municipal partners.

The Congress of the United States should act to restrain the EPA from imposing uncontrolled and expensive tax burdens on the subjects it regulates. Taking reasonable actions to improve water quality is one thing, but being mandated to accomplish everything overnight is unfathomable. All levels of government must be cognizant of costs. The regulations, reporting requirements and the overall implementation costs must be reduced to a sustainable and rational level. The taxpayers and the country cannot be bankrupted by an attempt to reach unrealistic goals set by a bloated out of touch federal bureaucracy.

5) Signage at outfalls. Installation of signage at outfalls provides no tangible benefit to water quality. Installation of signs and posts will waste resources. The signs will encourage theft or vandalism and will provide little to no use in management of the storm drain system. All regulated organizations are required to have maps with locations of all outfalls. The availability of low cost GPS devices makes these outfalls easily located by just about anyone.

Thank you for your consideration, if you would like additional information, please contact me at jneece@chicopeema.gov or (413) 594-3557.

Sincerely,

Jeffrey A. Neece

Jeffrey Neece
DPW-Superintendent
City of Chicopee

CONSERVATION LAW FOUNDATION

3/31/2010

By email

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Re: Draft General Permit for Small Municipal Storm Sewer System for Massachusetts North Coastal Watersheds

Dear Ms. Murphy:

The Conservation Law Foundation ("CLF") appreciates the opportunity to comment on the Small Municipal Separate Storm Sewer System Draft General Permit for Massachusetts North Coastal Watersheds ("draft permit").

Founded in 1966, the Conservation Law Foundation ("CLF") is a member-supported environmental advocacy organization that works to solve the problems threatening our natural resources and communities in Massachusetts and throughout New England. Among those problems, CLF has worked, and continues to work, to promote effective regulations and strategies to reduce and minimize the significant impacts of stormwater pollution.

I. General Comments

"Stormwater runoff is one of the most significant sources of pollution in the nation, 'at times comparable to, if not greater than, contamination from industrial and sewage sources."[1] As the U.S. Environmental Protection Agency (EPA) acknowledged in 1999, "[s]torm water runoff from lands modified by human activity can harm surface water

[1] *Environmental Defense Center v. Browner*, 344 F.3d 832, 840 (9th Cir. 2003), *cert. denied*, 124 S.Ct. 2811 (2004) (*citing* Richard G. Cohn-Lee and Diane M. Cameron, *Urban Stormwater Runoff Contamination of the Chesapeake Bay: Sources and Mitigation,* THE ENVIRONMENTAL PROFESSIONAL, Vol. 14, p. 10, at 10 (1992) and *Natural Res. Def. Council v. EPA*, 966 F.2d 1292, 1295 (9th Cir. 1992)).

resources and, in turn, cause or contribute to an exceedance of water quality standards by changing natural hydrologic patterns, accelerating stream flows, destroying aquatic habitat, and elevating pollutant concentrations and loading." 64 Fed. Reg. 68,724 (Dec. 8, 1999). This is no less true in Massachusetts. Stormwater has been cited as the primary cause of water quality impairment in the Commonwealth, and municipal small separate storm sewer systems ("MS4s") are a significant contributor to those problems.[2]

An enhanced Small Municipal Storm Sewer ("MS4") permit program for Massachusetts with meaningful standards, clear milestones, and strong enforcement is necessary as part of the overall effort to restore degraded rivers, streams, and ponds and maintain fishable, swimmable water quality in the state's waterways. The North Coastal Draft Permit represents a substantial step forward in this direction, and we recognize the work EPA Region 1 ("EPA") has undertaken to evaluate the effectiveness of the 2003 permit and to involve stakeholders in discussions about the permit reissuance. However, from CLF's perspective there are a number of areas where the permit must be strengthened in order to fully reflect legal requirements and to accomplish the objectives of the MS4 program.

Compliance with the Massachusetts MS4 permit, and success at achieving water quality outcomes, has varied widely across the permittees under the 2000 permit.[3] EPA's own review of the MA MS4 program revealed that only 163 of 238 towns submitted their annual report for Year 6 (2008-09). Only 25% of Communities reported they were doing outfall inspection and monitoring. And 30% still had not completed outfall mapping. These are baseline requirements, that municipalities have been aware of since the 1999,[4] and that form the building blocks of the program. These monitoring, planning and assessment steps are prerequisites to the full achievement of what this permit program requires, which is a systematic analysis of impervious area, the creation and implementation of a plan to retrofit existing infrastructure to meet water quality standards, and incorporation of LID into all new development.

Although achieving these objectives, and compliance with the Clean Water Act, will require a sustained commitment of resources, EPA and the entities regulated under the Phase II program must not lose sight of the fact that there are significant costs associated with

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[2] MassDEP, *Moving Toward a Statewide Stormwater Policy,* Presentation to Stormwater Stakeholders Group, March 6, 2008 (citing pollutants associated with stormwater runoff as the cause of 60% of impairments statewide; *see also* Massachusetts Integrated List of Waters (2008), available at http://www.mass.gov/dep/water/resources/tmdls.htm; Lower Charles River Nutrient TMDL, available at http://www.mass.gov/dep/water/resources/tmdls.htm.

[3] MassHighway, for example, failed to submit an NOI meeting even basic authorization requirements until CLF, the Charles River Watershed Association, and the Leominster Land Trust sued the Commonwealth in federal court in 2006. CLF v. Patrick, Case No. 06-11295wgy (U.S. District Court for the District of Massachusetts).

[4] 64 Fed. Reg. 68722 (Dec. 8, 1999). Had these requirements been meaningfully considered by the permittees from the outset, there was ample time to incorporate infrastructure improvements into annual and multi-annual budgeting and capital planning processes, and to establish funding mechanisms to ensure the financial resources for management of stormwater. Newton, for example, has implemented a stormwater utility.

continued stormwater pollution – such as ongoing and increasing degradation of water quality, loss of recreational value, adverse impacts on water supplies, and declining property values – that can only be reduced and avoided by improved stormwater regulation and management.[5] Low Impact Development ("LID") and green infrastructure practices that restore the natural hydrological cycle and reduce the demand on piped infrastructure can be, in the long run, more cost-effective to implement and maintain than conventional stormwater infrastructure.[6] Thus, in addition to improving and protecting water quality, the increased use of LID and green infrastructure has the potential to generate financial benefits and more livable communities.

II. Water Quality-Based Requirements

A central tenet of the Clean Water Act (CWA) as well as the small MS4 program is the principle that NPDES permits ensure compliance with water quality standards.[7] This concept is reiterated in the CWA, its regulations, case law, and the Small-MS4 General Permit. In enacting the CWA, one of Congress' principal goals was to "recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, [and] to plan the development and use (including restoration, preservation, and enhancement) of land and water resources."[8] In accordance with this goal, the CWA is clear that all provisions in a NPDES permit must comply with state water quality standards.[9] Federal case law has also underscored EPA's authority to include in stormwater permits all conditions and limitations necessary to assure the attainment water quality standards are met.[10]

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[5] See, e.g., "How Much Value Does the City of Philadelphia Receive from its Park and Recreation System? A Report by The Trust for Public Land's Center for City Park Excellence for the Philadelphia Parks Alliance," June 2008 at 3-4 (estimating that Philadelphia's 10,000 acres of parks save $5.9 million annually in stormwater management costs).

[6] Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices, U.S. EPA, Nonpoint Source Control Branch (4503T), Washington, D.C., Dec. 2007 (EPA 841-F-07-006). This EPA report on seventeen LID case studies found that in the majority of the LID projects "significant savings were realized due to reduced costs for site grading and preparation, stormwater infrastructure, site paving, and landscaping." LID projects resulted in up to 80% total capital cost savings. Furthermore, additional benefits, such as improved aesthetics and faster sales, were not factored into these savings figures. The case studies included redevelopment projects (for example, green roofs in Toronto) as well as new development.

[7] CWA §301(b)(1)(C), 33 U.S.C. § 1331(b)(1)(C), and 40 C.F.R. § 122.4(d).

[8] *See* 33 U.S.C. § 1251(b).

[9] *See* 33 U.S.C. § 1370 (allowing state water quality standards to be more stringent than federal technology-based standards); 33 U.S.C. § 1341(a) (requiring compliance with water quality standards of both the state where the discharge originates and of any state affected by the discharge). The requirement that permits comply with state water quality standards allows no exceptions for cost or technological feasibility. *In re City of Fayetteville, Ark.*, 2 E.A.D. 594, 600-01 (CJO 1988) (interpreting the language of section 301(b)(1)(C) to require "unequivocal compliance with applicable water quality standards," and prohibit "exceptions for cost or technological feasibility"), *aff'd sub nom*. Arkansas v. Oklahoma, 503 U.S. 91 (1992).

[10] *Defenders of Wildlife v Browner* affirmed EPA's authority to include in small and medium MS4 permits controls and limitations necessary to ensure water quality standards are met. 191 F.3d 1159, 1166-67, (9th Cir. 1999) *See also* 33 U.S.C. 1312(p)(3)(b)(iii) (as cited in Fact Sheet, at 4).

The implementation of the MS4 program to date, and analysis done in connection with the Charles River Watershed phosphorus TMDLs, indicates that retrofits of existing infrastructure will be needed to ensure water quality standards are met in urban and suburban waterways. CLF encourages EPA to more clearly state where stormwater retrofits and new structural BMPs are expected as the result of the minimum control measures and Section 2. As described more fully below, LID-based performance standards are warranted in this permit, as it is not clear the permit's objectives can be met without them.

Section 1.3(k), providing that discharges that cause or contribute to instream exceedances of water quality standards are not authorized under the permit, should be retained in the final permit as an expression of EPA's responsibility and authority to ensure water quality standards are met.

CLF recognizes that EPA has taken steps to clarify the relationship between water quality-related requirements and the six minimum measures (and that both sets of requirements are applicable), which is generally a beneficial change. However, the language still raises some significant concerns and could be further clarified and strengthened.

a. Section 2.1.1, Requirement to Meet Water Quality Standards.

CLF objects to the "presumptive approach" set forth in the permit and fact sheet, in which discharges are presumed to satisfy water quality requirements if minimum measures are implemented. (*See* Fact Sheet, at 29).

Section 2.1.1 is problematic in that it attempts to create the presumption that water quality standards are met if permittee "fully satisfies" all other permit requirements,' and allows permittees a 60-day "grace period" to correct instream exceedances after they are brought to the permittee's attention. The presumption that "in the absence of information stuggesting otherwise, discharges will be presumed to meet the applicable water quality standards . . . " is contrary to the permit itself (Section 1.3(b)) as well as the Clean Water Act and the Phase II regulatory scheme, which establish that the burden is on the discharger to demonstrate that water quality standards are met. This presumption should be removed in the final permit. The 60-day period could be construed to create a "safe harbor" for dischargers once an illegal discharge is discovered. EPA should remove this provision from the permit and use other means to communicate its expectations as to how a municipality should respond to the discovery instream exceedances, and would retain the ability to exercise its enforcement discretion on a case-by-case basis. Both the presumption and the grace period also appear to attempt to generate an illegal hurdle to citizen enforcement of the permit that contravenes the right of citizens under Section 505 of the Clean Water Act, 33 U.S.C. § 1605.

The Fact Sheet cites language in the 1999 Federal Register notice that announced the MS4 program as support for this presumption, but neglects to point out the text immediately following, which reiterates the ongoing obligation to modify the SWMP to meet water quality standards.

> As discussed further below, however, small MS4 permittees should modify their programs if and when available information indicates that water

> quality considerations warrant greater attention or prescriptiveness in specific components of the municipal program. If the program is inadequate to protect water quality, including water quality standards, then the permit will need to be modified to include any more stringent limitations necessary to protect water quality.

64 Fed. Reg. 68722, 68753 (Dec. 8, 1999) (emphasis added).

CLF does not concede that the phrase "if and when available information indicates…" in the Phase II rule allows permittees to wait for citizens or regulatory agencies to notify them that a discharge is causing or contributing to water quality problems.[11] The burden is more properly on the discharger to actively assess and monitor their discharges, and to immediately correct problems, whether discovered through their own assessment or by others.

b. 2.2.1 – Discharges to Impaired Waterways With an Approved TMDL

- CLF objects to the draft permit language stating that approved TMDLs are those that have been approved as of the effective date. As new TMDLs are approved during the permit term, they ought to be considered approved TMDLs. This better reflects the reality that new TMDLs will be issued throughout the permit term. Incorporating new TMDLs would ensure that their implementation will not be held up by the MS4 permit reissuance.

- Section 2.2.1(b) refers to Appendix G, in which EPA has done some 'translating' of what the TMDLs mean in terms of requirements for MS4s. This chart is a helpful addition to the permit, as the prior permit term revealed that there was a gap in some permittees' understanding of or acceptance of responsibility for loading reductions. There are additional TMDLs that identify stormwater-related pollutants as a source of impairment although their WLAs may not be as explicit in relation to MS4s. CLF encourages EPA to consider adding TMDLs to this appendix.

- The draft permit also reflects a helpful clarification in 2.2.1(c) that TMDL is not a license to pollute – that discharges to impaired waters must also comply with Section 2.1, the prohibition on causing or contributing to instream exceedance of water quality standards. CLF strongly recommends this be retained in the final permit.

- CLF disagrees with the approach to documenting compliance with TMDLs reflected in the fact sheet, that "the permittee's demonstration of meeting the requirements of the WLA should focus on evidence that shows that the BMPs are implemented properly and adequately maintained." A quantitative approach should be used where the permittee estimates or its overall pollutant loading and the expected reduction if BMPs are properly maintained, as well as the expected impacts on water quality. This estimation should then be verified by real world information.

[11] *See* 64 Fed. Reg. 68722, 68753 (Dec. 8, 1999) ("[p]ermittees should modify their programs if and when available information indicates that water quality considerations warrant greater attention or prescriptiveness in specific components of the municipal program.")

- **CLF strongly supports the provisions of Section 2.2.1(d) that municipalities develop a Phosphorous Control Plan describing measures necessary "to achieve consistency with the wasteload allocation ("WLA") in the Lower Charles TMDL, and urges that these provisions be further strengthened to ensure the TMDL loading reductions are timely achieved.**

    - CLF supports the language specifically walking the permittee through the process of estimating its phosphorus ("P") reduction over its 2000 P load. There appears to be an implicit trading provision - "In Lieu of Developing a 2010 MS4-only Phosphorus Load, the MS4 may decide in the PCP to plan and implement municipal-wide P reductions in areas tributary to the Charles, to achieve consistency with the WLA." This provision needs clarification, because as drafted, it implies that the town can 'describe' some type of trading, but does not require objective measures to account for the reductions. If in fact a trading program is envisioned, metrics must be required to document and track the reductions.

    - CLF has major concerns about the implementation timeframes for the Phosphorus Control Plan. The draft permit states that permittees in the Charles must develop and "begin implementing" a Phosphorus Control Plan within 4 years. CLF objects to four years as the length of time for the development of the PCP. A much shorter timeframe should be feasible, given the extent to which supporting data and modeling is already available from EPA and MassDEP (as highlighted in the fact sheet). A strong starting point is already reflected on line as of today's date in the impervious acreage estimates on the EPA Region 1 website for this permit,[12] and in the precise loading reduction targets calculated for each town in Appendix G to this permit.

    - The draft permit allows permittees ten years to complete implementation. The 10 year compliance timeframe is too long, from both a practical and legal standpoint. EPA does not have the authority under the Clean Water Act and NPDES regulations to include ten year compliance schedules. The term of any NPDES permit may not extend beyond five years.[13] In addition, both the NPDES regulations and the MassDEP regulations specify that permits shall require compliance "at the earliest practicable time."[14] Ten years is well beyond the earliest practicable time for the installation of stormwater retrofits, and may actually make the process more challenging.[15]

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[12] http://www.epa.gov/ne/npdes/stormwater/ma.html

[13] 40 C.F.R. §§ 122.46(a)-(b). Furthermore, CLF does not concede that the limited conditions in which compliance schedules are allowable under the Massachusetts surface water regulations are met in this instance. Compliance schedules are not permissible for water quality-based effluent limitations unless based on "new, newly revised or interpreted water quality standards that became effective after both issuance of initial permit for discharge and 1977." 314 Code Mass. Regs. 4.03(1)(b).

[14] 314 Code Mass. Regs. 4.03(1)(b).

[15] To extend this requirement over such a long period of time would likely make the implementation *less* practicable. The remote end date would make it difficult for local officials and town staff to

- EPA should to alter this provision in the final permit to reflect a compliance timeframe of no more than one to two years to complete the phosphorus control plan and the remaining permit term (for a total of no more than five years) to implement the plan. In addition, EPA should include enforceable interim milestones that will facilitate planning and budgeting at the town level. This would be consistent with 40 C.F.R. § 122.47(a)(3) (directing NPDES permitting authorities to require interim milestones no more than one year apart when a permit establishes a schedule of compliance beyond the effective date of the permit) and with MassDEP regulations.[16]

c. 2.3.1.1-2 – New or Increased Discharges to Impaired Waters

- The Draft Permit's requirement that new or increased discharges to impaired waters are disclosed and offset are critical on both a legal and practical level. Over half of Massachusetts waterways are already impaired for stormwater-related pollutants. Preventing polluted stormwater discharges from new impervious area (which EPA finds is typically the source of new or increased discharge)[17] represents the most straightforward opportunity to prevent further inputs of pollution into these degraded waterways. As EPA points out, MS4 permittees are already obligated to control their discharges to the point where they are not causing or contributing to instream exceedances of water quality standards.[18] Therefore, where new outfalls , higher pollutant loadings, or increased stormwater volume are proposed, 40 C.F.R. § 122.4(i) requires no less.

- CLF agrees generally that any new or increased discharges to impaired waters must be evaluated by the permittee before they occur, in relation to TMDLs and water quality standards. CLF supports the requirement that permittees give prior notice and receive approval from EPA before a new discharge will commence into a water with a TMDL, and strongly encourage EPA to require this information is made available to the public in real time. The draft permit does not appear to provide for any notice to EPA or the public prior to increased discharges, or prior to new discharges in impaired waters without a TMDL. CLF recommends this provision be changed in the final permit. It is critical that citizens, as well as regulatory agencies, have the opportunity to be informed *before* any new or increased discharge is permitted, to ensure that full dialogue occurs in the municipality as to how stormwater will be managed, and so that EPA and the public can make sure that the offsets or promised infrastructure are, in fact implemented. Merely requiring a statement in the annual report is not enough -- for example if a development or infrastructure project has been completed nearly a year ago and no offsets actually occurred as part of the project, or the project was changed from the initial design, it

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justify taking quick interim actions. In the meantime, land uses may change and phosphorus pollutants will accumulate in sediment and impoundments, unneccessarily adding to the challenges of achieving the applicable water quality standards for phosphorus.

[16] Under Massachusetts regulations, where schedules of compliance are issued, they "shall include dates for specified tasks or activities leading to compliance and may include interim effluent limitations, as the Department deems appropriate." 314 Code Mass. Regs. 4.03(1)(b).

[17] Fact Sheet, at 39.

[18] Fact Sheet, at 40.

would be more difficult and costly to go back and mitigate the new or increased discharge after the fact. The spirit of this important permit provision would not be served by self-reporting on an annual basis.

- EPA should clarify who "new permittees" are. It is not immediately apparent why there needs to be a category of dischargers that were not subject to the 2003 permit but who are covered under the draft permit, and the fact sheet offers insufficient justification for why additional time for compliance is appropriate. Presumably, the entity (a town or nontraditional MS4) could have planned to be able to meet its requirements at the time it became covered under the permit. Allowing extra time would send the wrong message – that regulated entities need not prepare for environmental permit requirements triggered by their own development.

- The draft permit represents an improvement over the 2003 permit in that "increased discharge" is defined, and that this situation is addressed more explicitly.[19] CLF agrees with EPA that no net increase in pollutant loading should be allowed from increased discharges to impaired waters, and that offsets need to be documented before construction begins. However, the application of the term "new discharger" is inappropriately proscribed due to EPA's overly broad reading of the term "new discharge," relying on an objectionable interpretation of the term "site"[20] to include an entire MS4 system. *See* 40 C.F.R. 122.2 (definitions). As a result, many discharges that should properly be treated as "new discharges" are considered to be "increased discharges."

- Functionally, this accomplishes an end run around the requirements of 122.4(i), as interpreted in the *Pinto Creek* decision, that "no permit may be issued to a new discharger if the discharge will contribute to the violation of water quality standards." A narrow exception to this prohibition is carved out for situations where a TMDL has been calculated, if the discharger can show, before the end of the comment period, that "there are sufficient remaining pollutant load allocations to allow for the discharge and that the existing dischargers into that segment are subject to compliance schedules designed to bring the segment into compliance with applicable water quality standards."[21] CLF does not agree that new impervious area or new stormwater outfalls created by a municipality are properly defined as "increased discharges" rather than "new discharges" or "new dischargers" for purposes of triggering the Pinto Creek analysis. Any new stormwater outfalls

[19] "Increased discharge" is defined in the draft permit as a discharge "directly into the MS4 or from the MS4 that commences after the effective date of this permit and results from creation of one or more acres of new impervious surface." Draft permit, § 2.3.1.

[20] The term "site" is defined to mean "the land or water area where any 'facility or activity' is physically located or conducted including adjacent land used in connection with the facility or activity." 40 C.F.R. 122.2. EPA appears to have inserted the term "contiguous" into the discussion in the fact sheet as part of the broadening of the definition.

[21] 40 C.F.R. 122.4(i); *Friends of Pinto Creek v. EPA*, Slip Op. No. 05-70785, 13505, 13515 (9th Cir., Oct. 4, 2007). The rationale for this section of the regulations is that it "corresponds to the stated objectives of the Clean Water Act 'to restore and maintain the chemical, physical, and biological integrity of the nation's waters.' 33 U.S.C. § 1251(a) (1987). And that 'it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited.' 33 U.S.C. § 1251(a)(3) (1987)." *Pinto Creek,* at 13515 (9th Cir. 2007).

created by an MS4 discharger into an impaired waterbody would contribute to the violation of water quality standards, and should be subject to the Pinto Creek requirements. We recommend this provision be changed in the final permit.

- Under the draft permit, "increased discharges" must provide for a net decrease in pollutant loading through enhanced control or offsets.[22] Without conceding that these discharges can be allowed under the permit, absent a TMDL and a demonstration that compliance schedules are in place for other point sources, CLF agrees agree that that a net decrease in pollutant loading should be required for any increased discharges to impaired waters. More specificity is needed as to what kinds of measures are an appropriate offset (for example, structural BMPs installed and functioning, and verified by the permittee to accomplish a particular pollutant loading, mass or volume reduction). Quantitative analysis and verification should be required to document the pollutant reduction and that the discharge will not contribute to water quality standards exceedances.

- Regarding Section 2.3.1.2, the "increased discharge" analysis and verification for TMDL waterways is not sufficient to ensure consistency with TMDLs. Step "a" is appropriate, and permittees should be required to calculate their loading contribution in this circumstance. However, steps "b" and "c" are too vague and leave an impermissible degree of discretion to the permittee. A better defined quantitative approach should be required, and the permittee should be required to certify as to the measures that have been taken on the ground and that they are achieving the necessary pollution reductions.

2.3.3 - Antidegradation Requirements.

- In general, the draft permit contains more thorough descriptions of the elements the antidegradation analysis must include than did the prior permit. This is an improvement over the prior permit, but this section is still not sufficiently clear and prescriptive to ensure the state's antidegradation policy is carried out.

- A second general concern is that the antidegradation provisions of the permit are too narrow in their application; antidegradation should be an ongoing and prospective analysis that applies to all permitted activities. This is because all NPDES permits must meet the non-degradation standard throughout the lifespan of the permit. *See* 40 C.F.R. 131.12.

- Section 2.3.3(b)(1) appears to create a de minimis exception, but this is not explained in the Fact Sheet. We do not agree that there is any de minimis threshold in the

[22] The Draft Permit provides that increased discharges are only eligible for General Permit coverage if the permittee identifies and estimates a load for each pollutant of concern, implements structural BMPs, and identifies the BMPs it has implemented such that the MS4 will not cause or contribute to exceedences of water quality standards or, in the case of a TMDL waterbody, will be consistent with the TMDL. Draft Permit, Sections 2.3.1.1 – 2.3.1.2.

state's anti-degradation regulations at 314 Code Mass. Regs. 4.04, and therefore this should be removed.[23]

- The "Tier II" provisions in Section 2.3.3(b) are problematic, in that section 2.3.3(b) creates a subjective "out" on a number of grounds that are not consistent with 40 C.F.R. 131.12. The permittee can claim the discharge is "not significant because it is temporary in nature and that upon completion of the discharge period the existing water uses . . . will be equal to or better than . . . prior to commencing the discharge," or that "the effluent will be of a better quality than the existing water quality of the receiving water." These categories are too subjective to be enforceable, and at a minimum are susceptible to overly generous interpretation by permittees. This type of subjective self-regulation was struck down in *Environmental Defense Center v. Browner.*[24] In addition, allowing for a discharge that is "temporary in nature" implies that water quality standards during particular periods or events, which appears contrary to the water-quality based requirements of the MS4 program.[25]

- Section 2.3.3(f) provides that new or increased discharges to Outstanding Resource Waters require an individual permit. EPA should meaningfully enforce this provision. Given the wide range of waterways receiving discharges from the Department of Transportation roads and infrastructure, including public water supply areas,[26] DOT should be required to obtain an individual permit on this basis alone.

III. Performance Standards Reflecting Low-Impact Development and Green Infrastructure

CLF strongly urges EPA to include in the permit performance standards that reflect Low-Impact Development or "green infrastructure" stormwater management practices. These practices are widely available, well proven, are generally more effective than conventional infrastructure at pollutant removal and volume reduction, and confer additional benefits to the community and environment. As detailed in attachments A,B,C, and D1-75 to this comment letter, **LID/green infrastructure is the current expression of controlling polluted stormwater runoff to the "maximum extent practicable" ("MEP").** Furthermore, the attached documents demonstrate that the permit cannot effectively ensure that water quality standards will be met *without* inclusion of such LID/green infrastructure-based performance standards. Performance standards based on LID/green

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[23] If this is a reference to 314 Code Mass. Regs. 4.04(5), it appears to be mischaracterized. That section requires a four part analysis to be performed by the applicant to demonstrate that a number of substantive criteria are met before *"limited degradation"* (i.e. a new or increased discharge) is allowed to a high quality water. 4.04(5) would not be properly characterized as a de minimis threshold.

[24] *Environmental Defense Center v. Browner,* 344 F.3d 832, 840 (9th Cir. 2003), *cert. denied*, 124 S.Ct. 2811 (2004).

[25] *See* 40 C.F.R. § 122.4.

[26] including the Hobbs Brook Reservoir, which is listed as a Class A, Outstanding Resource Water. *See* 314 Code Mass. Regs. 4.06, Figures, available at http://www.mass.gov/dep/water/laws/tblfig.pdf.

infrastructure should be included in this permit.[27] In particular, performance standards for LID/ green infrastructure should be included in Section 2.4.5, the Post-Construction bylaw, and should be required as the means by which permittees fulfill water-quality based requirements under Section 2.

From the outset, EPA has made clear the expectations that technologies would evolve, and that the Maximum Extent Practicable standard in the second round of small MS4 permits would reflect what was learned about the effectiveness of the BMP implemented during the first round. The need to meet water quality standards was to drive the evolution of the MEP standard, itself, because the ultimate objective of all BMPs is to ensure the attainment of water quality standards. As EPA expressed in the MS4 Final Rule:

> [The Maximum Extent Practicable standard] should continually adapt to current conditions and BMP effectiveness and should strive to attain water quality standards. Successive iterations of the mix of BMPs and measurable goals will be driven by the objective of assuring maintenance of water quality standards. If, after implementing the six minimum control measures there is still water quality impairment associated with discharges from the MS4, after successive permit terms the permittee will need to expand or better tailor its BMPs within the scope of the six minimum control measures for each subsequent permit.

64 Fed. Reg. 68722, 68754 (Dec. 8, 1999) (EPA Stormwater Phase II Final Rule).

EPA anticipated that "the NPDES permitting authority may ask the permittee to revise their mix of BMPs, for example, to better reflect the MEP pollution reduction requirement." 64 Fed. Reg. 68722, 68754 (Dec. 8, 1999) (EPA Stormwater Phase II Final Rule). **At this juncture, ten years after the Small MS4 program was first enacted, and given the wealth of data generated in the interim, it would be inappropriate for EPA Region 1 *not* to include LID-based performance standards and revise the scope of required BMPs to reflect LID/green infrastructure.**

Comments by Dr. Robert Roseen, Director of the University of New Hampshire Stormwater Center on the draft permit (Attachment A) and Dr. Stephanie Hurley's Statement on Low-Impact Development (Attachment B) confirm that Low-Impact Development and green infrastructure is well tested, effective at stormwater volume reduction and pollutant removal, suitable for New England, and confers ancillary benefits.

Dr. Roseen's professional opinion is that "LID stormwater management works effectively throughout multiple seasons including challenging winter conditions. Data shows that it works better for water quality than conventional stormwater management."[28] He also confirms that studies have shown LID to be cost effective and in some cases to result in cost savings.[29] Furthermore, Dr. Roseen cautions that "with the raising of the standards for

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[27] Whether an expression of technology-based effluent limitations, water-quality based effluent limitations, or both, such performance standards are timely and necessary for the reasons described above.

[28] Attachment A, at 1.

[29] *Id.* at 2.

MEP . . . certain practices should be *disallowed* for usage. Practices that have been demonstrated to be contributing to the water quality failures should be eliminated . . . ."[30]

Dr. Hurley's professional opinion regarding LID is that it "offers a more ecological, flexible, and context-sensitive stormwater management approach—and more readily meets water quality and hydrologic performance standards—than conventional stormwater management."[31] Furthermore, Dr. Hurley has personally evaluated LID implementation sites at various locations throughout the U.S. and internationally, and confirms that "the principles of LID design can be successfully applied in various topographies, geographies, and climates" including New England, and at a variety of scales.[32] Her conclusion is that LID represents the maximum extent practicable for stormwater treatment.[33]

The direct testimony of Richard Horner, before the Pollution Control Hearings Board for the State of Washington in the matter of the Seattle Phase I stormwater permit (Attachment D3) affirmed that LID techniques are " unquestionably 'known' and 'available' techniques. In many cases, implementation of LID for new or redevelopment is less costly than conventional BMPs, and offers other economic benefits such as improved property values or reduced water use."[34] Dr. Horner further asserted that the Seattle Phase I permit at issue did not "use all known available and reasonable methods" to control stormwater from new and redevelopment, and it was "highly unlikely" that compliance with water quality standards could be achieved using conventional techniques.[35] Further, he asserted that "LID approaches are far more protective of water quality than the conventional BMPs" and that the permit did not reflect the maximum extent practicable standard.[36]

The direct testimony of Dr. Derek Booth in the same matter asserted that "the [Seattle Phase I] Permit . . . does not protect rivers and streams, beneficial uses, or aquatic life. Continued reliance on such a [flow-based] standard for new development in western Washington will not prevent serious and significant additional degradation to these resources," and in his professional opinion, "a more protective performance standard that more closely matches natural hydrology . . . is readily achievable without sacrificing opportunities for future development. Achieving a more protective standard would rely on site- and basin-level LID BMPs that are in my opinion, sufficiently well known, understood, available and economically and technologically feasible that they can be implemented throughout western Washington."[37]

Thomas Holz, an experienced civil engineer, testified that

> "LID approaches are generally more effective at protecting water quality and beneficial uses than the engineered, end-of-pipe standards embraced in the 2005 [Washington] Manual and Permit. They are known, available, and

[30] *Id.* at 1 (emphasis added).
[31] Attachment B, at 2.
[32] *Id.* at 2-3.
[33] *Id.* at 3.
[34] (Attachment D3, at ¶27).
[35] *Id.*
[36] *Id.*
[37] Attachment D2, at ¶ 33.

> reasonable (as well as "practicable") in virtually all new and redevelopment situations.

(Attachment D1, at ¶ 33.)

In addition, a wealth of technical articles, case studies, litigation documents, and federal government guidance documents and fact sheets summarized in Attachment C and included as Attachments D4-75 all demonstrate these principles.

The greater adoption of LID, spurred by regulatory approaches including the MS4 permit, will benefit Massachusetts communities by keeping pollutants and concentrated pulses of stormwater out of our rivers, ponds and streams, generating increased green space, cooling urban areas, and relieving some of the cost and maintenance burden on aging municipal stormwater infrastructure.

IV. Six Minimum Measures

One theme that emerged from the implementation of the 2003 MA Small MS4 permit was the need for additional clarity, and greater enforceability of requirements under the six minimum measures. CLF recognizes that EPA has significantly clarified a number of these requirements in the draft permit, and generally supports these changes. The permittees' inconsistent progress toward improved water quality also indicates that additional best management practices are needed, in addition to clarification of the requirements.

a. IDDE and System Mapping

The requirement at Section 2.4.4.3 that IDDE be continued is important, and CLF supports the continued inclusion of IDDE requirements in the MS4 permit. Illicit connections can contain extremely high levels of bacteria as well as substantial nutrient loads, and should continue to be a core element of compliance with the permit.

CLF strongly supports the requirement for enhanced mapping of the sewer infrastructure and affected waterways in Section 2.4.4.6. As referenced above, complete mapping of sewer infrastructure, outfalls, and adjacent waterways, is a prerequisite to the full engagement of all stakeholders in better stormwater management. It is also necessary for meaningful consideration by permittees as to where increased BMPs will be installed to meet water-quality based requirements of the permit.

b. Impervious area/ DCIA mapping

CLF supports the new requirements in the draft permit that towns track impervious cover[38] and "Directly Connected Impervious Area," ("DCIA"), assess possible locations for LID retrofits (presumably so that trading can occur), and assess the possibility of requiring LID town-wide for new construction. . The link between impervious cover and stream degradation has been well established since before the issuance of the 2000 permit.[39]

[38] (hard surfaces such as roadways, sidewalks, driveways, parking lots, and rooftops)
[39] 64 Fed. Reg. 68722, 68725 (Dec. 8, 1999); *see id.* at 68726-8.

Tracking overall impervious cover as well as DCIA will allow communities to fully account for the causes of waterway impairment, and is an important step towards the deployment of Low-Impact Development on a broader scale

c. Post-Construction LID Ordinance

CLF strongly supports the requirement that permittees institute a post-construction ordinance, as one of the core minimum measures laid out in the initial Phase II rule. Permittees covered under the 2003 permit were required to pass an ordinance addressing post-construction stormwater discharges, and to "develop, implement and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than one acre and discharge into the municipal system." The adjustment of the ordinance to reflect the use of LID should be mandatory, and should not require a great deal of additional time to be put into place.

Rather than merely requiring that municipalities "assess the possibility of" requiring LID town-wide for new contruction, EPA should go one step farther and require that a LID-based performance standard is met. LID technologies are now well proven, widely available, demonstrated to be as effective or more effective as conventional technologies, while conferring additional benefits, and necessary to ensure the attainment of water quality standards.

As drafted, the Permit requires municipalities to enact an ordinance that tracks certain requirements of the Massachusetts Stormwater Standards. We support the requirement that permittees enact ordinances requiring stormwater controls from new and redevelopment. For the reasons detailed above and in the Attachments to CLF's comments), the final permit should require that Low-Impact Development or "green infrastructure" stormwater management techniques are used, including on-site infiltration of stormwater. The Massachusetts Stormwater Standards may not equate to meeting water quality standards in all areas.

Therefore, we recommend that EPA implement a more protective standard. An alternative is the standard reflected in the EPA Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act ("EPA Federal Facilities Guidance"), The guidance was enacted pursuant to Executive Order 13514, and requires that facilities of a certain size either treat stormwater on-site sufficiently to infiltrate the 95th percentile storm event, or implement measures that will restore or maintain pre-development hydrology on a site-specific basis. This standard has been determined to be feasible and cost-effective in the context of federal facility building standards.[40] In issuing the Federal Facilities Guidance, EPA relied on the testimony of Derek Booth, Thomas Holtz and Richard Horner regarding LID in the Seattle MS4 litigation (Attachments D1-D3).[41]

In heavily urbanized areas including the Boston metropolitan area, the typical parcel size is smaller than one acre. Consequently, a one-acre threshold for post-construction

[40] Attachment D67, EPA Federal Facilities Guidance (Dec. 2009).
[41] *See* Attachment D67, EPA Federal Facilities Guidance, at 55 (Dec. 2009).

stormwater management is too high to capture a significant portion of development. For the reasons EPA has already identified, a post-construction stormwater bylaw is important to controlling inputs into the MS4 system, and the threshold should be lower than one acre. One half acre would be a more appropriate threshold in urban areas. Dr. Robert Roseen's comments on the draft permit have also identified this as a concern. (*See* Attachment A).

V. Monitoring and Assessment, and Public Participation

Monitoring and assessment are critical to assessing whether the measures municipalities have chosen to implement are, in fact, working to accomplish the objectives of the Permit, and to guide decisions about what additional measures can and should be taken in each community. That is why CLF supports strong provisions for outfall monitoring, GIS mapping, tracking of Directly Connected Impervious Area in the Final Permit, as well as requirements to report all of the above data and information.

a. Monitoring

- CLF strongly supports increased monitoring, in both wet and dry weather, as a critical component of this permit. The outfall monitoring requirements in the draft permit will yield important information about current water quality, sources of pollution, and over the span of the permit, will reveal long-term trends, and where strategies employed by municipalities are effective or ineffective. Outfall monitoring is important for numerous reasons beyond merely supporting the illicit detection and elimination program. It provides a baseline that can then be compared to discharges in future years. Monitoring data indicates whether the BMPs a permittee has chosen to use are sufficiently effective at reducing pollution. The data can also shed light on trends that are outside of the permittee's control, but that should inform choices made about stormwater BMPs.

- For these reasons, the Permit should require more than one wet and one dry sample of each outfall within the five-year term. Three samples at each outfall during the permit term would better characterize conditions in light of the variability of stormwater discharges. CLF's experience has been that outfalls near interconnections between permittees are an important place for attention to be focused, and we support the requirement that these areas be sampled.

- Given the importance of monitoring data, CLF is concerned about the scope of the exemptions, framed as a "permittee-specific monitoring plan" in Sections 3.1.4 and urges EPA to remove these exemptions so they do not undermine the rule.

- In particular, 3.3.1 is problematic because it is important that permittees continually assess the effectiveness of their BMPs at controlling pollutants. It is not clear under what circumstances a permittee would have completed outfall monitoring under the 2003 permit that would be equivalent to the outfall monitoring required under this permit. Section 3.1.4.2, which allows an opt-out if the outfall is associated with a Problem Catchment, seems counter-intuitive. It would seem even more important and relevant to have data on outfalls where high pollutant loadings are detected, whether or not the source is suspected to be known. Section 3.1.4.3

allows an opt-out if the amount of impervious cover discharging through an outfall is less than 10 percent of the catchment area. Water quality impacts can occur from less than ten percent impervious cover, so EPA should consider lowering this threshold.

- Section 3.1.4.5 appears to allow the permittee to opt out of monitoring if "the permittee has conducted or will conduct in its permittee-specific monitoring plan wet and dry weather in-stream monitoring which is representative of one or more discharges to the same water body." If this provision is kept, EPA should clarify that the permittee must affirmatively certify and describe why the outfalls are representative of others, and the use of this opt-out should be limited to a certain proportion of outfalls overall, to ensure that adequate monitoring is done throughout the MS4 system during the span of the permit.

- Instream monitoring of receiving waters is also an important component of evaluating the overall relationship between MS4 discharges and water quality, and can inform the appropriate level of stormwater controls – in some cases directly indicating impacts from particular MS4 drainage areas, and in some cases yielding a more general understanding of the types and levels of contaminants found under given conditions. CLF recommends that EPA consider including targeted instream monitoring requirements in the final permit. It is noteworthy that stormwater expert Derek Booth testified in the litigation over the sufficiency Seattle's Phase I stormwater permit that monitoring was critical. (Attachment D1, at 97-99). Rather than relying on presumptions as to the effect of particular BMPs, he maintained that "if you want to know the condition of this water body, you have to go measure that condition in that water body." (Attachment D#, at 99).

b. Transparency and Public Participation

The importance of public participation to the MS4 program was recognized at the outset of the program, when a federal appeals court found that EPA's failure to make Notices of Intent for coverage under the MS4 permits available to the public for comment contravened the Clean Water Act.[42] The experience to date under the Small MS4 permit in Massachusetts confirms that public participation is vital to successful implementation of this permit. Transparency and public participation are an effective means to augment EPA's enforcement, and to foster stronger support for town decision-makers to dedicate resources to stormwater management. In instances where municipalities are falling short due to capacity or resource constraints, watershed groups can step forward to call needed attention to overlooked issues, help to secure resources, and supplement existing data and information about outfalls and the condition of waterways. However, this is only possible when information is publicly available about the municipality's efforts, the location of infrastructure and outfalls, and the condition of local waterways. Residents and community- or watershed-based organizations are in a unique position to enhance the efforts of municipalities through the MS4 program, but without full access to information, citizens are less able to assist in these ways.

[42] *Environmental Defense Center v. EPA*, 344 F.3d 832, 856-859 (9th Cir. 2003).

CLF strongly supports the provision in the Draft permit requiring SWMPs to be made available to the public, and urges EPA to additionally require that all SWMPs, storm sewer infrastructure system maps, annual reports, Phosphorus Control Plans, monitoring plans, and monitoring data are placed on line in real time. Given modern technology, this need not be burdensome for the permittees, while it adds a great deal of value to the information collected by making it more accessible and usable to a wider range of stakeholders.

We support the provision in the draft permit that a comment period will occur for NOIs. This is legally required as per federal case law and will have the benefits described above.

VI. Enforceability

In some cases, the flexibility EPA afforded under the 2003 Massachusetts Small MS4 permit was abused. Our waterways are now exhibiting the effects of that neglect, and it is important going forward that all permit requirements are expressed in clear terms with enforceable parameters. The draft permit generally reflects clearer requirements and terminology, and this letter points out a number of instances where the requirements must be strengthened in order to be enforceable, or could be clarified for the benefit of permittees and the public.

VII. State Transportation Agencies

High pollutant loadings from roads and highways are well documented.[43] Highways are specifically referenced in a number of TMDLs in Massachusetts as a significant contributor and a source that must be controlled in order to achieve the needed pollutant loading reductions in that waterway.[44] MassDOT should be required to (1) identify and prioritize outfalls in water in TMDL, also identify where cross headwater streams, with low flows, (2) identify areas where highways cross sensitive habitat, (3) develop a prioritization for stormwater retrofits for those areas, and (4) develop a retrofit plan for its entire system as needed to comply with TMDLs and to correct its cause of and contribution to instream exceedances of water quality standards. "Storm water discharges from State DOTs in Phase 1 areas should already be regulated under Phase I. The preamble to Phase 1 clearly states that "all systems within a geographical area including highways and flood control districts will be covered."[45]

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[43] *See e.g.* National Academy of Sciences, Urban Stormwater in the United States: Report in Brief, at 4 (2009) ("[f]reeway, industrial, and commercial areas can be very significant sources of heavy metals, and their discharge significance is usually much greater than their land area indicates") (available at http://dels.nas.edu/dels/rpt_briefs/stormwater_discharge_final.pdf); 64 Fed. Reg. 68722, 68727 (Dec. 8, 2009) (Stormwater Phase II Final Rule); Expert Report of Vladimir Novotny, P.E., Docket No. 55-6, Feb. 7, 2008, CLF v. Deval Patrick et. al.,case no. 11295wgy, U.S. District Court for the District of Massachusetts.

[44] *See e.g.* TMDLs for Boston Harbor/Neponset River (bacteria), Buzzards' Bay watershed (bacteria), Blackstone Lakes (nutrients), Chicopee Basin Lakes (nutrients), Cape Cod (pathogens and nutrients), Charles River (phosphorus), French Basin (phosphorus), Shawsheen River (bacteria) available at MassDEP website, http://www.mass.gov/dep/water/resources/tmdls.htm.

[45] Phase II Final Rule, 64 Fed. Reg. 68722 (Dec. 8, 1999).

MassDOT expressed the view in the public hearing for this permit that DOT should not be subject to the same requirements as municipalities in the MS4 permit as proposed.

The Commonwealth is no less accountable to the requirements of the Clean Water Act than other public entities, and in fact has a greater responsibility to demonstrate leadership in protecting the resources that support the state's economy and the health of its citizens. Other highway departments are implementing LID and system-wide retrofit plans, which demonstrates that compliance is feasible.

An individual permit would more appropriately reflect the high pollutant loads from highways, and would allow for a more transparent accounting of the BMPs currently used, and that are available and appropriate, and should be deployed, throughout the highway system.

For these reasons, we strongly urge EPA to issue an individual permit to state transportation agencies, including the Department of Transportation.

To the extent state agencies remain within the General Permit, CLF strongly objects to the language in Sections 6.0-6.3 and 7.0-7.3 of the draft permit appearing to weaken the permit's requirements as applicable to state agencies. CLF does not agree with the apparent assumption that it is not possible for state agencies to comply fully with the requirements of the permit. For example, state agencies appear to be excused from Section 2.4.6.7 of the permit, which requires an assessment of current street design and parking lot guidelines and other local requirements that affect the creation of impervious cover . . . to determine if changes to design standards…can be made." The essence of this requirement – evaluating codes and design standards that affect creation of impervious cover, and identifying changes that can be made, is entirely applicable and appropriate for the Department of Transportation or other state agencies. For example, in addition to being directed to assess "facilities," parking areas and walkways, the DOT should be directed to assess its entire highway system for opportunities to reduce impervious area. A specific timeframe should be provided for this analysis, and the results should be disclosed to EPA and the public.

The same is true for Section 2.4.6.8, requiring an assessment of existing local regulations to determine the feasibility of making LID and green infrastructure practices "at a minimum . . . allowable." Again, in its essence, this is exactly the type of action EPA should be requiring of all permittees – to analyze the internal policies, regulations, or design standards that are barriers to LID, and to take action to remove them. While a state agency may or may not have its own "regulations," there are doubtless statewide regulations, internal agency policies, design guides, or standards that can and should be evaluated and changed to allow for LID.[46] EPA does not appear to have offered any legitimate rationale in

[46] In particular, the Mass Department of Transportation, Highway Division's design guide is in need of updating to reflect LID.

the fact sheet or otherwise for state agencies to be excused from these requirements.

VIII. Additional Requirements

A. State Water Quality Certification

It is notable that no draft state water quality certification (pursuant to Section 401 of the Clean Water Act) was noticed with the Draft Permit. The fact sheet indicates that a certification is being prepared. A draft Section 401 Water Quality Certification was made public along with the draft 2003 MS4 permit. It is important that the public have an opportunity to understand how MassDEP is viewing the draft permit conditions, and whether any additional requirements will be added through the certification to ensure state water quality standards are met. We request that EPA clarify the status of the state water quality certification.

B. Snow and Ice Removal and Chlorides

Research has indicated that, in the Northeast, chloride concentrations are increasing at a rate that threatens freshwater in the region.[47] Indeed, a 2001 article in *Stormwater* magazine ranked Massachusetts as having the highest annual road salt loadings in the United States. Chlorides TMDLs completed in New Hampshire confirm that stormwater runoff from roadways is a significant contributor to impairment, due to the high concentrations of chlorides, metals, and other additives in road salt that are washed into nearby waterways. Comments of Dr. Robert Roseen, Director of the NH Stormwater Center on the draft permit (Attachment A) highlight the potential of porous pavements to reduce salt application rates. Porous pavement and pervious concrete, both considered LID practices, require reduced de-icing application because water typically infiltrates rather than pooling on the surface.[48]

EPA should include in the final permit more robust requirements to address this growing threat to our freshwater bodies and drinking water supplies, including through LID and green infrastructure.

CLF recommends EPA add a requirement that permittees' salt storage facilities be enclosed, not merely covered (as the draft permit requires). We also support the requirement that salt storage be located away from drinking water supplies. The final permit should be more specific as to what constitutes a safe distance between salt storage and water supplies.

CLF strongly supports the requirement in Section 3 of the draft permit that permittees conduct outfall monitoring for conductivity and chlorine, as this will help to identify locations where road salt is impacting water quality. Only after any impacts to water

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[47] Susay S. Kaushal et al., *Increased salinization of fresh water in the northeastern United States*, 102 ECOLOGY 38, 13517-20 (2005), *available at* http://www.pnas.org/cgi/content/abstract/102/38/13517.

[48] *See* EPA Green Parking Lot Resource Guide, at 27, 55 n.97 (EPA, 2008)

resources have been brought to light can the state, municipalities, and citizens can make fully informed decisions about how to approach winter road maintenance.

Thank you for the opportunity to comment. CLF looks forward to continued dialogue with EPA and MS4 permittees about strategies to improve the effectiveness of stormwater regulatory programs, with the goal of restoring and maintaining fishable, swimmable waterways throughout Massachusetts.

Sincerely,

Cynthia E. Liebman

Staff Attorney
Conservation Law Foundation

Attachments:

A. Comment Letter and C.V. of Dr. Robert Roseen
B. Statement and C.V. of Dr. Stephanie Hurley
C. Chart Summarizing Attached Documents Regarding LID Approaches to Stormwater Management
D. Attachments D1-D73 (by hand delivery)*

*Attachments D1-D65 were presented to the Pollution Control Hearings Board for the state of Washington by Earthjustice and co-counsel for Plaintiffs, in connection with the Seattle MS4 litigation.

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Re: Draft General Permit for Small Municipal Storm Sewer Systems ("MS4") for Massachusetts South Coastal, Merrimack, and Interstate South-Flowing Watersheds

Dear Ms. Renahan:

The Conservation Law Foundation ("CLF") appreciates the opportunity to comment on the Small Municipal Separate Storm Sewer System Draft General Permit for Massachusetts South Coastal, Merrimack, and Interstate South-Flowing Watersheds Watersheds ("Draft Permit").

Founded in 1966, the Conservation Law Foundation ("CLF") is a member-supported environmental advocacy organization that works to solve the problems threatening our natural resources and communities in Massachusetts and throughout New England. Among those problems, CLF has worked, and continues to work, to promote effective regulations and strategies to reduce and minimize the significant impacts of stormwater pollution.

I. General Comments

"Stormwater runoff is one of the most significant sources of pollution in the nation, 'at times comparable to, if not greater than, contamination from industrial and sewage sources."[1] As the U.S. Environmental Protection Agency (EPA) acknowledged in 1999, "[s]torm water runoff from lands modified by human activity can harm surface water resources and, in turn, cause or contribute to an exceedance of water quality standards by changing natural hydrologic patterns, accelerating stream flows, destroying aquatic habitat, and elevating pollutant concentrations and loading." 64 Fed. Reg. 68,724 (Dec. 8, 1999). This is no less true in

[1] *Environmental Defense Center v. Browner*, 344 F.3d 832, 840 (9th Cir. 2003), *cert. denied*, 124 S.Ct. 2811 (2004) (*citing* Richard G. Cohn-Lee and Diane M. Cameron, *Urban Stormwater Runoff Contamination of the Chesapeake Bay: Sources and Mitigation,* THE ENVIRONMENTAL PROFESSIONAL, Vol. 14, p. 10, at 10 (1992) and *Natural Res. Def. Council v. EPA*, 966 F.2d 1292, 1295 (9th Cir. 1992)).

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Massachusetts. Stormwater has been cited as the primary cause of water quality impairment in the Commonwealth, and municipal small separate storm sewer systems ("MS4s") are a significant contributor to those problems.[2]

An enhanced Small Municipal Storm Sewer ("MS4") permit program for Massachusetts with meaningful standards, clear milestones, and strong enforcement is necessary as part of the overall effort to restore degraded rivers, streams, and ponds and maintain fishable, swimmable water quality in the state's waterways. The Draft Permit represents a substantial step forward in this direction, and we recognize the work EPA Region 1 ("EPA") has undertaken to evaluate the effectiveness of the 2003 permit and to involve stakeholders in discussions about the permit reissuance. However, from CLF's perspective there are a number of areas where the permit must be strengthened in order to fully reflect legal requirements and to accomplish the objectives of the MS4 program.

Compliance with the Massachusetts MS4 permit, and success at achieving water quality outcomes, has varied widely across the permittees under the 2000 permit.[3] EPA's own review of the MA MS4 program revealed that only 171 of 240 towns submitted their annual report for Year 7 (2009-10).[4] In compliance Year 6 (2008-09), only 25% of Communities reported they were doing outfall inspection and monitoring, and 30% still had not completed outfall mapping. These are baseline requirements that municipalities have been aware of since the 1999,[5] and that form the building blocks of the program. These monitoring, planning and assessment steps are prerequisites to the full achievement of what this permit program requires, which is a systematic analysis of impervious area, the creation and implementation of a plan to retrofit existing infrastructure to meet water quality standards, and incorporation of LID into all new development.

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[2] MassDEP, *Moving Toward a Statewide Stormwater Policy,* Presentation to Stormwater Stakeholders Group, March 6, 2008 (citing pollutants associated with stormwater runoff as the cause of 60% of impairments statewide; *see also* Massachusetts Integrated List of Waters (2008), available at http://www.mass.gov/dep/water/resources/tmdls.htm; Lower Charles River Nutrient TMDL, available at http://www.mass.gov/dep/water/resources/tmdls.htm.

[3] MassHighway, for example, failed to submit an NOI meeting even basic authorization requirements until CLF, the Charles River Watershed Association, and the Leominster Land Trust sued the Commonwealth in federal court in 2006. CLF v. Patrick, Case No. 06-11295wgy (U.S. District Court for the District of Massachusetts).

[4] *See* EPA NPDES Phase II Small MS4 Permit Program – Massachusetts Annual reports summary Permit Year 7 (2009-2010), *available at* http://www.epa.gov/ne/npdes/stormwater/assets/pdfs/MA-SWMP-Summaries-Metrics-Yr-7.pdf.

[5] 64 Fed. Reg. 68722 (Dec. 8, 1999). Had these requirements been meaningfully considered by the permittees from the outset, there was ample time to incorporate infrastructure improvements into annual and multi-annual budgeting and capital planning processes, and to establish funding mechanisms to ensure the financial resources for management of stormwater. Newton, for example, has implemented a stormwater utility.

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Although achieving these objectives, and compliance with the Clean Water Act, will require a sustained commitment of resources, EPA and the entities regulated under the Phase II program must not lose sight of the fact that there are significant costs associated with continued stormwater pollution – such as ongoing and increasing degradation of water quality, loss of recreational value, adverse impacts on water supplies, and declining property values – that can only be reduced and avoided by improved stormwater regulation and management.[6] Low Impact Development ("LID") and green infrastructure practices that restore the natural hydrological cycle and reduce the demand on piped infrastructure can be, in the long run, more cost-effective to implement and maintain than conventional stormwater infrastructure.[7] Thus, in addition to improving and protecting water quality, the increased use of LID and green infrastructure has the potential to generate financial benefits and more livable communities.

A recent (2010) EPA report found that:

> Communities across the nation are increasingly recognizing the potential for green infrastructure to address social and economic, as well as water quality concerns. Green infrastructure can reduce infrastructure costs, promote economic growth, and provide opportunities for outdoor reflection and recreation. As interest in green infrastructure becomes more widespread, the demand for related job skills continues to rise. These skills are required not only for the initial design and installation of green infrastructure practices, but for long-term operation and maintenance as well.
>
> Research indicates that the potential economic benefits of widespread green infrastructure implementation are substantial. According to a study by American Rivers, NRDC, and other groups, 153 water-related green infrastructure projects worth $1.025 billion are ready to be implemented within 6 to 9 months in communities across the country.

[6] See, e.g., "How Much Value Does the City of Philadelphia Receive from its Park and Recreation System? A Report by The Trust for Public Land's Center for City Park Excellence for the Philadelphia Parks Alliance," June 2008 at 3-4 (estimating that Philadelphia's 10,000 acres of parks save $5.9 million annually in stormwater management costs).

[7] Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices, U.S. EPA, Nonpoint Source Control Branch (4503T), Washington, D.C., Dec. 2007 (EPA 841-F-07-006). This EPA report on seventeen LID case studies found that in the majority of the LID projects "significant savings were realized due to reduced costs for site grading and preparation, stormwater infrastructure, site paving, and landscaping." LID projects resulted in up to 80% total capital cost savings. Furthermore, additional benefits, such as improved aesthetics and faster sales, were not factored into these savings figures. The case studies included redevelopment projects (for example, green roofs in Toronto) as well as new development.

U.S. EPA, Managing Wet Weather with Green Infrastructure: Green Jobs Training: A Catalog of Training Opportunities for Green Infrastructure Technologies, at i (Sept. 2010).[8]

II. Water Quality-Based Requirements

A central tenet of the Clean Water Act (CWA) as well as the small MS4 program is the principle that NPDES permits ensure compliance with water quality standards.[9] This concept is reiterated in the CWA, its regulations, case law, and the Small-MS4 General Permit. In enacting the CWA, one of Congress' principal goals was to "recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, [and] to plan the development and use (including restoration, preservation, and enhancement) of land and water resources."[10] In accordance with this goal, the CWA is clear that all provisions in a NPDES permit must comply with state water quality standards.[11] Federal case law has also underscored EPA's authority to include in stormwater permits all conditions and limitations necessary to assure the attainment water quality standards are met.[12]

The implementation of the MS4 program to date, and analysis done in connection with the Charles River Watershed phosphorus TMDLs, indicates that retrofits of existing infrastructure will be needed to ensure water quality standards are met in urban and suburban waterways. CLF encourages EPA to more clearly state where stormwater retrofits and new structural BMPs are expected as the result of the minimum control measures and Section 2. As described more fully below, LID-based performance standards are warranted in this permit, as it is not clear the permit's objectives can be met without them.

Section 1.3(k), providing that discharges that cause or contribute to instream exceedances of water quality standards are not authorized under the permit, should be retained in the final

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[8] listing green jobs training programs, more than half of which include LID/ green infrastructure stormwater management. *See also* www.epa.gov/greeninfrastructure.

[9] CWA §301(b)(1)(C), 33 U.S.C. § 1331(b)(1)(C), and 40 C.F.R. § 122.4(d).

[10] *See* 33 U.S.C. § 1251(b).

[11] *See* 33 U.S.C. § 1370 (allowing state water quality standards to be more stringent than federal technology-based standards); 33 U.S.C. § 1341(a) (requiring compliance with water quality standards of both the state where the discharge originates and of any state affected by the discharge). The requirement that permits comply with state water quality standards allows no exceptions for cost or technological feasibility. *In re City of Fayetteville, Ark.*, 2 E.A.D. 594, 600-01 (CJO 1988) (interpreting the language of section 301(b)(1)(C) to require "unequivocal compliance with applicable water quality standards," and prohibit "exceptions for cost or technological feasibility"), *aff'd sub nom.* Arkansas v. Oklahoma, 503 U.S. 91 (1992).

[12] *Defenders of Wildlife v Browner* affirmed EPA's authority to include in small and medium MS4 permits controls and limitations necessary to ensure water quality standards are met. 191 F.3d 1159, 1166-67, (9th Cir. 1999) *See also* 33 U.S.C. 1312(p)(3)(b)(iii) (as cited in Fact Sheet, at 4).

permit as an expression of EPA's responsibility and authority to ensure water quality standards are met.

Today, more than ten years since the commencement of the Small MS4 Program, and in light of current agency policy, EPA should be including numeric effluent limitations and performance standards in this permit that are clear, objective, enforceable, and reflect the state of the art, which is low-impact development ("LID") and "green infrastructure." The Draft Permit is an improvement over the 2003 permit in this regard, but does not go far enough toward this standard. As stated in a 2010 EPA guidance document:

> EPA now recognizes that where the NPDES authority determines that MS4 discharges and/or small construction storm water discharges have the reasonable potential to cause or contribute to water quality standards excursions, permits for MS4s and/or small construction stormwater discharges should contain numeric effluent limitations where feasible to do so. EPA recommends that NPDES permitting authorities use numeric effluent limitations where feasible as these types of effluent limitations create objective and accountable means for controlling stormwater discharges.

EPA Memorandum, James Hanlon to Regional Administrators, Nov. 10, 2010, "Revisions to the November 22, 2002 Memorandum 'Establishing Total Maximum Daily Load (TMDL) Waste Load Allocations (WLAs) for Stonm Water Sources and NPDES Permits Based on Those WLAs." The substantial body of water quality data collected in Massachusetts since 2003 shows that MS4 discharges not only have the reasonable potential to cause water quality standards exceedances, they *are* causing and contributing to exceedances of standards.[13]

CLF recognizes that EPA has taken steps to clarify the relationship between water quality-related requirements and the six minimum measures (and that both sets of requirements are applicable), which is generally a beneficial change. However, the Draft Permit still raises significant concerns and should be further clarified and strengthened.

a. Section 2.1.1, Requirement to Meet Water Quality Standards.

[13] See footnote 2, supra (citing MassDEP assessment that 60% of impairments are associated with stormwater pollution); . Massachusetts Integrated List of Impaired Waters, updated 2008 and 2010, available at http://www.mass.gov/dep/water/resources/tmdls.htm; MassDEP Mystic River Water Quality Assessment Report 2004-2008, at xi, *available at* http://www.mass.gov/dep/water/resources/71wqar09.pdf. The U.S. District Court for Massachusetts found that MassHighway was causing and contributing to instream exceedances of water quality standards at three locations. Case No. 06-cv-11295WGY, electronic order May 30, 2008; Order, May 11, 2010.

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CLF objects to the "presumptive approach" set forth in the Draft Permit and Fact Sheet, in which discharges are presumed to satisfy water quality requirements if minimum measures are implemented. (*See* Fact Sheet, at 30).

Section 2.1.1 is problematic in that it attempts to create the presumption that water quality standards are met if permittee "fully satisfies" all other permit requirements.' The presumption that "in the absence of information suggesting otherwise, discharges will be presumed to meet the applicable water quality standards . . . " is contrary to the permit itself (Section 1.3(b)) as well as the Clean Water Act and the Phase II regulatory scheme, which establish that the burden is on the discharger to demonstrate that water quality standards are met. This presumption should be removed in the final permit. CLF supports EPA's clarification that the 60-day period for the permittee to cure the exceedance is not create grace period and that EPA retains the ability to undertake any enforcement action allowed under the CWA. EPA should further clarify that this presumption and the 60-day period do not create any obstacle to the right of citizen enforcement conferred by Section 505 of the Clean Water Act, 33 U.S.C. § 1605, which would be illegal.

The Fact Sheet cites language in the 1999 Federal Register notice anticipated the ongoing obligation of the permittee to modify the SWMP to meet water quality standards.

> As discussed further below, however, small MS4 permittees should modify their programs if and when available information indicates that water quality considerations warrant greater attention or prescriptiveness in specific components of the municipal program. If the program is inadequate to protect water quality, including water quality standards, then the permit will need to be modified to include any more stringent limitations necessary to protect water quality.

64 Fed. Reg. 68722, 68753 (Dec. 8, 1999) (emphasis added).

CLF does not concede that the phrase "if and when available information indicates…" in the Phase II rule allows permittees to wait for citizens or regulatory agencies to notify them that a discharge is causing or contributing to water quality problems.[14] The burden is more properly on the discharger to actively assess and monitor their discharges, and to immediately correct problems, whether discovered through their own assessment or by others.

[14] *See* 64 Fed. Reg. 68722, 68753 (Dec. 8, 1999) ("[p]ermittees should modify their programs if and when available information indicates that water quality considerations warrant greater attention or prescriptiveness in specific components of the municipal program.")

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b. 2.2.1 – Discharges to Impaired Waterways With an Approved TMDL

CLF objects to the draft permit language stating that approved TMDLs are those that have been approved as of the effective date. As new TMDLs are approved during the permit term, they ought to be considered approved TMDLs. This better reflects the reality that new TMDLs will be issued throughout the permit term. Incorporating new TMDLs would ensure that their implementation will not be held up by the MS4 permit reissuance.

Section 2.2.1(b) refers to Appendix G, in which EPA has done some 'translating' of what the TMDLs mean in terms of requirements for MS4s. In general, this type of chart is a helpful addition to the permit, as the prior permit term revealed that there was a gap in some permittees' understanding of and acceptance of responsibility for loading reductions. The draft permit also reflects an important clarification in 2.2.2 that TMDL is not a license to pollute – that discharges to impaired waters must also comply with Part 2.1.1, the prohibition on causing or contributing to instream exceedance

CLF supports EPA's inclusion of specific requirements from TMDLs in Appendix G of the permit. However, certain of the assumptions that have been made in translating the TMDLs to requirements in Table G are objectionable and result in less stringent requirements in the Permit than are appropriate. There are numerous TMDLs in Massachusetts that clearly identify stormwater from impervious areas as a contributor to the impairment although the LA and WLA may not explicitly ascribe a specific percentage reductions to the MS4 system. TMDLs of this nature should be included in this appendix.

Table G2 sets forth TMDL requirements for Long Island Sound, and appropriately requires a 10% reduction from existing levels, as this reflects the approved Load Allocation for urban and agricultural loads for out-of-basin sources. This target is an important element of the TMDL, as other loading allocations are predicated on this nitrogen removal from out of basin sources. EPA should change the language in the fact sheet that could create the impression that MS4 permittees need not actually achieve and document this reduction.

Table G4, TMDLs for Buzzards' Bay and Cape Cod TMDLs, states that in many Cape Cod municipalities with an approved nitrogen TMDL, the approved TMDL allocation for nitrogen is "negligible." This is unsupported by the Cape Cod TMDLs[15] and their underlying technical

[15] Stage Harbor, Sulphur Springs, Taylors Pond, Bassing Harbor and Muddy Creek (Chatham) TMDLs for Total Nitrogen, approved by EPA Region 1 on June 21, 2006; Quashnet River, Hamblin Pond, Little River, Jehu Pond, and Great River (Waquoit Bay System) TMDLs for Total Nitrogen, approved by EPA Region 1 on Nov. 7, 2007; Great, Green, and Bournes Pond Embayment Systems TMDLs for Total Nitrogen, approved by EPA Region 1 on July 18, 2007; Popponesset Bay TMDLs for Total Nitrogen, approved by EPA Region 1 on Jan. 22, 2008; Pleasant Bay System

reports for several reasons. First, CLF disagrees with EPA's statement in the fact sheet that "The TMDLs for nitrogen do not identify MS4 sources as significant contributors of nitrogen." In fact, the TMDLs consistently identify stormwater runoff from impervious areas as substantial proportion of the "controllable" load reduction – as high as 30%.[16] In addition, it is well documented that nitrogen in stormwater runoff from impervious areas and roads contributes substantially to pollution of waterways.[17]

Second, the entire stormwater contributions of nitrogen from MS4 systems should properly be accounted for and placed in the WLA of the TMDLs and accordingly in Table G4. Municipal stormwater systems on Cape Cod that collect and convey stormwater to surface waters are "municipal separate storm sewer systems" as that term is defined in EPA's regulations, and are therefore point sources under the CWA that must be included in the WLA as a matter of law. 40 C.F.R. §§ 122.26(b)(16) & 122.32(a)(1); see also, 64 Fed. Reg. 68722, 68818-19 (Dec. 8, 1999). This is the case whether the MS4 conveys and discharges pollutants via groundwater aquifers, surface flow through discrete conveyances such as ditches or swales, direct piped discharges, or a combination of these conveyances. *See* CWA § 502(14), 33 U.S.C. § 1362(14) ("point source.") The TMDLs draw an arbitrary distinction between impervious area more or less than 200 feet from surface water bodies,[18] which is contrary to EPA's own mapping of MS4 areas of coverage for various municipalities associated with this MS4 permit reissuance. *See*

TMDLs for Total Nitrogen, approved by EPA Region 1 on Oct. 24, 2007; Three Bays System TMDLs for Total Nitrogen, approved by EPA Region 1 on Feb. 13, 2008; Centerville River – East Bay System TMDLs for Total Nitrogen, approved by EPA Region 1 on Dec. 20, 2007; West Falmouth Harbor Embayment System TMDLs for Total Nitrogen, approved by EPA Region 1 on May 5, 2008; Phinney's Harbor Embayment System TMDLs for Total Nitrogen, approved by EPA Region 1 on Feb. 5, 2008; Little Pond Embayment System TMDLs for Total Nitrogen, approved by EPA Region 1 on Mar. 3, 2008; Oyster Pond Embayment System TMDLs for Total Nitrogen, approved by EPA Region 1 on May 5, 2008; Nantucket Harbor Bay System TMDL for Total Nitrogen, approved by EPA Region 1 on May 12, 2009, and Stage Harbor/Oyster Pond, Sulphur Springs/Bucks Creek, Taylors Pond/Mill Creek (Chatham Southern Embayments) TMDL Re-Evaluations for Total Nitrogen, approved by EPA Region 1 on June 22, 2009.

[16] See, e.g., Chatham Draft TMDL, 2008, at v. ("fertilizer and runoff" account for **12%** of the controllable load reduction); Centerville Final TMDL ("land use" accounts for **19%** of controllable load and 16% of overall load); Pleasant Bay Final TMDL ("land use" accounts for **30%** of controllable load, and 9% of overall load); Three Bays Final TMDL ("land use" accounts for **23%** of controllable load and 17% of overall load); Phinneys' Harbor Final TMDL ("land use" accounts for **25%** of controllable load and 15% of overall load).

[17] *See* Attachments D1-D81 (LID documents); see e.g. Project Report No.515: Contamination of Soil and Groundwater Due to Stormwater Infiltration Practices: A Literature Review by Peter T. Weiss, Greg LeFevre and John S. Gulliver of the University of Minnesota Stormwater Assessment Project, prepared for the Minnesota Pollution Control Agency (June 23, 2010), at ii, 6, 7 ("In areas with traditional development (i.e. no LID), nitrate export was found to increase logarithmically with increased impervious area. In LID areas, nitrate export did not correlate with impervious surface area"). *Available at* http://www.safl.umn.edu/.

[18] The TMDLs are predicated on the assumption that nitrogen from MS4 stormwater discharges beyond 200' from surface water bodies is presumed to infiltrate and therefore not to reach the receiving waters covered by the TMDLs. See, e.g. Centerville River TMDL, at 18.

http://www.epa.gov/ne/npdes/stormwater/ma.html. To the extent that EPA's statement in Table G4 that nitrogen contribution is "negligible" based on this distinction, the permit and the table should be changed to reflect nitrogen reductions commensurate with the full extent of the MS4 contribution.

Third, Appendix G should clarify that the Cape Cod Nitrogen TMDLs provide no allocation for new growth. Thus, if any new MS4 impervious area is created, the additional nitrogen loading must be removed or offset on that basis alone. *See, e.g., Centerville TMDL, at 18.* TMDLs.

Finally, the chart is confusing, inconsistent, and apparently incorrect in that for some waterbodies with approved TMDLs, nitrogen is not listed in the column of approved TMDL components (while other pollutants are listed in this column), or the word "negligible" appears but the word nitrogen does not.

CLF disagrees with the approach to documenting compliance with TMDLs reflected in the Fact Sheet, that "the permittee's demonstration of meeting the requirements of the WLA should focus on evidence that shows that the BMPs are implemented properly and adequately maintained."[19] A quantitative approach should be used where the permittee estimates or its overall pollutant loading and the expected reduction if BMPs are properly maintained, as well as the expected impacts on water quality. This estimation should then be verified by real world information.

c. 2.3.1.1-2 – New or Increased Discharges to Impaired Waters

- The Draft Permit's requirement that new or increased discharges to impaired waters are disclosed and offset are critical on both a legal and practical level. Over half of Massachusetts waterways are already impaired for stormwater-related pollutants. Preventing polluted stormwater discharges from new impervious area represents the most straightforward opportunity to prevent further inputs of pollution into these degraded waterways. MS4 permittees are already obligated to control their discharges to the point where they are not causing or contributing to instream exceedances of water quality standards. Therefore, where new outfalls , higher pollutant loadings, or increased stormwater volume are proposed, 40 C.F.R. § 122.4(i) requires no less.

- CLF agrees generally that any new or increased discharges to impaired waters must be evaluated by the permittee before they occur, in relation to TMDLs and water quality standards. CLF supports the requirement that permittees give prior notice and receive approval from EPA before a new discharge will commence into a water with a TMDL,

[19] Fact Sheet, at 33.

and strongly encourage EPA to require this information is made available to the public in real time. The draft permit does not appear to provide for any notice to EPA or the public prior to increased discharges, or prior to new discharges in impaired waters without a TMDL. CLF recommends this provision be changed in the final permit. It is critical that citizens, as well as regulatory agencies, have the opportunity to be informed *before* any new or increased discharge is permitted, to ensure that full dialogue occurs in the municipality as to how stormwater will be managed, and so that EPA and the public can make sure that the offsets or promised infrastructure are, in fact implemented. Merely requiring a statement in the annual report is not enough -- for example if a development or infrastructure project has been completed nearly a year ago and no offsets actually occurred as part of the project, or the project was changed from the initial design, it would be more difficult and costly to go back and mitigate the new or increased discharge after the fact. The spirit of this important permit provision would not be served by self-reporting on an annual basis.

- The draft permit represents an improvement over the 2003 permit in that "increased discharge" is defined, and that this situation is addressed more explicitly. [20] CLF agrees with EPA that no net increase in pollutant loading should be allowed from increased discharges to impaired waters, and that offsets need to be documented before construction begins. However, the application of the term "new discharger" is inappropriately proscribed due to EPA's overly broad reading of the term "new discharge," relying on an objectionable interpretation of the term "site"[21] to include an entire MS4 system. *See* 40 C.F.R. 122.2 (definitions). As a result, many discharges that should properly be treated as "new discharges" are considered to be "increased discharges."

- Functionally, this accomplishes an end run around the requirements of 122.4(i), as interpreted in the *Pinto Creek* decision, that "no permit may be issued to a new discharger if the discharge will contribute to the violation of water quality standards." A narrow exception to this prohibition is carved out for situations where a TMDL has been calculated, if the discharger can show, before the end of the comment period, that "there are sufficient remaining pollutant load allocations to allow for the discharge and that the existing dischargers into that segment are subject to compliance schedules designed to bring the segment into compliance with applicable water quality

[20] "Increased discharge" is defined in the draft permit as a discharge "directly into the MS4 or from the MS4 that commences after the effective date of this permit and results from creation of one or more acres of new impervious surface." Draft permit, § 2.3.1.

[21] The term "site" is defined to mean "the land or water area where any 'facility or activity' is physically located or conducted including adjacent land used in connection with the facility or activity." 40 C.F.R. 122.2.

standards."[22] CLF does not agree that new impervious area or new stormwater outfalls created by a municipality are properly defined as "increased discharges" rather than "new discharges" or "new dischargers" for purposes of triggering the Pinto Creek analysis. Any new stormwater outfalls created by an MS4 discharger into an impaired waterbody would contribute to the violation of water quality standards, and should be subject to the Pinto Creek requirements. We recommend this provision be changed in the final permit.

- Under the draft permit, "increased discharges" must provide for a net decrease in pollutant loading through enhanced control or offsets.[23] Without conceding that these discharges can be allowed under the permit, absent a TMDL and a demonstration that compliance schedules are in place for other point sources, CLF agrees agree that that a net decrease in pollutant loading should be required for any increased discharges to impaired waters. More specificity is needed as to what kinds of measures are an appropriate offset (for example, structural BMPs installed and functioning, and verified by the permittee to accomplish a particular pollutant loading, mass or volume reduction). Quantitative analysis and verification should be required to document the pollutant reduction and that the discharge will not contribute to water quality standards exceedances.

- Regarding Section 2.3.1.2, the "increased discharge" analysis and verification for TMDL waterways is not sufficient to ensure consistency with TMDLs. Step "a" is appropriate, and permittees should be required to calculate their loading contribution in this circumstance. However, steps "b" and "c" are too vague and leave an impermissible degree of discretion to the permittee. A better defined quantitative approach should be required, and the permittee should be required to certify as to the measures that have been taken on the ground and that they are achieving the necessary pollution reductions.

d. **2.3.3** - Antidegradation Requirements.

[22] 40 C.F.R. 122.4(i); *Friends of Pinto Creek v. EPA*, Slip Op. No. 05-70785, 13505, 13515 (9th Cir., Oct. 4, 2007). The rationale for this section of the regulations is that it "corresponds to the stated objectives of the Clean Water Act 'to restore and maintain the chemical, physical, and biological integrity of the nation's waters.' 33 U.S.C. § 1251(a) (1987). And that 'it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited.' 33 U.S.C. § 1251(a)(3) (1987)." *Pinto Creek,* at 13515 (9th Cir. 2007).

[23] The Draft Permit provides that increased discharges are only eligible for General Permit coverage if the permittee identifies and estimates a load for each pollutant of concern, implements structural BMPs, and identifies the BMPs it has implemented such that the MS4 will not cause or contribute to exceedences of water quality standards or, in the case of a TMDL waterbody, will be consistent with the TMDL. Draft Permit, Sections 2.3.1.1 – 2.3.1.2.

- In general, the draft permit contains more thorough descriptions of the elements the antidegradation analysis must include than did the prior permit. This is an improvement over the prior permit, but this section is still not sufficiently clear and prescriptive to ensure the state's antidegradation policy is carried out.

- A second general concern is that the antidegradation provisions of the permit are too narrow in their application; antidegradation should be an ongoing and prospective analysis that applies to all permitted activities. This is because all NPDES permits must meet the non-degradation standard throughout the lifespan of the permit. *See* 40 C.F.R. 131.12.

- Section 2.3.3(b)(1) appears to create a de minimis exception, but this is not explained in the Fact Sheet. We do not agree that there is any de minimis threshold in the state's anti-degradation regulations at 314 Code Mass. Regs. 4.04, and therefore this should be removed.[24]

- The "Tier II" provisions in Section 2.3.3(b) are problematic, in that section 2.3.3(b) creates a subjective "out" on a number of grounds that are not consistent with 40 C.F.R. 131.12. The permittee can claim the discharge is "not significant because it is temporary in nature and that upon completion of the discharge period the existing water uses . . . will be equal to or better than . . . prior to commencing the discharge," or that "the effluent will be of a better quality than the existing water quality of the receiving water." These categories are too subjective to be enforceable, and at a minimum are susceptible to overly generous interpretation by permittees. This type of subjective self-regulation was struck down in *Environmental Defense Center v. Browner.*[25] In addition, allowing for a discharge that is "temporary in nature" implies that water quality standards during particular periods or events, which appears contrary to the water-quality based requirements of the MS4 program.[26]

- Section 2.3.3(f) provides that new or increased discharges to Outstanding Resource Waters require an individual permit. EPA should meaningfully enforce this provision. Given the wide range of waterways receiving discharges from the Department of

[24] If this is a reference to 314 Code Mass. Regs. 4.04(5), it appears to be mischaracterized. That section requires a four part analysis to be performed by the applicant to demonstrate that a number of substantive criteria are met before *"limited degradation"* (i.e. a new or increased discharge) is allowed to a high quality water. 4.04(5) would not be properly characterized as a de minimis threshold.

[25] *Environmental Defense Center v. Browner,* 344 F.3d 832, 840 (9th Cir. 2003), *cert. denied*, 124 S.Ct. 2811 (2004).

[26] *See* 40 C.F.R. § 122.4.

Transportation roads and infrastructure, including public water supply areas,[27] DOT should be required to obtain an individual permit on this basis alone.

III. Performance Standards Reflecting Low-Impact Development and Green Infrastructure

CLF strongly urges EPA to include in the permit performance standards that reflect Low-Impact Development or "green infrastructure" stormwater management practices, and/or numeric effluent limitations that are commensurate with such standards. These practices are widely available, well proven, are generally more effective than conventional infrastructure at pollutant removal and volume reduction, and confer additional benefits to the community and environment. As detailed in attachments A,B,C, and D1-75 to this comment letter, **LID/green infrastructure is the current expression of controlling polluted stormwater runoff to the "maximum extent practicable" ("MEP").** Furthermore, the attached documents demonstrate that the permit cannot effectively ensure that water quality standards will be met *without* inclusion of such LID/green infrastructure-based performance standards. Performance standards based on LID/green infrastructure should be included in this permit.[28] In particular, performance standards for LID/ green infrastructure should be included in Section 2.4.5, the Post-Construction bylaw, and should be required as the means by which permittees fulfill water-quality based requirements under Section 2.

From the outset, EPA has made clear the expectations that technologies would evolve, and that the Maximum Extent Practicable standard in the second round of small MS4 permits would reflect what was learned about the effectiveness of the BMP implemented during the first round. The need to meet water quality standards was to drive the evolution of the MEP standard, itself, because the ultimate objective of all BMPs is to ensure the attainment of water quality standards. As EPA expressed in the MS4 Final Rule:

> [The Maximum Extent Practicable standard] should continually adapt to current conditions and BMP effectiveness and should strive to attain water quality standards. Successive iterations of the mix of BMPs and measurable goals will be driven by the objective of assuring maintenance of water quality standards. If, after implementing the six minimum control measures there is still water quality impairment associated with discharges from the MS4, after successive permit terms

[27] including the Hobbs Brook Reservoir, which is listed as a Class A, Outstanding Resource Water. *See* 314 Code Mass. Regs. 4.06, Figures, available at http://www.mass.gov/dep/water/laws/tblfig.pdf.

[28] Whether an expression of technology-based effluent limitations, water-quality based effluent limitations, or both, such performance standards are timely and necessary for the reasons described above.

> the permittee will need to expand or better tailor its BMPs within the scope of the six minimum control measures for each subsequent permit.

64 Fed. Reg. 68722, 68754 (Dec. 8, 1999) (EPA Stormwater Phase II Final Rule).

EPA anticipated that "the NPDES permitting authority may ask the permittee to revise their mix of BMPs, for example, to better reflect the MEP pollution reduction requirement." 64 Fed. Reg. 68722, 68754 (Dec. 8, 1999) (EPA Stormwater Phase II Final Rule). Even more recent (2010) EPA guidance on this issue -- the establishment of water-quality based effluent limitations in stormwater permits -- stated that "[i]mproved knowledge of BMP effectiveness gained since 2002 should be reflected in the demonstration and supporting rationale that implementation of the BMPs will attain water quality standards and WLAs."[29] **At this juncture, ten years after the Small MS4 program was first enacted, and given the wealth of data generated in the interim, it would be inappropriate for EPA Region 1 *not* to include LID-based performance standards and revise the scope of required BMPs to reflect LID/green infrastructure.**

Comments by Dr. Robert Roseen, Director of the University of New Hampshire Stormwater Center on the North Coastal MS4 Draft permit (Attachment A) and Dr. Stephanie Hurley's Statement on Low-Impact Development, included with CLF's Comments on the North Coastal MS4 Draft Permit (Attachment B) confirm that Low-Impact Development and green infrastructure is well tested, effective at stormwater volume reduction and pollutant removal, suitable for New England, and confers ancillary benefits.

Dr. Roseen's professional opinion is that "LID stormwater management works effectively throughout multiple seasons including challenging winter conditions. Data shows that it works better for water quality than conventional stormwater management."[30] He also confirms that studies have shown LID to be cost effective and in some cases to result in cost savings.[31] Furthermore, Dr. Roseen cautions that "with the raising of the standards for MEP . . . certain practices should be *disallowed* for usage. Practices that have been demonstrated to be contributing to the water quality failures should be eliminated . . . ."[32]

Dr. Hurley's professional opinion regarding LID is that it "offers a more ecological, flexible, and context-sensitive stormwater management approach—and more readily meets water quality

[29] EPA Memorandum, James Hanlon to Regional Administrators, Nov. 10, 2010, "Revisions to the November 22, 2002 Memorandum 'Establishing Total Maximum Daily Load (TMDL) Waste d Allocations (WLAs) for Stonm Water Sources and NPDES Permits Based on Those WLAs', at 4.
[30] Attachment A, at 1.
[31] *Id.* at 2.
[32] *Id.* at 1 (emphasis added).

and hydrologic performance standards—than conventional stormwater management."[33] Furthermore, Dr. Hurley has personally evaluated LID implementation sites at various locations throughout the U.S. and internationally, and confirms that "the principles of LID design can be successfully applied in various topographies, geographies, and climates" including New England, and at a variety of scales.[34] Her conclusion is that LID represents the maximum extent practicable for stormwater treatment.[35]

The direct testimony of Richard Horner, before the Pollution Control Hearings Board for the State of Washington in the matter of the Seattle Phase I stormwater permit (Attachment D3) affirmed that LID techniques are " unquestionably 'known' and 'available' techniques. In many cases, implementation of LID for new or redevelopment is less costly than conventional BMPs, and offers other economic benefits such as improved property values or reduced water use."[36] Dr. Horner further asserted that the Seattle Phase I permit at issue did not "use all known available and reasonable methods" to control stormwater from new and redevelopment, and it was "highly unlikely" that compliance with water quality standards could be achieved using conventional techniques.[37] Further, he asserted that "LID approaches are far more protective of water quality than the conventional BMPs" and that the permit did not reflect the maximum extent practicable standard.[38]

The direct testimony of Dr. Derek Booth in the same matter asserted that "the [Seattle Phase I] Permit . . . does not protect rivers and streams, beneficial uses, or aquatic life. Continued reliance on such a [flow-based] standard for new development in western Washington will not prevent serious and significant additional degradation to these resources," and in his professional opinion, "a more protective performance standard that more closely matches natural hydrology . . . is readily achievable without sacrificing opportunities for future development. Achieving a more protective standard would rely on site- and basin-level LID BMPs that are in my opinion, sufficiently well known, understood, available and economically and technologically feasible that they can be implemented throughout western Washington."[39]

Thomas Holz, an experienced civil engineer, testified that

> "LID approaches are generally more effective at protecting water quality and beneficial uses than the engineered, end-of-pipe standards embraced in the

[33] Attachment B, at 2.
[34] *Id.* at 2-3.
[35] *Id.* at 3.
[36] (Attachment D3, at ¶27).
[37] *Id.*
[38] *Id.*
[39] Attachment D2, at ¶ 33.

> 2005 [Washington] Manual and Permit. They are known, available, and reasonable (as well as "practicable") in virtually all new and redevelopment situations.

(Attachment D1, at ¶ 33.)

In addition, a wealth of technical articles, case studies, litigation documents, and federal government guidance documents and fact sheets summarized in Attachment C and included as Attachments D4-81 all demonstrate these principles.

The greater adoption of LID, spurred by regulatory approaches including the MS4 permit, will benefit Massachusetts communities by keeping pollutants and concentrated pulses of stormwater out of our rivers, ponds and streams, generating increased green space, cooling urban areas, and relieving some of the cost and maintenance burden on aging municipal stormwater infrastructure.

IV. Six Minimum Measures

One theme that emerged from the implementation of the 2003 MA Small MS4 permit was the need for additional clarity, and greater enforceability of requirements under the six minimum measures. CLF recognizes that EPA has significantly clarified a number of these requirements in the draft permit, and generally supports these changes. The permittees' inconsistent progress toward improved water quality also indicates that additional best management practices are needed, in addition to clarification of the requirements.

a. IDDE and System Mapping

The requirement at Section 2.4. that IDDE be continued is important, and CLF supports the continued inclusion of IDDE requirements in the MS4 permit. Illicit connections can contain extremely high levels of bacteria as well as substantial nutrient loads, and should continue to be a core element of compliance with the permit.

CLF strongly supports the requirement for enhanced mapping of the sewer infrastructure and affected waterways in Section 2.4.4.6. As referenced above, complete mapping of sewer infrastructure, outfalls, and adjacent waterways, is a prerequisite to the full engagement of all stakeholders in better stormwater management. It is also necessary for meaningful consideration by permittees as to where increased BMPs will be installed to meet water-quality based requirements of the permit.

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Sanitary Sewer Overflows ("SSOs") are illegal, and CLF concurs that the permit should so state. CLF urges EPA to require that MS4 permittees provide real time public notification of SSOs in addition to notification to MassDEP and EPA. This would better ensure that citizens can make informed decisions about their own health and safety during and after SSO events and that the public can accurately understand the scope of overflows before deciding on investment of public resources to cure the problems.

b. Impervious area/ DCIA mapping

CLF supports the new requirements in the draft permit that towns track impervious cover[40] and "Directly Connected Impervious Area," ("DCIA"), assess possible locations for LID retrofits (presumably so that trading can occur), and assess the possibility of requiring LID town-wide for new construction. . The link between impervious cover and stream degradation has been well established since before the issuance of the 2000 permit.[41] Tracking overall impervious cover as well as DCIA will allow communities to fully account for the causes of waterway impairment, and is an important step towards the deployment of Low-Impact Development on a broader scale

c. Post-Construction LID Ordinance

CLF strongly supports the requirement that permittees institute a post-construction ordinance, as one of the core minimum measures laid out in the initial Phase II rule. Permittees covered under the 2003 permit were required to pass an ordinance addressing post-construction stormwater discharges, and to "develop, implement and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than one acre and discharge into the municipal system." The adjustment of the ordinance to reflect the use of LID should be mandatory, and should not require a great deal of additional time to be put into place.

Rather than merely requiring that municipalities "assess the possibility of" requiring LID town-wide for new contruction, EPA should go one step farther and require that a LID-based performance standard is met. LID technologies are now well proven, widely available, demonstrated to be as effective or more effective as conventional technologies, while conferring additional benefits, and necessary to ensure the attainment of water quality standards.

[40] (hard surfaces such as roadways, sidewalks, driveways, parking lots, and rooftops)
[41] 64 Fed. Reg. 68722, 68725 (Dec. 8, 1999); *see id*. at 68726-8.

As drafted, the Permit requires municipalities to enact an ordinance that tracks certain requirements of the Massachusetts Stormwater Standards. CLF supports the requirement that permittees enact ordinances requiring stormwater controls from new and redevelopment. For the reasons detailed above and in the Attachments to CLF's comments), the final permit should require that Low-Impact Development or "green infrastructure" stormwater management techniques are used, including on-site infiltration of stormwater. The Massachusetts Stormwater Standards may not equate to meeting water quality standards in all areas.

Therefore, we recommend that EPA implement a more protective standard. An alternative is the standard reflected in the EPA Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act ("EPA Federal Facilities Guidance"), The guidance was enacted pursuant to Executive Order 13514, and requires that facilities of a certain size either treat stormwater on-site sufficiently to infiltrate the 95th percentile storm event, or implement measures that will restore or maintain pre-development hydrology on a site-specific basis. This standard has been determined to be feasible and cost-effective in the context of federal facility building standards.[42] In issuing the Federal Facilities Guidance, EPA relied on the testimony of Derek Booth, Thomas Holtz and Richard Horner regarding LID in the Seattle MS4 litigation (Attachments D1-D3).[43]

In heavily urbanized areas including the Boston metropolitan area, the typical parcel size is smaller than one acre. Consequently, a one-acre threshold for post-construction stormwater management is too high to capture a significant portion of development. For the reasons EPA has already identified, a post-construction stormwater bylaw is important to controlling inputs into the MS4 system, and the threshold should be lower than one acre. One half acre would be a more appropriate threshold in urban areas. Dr. Robert Roseen's comments on the draft permit have also identified this as a concern. (*See* Attachment A).

V. Monitoring and Assessment, and Public Participation

Monitoring and assessment are critical to assessing whether the measures municipalities have chosen to implement are, in fact, working to accomplish the objectives of the Permit, and to guide decisions about what additional measures can and should be taken in each community. That is why CLF supports strong provisions for outfall monitoring, GIS mapping, tracking of Directly Connected Impervious Area in the Final Permit, as well as requirements to report all of the above data and information.

[42] Attachment D67, EPA Federal Facilities Guidance (Dec. 2009).
[43] *See* Attachment D67, EPA Federal Facilities Guidance, at 55 (Dec. 2009).

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a. Monitoring

- CLF strongly supports increased monitoring, in both wet and dry weather, as a critical component of this permit. The outfall monitoring requirements in the draft permit will yield important information about current water quality, sources of pollution, and over the span of the permit, will reveal long-term trends, and where strategies employed by municipalities are effective or ineffective. Outfall monitoring is important for numerous reasons beyond merely supporting the illicit detection and elimination program. It provides a baseline that can then be compared to discharges in future years. Monitoring data indicates whether the BMPs a permittee has chosen to use are sufficiently effective at reducing pollution. The data can also shed light on trends that are outside of the permittee's control, but that should inform choices made about stormwater BMPs.

- For these reasons, the Permit should require more than one wet and one dry sample of each outfall within the five-year term. Three samples at each outfall during the permit term would better characterize conditions in light of the variability of stormwater discharges. CLF's experience has been that outfalls near interconnections between permittees are an important place for attention to be focused, and we support the requirement that these areas be sampled.

- Given the importance of monitoring data, CLF is concerned about the scope of the exemptions, framed as a "permittee-specific monitoring plan" in Sections 3.1.4 and urges EPA to remove these exemptions so they do not undermine the rule.

- In particular, 3.1.4.1 is problematic because it is important that permittees continually assess the effectiveness of their BMPs at controlling pollutants. It is not clear under what circumstances a permittee would have completed outfall monitoring under the 2003 permit that would be equivalent to the outfall monitoring required under this permit. Section 3.1.4.2, which allows an opt-out if the outfall is associated with a Problem Catchment, seems counter-intuitive. It would seem even more important and relevant to have data on outfalls where high pollutant loadings are detected, whether or not the source is suspected to be known. Section 3.1.4.3 allows an opt-out if the amount of impervious cover discharging through an outfall is less than 10 percent of the catchment area. Water quality impacts can occur from less than ten percent impervious cover, so EPA should consider lowering this threshold.

- Section 3.1.4.5 appears to allow the permittee to opt out of monitoring if "the permittee has conducted or will conduct in its permittee-specific monitoring plan wet

and dry weather in-stream monitoring which is representative of one or more discharges to the same water body." If this provision is kept, EPA should clarify that the permittee must affirmatively certify and describe why the outfalls are representative of others, and the use of this opt-out should be limited to a certain proportion of outfalls overall, to ensure that adequate monitoring is done throughout the MS4 system during the span of the permit.

- Instream monitoring of receiving waters is also an important component of evaluating the overall relationship between MS4 discharges and water quality, and can inform the appropriate level of stormwater controls – in some cases directly indicating impacts from particular MS4 drainage areas, and in some cases yielding a more general understanding of the types and levels of contaminants found under given conditions. CLF recommends that EPA consider including targeted instream monitoring requirements in the final permit. It is noteworthy that stormwater expert Derek Booth testified in the litigation over the sufficiency Seattle's Phase I stormwater permit that monitoring was critical. (Attachment D1, at 97-99). Rather than relying on presumptions as to the effect of particular BMPs, he maintained that "if you want to know the condition of this water body, you have to go measure that condition in that water body." (Attachment D1, at 99).

b. Transparency and Public Participation

The importance of public participation to the MS4 program was recognized at the outset of the program, when a federal appeals court found that EPA's failure to make Notices of Intent for coverage under the MS4 permits available to the public for comment contravened the Clean Water Act.[44] The experience to date under the Small MS4 permit in Massachusetts confirms that public participation is vital to successful implementation of this permit. Transparency and public participation are an effective means to augment EPA's enforcement, and to foster stronger support for town decision-makers to dedicate resources to stormwater management. In instances where municipalities are falling short due to capacity or resource constraints, watershed groups can step forward to call needed attention to overlooked issues, help to secure resources, and supplement existing data and information about outfalls and the condition of waterways. However, this is only possible when information is publicly available about the municipality's efforts, the location of infrastructure and outfalls, and the condition of local waterways. Residents and community- or watershed-based organizations are in a unique position to enhance the efforts of municipalities through the MS4 program, but without full access to information, citizens are less able to assist in these ways.

[44] *Environmental Defense Center v. EPA*, 344 F.3d 832, 856-859 (9th Cir. 2003).

CLF strongly supports the provision in the Draft permit requiring SWMPs to be made available to the public, and urges EPA to additionally require that all SWMPs, storm sewer infrastructure system maps, annual reports, Phosphorus Control Plans, monitoring plans, and monitoring data be required to be made available, and more specifically that they are placed on line in real time. Given modern technology, this need not be burdensome for the permittees, while it adds a great deal of value to the information collected by making it more accessible and usable to a wider range of stakeholders.

We support the provision in the draft permit that a comment period will occur for NOIs. This is legally required as per federal case law and will have the benefits described above. In addition, CLF encourages EPA to provide for a comment opportunity on the content of SWMPs.

VI. Enforceability

In some cases, the flexibility EPA afforded under the 2003 Massachusetts Small MS4 permit was abused. Our waterways are now exhibiting the effects of that neglect, and it is important going forward that all permit requirements are expressed in clear terms with enforceable parameters. The draft permit generally reflects clearer requirements and terminology, and this letter points out a number of instances where the requirements must be strengthened in order to be enforceable, or could be clarified for the benefit of permittees and the public.

CLF has reviewed many of the annual reports under the 2003 MS4 permit. The annual reporting form template is an opportunity for EPA to ensure clear expectations and accountability for permit requirements. In part because the 2003 form was so general, MS4 annual reporting has been less effective than it could have been over the last 8 years as a compliance tracking tool. In addition to clarifying requirements in the body of the permit, EPA should make Appendix F to the Draft Permit, the Annual Reporting form spreadsheet, more specific so that the reports will be comparable across municipalities. EPA should prescribe in the permit and reflect in this template *standard numeric metrics for each BMP and water-quality based or technology-based effluent limitation* that every MS4 must report – i.e. outfalls sampled, illicit connections removed, acres of impervious cover retrofitted, number of new BMPs installed, pounds of pollution removed – instead of leaving complete discretion to the permittee. EPA should also require clear "yes or no" answers as to the status of compliance with requirements like enacting a post-construction ordinance. This will allow the EPA, MassDEP, and other stakeholders to track progress, and will allow MS4s to target their own resources when preparing reports.

VII. State Transportation Agencies

High pollutant loadings from roads and highways are well documented.[45] Highways are specifically referenced in a number of TMDLs in Massachusetts as a significant contributor and a source that must be controlled in order to achieve the needed pollutant loading reductions in that waterway.[46] MassDOT should be required to (1) identify and prioritize outfalls in water in TMDL, also identify where cross headwater streams, with low flows, (2) identify areas where highways cross sensitive habitat, (3) develop a prioritization for stormwater retrofits for those areas, and (4) develop a retrofit plan for its entire system as needed to comply with TMDLs and to correct its cause of and contribution to instream exceedances of water quality standards. "Storm water discharges from State DOTs in Phase 1 areas should already be regulated under Phase I. The preamble to Phase 1 clearly states that "all systems within a geographical area including highways and flood control districts will be covered."[47]

MassDOT expressed the view in the public hearing on the North Coastal MS4 Permit (in 2010) that DOT should not be subject to the same requirements as municipalities in the MS4 permit as proposed.

The Commonwealth is no less accountable to the requirements of the Clean Water Act than other public entities, and in fact has a greater responsibility to demonstrate leadership in protecting the resources that support the state's economy and the health of its citizens. Other highway departments are implementing LID and system-wide retrofit plans, which demonstrates that compliance is feasible.

An individual permit would more appropriately reflect the high pollutant loads from highways, and would allow for a more transparent accounting of the BMPs currently used, and that are available and appropriate, and should be deployed, throughout the highway system.

For these reasons, we strongly urge EPA to issue an individual permit to state transportation agencies, including the Department of Transportation.

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[45] *See e.g*. National Academy of Sciences, Urban Stormwater in the United States: Report in Brief, at 4 (2009) ("[f]reeway, industrial, and commercial areas can be very significant sources of heavy metals, and their discharge significance is usually much greater than their land area indicates") (available at http://dels.nas.edu/dels/rpt_briefs/stormwater_discharge_final.pdf); 64 Fed. Reg. 68722, 68727 (Dec. 8, 2009) (Stormwater Phase II Final Rule); Expert Report of Vladimir Novotny, P.E., Docket No. 55-6, Feb. 7, 2008, CLF v. Deval Patrick et. al.,case no. 11295wgy, U.S. District Court for the District of Massachusetts.

[46] *See e.g.* TMDLs for Boston Harbor/Neponset River (bacteria), Buzzards' Bay watershed (bacteria), Blackstone Lakes (nutrients), Chicopee Basin Lakes (nutrients), Cape Cod (pathogens and nutrients), Charles River (phosphorus), French Basin (phosphorus), Shawsheen River (bacteria) available at MassDEP website, http://www.mass.gov/dep/water/resources/tmdls.htm.

[47] Phase II Final Rule, 64 Fed. Reg. 68722 (Dec. 8, 1999).

To the extent state agencies remain within the General Permit, CLF strongly objects to the language in Sections 6.0-6.3 and 7.0-7.3 of the draft permit appearing to weaken the permit's requirements as applicable to state agencies. CLF does not agree with the apparent assumption that it is not possible for state agencies to comply fully with the requirements of the permit. For example, state agencies appear to be excused from Section 2.4.6.7 of the permit, which requires an assessment of current street design and parking lot guidelines and other local requirements that affect the creation of impervious cover . . . to determine if changes to design standards…can be made." The essence of this requirement – evaluating codes and design standards that affect creation of impervious cover, and identifying changes that can be made, is entirely applicable and appropriate for the Department of Transportation or other state agencies. For example, in addition to being directed to assess "facilities," parking areas and walkways, the DOT should be directed to assess its entire highway system for opportunities to reduce impervious area. A specific timeframe should be provided for this analysis, and the results should be disclosed to EPA and the public.

The same is true for Section 2.4.6.8, requiring an assessment of existing local regulations to determine the feasibility of making LID and green infrastructure practices "at a minimum . . . allowable." Again, in its essence, this is exactly the type of action EPA should be requiring of all permittees – to analyze the internal policies, regulations, or design standards that are barriers to LID, and to take action to remove them. While a state agency may or may not have its own "regulations," there are doubtless statewide regulations, internal agency policies, design guides, or standards that can and should be evaluated and changed to allow for LID.[48] EPA does not appear to have offered any legitimate rationale in the fact sheet or otherwise for state agencies to be excused from these requirements.

VIII. Additional Requirements

A. State Water Quality Certification

It is notable that no draft state water quality certification (pursuant to Section 401 of the Clean Water Act) was noticed with the Draft Permit. The fact sheet indicates that the certification process is "underway." A draft Section 401 Water Quality Certification was made public along with the draft 2003 Massachusetts MS4 permit. It is important that the public have an opportunity to understand how MassDEP is viewing the draft permit conditions, and whether any additional requirements will be added through the certification to ensure state water quality standards are met. We request that EPA and MassDEP clarify the status of the state water quality certification.

[48] In particular, the Mass Department of Transportation, Highway Division's design guide is in need of updating to reflect LID.

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B. Snow and Ice Removal and Chlorides

Research has indicated that, in the Northeast, chloride concentrations are increasing at a rate that threatens freshwater in the region.[49] Indeed, a 2001 article in *Stormwater* magazine ranked Massachusetts as having the highest annual road salt loadings in the United States. Chlorides TMDLs completed in New Hampshire confirm that stormwater runoff from roadways is a significant contributor to impairment, due to the high concentrations of chlorides, metals, and other additives in road salt that are washed into nearby waterways. Comments of Dr. Robert Roseen, Director of the NH Stormwater Center on the draft permit (Attachment A) highlight the potential of porous pavements to reduce salt application rates. Porous pavement and pervious concrete, both considered LID practices, require reduced de-icing application because water typically infiltrates rather than pooling on the surface.[50]

EPA should include in the final permit more robust requirements to address this growing threat to our freshwater bodies and drinking water supplies, including through LID and green infrastructure. Reducing the need for deicing agents through LID, making fully informed choices about the de-icing agents used, and maximizing efficiency of de-icing applications can allow MS4s to achieve the same benefits with less pollution to waterways.

CLF recommends EPA add a requirement that permittees' salt storage facilities be enclosed, not merely covered (as the draft permit requires). We also support the requirement that salt storage be located away from drinking water supplies. The final permit should be more specific as to what constitutes a safe distance between salt storage and water supplies.

CLF strongly supports the requirement in Section 3 of the draft permit that permittees conduct outfall monitoring for conductivity and chlorine, as this will help to identify locations where road salt is impacting water quality. In addition, CLF encourages EPA to require disclosure by MS4s of the types and quantities of de-icing agents they are using, and to require MS4 permittees to carry out targeted *monitoring* for pollutants commonly found in road salt (toxic metals and ferrocyanide) and other de-icing chemicals such as propylene glycol, in receiving waters of MS4 systems where they are used, to more accurately determine the degree of their impact on waterways and to establish a baseline to track whether conditions are improving or worsening over time. Only after any impacts to water resources have been brought to light can the state, municipalities, and citizens can make fully informed decisions about how to approach winter road maintenance.

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[49] Susay S. Kaushal et al., *Increased salinization of fresh water in the northeastern United States*, 102 ECOLOGY 38, 13517-20 (2005), *available at* http://www.pnas.org/cgi/content/abstract/102/38/13517.
[50] *See* EPA Green Parking Lot Resource Guide, at 27, 55 n.97 (EPA, 2008)

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Thank you for the opportunity to comment. CLF looks forward to continued dialogue with EPA and MS4 permittees about strategies to improve the effectiveness of stormwater regulatory programs, with the goal of restoring and maintaining fishable, swimmable waterways throughout Massachusetts.

Sincerely,

Cynthia E. Liebman

Staff Attorney
Conservation Law Foundation

CC: Thelma Murphy, U.S. EPA Region 1
Dave Webster, U.S. EPA Region 1
Stormwater Permitting Staff, MassDEP

Attachments:

A. Comment Letter and C.V. of Dr. Robert Roseen
B. Statement and C.V. of Dr. Stephanie Hurley
C. Chart Summarizing Attached Documents Regarding LID Approaches to Stormwater Management
D. Attachments D1-D81 (by hand delivery)*

*Attachments D1-D65 were presented to the Pollution Control Hearings Board for the state of Washington by Earthjustice and co-counsel for Plaintiffs, in connection with the Seattle MS4 litigation.

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February 27, 2015

Via Email

Newton Tedder
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Tedder.Newton@epa.gov

Re: DRAFT General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts

Dear Mr. Tedder:

The Conservation Law Foundation ("CLF") appreciates the opportunity to comment on the 2014 Draft General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems ("MS4") in Massachusetts ("Draft Permit").

Founded in 1966, CLF is a member-supported environmental advocacy organization that works to solve the problems threatening our natural resources and communities in Massachusetts and throughout New England. For years, CLF has been deeply engaged with the problems posed by stormwater runoff in Massachusetts and across New England, and CLF continues to work toward a solution for the stormwater runoff issue.

On March 31, 2010, CLF filed comments with EPA ("CLF 2010 Letter") concerning the previous draft of this permit for MA North Coastal Watersheds. On March 11, 2011, CLF filed comments with EPA ("CLF 2011 Letter") concerning the previous draft of this permit for MA Interstate, Merrimack, and South Coastal Watersheds. A copy of both comment letters are attached for reference, as is a copy of CLF's August 12, 2013 comment letter regarding the New Hampshire Small MS4 Draft General Permit ("CLF 2013 Letter"). CLF hereby incorporates the CLF 2010, 2011, and 2013 Letters and their attachments into this comment letter as if fully set forth herein.

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The following are brief comments regarding general principles and particular sections of the current Draft Permit.

- **§2.1.1 Requirement to meet Water Quality Standards.** CLF applauds the strong language of §2.1.1(a) requiring reduction of discharges to meet water quality standards. In order to effectuate this requirement, EPA should remove the final sentences of §2.1.1(b) & (c) and the entirety of §2.1.1(d). These sections provide a hurdle to citizen enforcement of water quality standard violations from individual discharges. EPA should also reinstate the language in the 2010 and 2011 Draft Permits at §1.3(k) expressly stating that the permit does not allow discharges that cause or contribute to an instream exceedance of water quality standards. *See* CLF 2010 Letter at 3-5; CLF 2011 Letter at 4-6.
- **§ 2.3 MEP Low Impact Development performance standards.** As CLF has amply documented in its prior MA MS4 Draft Permit comment letters, low impact development/green infrastructure ("LID/GI") practices continue to represent the expression of controlling polluted stormwater runoff to the maximum extent practicable ("MEP"), and this Permit will be deficient in its responsibility to ensure achievement of water quality standards under the Clean Water Act without LID/GI-based performance standards. This is particularly important given the potential for LID and GI practices to be effective climate change resiliency measures, helping communities deal with flooding from storm surges and severe rain and snow events. *See* CLF 2010 Letter at 10-13, CLF 2011 Letter at 13-16, CLF 2013 Letter at 4-9.[1]

[1] EPA itself has released several documents since CLF's last MA comment letters were submitted highlighting the stormwater reduction and economic benefits from LID/GI. *See, e.g.*, Enhancing Sustainable Communities With Green Infrastructure: A guide to help communities better manage stormwater while achieving other environmental, public health, social, and economic benefits (2014) http://www.epa.gov/smartgrowth/pdf/gi-guidebook/gi-guidebook.pdf; Getting to the Green: Paying for Green Infrastructure -- Financing Options and Resources for Local Decision Makers (2014) http://www2.epa.gov/sites/production/files/2015-02/documents/gi_financing_options_12-2014_4.pdf; Case Studies Analyzing the Economic Benefits of Low Impact Development and Green Infrastructure Programs (2013) http://water.epa.gov/polwaste/green/upload/lid-gi-programs_report_8-6-13_combined.pdf.

- **§ 2.3.6(d) DCIA mapping.** CLF continues to support this requirement as an essential element of both transparency and progress toward broad deployment of low impact development. *See* CLF 2010 Letter at 13, CLF 2011 Letter at 17.
- **§2.3.6(a) Area size threshold.** This section should apply to projects of at least one half acre, if not one quarter-acre size. A one acre threshold is inappropriate and insufficiently protective in urbanized areas. *See* CLF 2010 Letter at 14-15, CLF 2011 Letter at 18.
- **Appx H. Road Salt control measures.** Given the ubiquity and harm of road salt application, chloride control measures should be required for all permittees unless discharge modeling shows an absence of chloride. *See* CLF 2010 Letter at 19, CLF 2011 Letter at 24.
- **Transparency and Public Participation.** CLF continues to urge real time online accessibility of all relevant maps, reports, and plans. *See* CLF 2010 Letter at 17, CLF 2011 Letter at 20, CLF 2013 Letter at 10-11.
- **Appx. F Charles River phosphorus compliance period.** CLF urges EPA to require a more efficient timeline for action in waters subject to the Charles River phosphorus TMDL than that laid out in Appendix F. The Additional Enhanced BMPs described in Appendix H for phosphorus-impaired waters related to Public Outreach and Education, Stormwater Management for New Development and Redevelopment, implementation of nonstructural BMPs, and Good Housekeeping and Pollution Prevention for Permittee-Owned Operations should be required during the first two years of the permit period for MS4s discharging to waters with phosphorus TMDLs, and compliance with the TMDL should be required within 10 years.
- **Permit flexibility.** As a general matter, CLF urges clear and enforceable standards in place of flexible requirements. *See* CLF 2010 Letter at 17, CLF 2011 Letter at 21.

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Thank you for the opportunity to comment. CLF looks forward to continued dialogue with EPA with the goal of restoring and maintaining the health of Massachusetts' waterways.

Sincerely,

Caitlin Peale Sloan
Staff Attorney
Conservation Law Foundation

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February 27, 2015

Sent via email to Tedder.Newton@epa.gov on February 27, 2015

Attention: Comments on the 2014 Draft Massachusetts MS4 Permit
Docket ID No. FRL-9917-31-Region-1; Document No. 2014-23262

Dear Mr. Tedder;
The Central Massachusetts Regional Stormwater Coalition (CMRSWC) is a group of 28 towns, most of which are regulated under the United States Environmental Protection Agency's (the Agency's) 2003 NPDES Phase II Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit. The CMRSWC was formed in 2011 as a regional partnership to manage stormwater programs and ensure the long-term protection of water resources. Working as a group has allowed the CMRSWC to develop tools to expand our stormwater management practices, collectively protect shared resources, and meet the requirements of the 2003 Massachusetts MS4 Permit in an efficient and cost-effective manner.

This coalition has also created an effective forum for collaboration, communication, and discussion among the municipal representatives that attend the regular meetings of our Steering Committee and with other stormwater collaboratives in the Commonwealth of Massachusetts and New England. It is at several of these meetings and at related events that the CMRSWC has discussed the proposed Draft 2014 Massachusetts MS4 Permit that was released for public comment by the Agency on September 30, 2014, hereafter referred to as "the proposed Permit".

The following pages outline the concerns that members of the CMRSWC have with the proposed Permit. Our comments have been organized into two sections: ***General*** (which describes overarching concerns and concepts); and ***Specific*** (which apply to unique sections of the proposed Permit). For the latter, we have provided the section and page number of text for ease of reference. Where appropriate, we have provided suggestions for replacement language (or clarification) that would better align the proposed Permit with other MS4 Permits in New England, or have outlined provisions, concepts, or metrics we believe are more suitable or feasible (for in-the-field implementation).

General Comments

1. The members of the CMRSWC are supportive of proposed Permit provisions that will directly result in improved water quality, but object to those that are administrative or arbitrary, and that will not have a direct bearing on water quality. We have outlined specific objections as much as possible in our Specific Comments, below.

2. We encourage the Agency to update its own guidelines about how regulated communities are expected to balance compliance with the Permit (in its final form) with the ability to afford that compliance without experiencing economic hardship. Since 1997, the Agency has generally considered a maximum combined annual water and wastewater bill of 4.5% of mean household income (MHI)- 2% for drinking water and 2.5% for wastewater services- to be affordable. In their May 2013 "Affordability Assessment Tool for Federal Water Mandates" report, the United States Conference of Mayors, the American Water Works Association, and the Water Environment Federation (see *Attachment A*) argue that MHI is a poor indicator of economic distress, bears little relationship to poverty within the community, does not capture variation across diverse populations, and does not account "for the historical and future trends of a community's economic, demographic, and/or social conditions", especially during recessions and recovery from them, such as Massachusetts is presently experiencing. Municipal revenues are decreasing, and further restrictions on development or redevelopment are not in the best interest of communities struggling to maintain the level of service expected by residents.

   Even so, if we were to use MHI as the basis for evaluating a community's ability to afford a stormwater management program to comply with the proposed Permit, the 4.5% MHI cap would easily be exceeded if stormwater costs were included- along with drinking water and wastewater- in the calculation. This is true whether a community funds its program traditionally through the tax base or has developed a sustainable funding mechanism such as a stormwater utility or stormwater enterprise fund. In some rural Massachusetts towns, the cost of stormwater compliance will exceed the cost of wastewater compliance and the total cost for compliance with water regulations may well be closer to 10% of MHI. Leaders and administrators in these towns will have a difficult task, indeed, to convince their residents and business owners that some of the provisions in this proposed Permit will result in water quality improvements commensurate with the expense.

   Finally, several members of our community have calculated (or begun the process of calculating) their increased cost of compliance with the proposed Permit as compared to the 2003 MS4 Permit. In 2014, as part of an ongoing partnership between the CMRSWC, the Massachusetts Department of Environmental Protection (MassDEP), and the Worcester Polytechnic Institute's Integrated Qualifying Project (IQP) program, three of our member communities (Holden, Millbury, and Southbridge) participated in a project to quantify current and projected stormwater program costs (see *Attachment B*). The IQP report team assumed that provisions of the proposed Permit would be implemented as drafted, and evaluated the cost of new and expanded provisions as well as maintaining compliance with other Permit provisions. Among the conclusions, the IQP report team calculated the annual costs for implementation of the proposed Permit for the towns of Holden ($258,790), Millbury ($753,173), and Southbridge ($343,008). These projected costs represent increases of 39%, 30%, and 28% over current annual stormwater program budgets, respectively, and do not include other one-time or intermittent costs (such as capital expenditures like equipment), or the costs of design and construction of projects that may be required to eliminate illicit discharges. Even allowing for the imprecision inherent in a project of this scale, the consistency in comparative relative increases calculated for three three communities tells a story that will be repeated across the Commonwealth.

   We all agree that clean water supports our communities in many, many ways; notwithstanding this, the absence of guidance on how to best afford the increased costs of stormwater management cannot be ignored.

3. We encourage the Agency to include flexibility in the final Permit with respect to the date on which the Permit in its final form will become effective in each community. Flexibility in setting the effective date will allow each town the opportunity to budget for Year 1 and Year 2 tasks, specifically, within the municipal budget cycle, which will likely be out of sync with the Permit cycle. In the last few years, many communities have been telling their leaders and residents that the new Permit would be out "soon" based on updates from the Agency, with the target

issue date moving over the course of several municipal budget cycles. Many of these leaders will face reluctance, skepticism, and frustration when proposing increased stormwater program budgets, and will need to re-educate their decision makers about why these increases are required.

4. We believe that many provisions in the proposed Permit do not lend themselves to implementation over a five-year Permit term, at least in a way that is affordable for the regulated communities and that results in meaningful improvements to water quality. Instead, we propose that the Agency extend the schedule for several specific provisions, such as development and implementation of a catchment delineation, over a ten-year period. The Commonwealth of Massachusetts has in place a statutory framework that allows for such an extended timeline as a Compliance Schedule within a NPDES Permit. Indeed, the Agency has taken advantage of this extended schedule in the proposed Permit for the Catchment Investigation Procedure (see Section 2.3.4.8(c)(iii), IDDE Program Implementation Goals and Milestones, Page 37). This compromise will comply with Clean Water Act 402(b)(1)(B) while providing flexibility for the regulated communities. Where we believe this extended schedule is appropriate, we hereafter refer to it in subsequent comments as a "10-year Compliance Schedule".

5. When describing dry weather and wet weather screening and sampling and outfall/interconnection screening, the proposed Permit frequently refers to "detectable levels of chlorine". It should be noted that chlorine is detectable in most if not all outfalls and at the perimeter of many of Massachusetts' surface water bodies using many field kits available today, and this detection limit is likely to become lower (identifying smaller and smaller concentrations of chlorine) as technology improves. Treated drinking water entering a stormwater system is the potential source the chlorine indicator is intended to highlight. However, chlorine in drinking water is highly volatile, and decomposes quickly once discharged to a surface water body and exposed to sunlight and the ambient atmosphere. If all outfall samples would demonstrate "detectable levels of chlorine", but the chlorine will degrade quickly within a water body, this parameter ceases to be useful as a screening tool.

   We request that the chlorine parameter either be removed from all sections discussing screening methodologies, or that a numeric threshold be established- based on peer-reviewed data- that can correlate a specific elevated detected chlorine concentration to a potential illicit discharge, such as a grey water connection (or the absence of elevated bacteria) or a cross-connection (in the presence of elevated bacteria).

6. We have observed that many provisions in the proposed Permit include the development of a written program, written inventory, written report, written procedures, or other "written" documentation. These proposed provisions counter a shift on the part of many regulated communities to cloud-based infrastructure management systems, such as the online mapping and inspection platform used by our 28 members. Many communities use these cloud-based tools because they work with mobile devices, reduce paperwork, and allow data to be added to a management system in real-time. These tools reduce the amount of inefficient administrative time to enter information into a form or spreadsheet and typically allow towns to create work orders from the field for follow-up or maintenance activities. The data is every bit as useful and accessible and can be readily queried into reports to provide summaries and snapshots.

   Managing operations and maintenance procedures through cloud-based systems such as the one the CMRSWC uses is also more effective- if a change is made to a procedure or form on our platform, that change is available immediately to all users in all 28 communities without the need to print new forms, distribute them to all members, and inform our many, many users that the new form shall be used. These workflow improvements should be considered to be enhancements, and encouraged as they are consistent with federal efforts to reduce paperwork and not "overburden the public with federally sponsored data collections", mentioned as the goal of the Paperwork Reduction Act.

   We also know that many regulatory agencies like municipalities to maintain hard copies of documents at multiple locations, even though this practice does not lead to improved use of these documents. The *absence* of large volumes of paperwork doesn't mean that a community isn't implementing something any more than the *presence* of many binders means that a community is effectively utilizing the programs in them. Decreasing the use of paper in our work environment is also environmentally preferable.

It is important for both the Agency and the public to realize that increased use of technology and cloud-based tools allows local governments to work more efficiently and respond to their needs and requests more efficiently.

This modernization should be encouraged, and we request the Agency to incorporate flexibility for many of the "written" submittals requested to be implemented as modules within asset management platforms, and allow the permittee to demonstrate by other methods that these procedures, inventories, etc… exist and are being utilized.

7. We strongly encourage the Agency to engage in conversations and workshops that lead to development of a Final MS4 Permit that MassDEP is willing to sign onto. The alternative to a joint Permit, outlined by the Agency's Thelma Murphy at a meeting of the Northern Middlesex Stormwater Collaborative in Lowell, MA on December 4, 2014, would be two separate Massachusetts MS4 Permits: the current 2003 Massachusetts MS4 Permit would continue to be enforced by MassDEP, and the new Final Massachusetts MS4 Permit would be enforced by the Agency. Mayhem would ensue due to administration, operations and maintenance, and coordination duplication resulting from each of the Commonwealth's regulated communities being subject to two separate, parallel MS4 Permits. In practice, progress toward improving water quality would likely stop as legal challenges were filed, which is not in the best interest of any party involved.

   This coordination should begin as soon as possible to reach a version of the permit agreeable to both organizations and compliant with the Clean Water Act, Massachusetts' Surface Water Quality Standards, and associated supporting documentation, so that water quality improvement activities across the Commonwealth can be focused and consistent.

Specific Comments

1. Part 1.10(a), Stormwater Management Program (SWMP), (Page 7). The SWMP is required to describe the specific activities that will be taken, and the schedule for each activity or Best Management Practice (BMP), for the duration of the permit term. This document cannot be developed without thorough coordination of multiple departments and persons within each regulated community, and without each of these departments and persons committing the resources (both time and financial) needed for those activities and BMPs to be completed on the schedule proposed.

   The SWMP is arguably the most complicated and detailed submittal in the proposed Permit.

   We therefore request that the proposed Permit be revised to require an in-person coordination meeting between the Agency (and MassDEP, ideally) and the regulated community one year after the effective date to review the draft SWMP, with the Final SWMP due one year after that coordination meeting. This gives the regulated community an opportunity to receive intermediate feedback from the Agency and MassDEP, and for corrections to be made, if needed, to ensure that Final SWMP will be acceptable to all parties, reducing revision efforts. This coordination meeting would provide many communities with feedback on their current compliance status (which has not routinely been provided to this point), and allow them to adjust proposed investments in any Minimum Control Measure or TMDL-driven provision that they intend to incorporate into the SWMP.

2. Part 2.1, Water Quality Based Effluent Limitations (Page 9). This section references Clean Water Act 402(p)(3)(B)(iii), stating that this section of the Clean Water Act prohibits discharges that "cause or contribute to an exceedance of water quality standards". However, the referenced section of the Clean Water Act actually states that Municipal discharge Permits shall require "controls to reduce the discharge of pollutants to the maximum extent practicable", commonly known as MEP.

   MEP has long been the statutory standard that governs the level to which municipalities are responsible for limiting and reducing pollution in stormwater, and has been interpreted in many decisions as being subject to certain limitations, including the limits of technology and cost/benefit analyses.

For example, if a community spends $1 billion dollars on a stormwater treatment project for Pollutant X and continues to contribute 0.01% of the loading of Pollutant X to a receiving water that does not meet water quality standards for that pollutant, that community would be considered to have *satisfied the MEP standard* but would *not comply with the narrative limit* ("contribute to…") proposed in this section. The Agency implies that language in the proposed Permit would ***overrule MEP as the accepted standard***, an authority that the Agency does not have over water quality standards in the Commonwealth of Massachusetts.

To eliminate this inconsistency, we strongly request that language in this and other parts of the proposed Permit be revised to clearly establish that MEP standard shall be applied throughout the proposed Permit.

3. Part 2.1.2, Increased Discharges (Page 10): The Agency has been asked at a number of public meetings to provide additional clarification of the meaning of "increased discharge" and "increased loading". Many communities in Massachusetts are presently designing combined sewer overflow (CSO) or other sewer-related improvement projects in compliance with NPDES Permits other than the MS4 Permit. When Long Term Control Plans, inflow and infiltration studies, or other planning documents approved by the Agency require that a community implement methods likes sewer separation to reduce the burden on a treatment facility during wet weather events, the loading of a stormwater pollutant may shift from being delivered to a water body by un- or partially-treated wastewater to being delivered by the engineered stormwater system (albeit with load reduction). Even if we assume that all new stormwater projects are being designed in compliance with post-construction stormwater management, there may be a change in the volume or nature of the discharge of this pollutant. It is also possible that once the project is complete, the pollutant may be discharged to a different water body than the one that received the original CSO bypass.

   We realize that the MS4 isn't discouraging progress toward CSO abatement and sewer improvement projects, as these are done to further improvements in water quality. There is, nevertheless, a challenge in demonstrating in the MS4 Permit that the discharge or loading hasn't increased due to the implementation of those projects. The goal of fully integrated planning and permitting has not yet fully materialized, meaning that Towns can't fully "credit" themselves by demonstrating loading reductions to one water body by a project completed in another, nor are the same Agency personnel reviewing proposed projects and reports for the wastewater and stormwater NPDES permits- consistency that otherwise would provide confidence that one NPDES program is not competing or conflicting with another.

   To resolve this challenge, please clarify that CSO abatement and sewer improvement projects that have been approved by the Agency (and/or the MassDEP) are exempt from being captured by the definition of "increased discharge" or "increased loading".

4. Part 2.2.1, Discharges Subject to Requirements Related to an Approved TMDL (Pages 11-17). For the first time, many water bodies in our community have been identified as contributing to phosphorus impairments of the Charles River Watershed (Part 2.2.1(b)(i)), phosphorus impairments identified in the "Lakes and Ponds" TMDL (Part 2.2.1(b)(ii)), bacteria or pathogen impairments of multiple water bodies (Part 2.2.1(b)(iii)), phosphorus impairments in the Assabet River Watershed (Part 2.2.1(b)(v)), and/or nitrogen impairments in the Long Island Sound (Part 2.2.1(c)). A cost/benefit analysis of implementing the prescribed corrective waste load reduction actions outlined in Appendix F (and its attachments) has not been completed, nor has an evaluation been performed that models the expected impact of these waste load reductions. This is partially true because the data sets upon which many of these TMDLs was based were very small, used single grab samples, used generic land loadings to calculate watershed contributions, includes some sample data that did not receive full peer review or QA/QC. TMDL authors acknowledged that substantial gaps about influence of stormwater on water quality influenced error. We have not attached these TMDL reports to these comments: we consider these TMDLs to already be part of the public record, as they are referenced within the proposed Permit.

   We and many other groups question the validity of basing such an expensive and administratively complex component of the proposed Permit on TMDL reports that are not widely accepted. We request a continued focus on BMPs, both non-structural and structural (at the discretion of the regulated community) as the preferred method

to meet the Maximum Extent Practicable standard in addressing discharges from the MS4 to any of the impaired waters with a TMDL noted above, subject to future updates of these TMDL reports.

5. Part 2.2.2, Discharges to Certain Water Quality Limited Waters Subject to Additional Requirements (Pages 17-22). Similar to Specific Comment #4, for the first time, many water bodies in our communities have been identified as contributing to both nitrogen (Part 2.2.2(a)) and phosphorus impairments (Part 2.2.2(b)). For both of these impairments, no Total Maximum Daily Loading (TMDL) has been established, and no specific pollutant reduction target has been proposed.

   We request a continued focus on BMPs, both non-structural and structural (at the discretion of the regulated community) as the preferred method to meet the Maximum Extent Practicable standard in addressing discharges from the MS4 to any of the impaired waters noted above.

6. Part 2.3.2, Public Education and Outreach (Pages 22-24). As noted previously, flexibility in the Permit will result in the most substantial improvements to water quality. This also applies to a Permittee's authority to direct education and outreach messages to targets it has determined are the priorities for their specific community, rather than mandated messages to mandated audiences. This flexibility is present in most other MS4 Permits in New England, for example Maine's MS4 Permit (effective July 2013, administered by the Maine Department of Environmental Protection; see *Attachment C*) and the 2014 Draft Connecticut MS4 Permit (administered by the Connecticut Department of Energy and Environmental Protection; see *Attachment D*). We request the same flexibility, and the following modifications:

   a. In (b), replace "shall" with "should", to enable the Permittee to focus messages on the types of properties it has already determined- through its efforts under the 2003 MS4 Permit- to be the highest priority. The Agency should encourage the Permittee to evaluate whether it should target a new audience, but not all audiences exist in regulated communities. Increased flexibility to direct messages to priority targets (rather than to mandated audiences) will result in the most substantial improvements to water quality.

   b. In (c), replace:

      "…shall distribute a minimum of two (2) educational messages over the permit term to each audience identified in Part 2.3.2.b. (The permittee shall distribute at least eight educational messages during the permit term)."

      with

      "…shall distribute a minimum of eight (8) educational messages over the permit term."

   c. In (e), (f), and (g), eliminate the mandate to quantify the effectiveness of each message, each distribution technique, and the overall program. These requirements aim to compel technical and administrative personnel in each regulated community to function as marketing or public relations specialists, where they have not been trained to do so. If and when a community tries a new message delivery mechanism, encourage- but do not mandate- that they report on how well it worked. Towns are not in the habit of sending good money after bad, and will not continue to pay for services or products that it knows are ineffective.

      The inclusion of these elements in the final Permit, however well-intentioned, will have the effect of siphoning off a portion of a town's funding to a third party for implementation, losing the connection within the community. Instead, we encourage the Agency to actively share the resources that have been developed (and continue to be developed) within Massachusetts by our group and others, as ways to reduce the burden on individual communities to developing its outreach and education programs.

7. Part 2.3.4.5(c), Outfall/Interconnection Inventory (Page 27). The proposed Permit asks the Permittee to physically label all MS4 outfall pipes. This proposed provision is related to public education, not inventory of the system, and should not be included in Part 2.3.4.5. The Agency is already proposing that regulated communities capture information such as pipe and open channel discharge locations under Part 2.3.4.6 (System Mapping, Page 27-28), with the goal of being able to readily locate and mobilize at these locations to perform illicit discharge activities. As such, the Town is already required to maintain outfall location information in the way most useful to it.

   Placement of physical labels, such as signs, will be costly and provide no additional benefit to Permittee personnel over and above the system mapping.

   We recommend that placement of such signage be considered a potential delivery mechanism in Part 2.3.2 (Public Education and Outreach, Page 22-24) on a location-by-location basis - that is, if the community determines that the placement of such signage in an area would increase the public's understanding of stormwater services provided or help resolve a chronic illicit discharge issue, such as illegal dumping, in that area.

8. Part 2.3.4.6(a)(i), System Mapping (Page 27-28). The number of required mapping elements (ten) and detail to be provided for each far exceeds the system mapping provisions included (or proposed) in any other New England state. For example, the 2014 Draft Connecticut MS4 Permit proposes to require only the type, material, size and location (coordinates) for pipes, swales/ditches/channelized flow, and outfalls, and is considering scaling this list back. The Connecticut permit does not include catch basins, drain manholes, BMPs, interconnections with other systems, or catchment delineations, nor does it require *or even recommend* that the Permittee map any sanitary sewer infrastructure, unless there is a history of illicit discharges or cross connections in a specific area. We understand the value in documenting the location of many kinds of points of interest within stormwater system infrastructure, but request that this Part be scaled back to focus mandatory future mapping only on outfalls, pipes, catch basins, and drain manholes, with other information to be collected as the Permittee's discretion.

   Further, the definition of catchment provided in this section ("the area that drains to an individual outfall or interconnection") differs from the Agency's responses to questions on this provision at public meetings. For example, at a meeting in Lowell, an Agency representative stated the opinion that two catch basins connected to a single outfall pipe would not need to be delineated; in fact the proposed Permit does not include an exemptions for a "small" catchment like this one. We encourage the Agency to define, in the final Permit, some types and configurations of catchments that could be exempt from the delineation requirement, such as this example.

   Regardless, inconsistent information such as this example will lead to different interpretations, and data provided by Permittees will not be evaluated on a level playing field. The Agency's ability to provide specific examples of how a community should implement the catchment delineation provision, with visual examples and sample documentation (suitable for a community that does not have GIS capability) would go a long way to providing the needed consistency.

9. Part 2.3.4.7(c,), Assessment and Priority Ranking of Catchments (Page 30): We request clarification of the identifying parameters for sewer input based on sampling results. The permit language states that Problem Catchments and High Priority Catchments be categorized by ammonia $\geq$ 0.5 mg/l, surfactants $\geq$ 0.25 mg/l and bacteria levels greater than the water quality criteria applicable to the receiving water; or ammonia $\geq$ 0.5 mg/l, surfactants $\geq$ 0.25 mg/l and detectable limits of chlorine.

   Based on these requirement detection limits, *all three parameters* must be above levels for prioritization into one of these categories. We do not believe this is the intent of the Agency and request clarification on the threshold of these parameters.

10. Part 2.3.4.7(c)(i), Assessment and Priority Ranking of Catchments (Page 30). The definition of Low Priority Catchment should allow for categorization based on either the outfall/interconnection screening (Part 2.3.4.7(d)) or the catchment characteristics assessment (Part 2.3.4.7.(c)(ii)), but not both.

For example, if a catchment has no history of complaints or reports, has good dry weather water quality (per screening kits), has low development density, contains no industrial or commercial properties, consists of new infrastructure, and is located within a recently-sewered area, then there is hardly justification to require the full scope of screening and sampling outlined in 2.3.4.7(d). The community should be able to consider this example to be a Low Priority Catchment without going to extraordinary efforts, which is the very purpose of defining this category between the Excluded and High Priority categories.

11. Part 2.3.4.7(c)(iii), Reporting dates for Assessment and Priority Ranking of Catchments (Page 31). The level of effort required for the Assessment and Priority Ranking of Catchments is substantial and will require far more than one year from the effective date to implement. We request that this provision have a submittal milestone closer to 60% of the Permit term (i.e., Year 3 of a five-year permit term or Year 6 of a 10-year Compliance Schedule).

12. Part 2.3.4.7(e)(i), Catchment Investigation Procedure (Pages 33-34). This section outlines the System Vulnerability Factors that indicate "a risk of sanitary or septic system inputs to the MS4" under some conditions. These Factors include information that is either subject to the separate NPDES permit for the permittee's publicly owned treatment work (POTW), or is not applicable (for communities that aren't sewered). In either case, the core concept outlined by the Agency in listing these factors is that there needs to be increased cooperation between the entity primarily responsible for the operation of the regulated community's POTW (e.g., Town wastewater department or local sewer district) or subsurface wastewater discharge program (e.g., Board of Health or Code Enforcement Officer) and the entities primarily responsible for compliance with the MS4 Permit (e.g., Public Works Department, Conservation Agent/Commission, or Town Engineer).

    The information outlined in the Factors includes data and occurrences that are already routinely tracked by the POTW/subsurface system operator(s). As such, it is much more efficient to require these Factors to be discussed during the development of the SWMP early in the process and reviewed with the Agency at the one year coordination meeting (see Specific Comment #1) than to mandate that the permittee duplicate that substantial effort with a mid-permit term submittal.

13. Part 2.3.4.8(a), IDDE Program Implementation Goals and Milestones (Page 36). The level of effort required to complete the dry weather screening and sampling is substantial and will require far more than three years from the effective date. We request that this provision have a submittal milestone at Year 6 of a 10-year Compliance Schedule, or, alternately, that the Permittee be required to begin this task by Year 3 (of a 5 or 10-year Compliance Schedule).

14. Part 2.3.4.8(c), IDDE Program Implementation Goals and Milestones (Page 36-37). We request that the first sentence be deleted. As noted in Specific Comment #10, if a catchment characteristics assessment satisfies all criteria in Part 2.3.4.7.(c)(ii)), there is hardly justification to require the full scope of screening and sampling included in the Catchment Investigation Procedure.

    Further, the progress milestones for Problem, High Priority, and "all" catchments outlined in (i) through (iii) of this Part are not realistic, given the effort required in performing the Catchment Investigation Procedure, even if Low Priority catchments are excluded. We request that the Agency revisit these progress milestones based on a ten-year Compliance Schedule.

15. Part 2.3.6(a), Post-Construction Stormwater Runoff from New Development and Redevelopment (Page 39): The Agency has been asked at a number of public meetings to clarify the intent of the requirement to retain (or provide treatment for) the first inch of runoff from new and re-developed sites that disturb one or more acres and discharge to the MS4.

    We similarly request that the Agency confirm that projects such as roadway maintenance projects - including surface overlay, milling followed by overlay, and full-depth reclamation that does not expose the roadway sub-base - are not included in the definition of "disturb". That is, if a community is implementing a maintenance project on an existing roadway, without increasing the area of impervious surface, that no stormwater retention or treatment is

required. The potential unintended result of the alternative interpretation is the crippling of existing pavement maintenance projects- already underfunded- as new stormwater conveyance, storage, and treatment infrastructure is designed, for very little water quality benefit. Another potential unintended result of the alternative interpretation is discouraging redevelopment of urban/brownfields parcels with existing infrastructure in favor of focusing on a previously undeveloped parcel, which would ultimately increase, not decrease impervious area.

Finally, the Agency has acknowledged at public meetings that it is not authorized to supersede a state's water quality-based limits and has previously deferred to the antidegradation policy set forth in Massachusetts' Surface Water Quality Standards, 314 CMR 4.00. Nevertheless, tools for calculating removal efficiencies in this Part are inconsistent with the Massachusetts Stormwater Handbook. Please clarify that the Agency does not intend to challenge or rewrite guidance for design of stormwater treatment BMPs included in the Massachusetts Stormwater Handbook.

16. Part 2.3.6(d), Directly Connected Impervious Area (Page 42): The proposed Permit asks each Permittee to report on impervious area (IA) and directly connected impervious area (DCIA) each year of permit coverage, with the goal of reducing both metrics each year of permit coverage. The Agency has indicated that it will provide a benchmark for measurement of these metrics through maps located on its Massachusetts NPDES website and implies that these maps reflect "subbasins" that are hydraulically connected to a point of discharge. A review of these draft maps shows that development data are not only outdated (e.g., GIS layers dated 2000 through 2010) but also that the subbasins delineated by the Agency do not reflect development. The subbasins shown on these maps are inconsistent with the definition of "catchment delineation" in the proposed Permit (see: Section 2.3.4.6(a)(i), Page 28). That is, the subbasins on maps referenced by the Agency are of undeveloped topography, ignoring the engineered infrastructure and roadway elevations that convey stormwater across a reference area to a point of discharge. In fact, a single subbasin as shown on the Agency's map may include multiple hydraulic catchments.

    The value of using IA and DCIA as a surrogate for stormwater pollution is not yet proven, and we believe the Agency, not the regulated communities, should take the lead on gathering data on the correlation between the two. To allow the Agency to develop meaningful IA and DCIA benchmarks, we encourage that the IA and DCIA reporting measure be moved from a Year 2 start date to milestone closer to 80% of the Permit term (i.e., Year 4 of a five-year permit term or Year 8 of a 10-year Compliance Schedule). As a result of this shift, the deadline for submittal of the inventory and priority ranking for installation of BMPs should be shifted appropriately (or deleted entirely, as discussed in other comments we've provided).

17. Part 2.3.7, Good House Keeping and Pollution Prevention for Permittee Owned Operations (Pages 43-49). This Part has expanded substantially from the 2003 version, and with good reason: pollution prevention and good housekeeping are a very effective non-structural BMP for reducing stormwater pollution. Having said that, some sections of this part lack the flexibility inherent in other state MS4 Permits. Some provisions focus too strongly on the specific steps to be taken to reach an objective instead of the objective itself. As an example: Part 2.3.7(a)(ii)(a) includes specific procedures to be implemented for "Parks and open space". One mandated procedure outlined in this section is to establish "pet waste handling collection and disposal location at all parks and open space including the placing of proper signage concerning the proper collection and disposal of pet waste". This specific procedure is inappropriate for a community that has already banned dogs from public parks and open spaces and has successfully enforced that ban. In this case, the mandated placement of pet waste collection stations would work *against* the implemented dog ban by providing visitors with a disposal location of waste from animals that shouldn't be there, sending mixed signals! This example community is already accomplishing the objective (reducing bacteria and nutrient runoff from a park) through an alternative approach that they decided was most appropriate, and should be permitted the flexibility to stay on the course they have chosen while the goal continues to be achieved. An improvement for our example community could be to encourage (not mandate) them to place signage informing visitors about improvements to water quality in the park (or adjacent water bodies) that have been observed since the pet ban went into effect. We request that this Part of the proposed Permit be revised to focus on the end point or objective rather than the prescriptive steps to reach it.

Further, the progress milestones under all sections of this Part are not realistic, given the effort required in evaluating the range of activities and potential pollution sources across a wide spectrum of permittee-owned facilities and operations. We request that the Agency revisit these progress milestones based on a ten-year Compliance Schedule with the Permit.

18. Part 2.3.7(a)(iii)(b), Infrastructure Operations and Maintenance- Catch Basins (Pages 44-45). A catch basin sump being no more than 50 percent full is described as the threshold for proper function of the basin. This may be accurate, but the inclusion of this metric is arbitrary and not in and of itself protective of water quality. As many commenters will likely note, most Massachusetts regulated communities are already familiar with locations within their MS4 where catch basins receive higher debris and sediment loading and require more frequent cleaning. Most of these communities already inspect and clean these basins more frequently, and include these activities in Annual Reports to the Agency.

    Use of the "no more than 50 percent full" metric is preferred over the "twice a year, minimum" metric that has appeared in previous versions of this and related permits. However, if a permittee is mandated to use the "no more than 50 percent full" metric as the threshold for additional cleaning and/or investigation of areas not previously considered a priority, then it's inevitable that other areas will suffer as a result. The end result is that, given current wording, the permittee can be considered non-compliant if a single basin in the system has a sump more than 50 percent full, regardless of whatever increased investment was made in cleaning and inspection activities or net improvements to water quality.

    We request that the Agency replace "shall" with more permissive language like "should" in this section, maintaining the "no more than 50 percent full" metric as an ideal to strive for but not a provision that can lead to noncompliance.

    Finally, the last bullet in this section asks the permittee to report "the volume or mass of material removed from each catch basin draining to water quality limited waters and the total volume or mass of material removed from all catch basins". The latter part of this provision is feasible, although will require thorough recordkeeping and tedious summaries. The first part, however, is not feasible: regardless of the methodology by which the volume or mass is calculated, the numbers reported would not match reality. No catch basin cleaning technology can remove 100% of the sediment and material in a sump and material density varies, so a calculated volume/mass isn't realistic: at the end of the day, the calculated mass/volume from cleaning X catch basins would not be equal to the mass/volume of material in the truck that cleaned X catch basins. Manifests would never match estimated, reported removal mass/volume and would be flagged in an audit. The potential for a truck to return to the Public Works yard (or other location) after cleaning a single catch basin to be re-weighed (allowing for documentation of the actual mass removed from that basin) is also not realistic. This provision has good intentions, but is not feasible from a boots-on-the-ground perspective. It may be possible for some communities to plan cleaning routes to be watershed- or catchment-specific (allowing a total volume or mass to be quantified for that water body), although in other communities this may be highly inefficient. We request that this bullet be modified to eliminate the "each catch basin" provision.

19. Part 2.3.7(a)(iii)(b), Infrastructure Operations and Maintenance- Street Sweeping (Page 45). The proposed Permit describes each street (with some limitations) being swept a minimum of once per year as the threshold for reduction of sediment loads to surface waters. This may be accurate, but the inclusion of this metric is arbitrary and not in and of itself protective of water quality. Parallel to the argument in Specific Comment #18, most Massachusetts regulated communities are already familiar with locations within their MS4 where streets may contribute higher sediment loading and therefore require more frequent sweeping. Most of these communities already sweep these roadways more frequently than once a year, and include these activities in Annual Reports to the Agency.

    We request that the Agency replace:

"...shall be swept and/or cleaned a minimum of once per year in the spring (following winter activities such as sanding)."

with

"...should be evaluated in the spring (following winter activities such as sanding) for the need to be swept and/or cleaned."

This more permissive language maintains the annual evaluation metric as an ideal to strive for, but eliminates a single provision that can lead to noncompliance.

20. Appendix F, Attachment 2. The inclusion of phosphorus reduction credits for an "Enhanced Sweeping Program" or the weekly collection of "Organic Waste and Leaf Litter" from areas that discharge to the TMDL waterbody is self-defeating. Particulate deposition from fossil fuels burned (and brake dust and other pollution) from the equipment needed to implement these collection programs will far outweigh the benefits of the potential phosphorus removed from impervious surfaces. The capital costs for communities to purchase approved, highly-efficient sweeping/vacuum equipment or to set up an appropriate leaf mulching or composting program will make these credits not worth the effort invested.

    Further, many of our members that have increased the frequency of street sweeping activities have observed that residents often view these expanded services as an invitation to dispose of trash, leaves, and other materials in roadways. In this way, enhanced street sweeping actually works against litter-prevention efforts.

    Finally, as observed at a number of the meetings the Agency hosted during the public comment period, the portion of leaf litter that could be collected from municipal-owned property and impervious surfaces through sweeping activities represents a very small fraction of the leaf litter in the community watershed, as a whole. Efforts to capture this small portion do not represent a strong value compared to other non-structural BMPs our communities are implementing.

These comments have been approved by the CMRSWC's Steering Committee and are strongly supported by our member communities. Attached to these comments (as *Attachment E*) are Statements of Support from our member communities, many of which are also submitting individual comments to the Agency.

We appreciate the opportunity to comment on this proposed Permit, and look forward to the additional protections and clarifications afforded by its consistency.

Sincerely,

Adam Gaudette
Town Administrator; Spencer, MA

Attachments:

A: United States Conference of Mayors, the American Water Works Association, and the Water Environment Federation. *Affordability Assessment Tool for Federal Water Mandates*. May 2013. (*Attached without appendices*)

B: Correia, Eric, Michael Giroux, and Cameron Peterson. *Comprehensive Cost Analysis of the 2014 Massachusetts MS4 Permit: An Interactive Qualifying Project Report Submitted to the Faculty of the Worcester Polytechnic Institute*. December 2014.

C: Maine Department of Environmental Protection. *General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems*. July 2013.

D: Connecticut Department of Energy & the Environment. *Draft General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems*. July 2014. (*Attached without appendices*)

E: Letters of Support for these Comments provided by the following municipalities:

1. Charlton
2. Grafton
3. Hardwick
4. Holden
5. Hopkinton
6. Leicester
7. Millbury
8. Northborough
9. Northbridge
10. Oxford
11. Palmer
12. Paxton
13. Rutland
14. Shrewsbury
15. Spencer
16. Sterling
17. Sturbridge
18. Upton
19. Uxbridge
20. Ware
21. Webster
22. West Boylston

Cc: Robin Craver, Town Administrator (Charlton, MA)
Fred Civian (MassDEP Stormwater Coordinator)
Aubrey Strause, Co-Facilitator- CMRSWC (Verdant Water, PLLC)
Matthew St. Pierre, Co-Facilitator- CMRSWC (Tata & Howard, Inc.)

Central Massachusetts Regional Stormwater Coalition

Comments to USEPA on 2014 Draft Massachusetts
Small Municipal Separate Storm Sewer System (MS4) Permit

February 27, 2015

ATTACHMENT A

United States Conference of Mayors, the American Water Works Association, and the Water Environment Federation. *Affordability Assessment Tool for Federal Water Mandates*. May 2013. (*Attached without appendices*)

Affordability Assessment Tool for Federal Water Mandates

THE UNITED STATES CONFERENCE OF MAYORS

American Water Works Association

Water Environment Federation®
the water quality people®

Prepared for

The United States Conference of Mayors

The American Water Works Association

The Water Environment Federation

by

Stratus Consulting, Boulder, Colorado

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Chapter 2: Guidance for Developing EPA's Residential Indicator provides detailed guidance for completing EPA's preliminary screening analysis for affordability.

Chapter 3: Primary Data Sources for Developing Alternative Measures of Household Affordability describes the data sources that can be used to develop alternative indicators and measures of household affordability for individual communities.

Chapter 4: Guidance for Analyzing Socioeconomic Indicators of Household Affordability for Your Community focuses on the analysis of socioeconomic indicators that can help to provide a more complete picture of economic need within your community.

Chapter 5: Guidance for Developing Alternative Measures of Household Affordability provides guidance for developing specific household affordability metrics.

Chapter 6: Guidance for Assessing Utility Financial Capability: EPA's Secondary Screening Analysis and Alternative Measures provides specific guidance for analyzing utility financial capability, including EPA-suggested metrics and alternative approaches.

Bibliography
Workbook 1: EPA Guidance for Estimating the RI
Workbook 2: Accessing ACS Data at the Community, National, and Census-Tract Levels
Workbook 3: Socioeconomic Indicators
Workbook 4: Developing Alternative Metrics
Workbook 5: EPA's Secondary Screening Analysis

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List of Acronyms and Abbreviations

ACCRA	American Chamber of Commerce Research Association
ACS	American Community Survey
AFF	American Fact Finder
AWWA	American Water Works Association
BLS	Bureau of Labor Statistics
CES	Consumer Expenditure Survey
COLI	Cost of Living Index
CSO	Combined Sewer Overflow
CPH	cost per household
CPI	consumer price index
CWA	Clean Water Act
EJ	environmental justice
EPA	U.S. Environmental Protection Agency
FCI	Financial Capability Indicators
FMPV	fair market property value
GIS	geographic information systems
GO	general obligation
IPMS	Integrated Public Use Microdata Series
IPPP	Integrated Planning and Permit Policy
LAUS	Local Area Unemployment Statistics
MHI	median household income
MOE	margin of error
O&M	operations and maintenance
PUMA	Public Use Microdata Area
RI	Residential Indicator
SDWA	Safe Drinking Water Act
SPM	Supplemental Poverty Measure
USCM	U.S. Conference of Mayors
WEF	Water Environment Federation
WQS	water quality standards
WWT	wastewater

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Chapter 1

Assessing the Affordability of Federal Water Mandates

Communities and the water agencies that serve them have limited resources, so the investments they make need to address the most important risks to public health and the environment and deliver maximum benefits at a cost that is affordable. This Water Mandates Affordability Assessment Tool (Assessment Tool) is the result of a collaborative effort by the United States Conference of Mayors (USCM), the American Water Works Association (AWWA), and the Water Environment Federation (WEF). Its purpose is to raise issues, provoke discussion and provide alternative ways to view the affordability of federal water mandates in any given community. It does not represent the official policy of the sponsoring organizations or their members.

This chapter summarizes the U.S. Environmental Protection Agency's (EPA's) methods for analyzing the affordability of federal mandates stemming from the Clean Water Act (CWA) and Safe Drinking Water Act (SDWA). It describes the Agency's current policies, offers a critique, and identifies a number of alternatives that might be more suitable for analyzing the affordability of water and wastewater mandates on American communities. Finally, this chapter notes the importance of weighing benefits as well as costs when considering federal water mandates. As the reader will note, the term "water" is used throughout the Assessment Tool to mean drinking water, wastewater, and stormwater, unless otherwise noted.

Background

Investment to meet federal water and wastewater requirements can impose significant financial hardships on households, businesses, and the broader communities in which they are located. When communities face large—and sometimes multiple—federal water mandates, the combined impact of the required expenditures can be extremely expensive for everyone in that community who pays a water or wastewater bill (most consumers get one combined bill for water and wastewater services). For the utility, the cumulative suite of required investments not only strains fiscal capacity but may also displace other important investments, including critical but nonmandatory capital improvement and infrastructure renewal projects. For the greater community, mandatory investments may also squeeze out other important priorities, such as social safety net programs and economic development efforts. For the residents and businesses in affected communities, the capital and operating expenses associated with federal mandates are often reflected in water and wastewater bills that must grow faster than household incomes and the general rate of inflation. Very significant affordability challenges are often created, particularly for lower-income households.

With the intention of providing a mechanism for relieving undue economic stress in the face of wastewater-related mandates, EPA has developed "affordability" criteria to indicate when such mandates would cause substantial and widespread economic distress in the community. In the case of undue economic stress caused by wastewater requirements, the Agency might be willing to exercise some flexibility in the mandate by allowing a longer timeframe to achieve compliance or by relaxing compliance standards. The affordability of drinking water requirements is handled differently and can—at least in theory and case-by-case—affect the kind of technology that must be deployed in some small communities.

If EPA affordability criteria functioned properly, the economic hardship imposed on lower-income households might be alleviated in many communities. Unfortunately, there are several critical limitations to how EPA defines affordability and applies its assessment criteria. This is due in part to EPA's reliance on metrics such as median household income (MHI), which is highly misleading as an indicator of a community's ability to pay. As a result, regulatory relief is not provided in many communities where substantial and widespread economic hardships are indeed being created.

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EPA's Two-level Affordability Screening Analysis for Wastewater and Combined Sewer Overflow (CSO) Controls

In 1995, EPA published its first set of affordability-related guidelines: The Interim Economic Guidance for Water Quality Standards. The 1995 Guidance contains a detailed discussion of the analyses a municipality should undertake to evaluate the economic impact of complying with water quality standards (WQS) under the CWA. In 1997, EPA published Guidance for Financial Capability Assessment and Schedule Development using a nearly identical approach to assess whether an extended compliance schedule might be granted to a community facing affordability problems. The analyses put forth in these guidance documents are divided into two parts:

1. The preliminary screen examines affordability using a factor called the Residential Indicator (RI). The RI weighs the average per household cost of wastewater bills relative to median household income in the service area. Ultimately, an RI of 2% or greater is deemed to signal a "large economic impact" on residents, meaning that the community is likely to experience economic hardship in complying with federal water quality standards.

2. A secondary screen examines metrics related to the financial capability of the impacted community. This screen applies a Financial Capability Indicator (FCI) reflecting the average of six economic indicators. Those indicators include the community's bond rating, its net debt, its MHI, the local unemployment rate, the service area's property tax burden, and its property tax collection rate. Each indicator is assigned a score of 1 to 3, based on EPA-established benchmarks. Lower FCI scores imply weaker economic conditions and thus an increased likelihood the mandate would cause substantial and widespread economic impact on the community or service area.

The results of the RI and the FCI are ultimately combined into an overall rating based on EPA's Financial Capability Matrix. This rating is intended to demonstrate the overall level of financial burden imposed on a community by compliance with CWA mandates.

EPA's Assessment of Affordability for Drinking Water Regulations

Whereas EPA's consideration of affordability for wastewater and CSO compliance is aimed at assessing an individual community's ability to comply with regulatory mandates and schedules, EPA's consideration of affordability in the context of potable water supply is limited to assessing the national-level affordability of regulatory options for small communities. EPA does not consider the affordability of drinking water requirements in any manner that pertains to individual utilities (even small ones), or to the category of medium and large utilities.

EPA has stated that it would consider a National Primary Drinking Water Regulation to be unaffordable to small communities (those with populations under 10,000) if the standard would result in a household drinking water bill in excess of 2.5% of the national MHI in such communities. In this context, MHI is evaluated based on all small community water systems collectively (i.e., MHI is not considered for any individual utility, but for all small utilities lumped together). To date, EPA has never determined that a drinking water regulation is unaffordable for small systems. If EPA were to make such a finding, it would be required to identify technologies for small systems that might not result in meeting a particular drinking water standard but are found to protect public health. Then, on a case-by-case basis, states may approve the use of such affordable small system technologies (called a variance) or approve an extended deadline for compliance (called an exemption). States cannot approve both a variance and an exemption for the same standard in the same community. Variances are subject to review and approval by EPA. States have allowed very few variances and exemptions because they can be difficult and expensive to issue.

EPA's stated view on potable water—that it is affordable if it costs less than 2.5% of small community MHI—influences the perceived affordability of combined water and wastewater bills. Specifically, it is commonly inferred that EPA would consider a combined annual water and wastewater bill of less than 4.5% of MHI to be affordable (2.5% for water, plus 2% for wastewater services and CSO controls).

Limitations of EPA's Preliminary Screening Approach

A central issue in assessing affordability of federal water mandates is the reasonableness of community-wide MHI as a primary yardstick. MHI can be a highly misleading indicator of a community's ability to pay for several reasons.

• MHI is a poor indicator of economic distress and bears little relationship to poverty or other measures of economic need within a community. For example, consider an analysis of MHI and poverty data for the 100 largest cities in the United States. It shows that for 21 cities identified as having an MHI within $3,000 of the 2010 national MHI ($50,046), there is no discernible relationship between MHI and the incidence of poverty. Statistical analysis confirms that the correlation between MHI and poverty among these cities is not meaningful, with a correlation coefficient (r) of 0.024. Indeed, within these 21 cities, the poverty rate ranges from a low of 14.1% to a high of 23.3%.

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• MHI does not capture impacts across diverse populations. In many cities, income levels are not clustered around the median, but are spread over a wide income range or concentrated at either end of the income spectrum. This tendency for the income distribution to spread away from the middle has been increasing and may well continue to increase in the future, making MHI an even less meaningful metric. In addition, income distribution and other economic measures can vary widely across different districts and neighborhoods within a city. Thus, the economic hardship associated with increasing water and wastewater bills can be concentrated in a few lower-income neighborhoods. This will compound the economic hardship within the community and may raise issues of environmental justice (EJ). These impacts are not captured with the use of service area MHI as a sole indicator.

• MHI provides a "snapshot" that does not account for the historical and future trends of a community's economic, demographic, and/or social conditions. This is particularly relevant in areas that may be experiencing economic declines or population losses (which will result in the costs of water and wastewater programs being spread across fewer residents). Without consideration of these and other economic and demographic trends, the affordability determination will overestimate the ability of residents to tolerate rate increases over time.

• MHI does not capture impacts to landlords and public housing agencies. Many renters do not receive water bills because water and wastewater service is included in the cost of rent. The same is true of many residents in public housing. In cities with a high percentage of renters and/or public housing residents, use of MHI and RI does not capture impacts to landlords and public housing agencies, which must often absorb the cost of increased water and wastewater bills. In many cases, higher water bills mean that public housing authorities will be required to reduce the number of needy renters they serve, unless there can be offsetting increases in public housing budgets.

• The RI does not fully capture household economic burdens. Economic burdens are commonly measured by comparing the costs of particular necessities to available household income. The RI is such a measure in that it is used to evaluate the economic burden from water bills by comparing those bills to MHI. However, there can be situations where the economic burdens in a community are substantially different from those typically associated with its RI. For example, a community may experience unusually high costs of basic necessities or may have a distribution of household income that differs significantly from that in most communities. In these cases, the standard application of EPA's RI would be insufficient on its own to distinguish between higher and lower levels of economic impact.

Alternative Household Affordability Metrics: Moving Beyond EPA's Criteria

Given the limitations of the RI, and in particular the use of MHI as a primary indicator of household affordability, it is important to consider the use of alternative metrics to gauge the affordability of federal water, wastewater, and stormwater-related mandates. For example, impacts on customer bills can be assessed as follows:

• Across the income distribution. Given the relatively large percentage of households in the lower portions of the income distribution in many cities, it is important to examine the effect of rising water bills across the entire income distribution—and especially at the lower end—rather than simply at the median. For example, a key indicator could include the analysis of average water and wastewater bills as a percentage of the household income for each income quintile. Table 1-1 demonstrates that this percentage would be much higher for lower income quintiles in Atlanta compared to national levels (e.g., the income level that defines the upper end of the lowest quintile—lowest 20% of income earners—in Atlanta is $12,294; this compares to $20,585 nationally).

Table 1-1 Household Income Quintile Upper Limits in Atlanta, Georgia, and the United States (2011$)

	Atlanta, Ga.	United States
Lowest quintile	12,294	20,585
Second quintile	31,873	39,466
Third quintile	59,043	63,001
Fourth quintile	104,233	101,685
Lower limit of top 5%	246,335	187,087

Source: U.S. Census Bureau American Community Survey, 2012.

EPA's "Guidance for Preparing Economic Analyses" (240-R-00-003) recognizes the legitimacy of assessing impacts to all households across the income distribution, though EPA has not provided information on how such analyses have been conducted in the past or how they've been used in enforcement actions.

• Across household types. Average water and wastewater bills can be examined as a percentage of income for potentially vulnerable populations (e.g., renters and elderly households).

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• Across neighborhoods or similar geographic units, such as Census tracts, or Public Use Microdata Areas (PUMAs). Poverty rates and households located in poverty areas can be considered to identify portions of communities that are economically at risk. Alternative measures of poverty, such as the Supplemental Poverty Measure (SPM) recently developed by the U.S. Census Bureau , can be especially useful in this respect. The analysis could capture affordability issues in particular parts of a community or service area that may be masked when looking at the area as a whole.

Other indicators of economic need and widespread impacts can also be considered for the community or parts of the community[2]. These might include:

• The unemployment rate.

• The percentage of households receiving public assistance such as food stamps or living below the poverty level.

• The percentage of households meeting Home Energy Assistance Program requirements.

• The percentage of customers eligible for water affordability programs.

• The percentage of households paying high housing costs—for example the percentage of households with housing costs in excess of 35% of income.

• Other household cost burdens such as nondiscretionary spending as a percentage of household income for households within each income quintile (Rubin 2003).

EPA's Secondary Screening Analysis: Limitations and Alternative Indicators

Just as the RI falls short of its intended purpose, so too does the FCI. The FCI that makes up EPA's secondary screening analysis does not adequately reflect a community's ability to finance investments associated with federal water mandates. This measure fails to fully capture financial capability because:

• EPA uses property tax revenues as a percentage of full market property value (FMPV) as its sole measure of local tax effort. Focusing solely on property taxes—while ignoring income, sales, business taxes, and user fees typically charged for city services—inevitably understates the tax effort in cities that rely on multiple forms of taxation. As an alternative, EPA should allow municipalities to use total local tax and fee revenues as a percentage of gross taxable resources. This would provide a better measure of the extent to which a municipality is already using the full range of its taxable resources.

• The secondary screening analysis includes measures of local MHI and unemployment levels compared to the national average. By focusing on how these measures compare with national levels, EPA fails to acknowledge the profound impact of the absolute levels themselves. For example, if the national unemployment rate is 9%, a community with an unemployment rate of 10% is considered by EPA as having only a "mid-range" unemployment problem. In fact, a community with a 10% unemployment rate is all-but-certain to be experiencing significant distress, regardless of the national average.

  o In addition to supplemental measures for MHI (as previously described), EPA should consider a metric that compares a municipality's current unemployment rate with the long-term state and national average (the national average was 5.8% between 1991 and 2010). Use of the long-term state and national averages as a benchmark would provide a more insightful socioeconomic indicator than a single current number. A community's long-term unemployment rate (for example, the share of the labor force continuously unemployed for one-half year or more) could also be evaluated.

  o In addition to broadening the range of labor market indicators it considers in assessing local financial capabilities, EPA should consider other measures of local economic distress, such as foreclosure rates. At the national level, foreclosure rates rose from 5.8 per 1,000 households in 2006 to 22.2 per 1,000 in 2010 (Office of the State Comptroller, 2011). In many communities, high foreclosure rates have had a significant impact on the financial condition of local governments and their ability to finance capital improvements.

• The FCI does not take into account the recent deterioration of many local governments' ability to finance major capital improvements, as evidenced in municipal capital markets. EPA should consider adding a measure of local government revenue growth or decline to the FCI matrix,

The SPM includes changes in the measure of available household resources (e.g., using after-tax income instead of pretax income and taking into account income received through food stamps and other forms of public assistance) and also recognizes some nondiscretionary expenses that such households bear. The SPM also adjusts for different housing status (e.g., renters versus owners). Additional details can be found in the U.S. Census Bureau's Supplemental Poverty Measure (2011a).

2 EPA's 1995 Interim Economic Guidance for Water Quality Standards provides a good list of these indicators, and also includes economic losses, impacts on property values, decreases in tax revenues, and potential for future job losses, among others.

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with a decline in real revenues over some period taken as a sign of weakened financial capacity.

• EPA's methodology for assessing municipalities' financial capabilities takes into account formal debt burden, but it does not consider what for many cities is an even greater liability: unfunded pension and health care commitments to retirees. These are generally not reflected in formal debt.

• Community or utility revenues are not considered in the secondary screening analysis. This creates a significant weakness, especially in areas that are experiencing economic difficulties, delinquency in water and wastewater payments, declining water usage, shrinking revenues, or a growing number of older customers on fixed or declining incomes. EPA should consider the addition of more appropriate measures of revenue collection, such as current delinquency rates, the agency's ability to enforce collection, and its likelihood of recovering these costs.

• EPA's secondary screening analysis does not take into account the fact that many communities have a legal debt ceiling. Debt limitations have the potential to severely limit a community's ability to finance unfunded mandates absent an extended schedule.

• Finally, EPA does not consider the longer-term needs facing many municipalities for reinvestment and renewal of water and wastewater infrastructure due to the current system's age and condition. As documented by AWWA's Buried No Longer report (covering buried drinking water infrastructure only), these needs add up to at least $1 trillion over the next 25 years. Wastewater needs are at least as great, not counting CSO costs. The need for this investment is real and urgent.

Weighing the Benefits of Additional Mandate-Driven Expenditures

Federal Clean Water Act and the Safe Drinking Water Act mandates are intended to provide better public health protection, water quality enhancements, and other benefits. However, not all drinking water and wastewater mandates are the same. Some provide greater benefits than others, or provide benefits sooner than others, or generate benefits to different groups of people or ecosystems.

When communities face expensive water mandates and associated deadlines, the impact of the required expenditures can be extremely difficult for all who pay water bills, but particularly for those with lower incomes. In such communities, the expected benefits of the mandate should be carefully weighed against:

• Compliance deadlines (which might be amended)

• Permit limits (which might be adjusted)

• Required compliance technologies and strategies (some of which are more expensive than others)

• Other factors that influence the magnitude and timing of required investments

When the costs of meeting a regulatory mandate are high, the affordability implications and the benefit of the activity should each be evaluated in concert with the other. The most important questions include:

1. Are the added benefits of more rapid and/or stringent mandates warranted given the added costs and adverse impacts on affordability, when compared to less stringent, perhaps less expensive alternatives?

2. Are projects with lower public health or environmental benefits driving out projects that might be of greater value to the community or the nation?

3. Are the households that will realize most of the benefits different than those who will bear most of the costs?

4. Are those bearing the greatest burden economically disadvantaged and thus worthy of environmental justice consideration?

EPA's proposed Integrated Planning and Permit Policy (IPPP) provides one potential avenue by which the costs and benefits of all federal water mandates could be addressed. The IPPP process could be used to set priorities, make adjustments in requirements, and set reasonable timetables. Such adjustments would help ensure that local resources are used to secure the greatest public health and environmental benefits at an affordable cost. Moving the IPPP process forward as suggested offers important potential advantages:

• Comparing the environmental, social, and financial benefits of all water-related obligations would allow municipalities to develop priorities that reflect the totality of trade-offs and commitments facing the community.

• Considering all water-related obligations together, and assessing financial capability in light of total water-related obligations, would focus local resources where the community will get the greatest total environmental, public health, and other benefits.

It should be noted that EPA does not include drinking water mandates in the Integrated Municipal Stormwater and

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Wastewater Planning process, even though drinking water investments must be carried on the same customer bill as investments needed to comply with wastewater and CSO mandates. The USCM, AWWA, and WEF have recommended that EPA include consideration of drinking water investments in the Integrated Planning and Permit Program. The program should also consider necessary but nonmandatory investments in the ongoing rehabilitation of water and wastewater infrastructure.

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Chapter 2

Guidance for Developing EPA's Residential Indicator

This chapter provides an overview of the methods outlined in EPA's 1997 Guidance for Financial Capability Assessment and Schedule Development (U.S. EPA, 1997), which EPA uses for completing the preliminary screening analysis (i.e., calculating the RI). More specific instructions and worksheets developed by EPA for this purpose are included in this Assessment Tool as Workbook 1, an Excel spreadsheet.

EPA's RI is intended to provide a measure of the financial impact of current and proposed wastewater treatment (WWT) and CSO controls on residential users. The calculation of the RI involves the following steps:

• Determine the average annual cost per household (CPH) associated with WWT- and CSO-related programs and services in a given community. CPH is based on the total costs for these programs, the percentage of wastewater flow attributable to residential users, and the number of households in the service area, as further explained below.

• Determine the MHI for the service-area based on data from the U.S. Census Bureau.

• Divide the CPH by the service area MHI to calculate the RI.

• Compare the RI to financial impact ranges established by EPA to determine whether unfunded mandates will produce a possible high, mid-range, or low financial impact on residential users.

It is important to note that although EPA's 1997 Guidance was developed within the context WWT and CSO controls, this Assessment Tool is focused on the affordability of both water supply and WWT (including CSO and stormwater) programs. For comparison purposes, water and wastewater utilities can calculate the average annual CPH for both types of services using the methodology outlined below.

Step 1: Develop the CPH Estimate

In its 1997 Guidance, EPA outlines the following steps for determining the average annual CPH of existing and proposed WWT and CSO control costs:

• Determine total WWT and CSO (and stormwater) costs by adding together the current costs for existing WWT operations and projected costs for any proposed controls.

  o Current WWT costs are defined as "current annual wastewater operating and maintenance (O&M) expenses (excluding depreciation) plus current annual debt service (principal and interest)" (1997 Guidance, p. 12).

  o EPA Guidance states that O&M expenses and debt service costs should also be estimated for all proposed projects and adjusted to current year dollars (i.e., deflated) using the average annual national Consumer Price Index (CPI) inflation rate for the last five years. Workbook 1 includes specific instructions for applying the CPI and determining annualized debt service costs.

• Calculate the residential share of the total WWT and CSO costs.

  o The residential share of total costs is computed by multiplying the percent of total wastewater flow (including infiltration and inflow) attributable to residential users by the total costs.

• Calculate the CPH by dividing the residential share of the total WWT and CSO costs by the number of households within the service area.

The sources of data necessary for calculating CPH will vary somewhat by utility/municipality. Table 2-1 provides a summary of typical data sources.

Step 2: Determine Service-area MHI

The second step in developing the RI is to determine MHI for your service area (or general service area boundaries if the service area does not exactly follow Census-designated areas). In its 1997 Guidance, EPA recommends using the MHI from the latest census year and adjusting it to current year dollars using the average CPI inflation rate. However, the Decennial Census no longer includes MHI as a statistic. MHI is reported annually as part of the U.S. Census Bureau American Community Survey (ACS), which can be accessed via the American FactFinder (AFF) website at factfinder.

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Table 2-1 Typical data sources for calculating EPA's Cost per Household

Component of CPH	Data source
Current annual WWT, CSO, or stormwater costs	Utility/municipality financial reports (in some states these are available from central records kept by the state auditor or other state offices)
Projected annual WWT, CSO, or stormwater costs	Utility/municipal planning documents
CPI	Bureau of Labor Statistics (USDOL BLS, 2012)
Percent of total wastewater flow attributable to residential users	Utility billing data
Number of households in service area	Utility/municipal planning documents, U.S. Census Bureau ACS single-year estimates for most recent year[a]

aU.S. Census Bureau ACS data can be used if service area boundaries follow Census divisions (e.g., county, city, Census tracts, metropolitan statistical areas). Chapter 5 provides additional detail on ACS data.

census.gov/faces/nav/jsf/pages/index.xhtml. Additional detail and instructions for accessing ACS data are included in chapter 5, as well as in Workbooks 2, 3, and 4 that are included with this Assessment Tool.

EPA's 1997 Guidance also states that if the service area includes more than one jurisdiction, a weighted MHI should be developed based on the number of households within each area. In addition, if MHI is unavailable for a specific service area or jurisdiction, EPA suggests that the surrounding county's MHI may be sufficient.

Step 3: Calculate and Analyze the RI

To calculate the RI, the annual CPH is divided by the MHI of the service area. The RI indicator is then compared to financial impact ranges established by EPA to determine whether unfunded mandates will produce a possible high, mid-range, or low financial impact on residential users. In the context of wastewater, CSO, and stormwater controls, the RI is categorized as low if it is less than 1%, mid-range if it is between 1% and 2%, and high if it is greater than 2%. For drinking water, an RI of greater than 2.5% is considered to represent a high financial impact.

In its 1997 Guidance, EPA suggests that if the wastewater RI is classified as "mid-range" or "high", then the community should perform a secondary screening analysis (i.e., calculate the FCI) to assess the utility's financial capability to afford additional programs. Results from the preliminary and secondary screening analyses are ultimately combined into EPA's Financial Capability Matrix to determine whether a community should be granted a longer compliance schedule for meeting regulatory obligations, or provided another form of relief.

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Chapter 3

Primary Data Sources for Developing Alternative Measures of Household Affordability

This chapter provides an overview of the data sources that can be used to develop the metrics outlined in the subsequent chapters (4 and 5), including:

1. U.S. Census Bureau American Community Survey (ACS, the primary data source)

2. U.S. Census Bureau Integrated Public Use Microdata Series (IPUMS)

3. Additional national, state, and local sources.

Use these data sources to develop alternative measures of household affordability (i.e., beyond EPA's RI). Such alternative measures include a series of socioeconomic indicators, such as income distribution and poverty rates within a community, as well as specific affordability metrics for different household types.

Workbooks 2 and 3 provide more information and step-by-step instructions for accessing and analyzing this data.

U.S. Census Bureau ACS

The U.S. Census Bureau ACS serves as the primary source of data used to develop the affordability measures recommend in this Assessment Tool. The ACS is a household survey conducted by the U.S. Census Bureau with a current annual sample size of approximately 3.5 million households. The ACS replaced sample (long-form) data from the Census and is now the only source of data on income, poverty status, education, employment, and most housing characteristics. ACS estimates are released annually (for geographic areas with a population of 65,000 or more), as a three-year average (for geographic areas with a population of 20,000 or more), and as a five-year average (for all geographies, down to the Census Block Group level). The ACS is considered the most reliable source of detailed socioeconomic data currently available, and is the only source of data available for small geographies.

ACS datasets can be used to access socioeconomic data that will allow better examination of economic need within a community, including:

- Income levels and income distribution
- Poverty rates
- Unemployment rates
- Households receiving public assistance
- Some information on housing costs and housing burden

ACS data are also used in this Assessment Tool to develop specific affordability metrics, such as comparing average household water and wastewater bills to the MHI for each income quintile, and examining EPA's RI at the census tract level to identify potentially vulnerable communities.

ACS data are available on the U.S. Census Bureau's American FactFinder website. One-year estimates are typically released for the previous year every September, three-year estimates in October, and five-year estimates in December. As of December 1, 2012, the U.S. Census Bureau has released one-year estimates for 2011 and three-year estimates for 2009-2011. Five-year average estimates are scheduled for release on December 6, 2012.

Throughout this Assessment Tool, USCM, AWWA, and WEF recommend using the ACS to collect socioeconomic data at the city (or service area) level (i.e., using single-year or three-year average ACS estimates), as well as at smaller geographic scales (e.g., at the Census tract level, using five-year average ACS estimates). Analysis of these data on a smaller-scale (such as a Census tract or neighborhood) can help to identify vulnerable populations and assess potential EJ concerns.

Workbooks 2 and 3 provide additional information and step-by-step instructions for accessing, reporting, and mapping both one-year and five-year average ACS estimates. This includes guidance on navigating the AFF website, specific source tables for socioeconomic data, and selecting the correct geographic area (e.g., place within a state, county, metropolitan service area) for your service area.

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U.S. Census Bureau IPUMS

In addition to ACS data, more in-depth analyses can be performed using the U.S. Census Bureau's IPUMS. IPUMS can be used to analyze socioeconomic characteristics across different types of households (e.g., renter-occupied versus owner-occupied households, multi-family versus single-family) or to run queries or cross tabs at the city- or PUMA-level. PUMAs are statistical geographic areas that have been defined for the tabulation and dissemination of IPUMS data. PUMAs are made up of clusters of Census tracts and have a population of at least 100,000.

IPUMS consists of more than 50 high-precision samples of the American population drawn from 15 federal Censuses and 2000–2010 ACS data. IPUMS is composed of microdata, meaning that each record is a person. In most samples, persons are organized into households, making it possible to study the characteristics of people in the context of their families or other co-residents. Because IPUMS uses census results from individuals, it is possible to drill down into much deeper detail than possible with ACS summaries. For example, IPUMS data can be used to determine the percentage of people at certain income levels in different areas of a city or community (e.g., the percentage of residents with incomes greater than the 2% affordability threshold income).

The use of PUMS data presents several obstacles for water and wastewater utilities. Most importantly, because the data are individuals and not tables, researchers must use advanced statistical packages (such as SPSS, SAS, S-plus, or R software programs) to analyze the millions of records in the database. In addition, the large size of the PUMAs (100,000 people) is a potential problem for smaller cities. Further, because PUMAs must include 100,000 people, some PUMA boundaries are arbitrary and do not always follow political or common geographical delineations.

For these reasons, this Assessment Tool does not provide in-depth detail on how to access and analyze IPUMS data. However, the use of these data by water and wastewater utilities may be performed in-house or by consultants with relevant knowledge. More information on IPUMS can be found at www.census.gov/acs/www/data_documentation/public_use_microdata_sample/.

Throughout the remainder of this Assessment Tool, places where IPUMS data would serve to augment household affordability assessments are noted; however, the Assessment Tool and analyses focus on more accessible and user-friendly data sources.

Supplemental Data Sources

In addition to U.S. Census Bureau surveys, state and local data sources can also provide a wealth of relevant information. The availability of these sources will vary across utilities/municipalities and may include information from states' labor departments (e.g., particularly for unemployment data), economic development and local government agencies, and other local agencies and organizations.

Another source of supplemental data may include datasets that provide information on nondiscretionary spending and housing costs within a city compared to the national average, or some other benchmark. This information can help to demonstrate the burden that these costs place on different types of households and can provide insight into the potential effects of water and wastewater rate increases. For example, in larger communities where the cost of living is high and incomes are commensurate with the national average, the American Chamber of Commerce Research Association (ACCRA) Cost of Living Index (COLI) database might serve as an important measure of existing household burdens. The ACCRA COLI database provides a measure of differences in the cost of living among urban areas in the United States relative to price levels for consumer goods and services in participating areas. Data from the BLS Consumer Expenditure Survey (CES) can also be used to assess economic burdens within different types of communities, including both urban and rural communities. More information on the ACCRA COLI is available at www.coli.org/.

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Chapter 4

Guidance for Analyzing Socioeconomic Indicators of Household Affordability for Your Community

There is no single piece of information that can definitively indicate whether a community is at risk of being unable to afford increased water and wastewater costs. However, relevant socioeconomic indicators can help to provide a more complete picture of a community's economic and social characteristics (and thus, its ability to afford rate increases associated with unfunded mandates). This Assessment Tool (and associated templates) focuses on the following indicators of social and economic need[1]:

- Income levels
- Income distribution
- Poverty rates
- Household economic burdens and nondiscretionary spending
- Supplemental indicators, including households receiving public assistance and unemployment rates within a community.

The following sections provide an overview of the socioeconomic indicators described above, as well as general guidance for accessing and analyzing specific socioeconomic data. We do not propose specific affordability thresholds for these indicators, rather, they are intended to provide context and to help "build the case" for why a community may merit additional consideration for regulatory relief.

Throughout this Assessment Tool, graphs and tables for specific indicators are presented, drawing upon data from various U.S. cities as examples. Workbook 2, "Assessing American Community Survey Data at the Community, National, and Census-Tract Levels," includes step-by-step instructions for accessing the ACS data necessary for analyzing each indicator. Workbook 3 provides templates for developing specific analyses for your community[2].

Income Levels

Although not useful as a sole indicator of household affordability, MHI data will serve as an important component of your household affordability assessment. In addition to providing an indication of economic need, MHI data will be used to develop specific affordability measures (e.g., evaluating water and wastewater rates as a percentage of MHI by Census tract or within each income quintile).

The first order of business is to document MHI for your community for the most recent year available, compared to the national MHI for the same year (in 2011, the MHI in the United States was $50,502). Citywide or service area-wide income data are easily obtained via American FactFinder (AFF) using the ACS single-year, three-year average, or five-year average dataset, depending on the size of your community. See Workbooks 2 and 3 with this Assessment Tool.

To identify specific areas in your community with high concentrations of low-income households, MHI data should also be analyzed at the Census tract level. These data will be based on five-year average estimates from the ACS because single-year data are not available at this smaller geographic scale (5-year average estimates are available for all geographies). These data should be downloaded via AFF into Excel spreadsheets for further analysis.

1 There are other indicators that localities and utilities may want to consider, particularly those listed in the EPA 1995 Interim Economic Guidance for Water Quality Standards Workbook as part of the widespread economic impact analysis; these indicators include: losses to local economy; increases in unemployment; impacts on property values or community development potential; decreases in tax revenues; loss of future jobs or personal income. See this EPA guidance for a complete list.

2 ACS estimates are released annually (for geographic areas with a population of 65,000 or more), as a three-year average (for geographic areas with a population of 20,000 or more), and as a five-year average (for all geographies, down to the Census Block Group level).

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Figure 4-1 MHI by Census tract, 2011, developed using American Fact Finder website
Source: U.S. Census Bureau ACS, 2011a, 2006–2010 five-year average estimates

The AFF website provides options for developing maps of income and other socioeconomic data by Census tract. Tract-level data can also be analyzed and mapped using geographic information systems (GIS), depending on the resources and capabilities within your utility. With the use of GIS, utilities have the options for further analyzing the data and conducting more in-depth analyses (e.g., developing maps showing Census tracts where the average household water and wastewater costs exceed specific percentages of MHI). Workbook 3, "Socioeconomic Indicators" provides specific instructions for accessing Census tract-level data and developing the corresponding maps.

Figures 4-1 and 4-2 provide examples of Census tract MHI maps for the City of Philadelphia developed on the AFF website and using GIS, respectively. These maps demonstrate significant variation across census tracts, in terms of MHI. Workbook 2 includes specific instructions for downloading and mapping Census tract level data.

To identify potentially vulnerable populations, income levels should also be analyzed across different types of households. For example, in some communities there may be considerable differences between income levels for renter-occupied and owner-occupied households, as well as between multi-family and single-family households, or between elderly and non-elderly households. Income data for renter and owner-occupied households and for elderly residents can be downloaded from the 2011 (or relevant year) ACS single-year dataset. However, income data for multi-family and single-family households can only be accessed through IPUMS.

Table 4-1 shows how MHI can vary significantly across different types of households, using Kansas City, Kansas as an example.

In addition, in recent years income levels in many cities have been declining. Where this happens it has important affordability implications because it means that increases in water and wastewater bills will not be offset by similar increases in incomes. Income data can be downloaded from single-year ACS databases from 2005 through the current year. When comparing MHI across years, it is important to adjust for inflation (using the CPI) so that all data points are compared using the same year value. For smaller communities, it will be necessary to look at changes in three-year or five-year average ACS estimates.

Continuing with Kansas City as an example, Figure 4-3 presents a graph of citywide MHI for 2005 through 2011. As shown, Kansas City has followed the trend of many cities in the United States, with real MHI declining by about $1,150 from 2005 to 2011. When compared to average increasing annual household water and wastewater costs, this graph can serve as a useful tool to show how increasing water and wastewater bills are outpacing real increases in household

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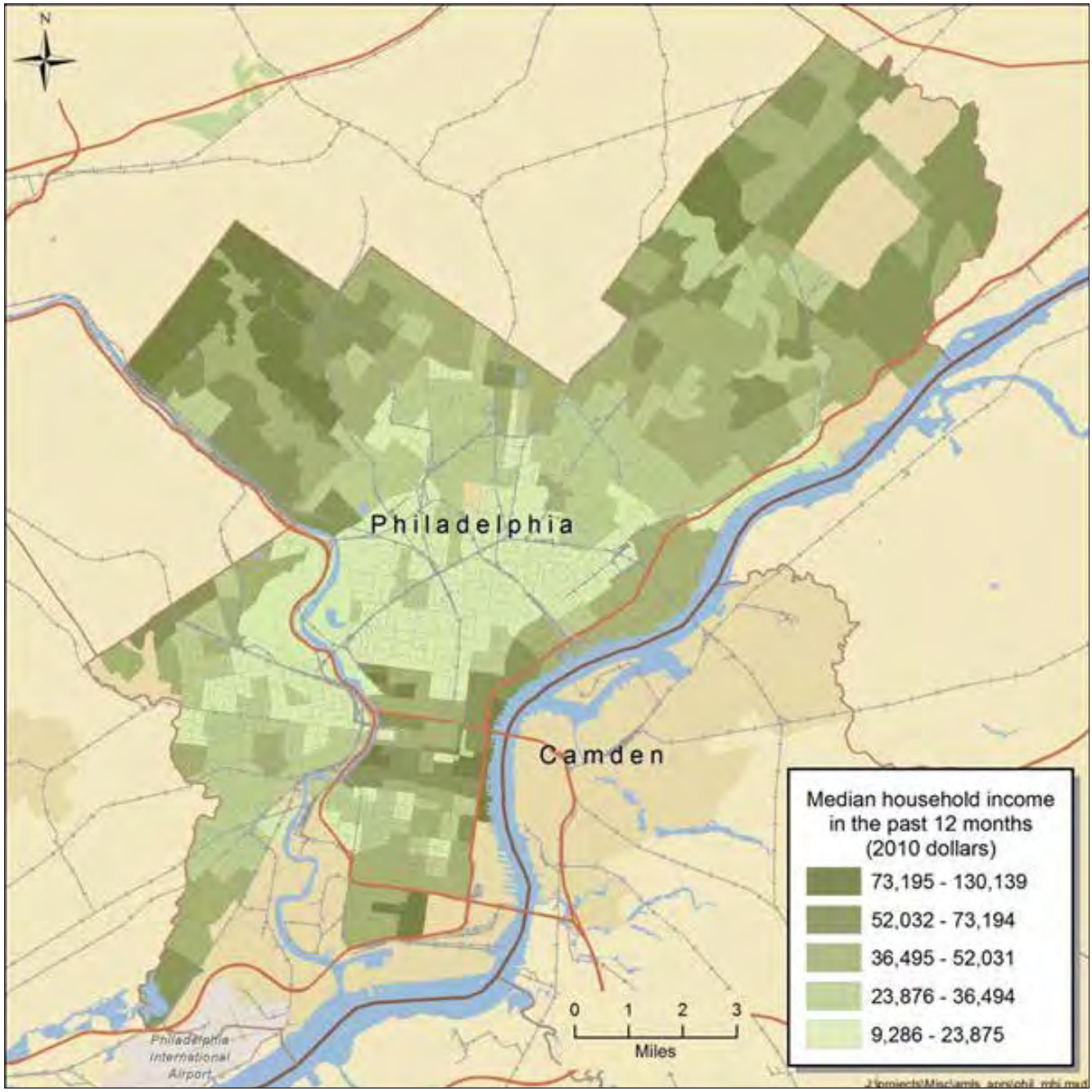

Figure 4-2 MHI by Census tract, 2011, developed using in-house GIS capabilities
Source: U.S. Census Bureau ACS, 2011a, 2006–2010 five-year average estimates

incomes (e.g., annual average household water and wastewater costs can be graphed on the secondary y axis).

Table 4-1 MHI by household type, Kansas City, Kansas

Household type	MHI (2011$)
All households	37,036
Elderly households	27,955
Renter-occupied	24,898
Owner-occupied	47,272

Source: U.S. Census Bureau ACS, 2012, 2011 single-year estimates

Workbook 3 (an Excel spreadsheet) provides the specific ACS data tables you will need to obtain the information presented above for your community. The spreadsheet also provides templates for presenting these indicators as graphs and tables (see spreadsheet tabs MHI, MHI_HHType, and ServiceArea_MHI_2005-2011).

Income Distribution

In many cities, incomes are less centered on the median compared to incomes in the United States as a whole. This has important implications for affordability because

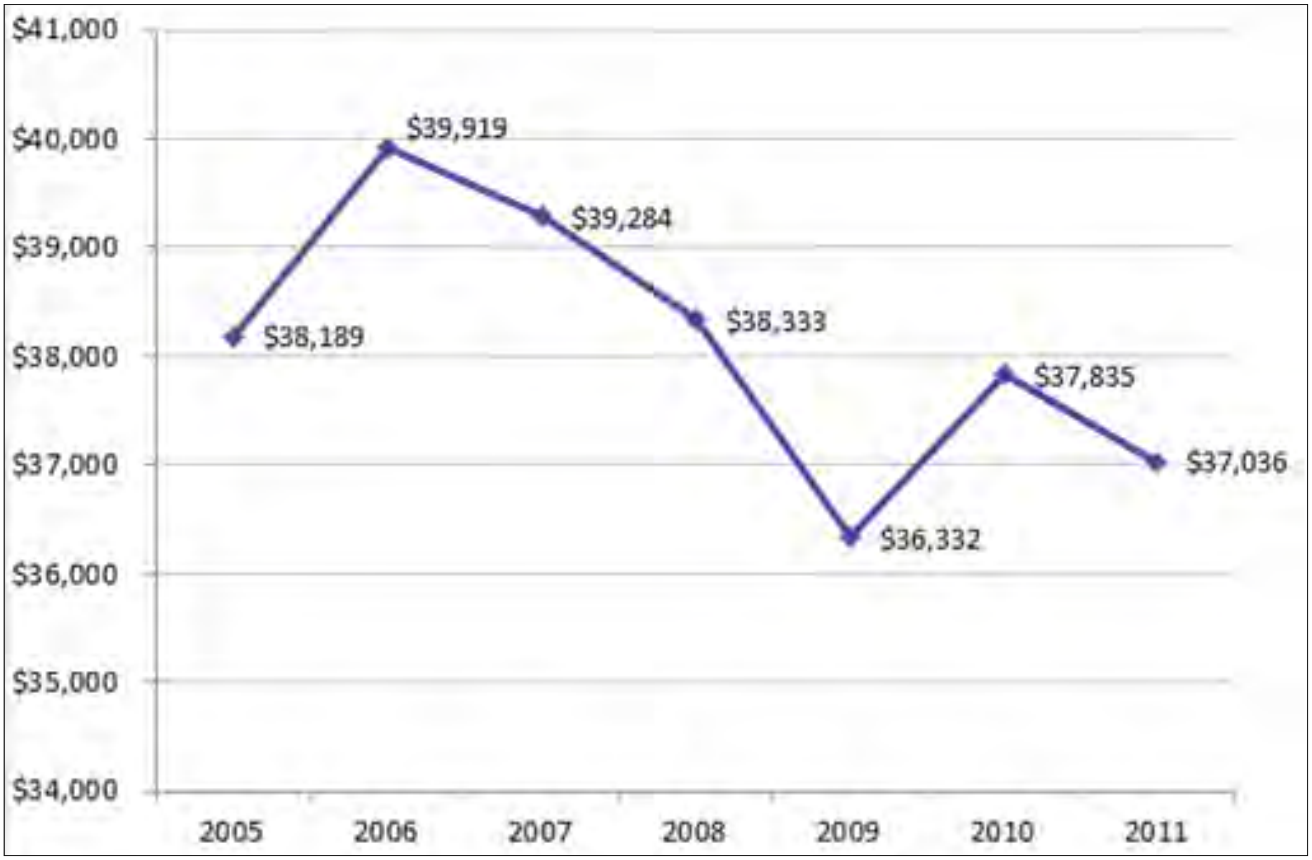

Figure 4-3 Kansas City MHI, 2005–2011, adjusted to 2011 dollars using CPI
Sources: U.S. Census Bureau ACS, 2006, 2007, 2008, 2009, 2010, 2011b, 2012 (2006-2010 single-year estimates).

it means that a higher percentage of households within these communities may be adversely impacted by water and wastewater rate increases compared to what might be expected under a more equal distribution of income. Although this is the case in many larger urban communities, Rubin (2001b) shows that this is also the case for many rural/nonmetropolitan communities, which tend to have a higher percentage of households in lower-income categories compared to the national average.

Income distribution can be examined with ACS data in different ways, including by income quintile, as well as by 10- and 16-category distributions. Table 4-2 shows the upper limits of household income quintiles for Atlanta, Georgia, compared to the United States as a whole. As shown, the lowest-income quintiles in Atlanta are substantially lower than those for the United States. This indicates that a greater percentage of Atlanta households are at the lower end of the income spectrum compared to the national average (e.g., the upper limits for the lowest quintile indicate that in the United States, the lowest 20% of households earn less than $20,585 per year, while in Atlanta, the lowest 20% of households earn less than $12,294 per year). Conversely, the lower limits for the upper quintiles are greater in Atlanta than for the United States overall.

Table 4-2 Household income quintile upper limits, Atlanta, Georgia and the United States (2011$)

	Atlanta, GA	United States
Lowest quintile	12,294	20,585
Second quintile	31,873	39,466
Third quintile	59,043	63,001
Fourth quintile	104,233	101,685
Lower limit of top 5%	246,335	187,087

Source: U.S. Census Bureau ACS, 2012.

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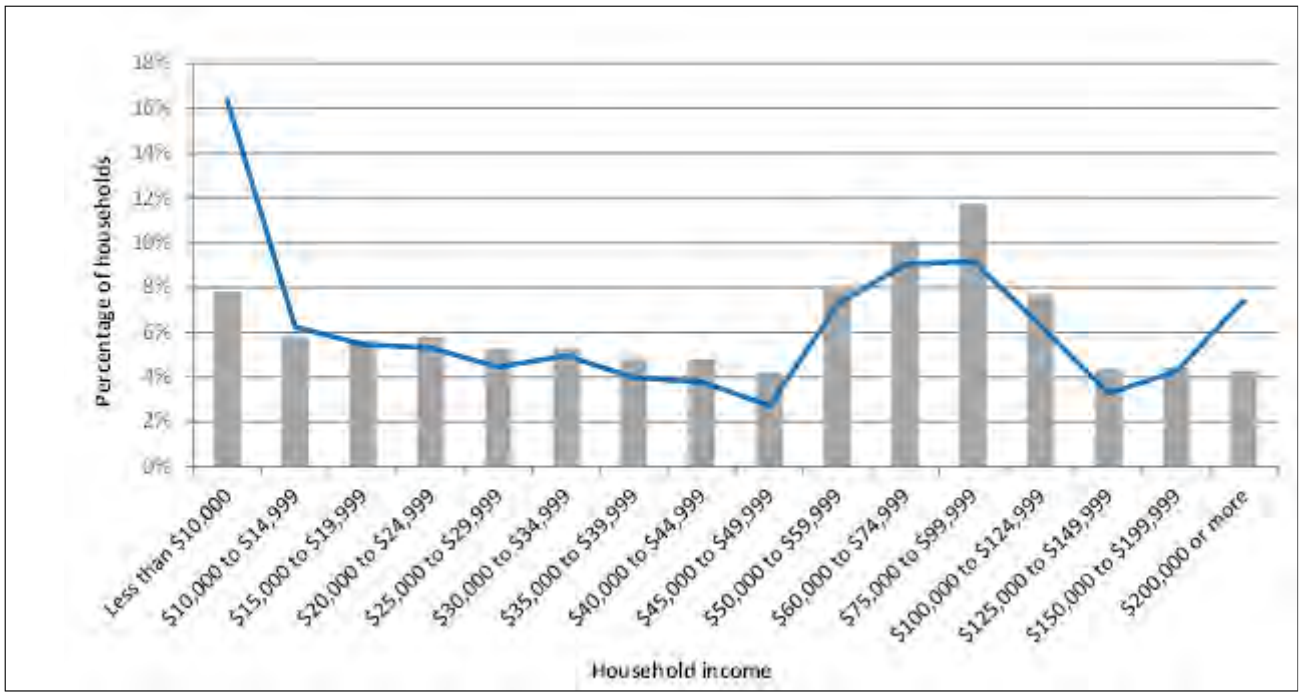

Figure 4-4 Income distribution in Atlanta, Georgia and the United States
Source: U.S. Census Bureau ACS, 2012 (2011 single-year estimates).

Figure 4-4 graphically portrays that the income levels in Atlanta are more concentrated toward the ends of the income spectrum compared to the national average. Indeed, the figure reveals that the income bracket containing Atlanta's MHI ($43,903 in 2011) is one of the least-populated income classes in the entire city. Thus, it is evident that in Atlanta (and in many other cities in the United States), citywide MHI does not reflect a "typical" household. Further, a much higher percentage of residents would be adversely impacted by increased water and wastewater bills compared to communities with a more equal and centrally clustered income distribution.

The evaluation of income distribution across different household types can help to identify vulnerable populations within a community. Continuing with Atlanta, Georgia, as an example, Figure 4-5 shows the income distribution across elderly households (i.e., the head of the household is 65 years or older) compared to the income distribution citywide. As shown, the majority of elderly households (52%) have a reported income of less than $25,000. This compares to about 33% of households citywide.

As demonstrated in Table 4-1, a second population of potentially vulnerable households includes renter-occupied households, which often have lower incomes than owner-occupied households. Figure 4-6 shows the income distribution for renter- and owner-occupied households in Atlanta, Georgia, where 55% of all households are renter occupied. As shown, there is a much higher percentage of renter-occupied households in the lower-income categories, with close to 40% of all renters earning less than $20,000 per year.

Workbook 3 provides the specific ACS data tables that you will need to obtain income distribution data for your community. The spreadsheet also provides templates for presenting these indicators as graphs and tables (see spreadsheet tabs Inc._quintiles; Inc._dist; Elderly_Inc_dist;, and Renter_Owner_Inc_dist).

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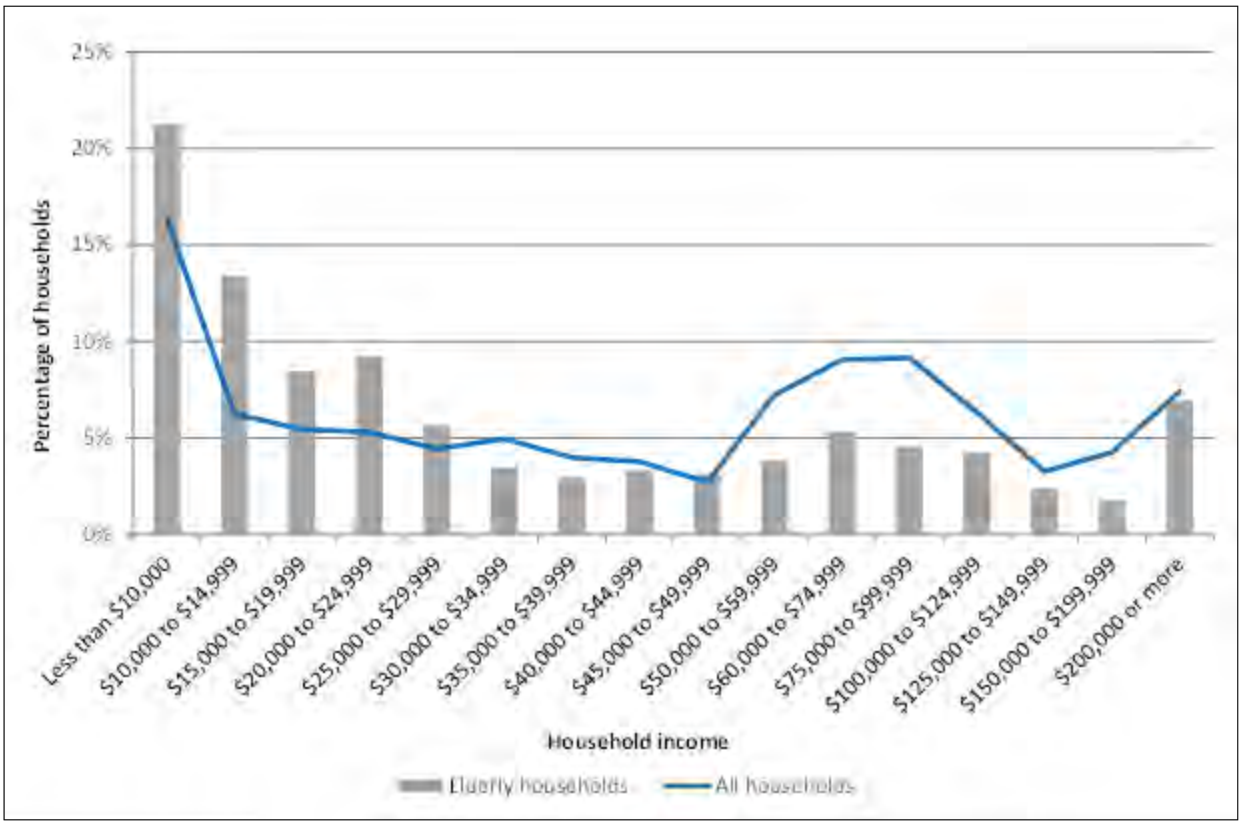

Figure 4-5 Income distribution in Atlanta, Georgia, elderly households and citywide
Source: U.S. Census Bureau ACS, 2012 (2011 single-year estimates)

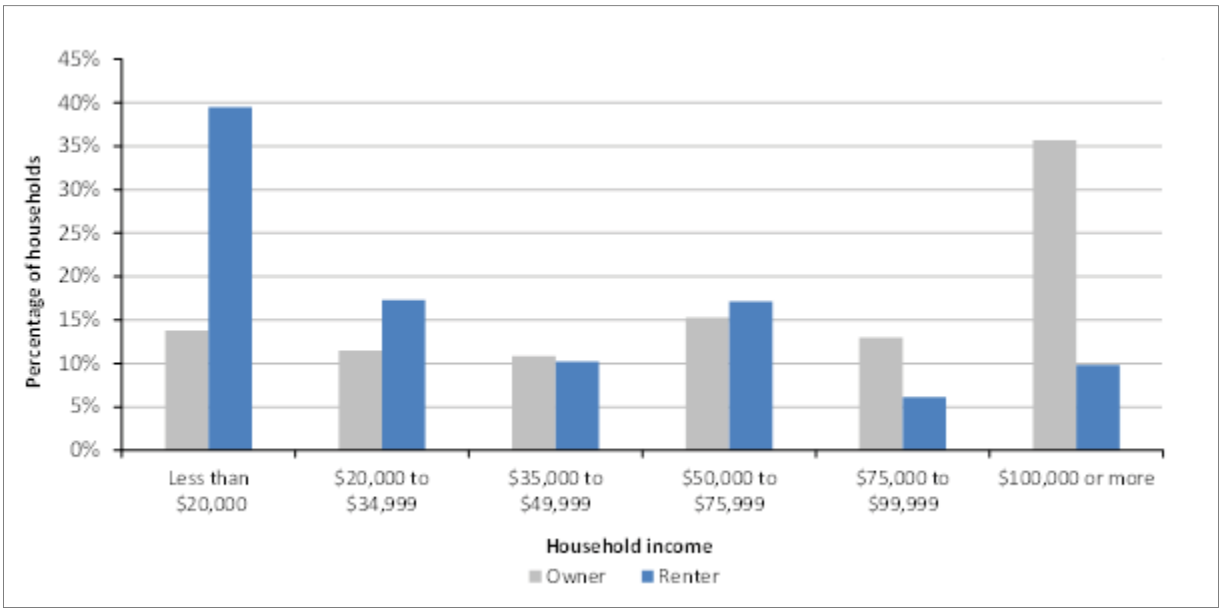

Figure 4-6 Atlanta, Georgia income distribution, renter- and owner-occupied households
Source: U.S. Census Bureau ACS, 2012 (2011 single-year estimates)

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Poverty Rates

In addition to income levels and income distribution, poverty rates serve as an important indicator of economic need. In 2011, 15.9% of people in the United States were living below the federal poverty line. This percentage provides a benchmark for assessing poverty levels within your community, which can be obtained using ACS single-year and three-year average estimates (depending on the size of your service area). Data on the percentage of elderly residents and children living below the federal poverty line are also available through ACS. These data can help to identify vulnerable populations.

Similar to income levels, poverty rates can be examined at the Census tract level using five-year average ACS estimates. Once these data are downloaded, they can be used to identify "poverty areas," where 20% or more of the households in that Census tract have incomes below the federal poverty level. Again, these data can be mapped using AFF or with GIS capabilities at your utility.

In terms of affordability, identifying areas where poverty is more concentrated may have important implications for public health. In essence, the effective reduction in disposable income among low-income households could adversely affect those households' ability to pay for needed food, heat, and medical care (Crawford-Brown et al., 2009; Raucher et al., 2011). Care should be taken to ensure that public policies (including well-intentioned environmental mandates) do not impose costs that may further exacerbate the health challenges faced by households in such low-income neighborhoods.

Many have argued that the official (i.e., federal) poverty rate does not provide an accurate measure of the number of households truly living in poverty conditions. Indeed, various studies have emphasized that households with incomes that are significantly higher than the poverty level often experience severe hardships, including hunger, lack of needed heating and cooling, and the inability to afford medical care (Boushey et al., 2001).

To obtain a more accurate measure of households living in poverty conditions, the U.S. Census Bureau developed a Supplemental Poverty Measure (SPM) in 2010. The SPM factors in public assistance and financial support offered to low-income households (e.g., housing subsidies, low-income home energy assistance) and also recognizes some nondiscretionary expenses that such households bear (e.g., taxes, out-of-pocket medical expenses, and geographic adjustments for differences in housing costs) (U.S. Census Bureau, 2011a).

At the national level, for a two- adult, two-child household in 2010, the SPM income threshold was set at $24,343. This compares to the official poverty threshold of $22,113. Nationwide, the SPM indicates[4] that there are 5.35% more people in poverty than the official poverty threshold would indicate. The SPM also indicates that inside Metropolitan Statistical Areas the difference is 11.2%, and within "principal cities," the SPM-implied number of people in poverty is 5.94% higher than the official poverty measure indicates. Although the SPM is not yet available at the city/community level, these general rules can help to identify additional households that may be adversely impacted by increased water and wastewater rates.

Workbook 3 provides the specific ACS data table that you will need to obtain poverty data for your community. The spreadsheet also provides templates for presenting these indicators as graphs and tables (see spreadsheet tab "Poverty").

Housing Burdens and Nondiscretionary Spending

As noted in chapter 1, EPA's residential indicator does not capture existing household economic burdens beyond those associated with water and wastewater bills. Economic burdens are commonly measured by comparing the cost of particular necessities to the resources (e.g., income) available to a household or community. EPA's RI is such a measure in that it is used to evaluate the economic burden from wastewater charges by comparing those charges to MHI. However, wastewater service is just one of a set of basic necessities whose costs influence the overall economic burden on a community's households.

Household economic burdens can be a significant factor for large urban communities where the cost of living is much higher than the national average, as well as in smaller rural communities where MHIs are often lower than the national MHI but nondiscretionary costs are not. Analysis of household economic burdens and nondiscretionary spending requirements can provide an indication of how difficult it is for both low- and middle-income households in your community to make ends meet, and how increases in water and wastewater costs will impact different types of households.

Housing burden is the most common measure of household economic burden. Most government agencies consider housing costs of between 30% and 50% of household income to be a moderate burden in terms of affordability; while costs greater than 50% of household income are considered

4 The SPM also adjusts for different housing status (e.g., renters versus owners). Additional details can be found in the U.S. Census Bureau (2011).

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a severe burden. The ACS provides information on monthly housing costs for both owner-occupied and renter-occupied households, as well as by income level. These data can be divided by the MHI for these different groups to calculate housing burden. Additional analyses can be performed using IPUMS data (e.g., IPUMS can be used to determine the exact number of households with a moderate or severe housing burden, while ACS summary files can only provide average costs as a percentage of MHI for a limited number of household types).

Workbook 3 provides the specific ACS data tables you will need to access to obtain housing burden data for your community. The spreadsheet also provides templates for presenting different housing burden indicators as graphs and tables (see spreadsheet tab "Housing_burden").

Sources of nondiscretionary spending data can help to provide insight into additional household economic burdens. Key sources for these data include the Bureau of Labor Statistics CES, the ACCRA COLI, and any additional local data sources prepared by government agencies or organizations. The BLS CES contains detailed demographic, income, and monthly expenditure data at the PUMA level. These data can provide insight on relative consumer spending within your community compared to different types of communities (e.g., urban vs. rural). CES data are accessed in the same way that IPUMS data are accessed, and require a thorough knowledge of a statistical software package such as SAS, SPSS, or STATA.

ACCRA COLI data are another source of nondiscretionary spending data. The ACCRA COLI provides a measure of differences in the cost of living among urban areas in the United States. The ACCRA COLI measures relative price levels for consumer goods and services in participating areas. The average for all participating places, both metropolitan and nonmetropolitan, equals 100 and each participant's index is read as a percentage of this average. The ACCRA COLI dataset is updated quarterly for approximately 305 cities within the United States, and includes data for different income quintiles. This data can be useful if your community is one of the participating areas.

Additional Socioeconomic Indicators

There are several additional measures of economic need that can help to examine the ability of households to afford water and wastewater rate increases, including:

1. Percentage of residents receiving public assistance income and/or food stamps

2. Average annual unemployment rates

3. Number/percentage of households that are delinquent in paying their water bills

4. Number/percentage of households enrolled in utility low-income assistance programs.

Workbook 2 describes the specific ACS source tables that contain information related to the percentage of residents receiving public assistance income and/or food stamps and average annual unemployment. Information on delinquency rates and low-income assistance programs should be available through your utility.

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Chapter 5

Guidance for Developing Alternative Measures of Household Affordability

This chapter provides additional guidance for assessing water and wastewater affordability at the household level (i.e., going beyond EPA's RI). This includes the development of utility-specific affordability measures, such as comparing current average wastewater bills to household income levels across the income distribution in your service area or community. The following sections provide an overview of recommended approaches for assessing affordability and communicating results, while more detailed instructions and templates for developing these alternative metrics are included in Workbook 4.

Remember that EPA may consider the affordability of water and CSO mandates using your community's MHI. However, throughout the following sections, water and/or wastewater bills are compared to household income levels, drawing upon data from selected communities throughout the United States. For the purpose of this Assessment Tool, hypothetical average household water and wastewater costs of $300 and $450, respectively, are used for a combined average annual bill of $750. It is important to keep in mind that these analyses can be conducted using current water and/or wastewater costs, as well as household water and wastewater costs that take into account planned rate increases. This chapter also provides additional detail on conducting affordability analyses for future years.

Average Water and Wastewater Bills

Throughout this chapter, the comparison of average household water and wastewater bills to household income levels are discussed. It is important to note that the use of the term "bill" is intended to reflect the estimated average costs of water and/or wastewater service based on current rates and average household consumption. If data are available, a weighted average can be determined based on the number of single- and multi-family homes in the community and their respective average household consumption levels.

With this approach, average household water and wastewater costs are based on your utility's existing rate models, as reflected in the current rates. This provides a more realistic assessment of current household costs and should allow you to easily evaluate household affordability in future years under planned rate increases. This approach should also allow you to examine household affordability under a series of "what if" scenarios (e.g., examining affordability with and without the impact of a potential mandated or nonmandated investment, or under different assumptions regarding interest rates and financing costs).

Water and Wastewater Bills and Household Income Comparisons

As a first step to developing your affordability indicators, compare average annual water and wastewater bills to household incomes for different types of households and across geographic areas. At the citywide level, this calculation essentially represents EPA's RI (although it can include water costs in addition to wastewater costs). The RI calculation should also be evaluated at the Census tract level (if your community is large enough to include several Census tracts) to identify areas where average household costs may have a "mid-range" to "large" economic impact (e.g., as defined by EPA for wastewater).

Continuing with our analysis of MHI by Census tract for the City of Philadelphia (see chapter 4), Figure 5-1 shows average annual household wastewater costs (using our hypothetical average bill of $450) as a percentage of Census tract MHI. This map demonstrates how an increase in wastewater rates would impact communities within Philadelphia differently.

The Census tracts outlined in black in Figure 5-1 illustrate an important point for analyzing household affordability at the Census tract level. These Census tracts are highlighted because they have fewer than 750 people in them (the average number of people per Census tract is about 4,000). Thus, although a map may show several Census tracts where the average household water and/or wastewater bill amounts to a relatively high percentage of MHI, it is important to evaluate what this means in terms of the overall population of your service area (in the case of Philadelphia, about 1.5 million people). To account for this,

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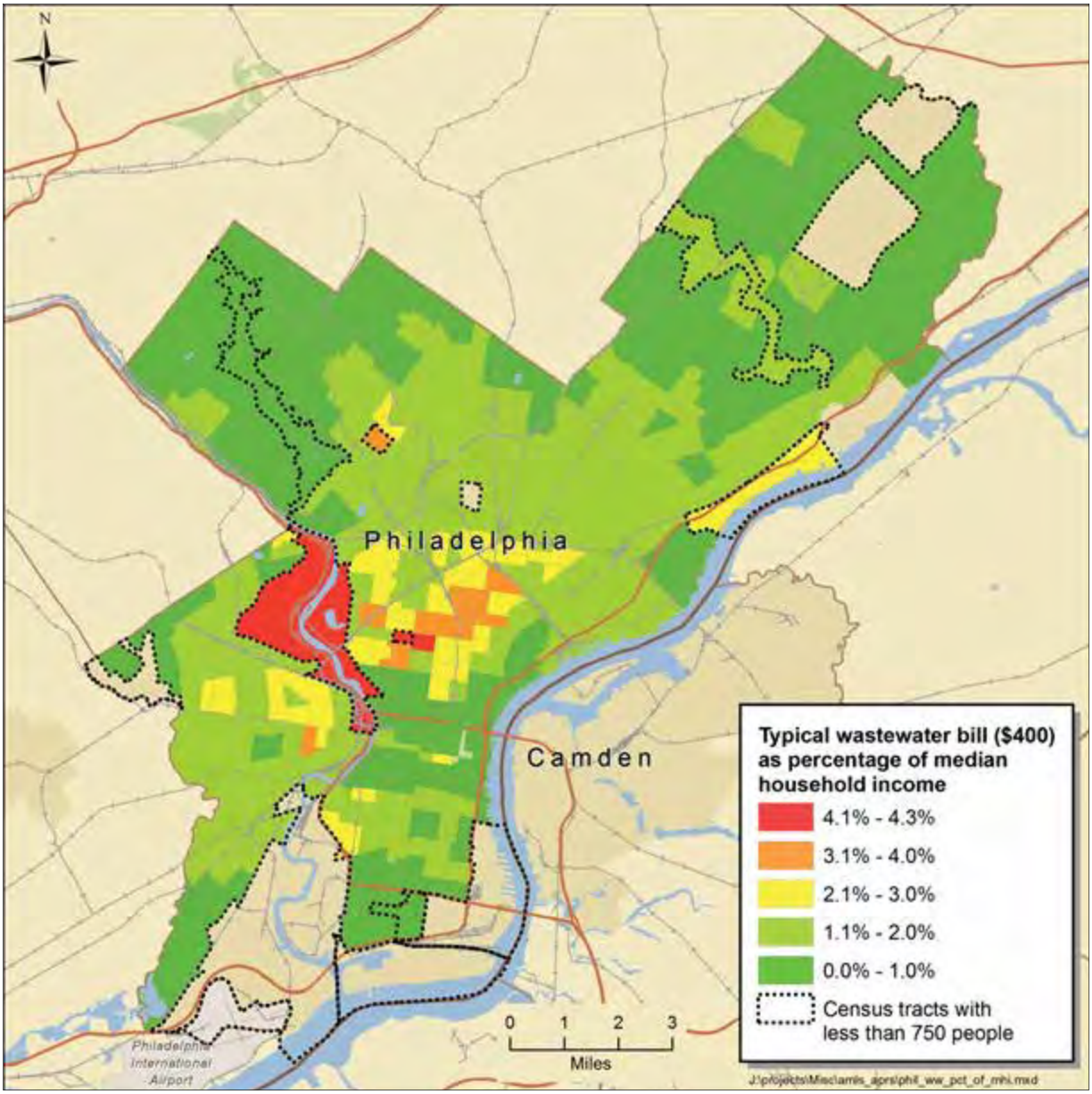

Figure 5-1 Hypothetical average annual wastewater bill as a percentage of Census tract MHI, Philadelphia, Pennsylvania

Source: U.S. Census Bureau ACS, 2011a, 2005–2010 five-year average estimates

it is important to examine variables that provide context (e.g., population, number of households) when downloading Census tract data for specific analyses. These data can be easily downloaded by Census tract via AFF using ACS five-year average estimates.

In many communities, the estimated average household wastewater bill and total combined (water and wastewater) bill may not exceed 2% and 4.5%, respectively, of MHI in most Census tracts; however, a number of households have incomes well below the MHI for their community. Many of these households may already be paying more than 2% of their income for wastewater services, or more than 4.5% of their income for combined water and wastewater services.

This can be easily examined using income distribution data from the ACS. For example, Figure 5-2 shows the percentage of households within Sacramento, California, at different levels of affordability (i.e., the percentage of households spending certain percentages of their income

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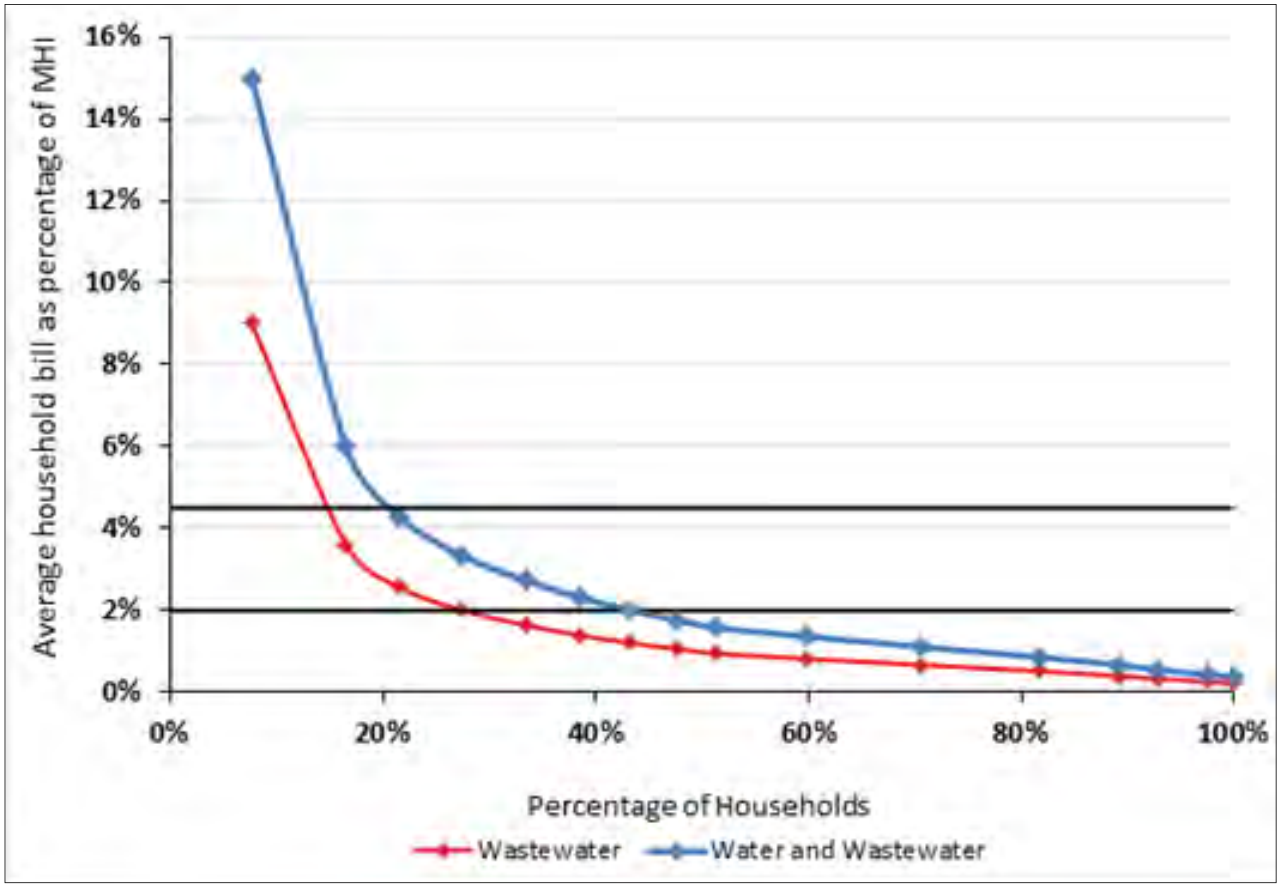

Figure 5-2 Hypothetical annual average wastewater and combined water and wastewater bills as a percentage of household income, Sacramento, California

on water and wastewater services). This analysis is based on the percentage of households within each of 16 Census-defined income categories and evaluates the average wastewater and total combined water and wastewater bill as a percentage of the mid-point income within each category. As shown, it appears that with average household costs of $300 and $450 for water and wastewater services, respectively, close to 30% of households in Sacramento, would pay more than 2% of their income for wastewater services, and about 20% pay more than 4.5% of their income for combined water and wastewater services.

IPUMS data can be used to conduct further analysis on the number of households that may be unable to afford significant water and/or wastewater rate increases. For example, based on the estimated average household water and wastewater cost of $750, households earning less than $16,667 would pay more than 4.5% of their income for water and wastewater services. IPUMS can be queried to determine the exact number of households within your community (and within each PUMA in your community), that make less than this amount (and therefore would have paid more than 2% of their income for their estimated average wastewater bill).

Table 5-1 Hypothetical annual average wastewater bill as percentage of MHI by income category, Butte, Montana

Income category	Percentage of households	MHI within income quintile	Average estimated wastewater bill as a percentage of MHI
Less than $20,000	24%	$10,000	7.50%
$20,000 to $39,999	26%	$29,999	2.50%
$40,000 to $74,999	30%	$57,499	1.30%
$75,000 to $99,999	8%	$87,499	0.86%
$100,000 to $199,999	10%	$149,999	0.50%

Three-year average ACS estimates were used due to the small size of Butte; one-year estimates are unavailable.

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Table 5-2 Hypothetical annual average wastewater bill as a percentage of federal poverty threshold incomes

Household or family size	Poverty threshold	Average water and wastewater bill (example) ($)	Estimated average household bill as a percentage of poverty level income (%)
1	$11,170	284	2.54%
2	$15,130	568	3.76%
3	$19,090	852	4.46%
4	$23,050	1,136	4.93%
5	$27,010	1,420	5.26%
6	$30,970	1,705	5.50%
7	$34,930	1,989	5.69%
8	$38,890	2,273	5.84%

Table 5-1 presents another way to evaluate impacts to low-income households within your community. Based on the hypothetical average water and wastewater bill of $750, Table 5-1 shows average annual water and wastewater costs as a percentage of MHI for different income categories, using Butte, Montana, as an example. As shown, average water and wastewater bills already amount to more than 7.5% of MHI for households in the lowest-income category (approximately 24% of the 14,836 households in Butte). This analysis assumes that MHI within each income quintile is the mid-point. However, IPUMS data can be used to determine the true median.

Examining the average wastewater bill as a percentage of poverty level income also provides insight into the number of people facing unaffordable water and wastewater bills. Poverty threshold incomes vary depending on the number of people living in the household. For example, in 2010, the official federal poverty threshold for a household or family of 2 was $15,130; for a family of 4, the poverty threshold was $23,050.

Table 5-2 shows the hypothetical average water and wastewater bill of $750 as a percentage of poverty threshold incomes by household size. To conduct this analysis, the combined water and wastewater bill of $750 were adjusted to account for differences in household size, based on the average U.S. household size of 2.64 in 2011 (i.e., each person in the household adds about $284 to the average bill). As shown in Table 5-2, the hypothetical average bill of $750 ranges from 2.5% to 5.8% of poverty threshold incomes.

Finally, as discussed in chapter 4, in many communities, incomes vary considerably between renter-occupied and owner-occupied households, as well as for elderly households. Drawing upon our analysis of MHI for different types of households in Kansas City, Kansas (see chapter 4), Table 5-3 shows an average total water and wastewater bill of $750 as a percentage of MHI across these different household types. As shown, in Kansas City renter-occupied households have much lower incomes than all other household types. On average, these households would pay 3.01% of their income for water and wastewater services with an average annual bill of $750.

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Table 5-3 Hypothetical annual average total household water and wastewater bill as a percentage of MHI by household type, Kansas City, Kansas

Household type	MHI (2011$)	Average household water and wastewater cost as a percentage of MHI
All households	37,036	2.03%
Elderly households	27,955	2.68%
Renter-occupied	24,898	3.01%
Owner-occupied	47,272	1.59%

Source: U.S. Census Bureau ACS, 2012 (2011 single-year estimates).

IPUMS data can also be used to estimate average household water and wastewater costs as a percentage of MHI for multi-family and single-family homes. For this analysis, the average estimated water and wastewater bill can be based on actual average consumption for these different types of households.

Workbook 4 provides specific instructions and templates for developing the affordability metrics (including graphs and tables) presented in this section. The "Overview" tab is this spreadsheet contains a table of contents that links spreadsheets in the Excel worksheet to specific figures and tables in this section.

Income Distribution: Implications for Wastewater Affordability

As noted throughout this report, EPA's 1997 Guidance suggests that wastewater bills equal to 2% of MHI are considered affordable for a community. In 1997 (when the Guidance was developed), the most recent income and poverty data available would have been from 1996. In 1996, the national MHI was $35,492 (U.S. Census Bureau, 1997). Thus, an average annual wastewater bill equal to 2% of national MHI would have equated to $710. Based on national income distribution data, in 1996 the lowest quintile (20th percentile) of household income was 42% of the median income, or approximately $14,900 (U.S. Census Bureau, 1997). That is, the lowest 20% of households in the United States made $14,900 or less. At that income level, a bill of $710 would have equated to 4.75% of household income. In other words, the MHI threshold of 2% would be equivalent to having 20% of households in a community pay 4.75% (or more) of their income for wastewater service.

Using the national income distribution data for 2012, a bill equal to 2% of national MHI would be $1,010 per year. That bill would represent 4.9% (or more) of income for the lowest 20% of U.S. households, which is relatively similar to the 1996 level. In many communities, however, a wastewater bill of 2% of MHI would have a much more severe impact on low-income households. For example, in New York City, 2% of the city's MHI of $49,461 would be $989 per year. This would represent 5.9% at the upper limit of the city's lowest income quintile ($16,824), meaning that at least one-fifth of the city's households would be paying 5.9% of their income (or more) for wastewater services—a burden that is 20% greater than would be expected from the national income distribution.

In this example for New York City, in order to keep the impact on low-income households consistent with that expected from national income distributions—that is, to ensure that no more than 20% of households face sewer bills of 4.8% (or more) of income—then wastewater bills would need to be no more than $807 per year, or 4.8% of the upper limit for the lowest income quintile. This amounts to 1.63% of the city's MHI. This reveals the extent to which the 2% of MHI metric does not reflect burdens on the poorest 20% of households in the community, and that an MHI-based metric of affordability for New York City of about 1.6 would be more equivalent to 1996 measures for reflecting impacts on the lowest-income quintile.

This analysis can be easily applied to your community in the context of water and/or wastewater services using ACS data related to income quintiles and MHI.

Assessment of Affordability in Future Years

Finally, in addition to analyzing affordability impacts associated with current water and wastewater rates, it is also important to examine how affordability will change over time. Many utilities have the capability to estimate rate increases for future years, based on estimated costs associated with planned projects and programs. Using these data, it is relatively straightforward to calculate the estimated average household water and wastewater bill for future years. However, this calculation will need to take into account any assumed changes in household water consumption over time, such as whether your utility expects average household use to decline. You may also want to conduct sensitivity analyses to examine the effect of your assumptions (e.g., regarding O&M costs for planned projects or project financing costs and interest rates).

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In order to compare average water and wastewater bills to household income levels, it will also be necessary to make some assumptions about how income levels will change over time. In the past, we would have recommended that you simply assume incomes will increase at the same rate as the CPI. However, as demonstrated in chapter 6, in recent years income levels have not kept pace with the CPI, and have even declined in many communities. This can make it difficult to project MHI for your community going forward.

One approach for projecting future income levels is to examine how income levels have changed in recent years in comparison to the CPI. For example, over the past five years national income levels have increased at a rate of approximately 60% of the increase in CPI. Given the recent economic crisis and recovery process, it seems reasonable to assume that this trend will likely continue, at least for the near future. Thus, to project MHI over the next several years, you may wish to assume that incomes will increase by about 60% (or rate at which your community's MHI has increased relative to CPI) of the forecasted change in CPI (as developed by the Congressional Budget Office). Beyond the next several years, it may be reasonable to assume that incomes will again begin to increase at the same rate as the CPI. Although this analysis is not exact, it does provide a general idea of how income levels may change.

Communicating the Results

Given the wealth of information and analyses described in chapters 4 and 5 of this Assessment Tool, it can be difficult to imagine how to best synthesize and communicate the results of your affordability assessment. As noted in chapter 4, we do not propose any specific thresholds that would indicate that a community is at risk of being unable to afford significant increases in water and wastewater costs. The analyses conducted here are intended to go beyond EPA's RI to provide a more comprehensive assessment of household affordability.

Depending on your community, you may want to focus on specific aspects of the Assessment Tool suggested (e.g., EJ concerns, elderly households, impacts to low-income households). The graphs and tables portrayed in this Assessment Tool are also provided as templates in the guidance documents and can be used to analyze and present results.

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Chapter 6

Guidance for Assessing Utility Financial Capability: EPA's Secondary Screening Analysis and Alternative Measures

This chapter provides guidance for completing EPA's secondary screening analysis (i.e., developing the FCI), as well as for developing alternative measures of utility financial capability. First, we overview the methods outlined in EPA's 1997 Guidance for completing the secondary screening analysis. Next, we provide guidance for developing alternative financial indicators (such as those outlined in chapter 4). More specific instructions and templates are included in Workbook 5.

Again, it is important to note that although EPA's 1997 Guidance was developed within the context of waste water and CSO controls, our Assessment Tool is focused on the affordability of water supply, wastewater, CSO, and stormwater) programs.

Calculating EPA's FCI Metrics

EPA's secondary screening analysis includes a series of economic indicators used to evaluate a utility's financial capability to implement mandated wastewater, CSO, and/or stormwater controls. These indicators include:

- Bond rating
- Overall net debt as a percentage of full market property value (FMPV)
- Unemployment rate
- MHI
- Property tax revenues as a percentage of FMPV
- Property tax revenue collection rate.

Table 6-1 Permittee FCI benchmarks and their ratings: EPA Guidance

Financial capability metric	Strong (score = 3)	Mid-range (score = 2)	Weak (score = 1)
Debt indicators			
Bond rating GO bonds	AAA-A (S&P) Aaa-A (Moody's)	BBB (S&P) Baa (Moody's)	BB-D (S&P) Ba-C (Moody's)
Bond rating (revenue bonds)	AAA-A (S&P) Aaa-A (Moody's)	BBB (S&P) Baa (Moody's)	BB-D (S&P) Ba-C (Moody's)
Overall net debt as percentage of FMPV	Below 2%	2–5%	Above 5%
Socioeconomic indicators			
Unemployment rate	More than 1 percentage point below the national average	+/- 1 percentage average point of national average	More than 1 percentage of national average
MHI	More than 25% above adjusted national MHI	+/- 25% of adjusted national MHI	More than 25% below adjusted national MHI
Financial management indicators			
Property tax revenues as percentage of FMPV	Below 2%	2–4%	Above 4%
Property tax revenue collection rate	Above 98%	94–98%	Below 94%

GO: general obligation.

S&P: Standard & Poor's.

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As part of the screening analysis, each indicator is "scored" on a scale of 1 (weak) to 3 (strong). The average of these scores represents the overall FCI. The following sections describe the methods and data sources used to determine each indicator. Table 6-1 shows the ratings and scores for each indicator, as outlined in EPA's guidance documents.

Bond rating

The first financial benchmark included in EPA's secondary screening analysis is a municipality's bond rating for both GO and revenue bonds. GO bonds are bonds issued by a local government and repaid with taxes (usually property taxes). GO bond ratings reflect financial and socioeconomic conditions experienced by the community as a whole. Revenue bond ratings, by comparison, reflect the financial conditions and management capability of a water/wastewater utility. They are repaid with revenues generated from user fees.

There are currently three major rating agencies for municipal bonds: Moody's Investors Services, S&P, and Fitch Ratings. Of the three rating agencies, Moody's and S&P's rate over 80% of all municipal and corporate bonds (these are also the only two rating agencies included in EPA's 1997 Guidance). Municipal bond reports from these agencies can be accessed at:

- Moody's Investors rating service: www.moodys.com
- S&P rating service: www.standardandpoors.com

Table 6-1 shows how ratings from these agencies translate into "strong," "mid-range," and "weak" scores in terms of the FCI.

In its 1997 Guidance, EPA notes that there are many small- and medium-sized communities that have not used debt financing and therefore have no bond rating. EPA states that when a bond rating is unavailable, this indicator can be excluded from the secondary screening analysis. However, this will effectively place a greater reliance on scores for the socioeconomic and financial management indicators.

Net debt as a percentage of Fair Market Property Value (FMPV)

The second financial benchmark measures a municipality's outstanding GO debt as a percentage of FMPV. This indicator is intended to provide a measure of debt burden on residents within your service area/community, as well as a measure of the ability of your local government to issue additional debt.

To calculate net debt as a percentage of FMPV, it is first necessary to identify the direct net debt of your community, as well as your community's share of debt from overlapping entities. EPA defines overall net debt as debt repaid by property taxes within a utility/municipality's service area. It excludes debt that is repaid by special user fees (e.g., revenue bonds). The percentage of your community's share of debt from overlapping entities is the amount charged to persons or property with your service area (based on the estimated FMPV of real property of each overlapping jurisdictions).

Debt information is typically available from your community's annual financial statements. FMPV data should be available through your community or State assessor's office (EPA's 1997 Guidance states that as long as your service area boundaries generally conform to one or more community boundaries, it is not necessary to prorate the FMPV).

In some communities, the tax assessed property value will not reflect FMPV. This occurs when the tax assessment ratio is less than one. In such cases, FMPV can be computed by dividing the total tax assessment value by the assessment ratio (i.e., the percentage of the FMPV that is taxed at the established tax rate).

If the net debt for your community is greater than 5% of the FMPV, you would receive a "weak" rating for this indicator, based on EPA's scoring methodology. A net debt of 2% to 5% of FMPV is considered "mid-range," while below 2% is considered "strong."

Unemployment rate

The unemployment rate is defined as the percentage of the total labor force that is unemployed but actively seeking employment and willing to work. Monthly and annual average unemployment rates are available through the BLS Local Area Unemployment Statistics (LAUS) program. LAUS is a federal-state cooperative effort that maintains employment statistics for Census regions and divisions (e.g., counties and metropolitan statistical areas), cities of 25,000 population or more, and other areas. EPA Guidance does not specify whether monthly or annual data should be used, however, we recommend using the annual average unemployment rate. For more information and to access LAUS data, visit www.bls.gov/lau/data.htm.

For the purposes of calculating the overall FCI, local unemployment rates are compared to the national average as a benchmark (also available through BLS). Areas with an unemployment rate of more than 1% above the national average are rated as "weak" in this area. Areas with unem-

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ployment rates within 1% of the national average is considered "mid-range" and those with unemployment rates more than one percentage point below the national average are considered "strong."

MHI

The MHI benchmark compares your community's MHI to the national MHI. As detailed in previous chapters, this information can be easily accessed from the U.S. Census Bureau ACS via AFF. Depending on the size of your community, you will need to use single-year, three-year average, or five-year average ACS estimates. These estimates are adjusted for inflation by the ACS.

In terms of the overall FCI, a community is considered weak for this indicator if MHI is more than 25% below the national MHI, mid-range if MHI is within 25% of the national MHI, and strong if MHI is more than 25% above the national MHI.

Tax revenues as a percentage of FMPV

This indicator, which EPA also refers to as the "property tax burden," is intended to measure the funding capacity available to support debt based on the wealth of the community, as well as the effectiveness of management in providing community services (1997 Guidance).

FMPV data should be readily available through the community or state's assessor office, while property tax revenues are typically available in a community's annual financial statements. If a community's property tax revenues are greater than 4% of FMPV, a "weak" rating is assigned for this indicator; between 2% and 4% is considered mid-range; and below 2% is considered strong.

Property tax collection rate

The property tax collection rate is intended to measure of the efficiency of the tax collection system and the acceptability of tax levels to residents. To determine the collection rate, you will need to divide property tax revenues by the property taxes levied. However, be aware that this metric may understate the effort your community is making if it relies less than the typical community on property taxes and more on, say, sales taxes, user fees, special fees, and assessments. See the following section for more on this issue.

To calculate property taxes levied, multiply the assessed value of real property within your community/service area by the property tax rate. This information should be available through your community or state assessor's office. Property tax revenues are typically available in your community's annual financial statements.

For this indicator, if the property tax collection rate in your community is below 94%, you will receive a "weak" rating; between 94% and 98% is considered mid-range; and above 98% is considered "strong."

Alternative Measures of Utility Financial Capability

Chapter 1 of this Assessment Tool provides several suggestions for supplemental measures that would help to provide a better assessment of utility financial capability. The following sections provide instructions for developing and analyzing these measures.

It is important to note that the measures suggested below may not necessarily apply to your community, and that there may be additional financial indicators not reflected here that may be particularly relevant for your community. In developing evidence to support a determination on whether your utility has the financial capability to implement regulatory mandates, it is important to investigate relevant measures and metrics specific to your community.

Local tax revenues as a percent of gross taxable resources

As discussed previously, EPA uses property tax revenues as a percentage of FMPV as its sole measure of local tax burden. However, in cities that rely on multiple forms of taxation, focusing solely on property taxes inevitably understates a city's current tax effort. To account for multiple forms of taxation, total local tax revenues as a percentage of gross taxable resources should be included as a supplemental measure in EPA's FCI (in addition to real property taxes as a percentage of FMPV). This would provide a better measure of the extent to which a municipality is already using the full range of its taxable resources.

Gross taxable resources are the combined dollar amount of resident household incomes and business surpluses (income less employee compensation) within a community (NYC Independent Budget Office, 2007). Tax effort is the ratio of direct and overlapping government tax collections to taxable resources. In 2007, the NYC Independent Budget Office developed a report comparing state and local taxes in large U.S. cities (NYC Independent Budget Office, 2007). This report provides a methodology for determining a city/municipality's total taxable resources and is available at

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www.ibo.nyc.ny.us/iboreports/CSALTFINAL.pdf. Total tax revenues should be available within your community's annual financial reports.

Measuring the severity of unemployment

Chapter 1 of this Assessment Tool discusses the limitations associated with the application of current annual average unemployment as a key indicator of utility financial capability. To provide a more accurate measure of whether local economic problems are severe enough to warrant relief from EPA mandates, the following measures are suggested:

• The current and long-term average unemployment rate in your community compared to the long-term national average. Between 1991 and 2011, the national unemployment rate averaged 5.8%. Use of the long-term average level of unemployment as a benchmark anchors the national unemployment rate as a comparison measure. For example, in 2010 a community with an unemployment rate of 10.1% would be classified as having only a mid-range unemployment problem simply because it was within 1% of the national average of 9.1% in that year.

• Long-term unemployment compared to national long-term unemployment. The annual average unemployment rate does not reflect trends in long-term unemployment (defined as the share of the labor force continuously unemployed for one half year or more). Use of the long-term unemployment rate provides an additional measure of economic distress within a community.

In addition to broadening the range of labor market indicators, other measures of local economic distress, such as foreclosure rates and annual migration/population data, can provide insight into the financial capability of a community or utility to fund mandated programs. In many communities, high foreclosure rates have had a significant impact on the financial condition of local governments, and their ability to finance capital improvements. In addition, chronic joblessness leads working-age residents to migrate to areas where they have a better chance of finding a job. This kind of migration does not show up in unemployment rates, but it can permanently affect a community's ability to support investments in water and wastewater systems.

The deterioration of local government financial capabilities

To take into account the erosion of local government finances, a measure of local government revenue growth or decline can be included in EPA's FCI matrix, with an absolute decline in real revenues over some period taken as a sign of weakened financial capacity. Revenue growth or decline should be measured over a long enough period of time to ascertain a trend (e.g., the last 3 to 5 years). This information should be available from your local government's annual financial reports.

Ignoring other long-term liabilities

EPA's methodology for assessing municipalities' financing capacity takes into account their formal debt burden (measured by the ratio of net debt to underlying property values). But it does not consider a burden that for a growing number of municipalities is greater than the burden of formal debt—unfunded pension liabilities and other commitments to retirees, as well as other long-term contractual commitments. The value of unfunded long-term liabilities over time should be included as a supplemental measure of utility financial capability (e.g., in comparison to available resources for meeting these commitments).

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Central Massachusetts Regional Stormwater Coalition

Comments to USEPA on 2014 Draft Massachusetts
Small Municipal Separate Storm Sewer System (MS4) Permit

February 27, 2015

ATTACHMENT B

Correia, Eric, Michael Giroux, and Cameron Peterson. *Comprehensive Cost Analysis of the 2014 Massachusetts MS4 Permit: An Interactive Qualifying Project Report Submitted to the Faculty of the Worcester Polytechnic Institute*. December 2014.

Comprehensive Cost Analysis of the 2014 Massachusetts MS4 Permit

An Interactive Qualifying Project Report

Submitted to the Faculty of

WORCESTER POLYTECHNIC INSTITUTE

in partial fulfillment of the requirements for the

Degree of Bachelor of Science

By

Eric Correia Michael Giroux Cameron Peterson

December 18th, 2014

Worcester Community Project Center

Sponsored By: Massachusetts Department of Environmental Protection

Abstract

Stormwater runoff is one of the leading causes of water pollution in the United States. The MS4 permit reduces pollution by regulating the runoff of pollutants into stormwater drains. With the assistance of the MassDEP and the Worcester Community Project Center, we sought to provide the Massachusetts towns of Southbridge, Holden, and Millbury with a cost analysis for implementation of the 2014 draft MS4 permit. In order to achieve this goal, we learned the details of the 2003 permit and 2014 draft permit, interviewed town officials, and performed water quality sampling. After creating our cost analysis, we provided our subject towns with findings and recommendations assessing the feasibility of implementing the permit, and suggestions for best practices each town uses to manage stormwater.

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Next, we would like to thank the representatives from Holden, Millbury, and Southbridge, who were extremely generous in allowing us to interview them and perform outfall tests. From Holden, we would like to thank Isabel McCauley, John Woodsmall, and Pamela Harding. We are especially grateful to John Woodsmall for appearing in our video, and to Isabel McCauley for taking us out to all of the outfalls we tested. From Millbury, we would like to thank Robert McNeil and Cindy Allard for allowing us to interview them, and for showing us a smoke test demonstration. From Southbridge, we would like to thank Heather Blakeley, Ken Pickerin, and Mark DiFronzo for allowing us to conduct our interviews and sampling.

Additionally, we would like to thank Robert Lowell and Larry Pistrang from the Department of Conservation and Recreation (DCR) for allowing us to interview them and gain from their experience. We would also like to thank Kelley Freda from the DCR, for contributing a detailed cost estimation.

We would also like to thank the Central Massachusetts Regional Stormwater Coalition, in particular Aubrey Strause and Matthew St. Pierre for giving us data, answering our questions, and allowing us to attend steering committee meetings.

Finally, we would like to thank our advisors Corey Dehner and Anne Ogilvie for their ongoing support and dedication to the success of our projects. Thank you for pushing us to

perform to the best of our ability no matter what happened during the term. We would also like to thank you for the various donuts, pizzas, and coffee to keep us going along the way.

Executive Summary

Background

Water Pollution affects an enormous number of water bodies in the United States. "In 2006, there were over 15,000 beach closings or swimming advisories issued due to bacterial levels exceeding health and safety standards" (Council, 2008). Much of this pollution is due to stormwater runoff. Stormwater runoff occurs when water becomes displaced by weather and flows over impervious surfaces, such as roads and roofs. When stormwater flows over these surfaces, it often collects pollutants such as oils, nutrients, ammonia, sediments, and heavy metals (EPA, 2012). These pollutants can have environmental, aesthetic, and economic ramifications on surface bodies of water. In order to combat stormwater runoff, the United States Environmental Protection Agency (USEPA) has created a system to move stormwater runoff into nearby bodies of water through what is known as Municipal Separate Storm Sewer Systems (MS4). Unfortunately, while these systems are useful for draining stormwater runoff, they are also very effective at directing pollutants into water bodies.

Before 1972, stormwater runoff and sewage drained through the same pipe, which led to frequent overflows (Robert B. Stegmaier, 1942). These overflows led to the pollution of topsoil, and the need for a better solution became apparent. This situation led to the creation of the Clean Water Act (CWA) in 1972 (Andreen, 2003a). In 1990, the USEPA first released the MS4 permit as part of the CWA. The MS4 permit allows municipalities to regulate the discharge of pollutants into stormwater drains. The MS4 permit defines six minimum control measures to reduce pollution caused by stormwater runoff. These control measures are:

1) Public Education
2) Public Involvement and Participation
3) Illicit Discharge Detection and Elimination (IDDE)
4) Construction Site Runoff Control

5) Post-Construction Runoff Control
6) Pollution Prevention and Good Housekeeping

Municipalities fulfill these control measures with Best Management Practices (BMPs). These BMPs can include street sweeping, waste collection, and outfall sampling. The implementation of these BMPs cost municipalities money. Massachusetts has been regulated under the same MS4 permit since 2003. Even though this permit expired in 2008, the USEPA continued to administer it indefinitely until they were able to release a new permit. On September 30, 2014, the USEPA released the 2014 draft MS4 permit. This new draft permit is much more detailed than the 2003 permit and has much more stringent regulations. Due to this increased level of regulation, the 2014 draft MS4 permit will cost much more to implement than the 2003 MS4 permit.

The Massachusetts Department of Environmental Protection (MassDEP), in collaboration with Worcester Polytechnic Institute (WPI), developed this project in order to assess the cost of implementing the 2014 draft MS4 permit in three Massachusetts towns: Southbridge, Holden, and Millbury. Our subject towns are part of the Central Massachusetts Regional Stormwater Coalition (CMRSWC). As of the 2014 fiscal year, The CMRSWC consists of communities that share resources for stormwater management, such as water sampling kits and GPS mapping equipment. Our goal for this project was to provide a comprehensive analysis of the cost of implementing the 2014 draft MS4 permit in Southbridge, Holden, and Millbury Massachusetts.

Methodology

In order to achieve our goal of providing a comprehensive analysis of the cost of implementing the 2014 draft MS4 permit in Southbridge, Holden, and Millbury Massachusetts, we utilized the following methodology.

1) Became educated on the details of the 2003 MS4 permit and 2014 MS4 permit
2) Assessed what Holden, Millbury, and Southbridge, Massachusetts have done to meet the requirements of the 2003 MS4 permit
3) Identified Holden, Millbury, and Southbridge's total current expenditures for stormwater management
4) Identified what changes each of our subject towns will have to make in order to comply with the requirements of the 2014 MS4 permit
5) Provided a detailed analysis of the complete costs for each town to comply with the requirements of the 2014 MS4 permit
6) Created an informational video to explain the costs of implementing the 2014 MS4 permit

Throughout our project, we used various research methods such as document analysis, field work, and interviews in order to learn about the cost of compliance with the MS4 permit. By analyzing various background documents about stormwater management, including the 2003 MS4 permit and 2014 draft MS4 permit, we were able to learn about the need for stormwater management as well as the BMPs typically used to manage stormwater.

We conducted interviews with various municipal officials, including public works directors, fire chiefs, town engineers, and members of town conservation commissions. These interviews allowed us to learn about our subject towns' stormwater programs and the costs associated with these programs. We also conducted an interview with the Department of Conservation and Recreation (DCR), which allowed us to estimate costs of BMPs, which town officials could not provide to us.

During our project, we also performed field work, which included outfall sampling using the CMRSWC kits, using dry and wet weather screening forms, and using the geographical information system (GIS) maps of our subject towns. This fieldwork allowed us to gain a more accurate understanding of the amount of labor involved with screening outfalls, which ultimately assisted us in completing our cost analysis.

After we completed our goals and objectives, we were able to provide findings and recommendations to our subject towns.

Findings and Recommendations

Finding 1: The 2014 draft MS4 permit may cost too much for the towns to effectively implement

The costs associated with stormwater management are very high, yet many towns have a limited budget for stormwater. The MS4 permit may cost too much for towns to individually implement. For implementation of the 2014 draft MS4 permit, Holden should expect to spend $258,790 annually, Millbury should expect to spend $753,173 annually, and Southbridge should expect to spend $343,008 annually.

Recommendation 1: Effective regionalization will allow towns to better implement their stormwater management programs

Due to the high cost of implementing the 2014 draft MS4 permit, we recommend that the towns regionalize. Regional organization, such as through the CMRSWC, can reduce the cost of many materials related to stormwater management.

Finding 2: Using innovative funding techniques can help the towns spend less from their general funds on stormwater management

The CMRSWC has received funding from the Community Innovation Challenge (CIC) grant. The first year of the Coalition's existence was fully funded by the CIC grant program and the subsequent two years of grant funding supplemented the Coalitions expenditures. In FY2014, member towns paid 4,000 dollars to continue as members of the Coalition. Millbury has begun applying for other grants to support implementation of BMPs, which may save them money over time.

Recommendation 2: The towns should seek alternative sources of funding such as additional grants beyond the CIC

Due to the reduction of CMRSWC funding from the CIC, we recommend that the towns apply for other grants. These grants can include the 604(b) grant from the MassDEP. The Towns should apply to these grants as quickly as possible, and the Coalition should lobby for additional future funding from the USEPA and MassDEP.

Finding 3: Using innovative stormwater management techniques can help the towns save money and thus implement the permit more effectively

Millbury uses innovative stormwater BMPs, such as a school art contest, to fulfill the public participation control measure. These BMPs allow Millbury to implement the MS4 permit effectively and at a low cost.

Recommendation 3: The towns should strive to utilize innovative stormwater management techniques

Millbury's use of creative BMPs has saved them money in implementing the MS4 permit. We encourage other towns to do the same, as they may be able to come up with BMPs, which are more efficient and cost-effective than their current BMPs.

Finding 4: Towns that communicate with other towns, even to a small extent, can more effectively manage and fund their stormwater management programs

A previous IQP group from WPI demonstrated that the CMRSWC towns spend less money on stormwater management than towns that work independently. This type of collaboration can also help generate more innovative BMPs, which will save the towns money.

Recommendation 4: Regionalization can help towns save money by sharing information and resources

We recommend that the towns regionalize and attempt to share information and resources. This practice will help them implement the 2014 draft MS4 permit more effectively.

Finding 5: In each of our subject towns, stormwater management information was divided amongst different departments

In many of our subject towns, there was not one person fully dedicated to stormwater management. Multiple departments in each town were responsible for implementing the stormwater management programs. As a result, we often had to request information from more than one department in each town.

Recommendation 5: Having a central source of stormwater management should allow for easier implementation of future MS4 permits and make continuous compliance easier for the towns

We recommend that the towns research the feasibility of either creating a position dedicated to managing stormwater information, or making this responsibility part of a single position. If smaller towns cannot afford to pay for this position, we recommend that multiple towns share a person dedicated to stormwater information. This practice will make it easier to implement the MS4 permit in the future.

Finding 6: The IDDE control measure will be a significant contributor to the increase in cost between the 2003 and 2014 draft MS4 permits

The 2014 draft MS4 permit has many more requirements than the 2003 MS4 permit, especially in the IDDE control measure. Much of the increase in cost between the two permits will be due to the increased stringency of the IDDE measure. The IDDE measure will also have more detailed requirements for practices such as outfall sampling with water testing kits.

Recommendation 6: The CMRSWC should have one person in charge of keeping track of and maintaining the sampling kits

When we performed sampling in the field, the sampling kits were often disorganized and had expired components, which slowed down our work. Having the kits intact will make it easier to sample, and will thus save money on sampling costs.

Finding 7: The current Asus tablet in use by the CMRSWC is slow and ineffective

When we used the tablet in the field, it was often slow to load. Town employees often complained about the delay. When we used a new smart phone, we did not see this delay. The delay caused by the old technology costs the towns in the CMRSWC money on labor costs.

Recommendation 7: The towns should use software, which can collect data offline and then upload it to an online database later, as well as a tablet, which is more up to date. This would allow the DPW workers to work more efficiently, thus saving the town labor costs

We recommend that the Coalition should purchase a new tablet, such as an Apple iPad. The labor costs that the tablet will save will pay for the cost of the tablet very quickly.

Other Recommendations

The Massachusetts Department of Environmental Protection should research the potential of providing standardized materials available to Massachusetts municipalities

Many of the control measures of the permit, such as public education and public involvement and participation, require municipalities to create similar documents. If the MassDEP could create standardized templates for these requirements, it could reduce the cost to towns, as well as give them more time to focus on eliminating pollutants.

The CMRSWC should streamline and update the digital forms. This practice would reduce the time needed to inspect outfalls, thus saving money

While we performed fieldwork in Holden, we found that the dry and wet weather forms had categories relating to pollutants, which are not regulated by the MS4 Permit. These extra categories made the forms time-consuming to fill out. Collecting this additional information causes the towns to spend increased labor costs. By updating the forms, the CMRSWC can reduce labor costs for the towns.

Recommendations for Future Research

We recommend that future project groups research the cost of implementing Total Maximum Daily Load (TMDL) requirements in towns. These requirements may generate a very large cost, which has not been researched well. We also recommend that future research groups

attempt to eliminate some of the biases, which may have appeared in our research. These biases stemmed from our limited sources of budget data, and as a result, some of our cost figures may be inaccurate. We recommend other project groups eliminate this bias by finding multiple sources for town budget data.

Conclusion

The findings and methods that we present should help the towns understand and prepare for the financial implications of implementing the 2014 draft MS4 permit. The towns will have to work hard to comply with this new permit, but this effort will be worth protecting people and the environment from the negative effects of stormwater runoff. Among our most important recommendations, we emphasize the benefits of regionalization, the use of innovative stormwater management and funding techniques, and the centralization of stormwater management in each town. We also recommend that the towns reach out to the MassDEP for advice on implementing the 2014 draft MS4 permit. Although the task of effective stormwater management is daunting, the towns can plan to effectively manage stormwater, thus protecting human health and the environment.

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Table of Acronyms

Acronym	Meaning
WPI	Worcester Polytechnic Institute
MS4	Municipal Separate Storm Sewer System
MassDEP	Massachusetts Department of Environmental Protection
DCR	Department of Conservation and Recreation
CMRSWC	Central Massachusetts Regional Stormwater Coalition
USEPA	United States Environmental Protection Agency
CWA	Clean Water Act
BMP	Best Management Practice
GPS	Global Positioning System
GIS	Geographical Information System
IDDE	Illicit Discharge Detection and Elimination
NPDES	National Pollutant Discharge Elimination System
U.S.	United States
NWQIR	National Water Quality Inventory Report
E. Coli	Escherichia coli
PCB	Polychlorinated biphenyl
TMDL	Total Maximum Daily Load
EIA	Effective Impervious Area
HAB	Harmful Algal Blooms
LID	Low Impact Designs
FWPCA	Federal Water Pollution Control Act
NEETF	National Environmental Education and Training Foundation
CIC Grant	Community Innovation Challenge Grant

SWPPP	Stormwater Pollution Prevention Plan
SWMP	Stormwater Management Program
DPW	Department of Public Works
CCTV	Closed Circuit Television
EPG	Environmental Partners Group
MassEEA	The Massachusetts Environmental and Energy Agency
MassDFG	Massachusetts Department of Fish and Game
CSO	Combined Sewer Overflow
TDS	Total Dissolved Solids

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1.0 Introduction

Pollution affects a staggering number of water bodies in the United States. "In 2006 there were over 15,000 beach closings or swimming advisories issued due to bacterial levels exceeding health and safety standards" (Council, 2008). A 2012 United States Environmental Protection Agency (USEPA) study evaluating 57% of the lakes, reservoirs, and ponds in the United States found that 97.5% of the examined water bodies contained unacceptable levels of pollution (USEPA, 2012).

One illustrative example of the extent of water pollution is in Ohio's Cuyahoga River. The water pollution in the Cuyahoga River was so profound that the river has actually caught on fire multiple occasions, as Figure 1 illustrates. In the 1960s, industries used the river as a dumping ground for contaminants such as oil, industrial waste, sludge, and sewage.

Figure 1. Cuyahoga River on Fire

(Greater Elkhart County Stormwater Partnership)

In 1969, one of these fires captivated national attention, and caused a chain of events, which spawned the creation of the Clean Water Act (EPA, 2013). The Cuyahoga river fires are just one of many cases of such extreme water pollution.

Water displaced by the weather events, also known as stormwater runoff, pollutes the surface waters of the United States. Stormwater runoff occurs when stormwater flows over an impervious surface, an area that water cannot pass through, such as house roofs, streets, and

parking lots. As the stormwater flows over these surfaces, it often collects pollutants such as oils, sediment, and heavy metals (EPA, 2012). These pollutants are detrimental to aquatic life, which in turn, affects the people in the surrounding areas. Pollutants such as nutrients can cause severe harm to aquatic life through the formation of algal blooms. These are alga blooms that become harmful under certain conditions including light availability and an abundance of nutrients. These harmful algal blooms can damage aquatic plants by blocking sunlight and depleting nutrients from the water, which can kill aquatic fauna (Kuentzel, 1969). Beyond the flora and fauna, stormwater runoff pollution also erodes natural structures such as deltas as illustrated in Figure 2.

Figure 2. Example of sediment runoff (Lehman, 2010)

To combat the issue of stormwater runoff, the USEPA created a system to move stormwater runoff into nearby bodies of water this is known as Municipal Separate Storm Sewer Systems (MS4s). In order to minimize stormwater flow over impervious surfaces, the design of the area around MS4s incorporates efficient methods of directing stormwater into the MS4s. The issue with moving the stormwater runoff directly into the bodies of water is that the pollutants that the stormwater runoff carries end up in the body of water.

To mitigate the impact of stormwater runoff, the USEPA has created an MS4 permitting system. The USEPA categorizes these permits are as either MS4 or National Pollutant Discharge Elimination System (NPDES). NPDES permits are a more general category of permits, which apply to facilities that have a wastewater output. The MS4 permits fall under the category of the

NPDES permits, but MS4 permits deal with requirements more specific to stormwater runoff (US EPA, 2014b). Figure 3 shows a simplified example of an MS4. The MS4 permit contains measures, which help mitigate the impacts of stormwater runoff. (USEPA, 2014c)

The MS4 permit contains six minimum control measures that permittees must follow in order to maintain compliance with the permit. These six measures provide general guidelines for stormwater management and public education. On September 30, 2014, the USEPA issued a new draft MS4 permit for permit holders in Massachusetts. In Massachusetts, the USEPA issues the MS4 permit. In the meantime, the Massachusetts Department of Environmental Protection (MassDEP) acts as the cosigner, while the USEPA enforces the permit.

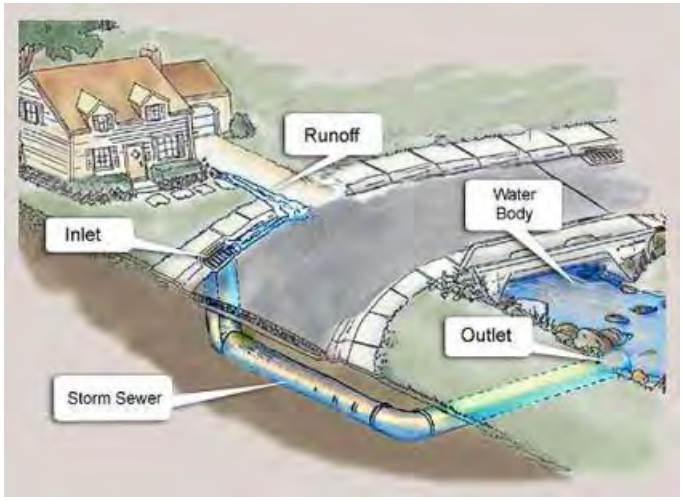

Figure 3. Example of a simple MS4 (Bardstown, 2014)

The MassDEP has developed this project requesting assistance from students with Worcester Polytechnic Institute's (WPI) Worcester Community Project Center. Our project was specifically aimed to assist the Central Massachusetts towns of Holden, Millbury, and Southbridge in understanding the costs of updating to the new 2014 draft MS4 permit. The goal of this project was to assess various municipalities' stormwater management practices for compliance with the MS4 permit, and provide a detailed analysis of the financial cost needed to fulfill the requirements of the 2014 draft MS4 permit. In addition to the cost analyses, we created

an informational video to help selectmen and town meeting members understand the implications of both stormwater runoff and the new MS4 permit requirements.

In chapter 2, we provide a detailed overview of stormwater runoff and its effects, the history and details of the MS4 permit, our sponsor the MassDEP, and the role of the Central Massachusetts Regional Stormwater Coalition (CMRSWC). In chapter 3, we describe the methodology we used to learn the details of the 2014 MS4 Draft permit and assess the total financial expenditures for compliance with its requirements. In our final two chapters, chapter 4 and 5, we outline our findings and provide recommendations for future research to the CMRSWC, the MassDEP, and the towns we worked with, Holden, Millbury, and Southbridge based on our findings.

We hope that this project will have a lasting and meaningful impact on stormwater management in Central Massachusetts. With the assistance of the MassDEP and CMRSWC, we hope our efforts help Central Massachusetts' municipalities prepare for the MS4 permit and protect the waters of the United States (U.S.) from pollution.

2.0 Background

2.1 Introduction

Rainwater runoff poses a serious risk of pollution to the world's surface water bodies. Impervious manmade surfaces such as roads and sidewalks drain pollutants into local water bodies after rain events occur. These pollutants, which can include chemicals, oils, metals, sediment, and bacteria, can directly affect human health by polluting local sources of drinking water (Gaffield, Goo, Richards, & Jackson, 2011). We discuss stormwater runoff and its impacts in more detail in section 2.2 of this chapter. To fully understand the problem of stormwater that the United States (U.S.) faces, we discuss the history of stormwater management in section 2.3

of this chapter. To help mitigate the impacts of stormwater, the United States Environmental Protection Agency (USEPA) released Municipal Separate Storm Sewer System (MS4) permit. This permit helps municipalities reduce pollution in water bodies by using effective stormwater management, which we discuss in more detail in section 2.4 (USEPA, 2014f). The Massachusetts Department of Environmental Protection (MassDEP), a Massachusetts state agency, helps municipalities navigate the intricacies of the MS4 permit. The MassDEP served as our sponsor throughout our project; we introduce them in section 2.5. We discuss the Central Massachusetts Regional Stormwater Coalition (CMRSWC), formed in 2012 to help communities meet the requirements of the MS4 permit (Spain, 2014); in section 2.6.

2.2 Stormwater Runoff

There is a difference between stormwater and stormwater runoff. Stormwater is the water that falls from storms or that which snowmelt produces. Stormwater runoff is the water that travels along impervious surfaces and gathers pollutants. The USEPA defines stormwater runoff as "generated when precipitation from rain and snowmelt events flows over land or impervious surfaces and does not percolate into the ground" (USEPA, 2014g). An impervious surface is a surface which water cannot pass through, such as asphalt and roofs. The stormwater runoff that flows over these impervious surfaces often collects pollutants that contaminate the stormwater and passes those contaminants into local water supplies. Contaminated stormwater runoff may contain oils, nutrients, and sediment. The oils, which usually come from leaking vehicles or car washing, are toxic to aquatic life. The nutrients that come from fertilizer and sewage overflow cause an unnatural increase in the growth of unwanted plant life, which depletes the oxygen in the body of water, causing aquatic life to die (EPA, 2012).

Sediment pollutants are found when land around the water body starts to erode, causing sediment to gather on aquatic life that lives close to the bottom of the water body, which prevents sunlight from getting to the plants (EPA, 2012).

In an effort to mitigate the impacts of stormwater runoff, municipalities may make land use changes, pass by-laws, and/or focus on public education. Municipalities mitigate the impacts of polluted stormwater runoff through Best Management Practices (BMP) and compliance with the MS4 permit, which we explain in section 2.4 below. When land use planners do not consider stormwater runoff, there can be serious environmental, aesthetic, and financial ramifications.

2.2.1 Environmental Impacts of Stormwater Runoff

Stormwater runoff is one of the top causes of water pollution in the U.S. today (Blair et al., 2014). Every two years, the USEPA releases a National Water Quality Inventory Report (NWQIR) on two groups of water bodies: rivers and streams, and lakes, reservoirs, and ponds. The NWQIR is the primary tool that the USEPA uses to keep the public, as well as Congress, informed about the quality of U.S. surface water. The USEPA monitors these bodies of water by regularly testing for various contaminants. These tests primarily look for contaminants such as fecal coliform, Escherichia Coli

Figure 4. Watershed

(S. R. W. Coalition, 2014)

(E. coli), polychlorinated biphenyls (PCB) in fish tissue, total phosphorus, and examine the concentration of dissolved oxygen. Based on these indicators and scientifically determined established safe levels, the USEPA determines if the body of water is impaired (Council, 2008). The USEPA breaks up the different municipalities by watersheds when issuing these reports to the public.

A watershed is the area where all of the connected rivers and ponds merge into one body of water as we illustrate in Figure 4. The Blackstone Watershed encompasses towns around Worcester, Massachusetts and municipalities to the south east of Worcester. In the 2012 NWQIR, the USEPA assessed 28.3% of Rivers and Streams; in the Blackstone watershed, 63.8% were impaired. The majority of the impairment was due to a lack of total maximum daily load (TMDL) management. TMDL is the total maximum amount of pollutants that can be discharged into a body of water while remaining safe for the water's intended use such as swimming or fishing (USEPA, 2013b). Since stormwater has caused so much pollution to bodies of water, the USEPA requires municipalities to use TMDLs, which the state creates, to help restore water bodies from over-pollution (USEPA, 2013b).

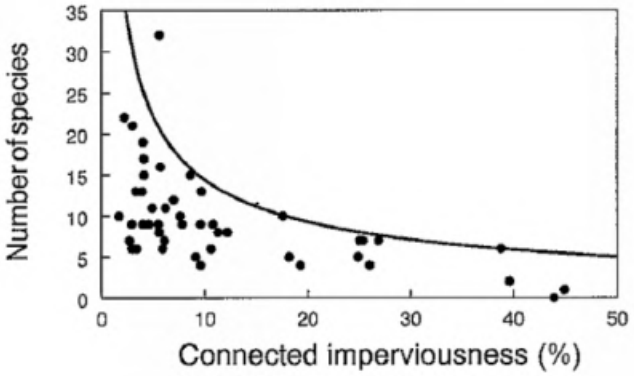

Figure 5: Species vs. EIA

(Council, 2008)

As more areas become urbanized, the amount of impervious area increases. The U.S. is experiencing a urbanization trend of increased urban population; the urban population went from 79.0% in 2000 to 80.7%

in 2010 (Bureau, 2012). This change would increase the Effective Impervious Area (EIA), causing more pollutants to run off into the local bodies of water.

The USEPA performed a study on surface water bodies, assessing, among other things, the amount of different fish species that inhabit that body of water. As Figure 5 illustrates, as the percent of imperviousness increases, the number of fish species in the area exponentially decreases. Figure 5 demonstrates a correlation between the amount of EIA and the presence of bio diverse aquatic system. This correlation is explained by an increase in pollution in the local area, causing the fish to either be poisoned by various pollutants or to suffocate on those same pollutants (Council, 2008).

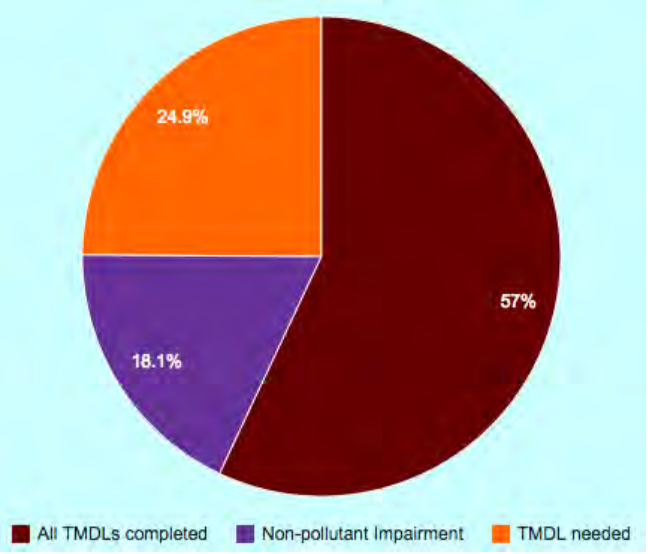

Figure 6. Causes of Lake Impairment (USEPA, 2012)

In addition, in 2012, the USEPA evaluated 57% of lakes, reservoirs, and ponds in the Blackstone watershed area. In this study, the USEPA found that of the 57% evaluated, 97.5% of the lakes, reservoirs, and ponds were impaired. In this case, however, only 24.9% of the lakes, reservoirs, and ponds needed a TMDL to be set in place (Council, 2008). THE USEPA also cited non-pollutant impairment as a problem in the lakes, reservoirs, and ponds in the Blackstone watershed, as seen in Figure 6. Non-stormwater pollutant impairment occurs when unregulated sources of non-stormwater pollution impair a body of water, such as turbidity (US EPA, 2014a).

The pollutants themselves are not the only problem with stormwater flowing into local water bodies untreated. Harmful algal blooms (HABs) are of great concern for aquatic life. HABs not only reduce water clarity, but they also deplete the oxygen in the water, which in turn can kill the natural life in the body of water. Since the HABs create a layer of colored algae on top of the water body, they also have a negative effect on the aesthetics of the water body. In addition, as the water becomes an eyesore, the tourism in the area also is likely to drop (Andersen, 2009).

2.2.2 Low Impact Designs

Low Impact Designs (LIDs) are a way to, "simulate natural hydrologic conditions, by gradually recharging groundwater and slowing runoff that flows to collection systems and receiving water systems" (MassDEP, 2014).

Figure 7. Bioswale

(Service, 2005)

Some of these methods include bioswales, green roofs, and infiltration or retention basins. People who design these areas usually create these designs as LIDs. A LID is a way that the designers try to address stormwater runoff by reducing the amount of impervious surface area and working with the natural landscape. LID includes stormwater BMPs, which we will explain in the next paragraph. LID can also be applied to redesigning areas; in that case, the LID would work more towards rebuilding the landscape rather than working with the existing area (Cahill, 2012).

BMPs are methods and designs that towns use to mitigate the effects of stormwater runoff. Some common BMPs include grassy swales, rain barrels, and vegetated roofs. *Grassy swales* are similar to the bio swales that we will discuss in the next paragraph, except the designers just use grass rather than other plant life. *Rain barrels* collect rainwater from roof runoff. Rather than dumping the runoff into the streets, the rain barrels allow the owner to use the water for watering plants or just dispersing on the ground so that the runoff naturally filters through the ground. *Vegetated roofs* are the same as extensive *green roofs*, which we will discuss later in this section.

Figure 8. Green Roof

(Division, 2014)

Bioswales can be an alternative method to using stormwater drains or simply to augment the drains. Workers place plants and foliage around an area, which is slightly lower than the area around it, as seen in Figure 7. The stormwater then flows into the bioswale, and the plants filter the stormwater for low flow storms. For larger storms, bioswales can direct the flow of stormwater into nearby drainage systems, however average bioswales can handle storms up to 4.3inches per 24hour period (Service, 2005). *Green Roofs* are a layer of dirt and plant life on the roof of a building. This layer above the roof provides shade to the roof, preventing it from reaching extremely hot temperatures; instead, the plant life absorbs most sunlight, which will normally heat the roof (Division, 2014). The layer of dirt also acts as a

Figure 9. Retention Basin

(USGS, 2004)

filtration system for light storms as seen in Figure 8. There are two types of green roofs, intensive and extensive. Intensive is similar to a roof garden, where the plant life is usually flowers, trees, and general garden plants in separate pots. Extensive roofs consist of a layer of dirt and rugged vegetation, which needs little to no maintenance (Division, 2014).

Figure 10. Infiltration Basin (University, 2011)

Infiltration and retention basins filter stormwater in a similar manner. An infiltration basin takes stormwater from the surface, trickles it down slightly below the surface of the ground, and dissipates the stormwater over a larger area, as Figure 9 illustrates. A retention basin is similar to an infiltration system, but instead of keeping the stormwater underground, it turns the stormwater into an artificial lake or pond, which drains slowly, but at a fixed rate, as Figure 10 illustrates (Mays, 2001).

LID	Average Cost
Green Roof (Intensive)	$10/ft^2
Green Roof (Extensive)	$25/ft^2
Rain Barrels	$216
Grassy Swales	$30/ft^2
Bioswales	$16.25/ft^2
Infiltration Basin	$4,500
Retention Basin	$7,500

Table 1. Comparison of LIDs

These methods of handling and filtering stormwater are just some of the ways that engineers and building planners handle the issue of stormwater runoff. Businesses work to mitigate stormwater runoff when it has an economic impact on their business. Below is Table 1[1], which compares the average costs of implementing each of the LIDs mention in this section. In the next section, we discuss the economic impacts of stormwater.

[1] (Brennan, 2014; Center, 2007; Division, 2014; PennsylvaniaDEP, 2006; USEPA, 2013a)

2.2.3 Economic Impacts of Stormwater Management

The goal of improved stormwater management raises questions about cost. Towns use many LID measures to effectively reduce the impact of stormwater runoff. The implementation of these LID measures, i.e. swales, permeable pavement, filter strips, and infiltration trenches, increases the cost of construction projects, as implementation requires careful planning and additional work. However, the economic benefits of these LIDs may in fact defray the cost of their implementation.

The BMPs, which towns use to comply with the requirements of the MS4 permit, can require a large initial financial input. For example, the town of Millbury, Massachusetts estimated that they spent about $75,000 on street sweeping during the 2013 fiscal year (Spain, 2014). The towns must understand the expenditures related to stormwater management in order to effectively fulfill the requirements of the MS4 permit.

Despite the increased cost of construction projects, LIDs can actually save towns money over time. The use of these LIDs minimizes the extent to which stormwater runoff impairs water quality. If there are fewer impaired water bodies, then towns spend less money on treating the water bodies. LIDs may also reduce the effects of flood damage, and eliminate the need for water treatment facilities (Thurston & EnvironetBase, 2012). LID measures can also save money by reducing construction cost. For example, a parking garage can cost approximately $20,000 per space to build. An open parking lot with non-impervious surfaces, however, can cost as little as $2,000 per space to build (Cahill, 2014). In this case, the use of an LID does not just reduce the construction cost; it also reduces the amount of runoff that needs to be treated.

2.3 History of Stormwater Management

October 2012 marked the 40th anniversary of the 1972 Amendments to the Federal Water Pollution Control Act, better known as the Clean Water Act (CWA). Many decades of surface

water pollution preceded the CWA, and some of the causes of pollution are rooted in the industrial surge of the previous two centuries. Unsanitary conditions and polluted drinking water led to health issues, such as yellow fever and cholera (Andreen, 2003b). Even in rural areas, water pollution was a problem. Most towns simply integrated any stormwater management systems into their sewer system. Easy to implement as a combined system, these constructs only involved the conveyance of water away from highly populated areas (Robert B. Stegmaier, 1942). Due to their combined nature, these systems were highly prone to overflow, contaminating topsoil and surrounding water bodies with raw sewage waste (Joseph-Duran, Jung, Ocampo-Martinez, Sager, & Cembrano, 2014). In 1948, the conclusion of World War II allowed the federal congress to bring focus onto more domestic issues. The massive industrial output of the war had taxed rivers, and funding for wastewater treatment had dropped during the years of conflict (Andreen, 2003a).

2.3.1 Evolution of the Clean Water Act

The 1948 Federal Water Pollution Control Act (FWPCA) served as a precursor to the CWA, which would undergo many revisions before the federal government expanded the CWA in 1972. The National Pollution Discharge Elimination System (NPDES) is a permit system added into the FWPCA with the 1972 amendments. Created by the Subcommittee on Air and Water Pollution of the Senate Committee on Public Works, the permit specifies what pollutant discharges the towns must manage. The permitting program specifies that discharges of a pollutant from a point source into a navigable waterway are prohibited unless the discharger has a NPDES. Specifically, the NPDES permit regulates point source discharges of pollutants into surface waters. A point source is defined by the CWA as "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel [etc.] from which

pollutants are or may be discharged" (U.S.C § 1251, (2014)). Originally, the USEPA intended the NPDES to regulate industrial wastewater and municipal sewage as this was the most abundant sources of liquid pollution (Tyer, 1993). Legislative amendments to the FWPCA in 1977, 1983, and 1987 increased the pollutants regulated under the CWA. As these regulations expanded, the EPA decided to implement stormwater management through a separate permit. Under the 1987 amendments, the Municipal Separate Storm Sewer System (MS4) came into being (MINAN, 2005). The CWA has since then expanded to cover many more pollutants than in its original conception.

2.3.2 What is the NPDES Stormwater Program

One of the main reasons that the USEPA put NPDES permits in place was to regulate how many pollutants can be safely discharged into surface waters (USEPA, 2014d). Congress charged the USEPA with administering the NPDES permit program. Congress first established this program with the enactment of the 1972 amendments to the FWPCA. The USEPA can also authorize state and local governments the power to administer the requirements of the CWA by what is called primacy authority (USEPA, 2014h). Massachusetts, however, does not have primacy authority to enforce the CWA so Massachusetts created its own set of laws that mirror the USEPA's laws. Generally, only industrial, municipal, and commercial facilities have to comply with the NPDES permits since they are the primary dischargers of pollutants into surface waters via point sources. Individuals, generally, do not have to get NPDES permits since their wastewater flows through the sewage system or septic tank.

The types of material that NPDES permits regulate are discharged pollutants from point sources. The CWA defines a point source as a pipe, ditch, channel, tunnel, conduit, well, landfill, etc. (U.S.C § 1251, (pg. 214) (2014)). A point source is a source of runoff that only has a single

point of release. A good example of a point source is a chemical treatment plant that uses a chemical to treat their product and then pumps out any of the runoff from their process into a local river. That pipe, which takes the runoff out of the plant, would be a point-based source, as Figure 11 illustrates.

Conversely, the other source of pollution comes from non-point sources. Non-point sources are sources of water pollution, which do not have a point of release such as rainwater and snow melting. Once the stormwater runoff and the melting snow travel into the local MS4s, the runoff becomes a point source, therefore falling under the regulatory authority of the NPDES permit program. A good example of a point source and a non-point source of pollution is Figure 11.

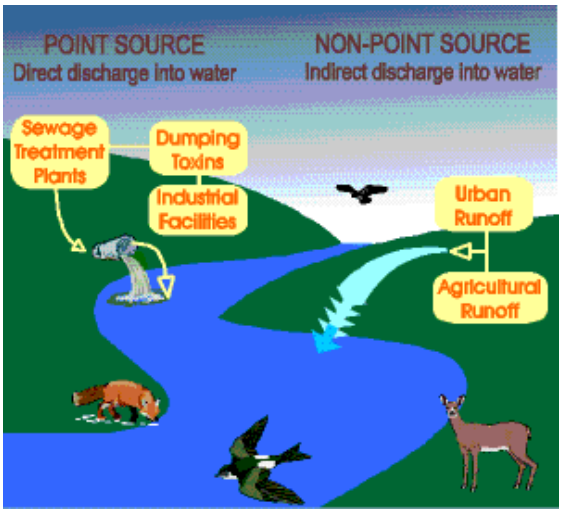

Figure 11. Point and Non Point Sources of Pollution

(College, 2014)

The USEPA and other government bodies, which have primacy authority, require companies and businesses to apply for these NPDES permits when they want to discharge any pollutant into a navigable surface water body through a point source (U.S.C § 1251, (2014))

2.4 The Municipal Separate Storm Sewer System Permit

As part of the CWA, the USEPA issued the MS4 permit in 1990 to reduce the impacts of storm water runoff. The government issues these permits with the sole purpose of addressing the large amounts of stormwater runoff that storms generate. These systems receive stormwater

runoff from the environment, and transport it into nearby bodies of water. These systems do not treat water; they only convey it from impermeable surfaces. With these permits, towns can regulate non-point discharges as point source discharges through the MS4, and create broad stormwater management programs. In 1990, at the inception of the MS4 permitting program, the USEPA issued phase-I MS4 permits on a per-city basis (USEPA, 2014h). These first permits contain measures tailored to individual municipalities, as many large cities had different requirements.

The primary requirement to qualify for a phase-I permit is that the town has a population of at least 100,000. In Massachusetts, there are 2 towns of this size: Boston and Worcester (Massachusetts, 2014b). The phase-II MS4 permit applies to smaller towns with a population of less than 100,000 and contains broad regulations so that it can be applicable to any small municipality. In total, the USEPA has issued approximately 7,450 MS4 permits across the United States from 1990 to 2014 (USEPA, 2014h) (USEPA, 2014b). At their core, these phase-II MS4 permits all integrate practices known as the six minimum control measures. The six minimum control measures are: Public Education, Public Involvement, Illicit Discharge Detection & Elimination, Construction, Post-Construction, and Pollution Prevention/Good Housekeeping.

Although the 2003 MS4 permit has expired, the six minimum control measures remain the primary focus of the 2014 MS4 permit draft. In the following sections, we outline the six minimum control measures and describe some of the BMPs that towns can use to comply with each control measure in the 2014 MS4 permit draft.

2.4.1 Public Education & Outreach

The first minimum control measure addresses the need for public education. Public education plays an important role in reducing pollution levels. Towns can meet the requirements through BMPs such as educational pamphlets, media campaigns, and workshops

The National Environmental Education and Training Foundation (NEETF) found that in 2005, 78% of Americans did not know that runoff from lawns, roads, and agricultural land is the most common source of water pollution. Of further concern, 47% of the public believes that industry accounts for most water pollution (USEPA, 2014b). In order to correct these misconceptions, this control measure requires municipalities to educate the public on the impacts of stormwater runoff and offer residents information on mitigation strategies they can implement at home.

2.4.2 Public Involvement and Participation

The second minimum control measure requires the municipality to form a working partnership with members of the community (USEPA, 2014b). A common way that municipalities fulfill the requirements of this control measure is to create volunteer programs, which engage the public in reducing the pollution caused by stormwater runoff. These programs offer opportunities for volunteers to mark storm drains and participate in cleanup and monitoring programs, as well as to create watershed groups and conservation corps teams (USEPA, 2014b). The officials of each municipality design these opportunities to integrate directly with stormwater programs. When towns implement and utilize this control measure correctly, they can involve the community and create self-monitoring environmental conservation groups.

2.4.3 Illicit Discharge Detection and Elimination

The third minimum control measure deals with the threat of stormwater contamination. Although the MS4 system carries stormwater, it does not treat the stormwater. The MS4 permit defines an illicit discharge as any discharge that is not entirely composed of stormwater. The MS4 stormwater drains are particularly vulnerable to foreign pollutants; the stormwater runoff in these MS4 systems may contain pathogens, nutrients, and various other pollutants. The phase-II MS4 permit requires four primary programs in this control measure, beginning with a full diagram of the MS4 system (USEPA, 2014b). The second program requires the municipality to create a legislative ordinance prohibiting discharges based on pollutant type (USEPA, 2014b). The third is the implementation of reporting techniques such as hotlines, onsite notifications, and outfall water tests (USEPA, 2014b). The fourth is an educational program on the dangers of these illicit discharges (USEPA, 2014b). When used effectively, these programs work to create a system that is both reactive in response to spills and proactive through prevention via education and enforcement.

2.4.4 Construction Site Stormwater Runoff Control

The fourth minimum control measure deals with construction-site stormwater runoff. Of the public works projects that adversely affect the health of a water system, construction site runoff is particularly detrimental. These effects stem from the sediment dissolved in the runoff, including dirt, sand, and other fine particles. When these concentrations of the sediment particles settle in waterways, they block sunlight, and can suffocate many forms of aquatic life (USEPA, 2014a). Phase-II MS4s require the municipalities they regulate to formulate a program to reduce pollutant stormwater runoff for construction exceeding one acre of land. This requirement is

comprised of six components. Collectively, they ensure that construction groups know of their management obligations for proper stormwater pollution management.

2.4.5 Post-Construction Stormwater Management

The fifth minimum control measure refers to post-construction stormwater management. In practice, this control measure is not a continuation of the previous control measure, but a different control measure to monitor BMP effectiveness, as well as the continued prevention of pollution. This control measure is implemented primarily through inspections of on-site facilities, and structures responsible for stormwater management. With these practices in place, areas with new development can continue to manage stormwater runoff pollution after construction has finished.

2.4.6 Pollution Prevention and Good Housekeeping

The final control measure is responsible for the housekeeping of a municipality's stormwater management program. In order for municipalities to maintain good operating conditions within municipal-owned facilities such as the Department of Public Works (DPW) and schools, they must construct a rigorous system of upkeep management. These components can consist of road maintenance and repairs, automobile fleet maintenance, landscape maintenance, as well as building upkeep. Pollution prevention practices can include activities such as street sweeping and storm drain system cleaning (USEPA, 2014e).

2.4.7 General Practices and Municipal Individuality

In order to account for thousands of different municipalities, the MS4 permit authors designed the six minimum control measures to be applicable to any possible situation. Independent of environmental conditions or area development, these measures have to be

comprehensive. Unfortunately, these phase-II MS4 permits rely on a large degree of self-reliance and proactive involvement by the municipalities, but there are resources available to help with this. In order to assist Massachusetts municipalities with MS4 permit compliance, the MassDEP has created a Stormwater Handbook, which contains resources about how a city or town can comply with the minimum control measures (MassDEP, 2014). Additionally, the Massachusetts Watershed Coalition, an organization dedicated to protecting and restoring Massachusetts watersheds, is able to provide many materials to their members, such as brochures and standard operating procedures (Coalition, 2014). However, the officials of each municipality must ultimately take responsibility to implement the practices in the six minimum control measures.

The MassDEP manages a system of computer checks and administering programs for stormwater management in Massachusetts. If the system flags a municipality for irregular readings or reports, inspection by MassDEP officials becomes necessary (Civian, Sept. 26, 2014). Implementation of these control measures requires the municipalities to spend a large amount of money, which raises budget concerns for the 2014 MS4 Draft permit.

2.5 The MassDEP and the Central Massachusetts Regional Stormwater Coalition

The MassDEP is the Massachusetts environmental agency charged with making sure Massachusetts has clean air and water (Massachusetts, 2014a). The central office of the MassDEP serves the entirety of Worcester County (MassDEP, 2013). The MassDEP assists the CMRSWC by providing them with numerous guidance documents, which teach the municipalities how to fulfill the requirements of the MS4 permit (CMRSWC, 2014b). In collaboration with the MassDEP, we sought to provide a cost analysis of implementing the new 2014 MS4 permit in three Massachusetts municipalities. During this project, we worked with

two primary contacts from the MassDEP: Frederick Civian, Statewide Stormwater Coordinator for the MassDEP, and Andrea Briggs, Deputy Regional Director of the Central MassDEP.

2.6 Central Massachusetts Regional Stormwater Coalition

Central Massachusetts is one of many regions in Massachusetts whose municipalities seek to effectively implement the 2014 MS4 permit. The CMRSWC helps its members achieve this goal. The CMRSWC, formed in 2012, initially consisted of 13 municipalities (Spain, 2014). Due to the success and utility of the CMRSWC, it has expanded to 30 municipalities by 2014. All of the municipalities within the CMRSWC are subject to regulations from the USEPA, which require the municipalities to mitigate the impacts of stormwater runoff (CMRSWC, 2014c).

The municipalities within the CMRSWC receive numerous benefits because of their collaboration. The municipalities can share stormwater management tools, such as Leica units and water quality testing kits, thus reducing cost (Coalition, 2014). Their collaboration also reduces redundancies in stormwater management projects, thus allowing the municipalities to use money more efficiently. Although the CMRSWC members try to collaborate as much as possible, the individual towns are ultimately responsible for utilizing the tools developed by the CMRSWC in order to comply with the MS4 permit (Spain, 2014).

2.6.1 Funding of the CMRSWC

The CMRSWC receives funding from the Community Innovation Challenge (CIC) Grant. Massachusetts Governor Deval Patrick started the CIC grant program in 2012 in order to ease the taxpayer burden of community improvements (Massachusetts, 2013a). The CMRSWC received $310,000 in 2012 to help implement the 2003 MS4 permit (Massachusetts, 2013b). The CIC Grant provided the CMRSWC with $105,000 for the 2013 fiscal year. This grant did not cover the total cost of the CMRSWC's efforts, thus each municipality had to provide $2,800 in order to supplement the cost (Spain, 2014). For the 2014 fiscal year, the CIC Grant provided the

CMRSWC with $80,000 (CMRSWC, 2014a). The grants are awarded in December, so at the current time the CMRSWC does not know if they have secured funding for next year.

2.6.2. Organizational Involvement in the CMRSWC

The CMRSWC operates with the help of various agencies and companies. The government agencies, which support the CMRSWC, include the MassDEP, the Massachusetts Department of Conservation and Recreation (DCR) and the USEPA. The CMRSWC also receives support from the private consulting firms of Tata & Howard and Verdant Water. The companies which provide services to the CMRSWC include Maine Technical Source, HACH Company Chemetrics, and People GIS (CMRSWC, 2014d).

2.6.3. Stormwater Consultants

The CMRSWC receives support from the private consulting firms of Tata & Howard and Verdant Water. Tata & Howard is an engineering firm which provides consulting for the management of wastewater, stormwater, and hazardous waste (Tata&Howard, 2014a). Tata & Howard also helped create a system which collects inspection data and maps runoff patterns within the CMRSWC (Tata&Howard, 2014b). Verdant Water operates from Scarborough, Maine, and focuses on industrial and municipal stormwater management. Verdant Water provides Stormwater Pollution Prevention Plans (SWPPPs), Illicit Discharge Detection and Elimination (IDDE) assistance and water quality screening.

The use of these private consulting services to fulfill components of the MS4 permit requires the municipalities to spend a large amount of money. We had to take the cost of these services into account in order to construct our cost analysis. In the next chapter of our report, we describe our methodology for creating our cost analysis.

2.7 Goals and Objectives

In collaboration with the MassDEP and the CMRSWC, we sought to provide the towns of Southbridge, Holden, and Millbury, Massachusetts with a comprehensive analysis of their cost of compliance with the new 2014 MS4 permit.

In order to achieve this goal, we:

1. Became educated on the details of the 2003 MS4 permit and the new 2014 MS4 permit
2. Assessed the degree to which Millbury, Holden, and Southbridge have met the requirements of the 2003 MS4 permit
3. Researched Millbury, Holden, and Southbridge's total current expenditures for stormwater management
4. Identified what changes each of the aforementioned towns will have to make to comply with the requirements of the new 2014 MS4 permit
5. Provided a detailed analysis of the complete costs each town will need to defray in order to comply with the requirements of the new permit.
6. Created an educational video to explain the costs of implementing the 2014 MS4 permit

We discuss our methodological approach to accomplishing these objectives in detail in chapter 3.

3.0 Methodology

3.1. Introduction

In collaboration with the Massachusetts Department of Environmental Protection (MassDEP) and the Central Massachusetts Regional Storm Water Coalition (CMRSWC), we provided the towns of Millbury, Holden, and Southbridge, Massachusetts with a comprehensive analysis of the cost of compliance with the new 2014 Municipal Separate Storm Sewer System (MS4) permit. We focused our project objectives on determining the current and future cost of stormwater management in the subject towns. The MassDEP and CMRSWC proposed this project to increase municipal and agency understanding of the cost of compliance with the MS4 permit; The MassDEP will not use this information for enforcement of the MS4 permit. The MassDEP recruited us to address this problem as independent consultants. The United States Environmental Protection Agency (USEPA) released the new 2014 draft MS4 permit on September 30, 2014. In order to accomplish our goal and objectives, we created the following methodology.

The main goal of our project was to gather information from the towns of Holden, Millbury, and Southbridge Massachusetts in order to help them identify the financial costs of implementing the 2014 MS4 permit draft when it eventually comes into effect. Below we discuss each of the objectives we achieved in order to accomplish our project goal.

3.2. Objective 1: Became educated on the details of the 2003 MS4 permit and the 2014 MS4 permit

In order to create a complete cost analysis of compliance with the 2014 Massachusetts draft MS4 permit, we first sought to understand the requirements of 2014 MS4 permit draft. Understanding the permit also involved an in-depth analysis of the expired 2003 MS4 permit that

the towns have to maintain compliance until the new permit goes into effect. The USEPA issued each of the towns a Phase II permit, as their populations do not exceed 100,000 people (US EPA, 2014).

We analyzed the content of the 2003 MS4 permit minimum control measures so that we would each become more familiar with the minimum control measures. We then contrasted the requirements of the 2003 MS4 permit with those of the 2014 MS4 Draft Permit. As we researched the requirements that are a part of the 2003 MS4 permit, we determined how the permit changed from the 2003 version to the 2014 version with the help of Fred Civian. In addition, we analyzed previous reports written by groups that have worked with the MS4 permit. We interviewed Worcester Polytechnic Institute (WPI) students Xinping Deng, Nicholas Houghton, Haoran Li, and Joseph Weiler, who completed the previous MS4 related project, to gain a better understanding of how to create a cost analysis and work with the towns. We also interviewed them to better understand the efforts that have gone into implementing the permit. After analyzing both permits and interviewing the past IQP group, we were better able to approach the task of creating a cost analysis for our subject towns, see Appendix A for a list of interview questions.

3.3. Objective 2: Assessed what Millbury, Holden, and Southbridge have done to meet the requirements of the 2003 MS4 permit

In order to achieve this objective, we reviewed annual stormwater reports, conducted interviews, and conducted fieldwork. Even though the 2003 MS4 permit expired, understanding what the towns have done to comply with the permit requirements helped us increase our understanding of the additional measures and costs the towns will need to take to maintain compliance once the USEPA implements the 2014 MS4 Draft permit.

In our subject towns, we interviewed Department of Public works (DPW) directors such as Heather Blakeley, John Woodsmall, and Rob McNeil. We also interviewed other municipal officials such as Mark DiFronzo Southbridge's fire chief, Isabel McCauley Holden's Town Engineer, a Conservation Commission member from Southbridge Ken Pickerin, and Pamela Harding Holden's Town Planner. We conducted these interviews to determine what each town currently does to comply with the 2003 MS4 permit. Through our sponsors at the MassDEP, we contacted these towns in order to set up interviews with the municipal officials that oversee compliance with MS4 permit requirements. We focused these interviews on each municipality's efforts to comply with the six minimum control measures. In addition, we asked the interviewees to provide us with any documentation of expenditures, which we used to determine their town's costs. See Appendix A for examples of the interview questions that we asked each of the towns.

The expense reports from the consultants, DPW, and highway department, which the officials provided to us, did not encompass all of the town's expenditures, so we also used these interviews and fieldwork to obtain a more complete understanding of the expenditures. We conducted this fieldwork in order to determine the man-hours needed to conduct sampling tests on site. We used this data for information regarding procedures, costs, and methods used to fulfill the 2003 MS4 permit.

3.4. Objective 3: Identified Millbury, Holden, and Southbridge's total current expenditures for stormwater management

Once we collected data detailing the practices that our subject towns use to manage their stormwater runoff, we aggregated our data to create a cost analysis. Millbury, Holden, and Southbridge are members of the CMRSWC, which utilizes the expertise of the environmental consulting firms Verdant Water and Tata & Howard. We analyzed cost data from any

expenditure that occurred before release of the 2014 draft MS4 permit, but after 2012 to get a general idea of expenses. We analyzed all expenditures from the experience reports mentioned in the previous objective because towns often do more than they report to manage stormwater but are not necessarily aware of the task coming under the rubric of one of the 2003 MS4 permit minimum control measures (Deng, Houghton, Li, & Weiler, 2014). These tasks could include street sweeping, public education, volunteer organizations, and hazardous waste cleanup.

Many municipalities hire construction contractors to make changes to existing Best Management Practices (BMP), if required, or to keep up with maintenance on the town's BMPs. These construction companies may not be a frequent cost, but towns may still face these costs, or similar as-needed costs, while they manage their stormwater. We spoke with stormwater consultants Matthew St. Pierre of Tata & Howard and Aubrey Strause of Verdant Water in order to get a better understanding of how much these municipalities have spent on stormwater management. We also interviewed the municipal officials that oversee the stormwater management programs such as the Directors of the DPW as mentioned in the previous objective. Andrea Briggs put us in contact with them during the course of the project. By interviewing both of these groups of people, we were able to assess stormwater management spending using multiple sources. Drawing on the research that we conducted in the previous objective, we analyzed the methods, which the towns used, and the cost of each method, in order to calculate a total amount that the towns spend on stormwater management.

To compile the data that we gathered from our subject towns, Ms. Strause and Mr. St. Pierre provided us with a chart that the previous IQP group had put together and that Ms. Strause and Mr. St. Pierre had updated, the chart can be seen in Appendix B. This chart had many common costs of towns and ways that towns pay for stormwater management. Once Ms. Strause

provided us with the chart, she was able to take the areas that we were looking at and add them to the chart. By using this chart, towns will be able to directly compare the data that we gathered with the data that the towns would gather from their own cost analyses.

Using the information that we gained from identifying Southbridge, Holden, and Millbury's current expenditures and the previous objective, we were able to compile data from all three municipalities and create a cost analysis.

3.5. Objective 4: Identified what changes each of the subject towns will have to make to comply with the requirements of the 2014 draft MS4 permit

In order to accomplish this objective, we used the knowledge gained in accomplishing objectives one, two, and three to begin calculating the cost of compliance with the 2014 MS4 permit. We performed research to determine the BMPs that the municipalities already have in place to comply with the 2003 MS4 permit. This research included a detailed analysis of the town's annual stormwater reports. In addition, we conducted interviews with town officials and stormwater consultants who have worked with the towns. Examples of the interview questions we used can be found in Appendix A. By identifying what Best Management Practices (BMPs) the towns already use, we were able to determine whether, and in what manner, our subject towns will need to expand their stormwater management efforts to meet the requirements of the 2014 MS4 permit.

In order to identify the necessary changes, we conducted interviews with municipal officials in each town. We also spoke with Frederick Civian; Regional Stormwater Coordinator of the MassDEP. These interviews provided us with insight into each town's level of preparedness toward meeting the requirements of the 2014 MS4 permit.

Ultimately, this objective helped us gain a comprehensive understanding of the financial cost of implementing the 2014 MS4 permit in each municipality. By understanding the BMPs each town uses, we were able to assess what changes they need to make, and by extension, the financial cost of implementing each change. We created a checklist of the common practices such as street sweeping, distribution of pamphlets, and outfall mapping that municipalities use to comply with stormwater permits, and combined this with a similar chart given to us by Mr. St. Pierre and Ms. Strause. We discuss our cost analysis in further detail in objective 5.

3.6. Objective 5: Provided a detailed analysis of the complete costs for each subject town to comply with the requirements of the 2014 draft MS4 permit

In order to complete this objective, we first determined the changes each town will need to make in order to comply with the 2014 draft MS4 permit, as we described in objective four. We then computed the financial cost of the implementation of these changes. In order to perform our cost analysis, we spoke with Mr. St. Pierre, Ms. Strause, and Mr. Civian. These people were able to provide us insight into the typical cost of implementing BMPs, which fulfill the MS4 permit. We were able to determine what equipment each town has, such as street sweepers, outfall mapping equipment, and signage, through interviews that we conducted with municipal officials. The CMRSWC possesses some of this equipment, which the municipalities can use, therefore eliminating the need for the towns to buy and maintain their own equipment. We also determined the human resources each municipality can provide to manage stormwater. This knowledge allowed us to determine the labor costs. This knowledge also allowed us to determine if the towns will need to hire contractors or additional personnel in order to supplement their workforce. Once we had a list of all of the costs of stormwater management from the subject

towns, we were able to estimate the total cost of meeting the requirements of the 2014 draft MS4 permit.

In order to assist us with our cost analysis, Mr. Civian provided us with a chart, which listed every regulation of the 2014 draft MS4 permit. This chart is utilized in Appendices D, E, and F where we used it for each of our three subject towns. We divided this chart into eight separate sheets. Seven of the sheets individually detail the requirements of the six minimum control measures, as well as miscellaneous requirements such as submitting a Notice of Intent (NOI). Within each of these sheets, we divided the costs into annual costs, one-time costs, and intermittent costs, and calculated a total for each. We then took the totals from each of the seven sheets and compiled them into an eighth master sheet. This chart allowed us to create a comprehensive analysis of implementing the 2014 draft MS4 permit in each of our subject towns.

3.7. Objective 6: Created an informational video to explain the costs of implementing the 2014 MS4 Draft permit

Over the course of the project term, we gathered photos, videos, and interviews from Fred Civian, Andrea Briggs, and John Woodsmall and compiled them into an informational video. By gathering this material, we were able to highlight the challenges and importance of stormwater management. These challenges include raising funds and garnering public support for stormwater management.

In order to create this video, we first created an outline. During the outlining process, we reached out to Frederick Civian, Andrea Briggs, Matthew St. Pierre, and Aubrey Strause in order to generate ideas for the content of our video. We then borrowed video recording equipment from WPI's Academic Technology Center (ATC). This equipment included a digital camera, monopod, tripod, GoPro, and a shotgun microphone. We used the GoPro to gather underwater

footage of the outfalls. The shotgun microphone allowed us to eliminate ambient noise from cars during our filming in the field. We also borrowed wireless clip-on interview microphones to get clear audio during our interviews. Once we acquired the equipment, we then began to create our video. We filmed our fieldwork, which included our use of the water sampling kits. We then conducted interviews with stormwater experts that we had contacted previously.

4.0 Cost Analysis

4.1 Introduction

One of our major findings details the benefits of regionalization to effectively implement the 2014 draft Municipal Separate Storm Sewer System (MS4) permit. Due to the high costs that we describe in this chapter, towns should consider joining an established coalition, such as the Central Massachusetts Regional Stormwater Coalition (CMRSWC), or starting a new coalition to serve their specific region.

After completing objectives one through four of our methodology, we were able to construct our cost analysis. In this cost analysis we detail both current stormwater expenditures for the towns of Southbridge, Holden, and Millbury, and potential costs of compliance with the new requirements of the 2014 MS4 Draft permit requirements.

After calculating the current expenditures of our towns, we sought to predict the cost of implementing the 2014 draft MS4 permit in our subject towns. In order to assist us with this portion of our cost analysis, Frederick Civian provided us with a spreadsheet, which lists each of

the requirements of the 2014 draft MS4 permit. We divided this table by the six minimum control measures of the MS4 permit, and then used the resulting spreadsheet to predict the cost of implementing each requirement in our subject towns. See the spreadsheets we used in Appendices D, E, and F.

In this chapter, we first provide some background information on the towns of Holden, Millbury, and Southbridge, Massachusetts. Then we discuss the results of our 2003 MS4 permit and 2014 draft MS4 permits cost analyses. We then explain the results of our comparative analysis of the three subject towns' current costs of implementing the 2003 permit requirements. Next, we describe the results of our comparative analysis of Holden, Millbury and Southbridge's estimated cost of compliance with the 2014 draft MS4 permit requirements.

4.2 Background Information on Millbury, Holden and Southbridge, Massachusetts

The three subject towns for the cost analysis are all located within Central Massachusetts. Despite their similar geographic location as seen in Figure 12, the subject towns vary in size, budget, and population. Southbridge, Massachusetts has a population of approximately 16,800, while Holden has a population of about 17,600, and Millbury has a population of about 13,300.

Figure 12: Town Locations in Massachusetts

The towns' geographic area and percentage of impervious surface area also varied. With a higher impervious surface area comes a more expensive stormwater management program since there is more area for the stormwater runoff to run along. As the runoff runs along

impervious area it collects pollutants and the more polluted the runoff becomes. This requires the towns to take more of an effort to reduce the pollution, which leads to a high cost for stormwater management. As our subject towns cover more geographic area, their budget increases except in Southbridge, which has a larger budget than Holden even though Southbridge is significantly smaller. Millbury has the highest percentage of impervious surface area even though they have the smallest total area, which significantly increases their stormwater management costs.

The form of town government can have a large effect on how long towns take to implement the new draft requirements for stormwater management. Both Millbury and Holden have open town meetings as their primary form of government, whereas Southbridge has a Council and an Alderman as their government structure. When we spoke with Robert McNeil, he told us that having open town meetings could cause regulations to take longer to pass since the meetings are open to the public. This, however, does allow for much more public involvement and participation.

Town	Form of Government	Population	Town Budget	Area	Percent Impervious
Southbridge	Council and Alderman	16,799	56,739,257	20.9mi^2	8.69%
Holden	Open Town Meeting	17,636	52,774,844	36.2mi^2	7.04%
Millbury	Open Town Meeting	13,305	39,018,827	16.3mi^2	13.09%

Table 2: Town Information

4.2.1 Current Cost of Public Education and Outreach

The Public Education control measure requires towns to educate their population about the issues the town faces with regard to stormwater and to offer opportunities for the residents to participate in stormwater-related activities. In Table 3, we show how much Southbridge, Holden, and Millbury currently spend on the Public Education control measure.

Town	Population	Cost
Southbridge	16,799	$10,952
Holden	17,636	$1,000
Millbury	13,305	$566

Table 3: Public Education Costs by Town

A first glance at Table 3 may indicate that Southbridge does much more for this control measure than the other towns, but that is not entirely the case. Much of Southbridge's cost comes from the pamphlets and brochures that they create and distribute to their residents. Both Holden and Millbury have savings of about $6,000 annually since they utilize the resources provided to them by the Central Massachusetts Regional Stormwater Coalition (CMRSWC). Holden also uses pamphlets and brochures comply with this control measure, but since they use materials from the CMRSWC, they only have to pay for distribution. Millbury distributes its public education material digitally through their Department of Public Works (DPW) website, saving on distribution and printing costs. Any town that is trying to maintain compliance with this control measure should utilize any already existing education materials, thereby saving money on design, especially if the town is part of the CMRSWC.

Southbridge also holds hazardous waste removal days in order to gather hazardous waste from households. This practice increases the amount Southbridge spends on this public education, but this helps prevent this waste from appearing in runoff, which in the end saves Southbridge money. This practice of preventative action is an example of what other towns can try as a cost-reduction effort.

4.2.2 Current Cost of Public Involvement and Participation

The next minimum control measure is Public Participation. Public Participation requires that towns comply with their own town meeting requirements. The United States Environmental Protection Agency (USEPA) designed this minimum control measure to allow the public to have a voice in the creation of town specific stormwater ordinances and regulations as required by the MS4 permit. In Table 4, we show the costs associated with maintaining compliance with the 2003 MS4 permit for each town.

Town	Cost
Southbridge	$0
Holden	$0
Millbury	$0

Table 4: Public Participation Costs by Town

The table has zero costs for each town, since this control measure only requires that the towns offer a place and time for people to comment and look at the regulations and ordinances before the town puts them into effect. Towns comply with most of this control measure by following basic town meeting requirements laid out outside of the MS4 permit.

4.2.3 Current Cost of Illicit Discharge Detection and Elimination (IDDE)

As illustrated by Table 5, the subject towns have a wide range of costs associated with implementing the 2003 MS4 permit IDDE control measure. Some of the requirements of the IDDE control measure include developing a storm sewer system map and creating a plan to detect and eliminate illicit discharges.

Town	Cost
Southbridge	$2,452
Holden	$3,520
Millbury	$4,678

Table 5: IDDE Costs by Town

Southbridge, Holden, and Millbury have all completed the mapping requirements of the 2003 MS4 permit. Therefore, the towns have not had to map their town in a couple years. The current costs associated with the IDDE control measure in Southbridge reflects outfall sampling since outfall sampling accounts for 97% of the money the town spends on this control measure. Millbury complies with this requirement by using a Best Management Practice (BMP) that includes use of a closed circuit television (CCTV) system and vacuum truck to remove blockages from their storm drain system. This takes up about 86% of the combined cost for this control measure.

Holden also spends much of their money on use of the vacuum truck totaling about 64% of their total costs for this control measure. Isabel McCauley the senior civil engineer for Holden, and John Woodsmall, the director of the department of public works (DPW) for Holden,

estimate that Holden typically spends $3,000-$4,000 per occurrence on the removal of illicit discharges and had to remove one illicit discharge this past year.

We must note, however, that our costs for Holden were based only on data which Ms. McCauley and Mr. Woodsmall were able to provide to us. Environmental Partners Group (EPG) performs many of Holden's costs associated with the IDDE control measure, including outfall mapping and water quality screening. Financial invoices from Holden detailed the town's annual expenditures on EPG services since 2007 at $119,000. However, the invoice descriptions do not specify exactly what service is associated with each line item. Therefore, it was difficult for us to discern between annual costs and one-time costs. We were unable to connect with EPG to obtain a more detailed cost breakdown.

4.2.4 Current Cost of Construction Site Runoff

As illustrated in Table 6, the costs associated with implementing the construction site runoff control measure of the 2003 MS4 permit in Southbridge, Holden, and Millbury is low. The 2003 MS4 permit requirements for this control measure include developing a plan to reduce the discharge of pollutants from construction sites.

Town	Cost
Southbridge	$0
Holden	$0
Millbury	$350

Table 6: Construction Site Runoff Control Cost by Town

Our three subject towns implement this control measure using volunteers from their conservation commissions. The volunteers conduct most of the site inspections for the towns. The use of these volunteers is an excellent way to enforce this control measure without costing the towns any additional money. Another reason the cost of implementing this control measure is so low is that contractors must eliminate any violations at their own expense, as Pamela Harding

of Holden (Holden Senior Planner) and Ken Pickerin (Conservation Commission member) of Southbridge described to us in our interviews.

Our subject towns also already have sediment control ordinances in place. These ordinances do not cost any money to the towns as they are laws, which are already in place, and they do not need to be developed by town lawmakers. Although we did not learn of the particular details of these ordinances, they are similar in the fact that they require sediment and erosion control measures at construction sites.

4.2.5 Current Cost of Post-Construction

Differently from the previous control measure, the USEPA designed the Post Construction Site Stormwater Runoff control measure to ensure continuing pollution prevention, as well as BMP functionality, after construction has been completed. In the 2003 MS4 permit, this control measure states that the permittee must develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb land greater than one acre and discharge into the municipal system (US EPA, 2013). Beyond this function, the control measure requires towns to have an ordinance addressing post-construction stormwater runoff, plans for BMP longevity, and that any control measure the towns put in place will prevent or minimize impacts to water quality (US EPA, 2013).

Town	Cost
Southbridge	$0
Holden	$1,760
Millbury	$0

Table 7: Post Construction Costs by Town

In calculating the costs for each town, we sought to determine what funds the towns spent for stormwater management after they completed development projects. Based on the cost estimation sheets developed in *Cost Analysis For The MS4 Permits* (used in Appendices A, B,

and C) we have found that the annual cost for this control measure is $0 for Southbridge, $1,760 for Holden, and $0 for Millbury as illustrated in Table 7.

These costs can be explained by the ways in which each town implements the post construction site regulations. A representative from Southbridge, Ken Pickerin, is part of the local conservation commission. The Southbridge Conservation Commission (ConCom) is a group of volunteers who inspect construction sites, as well review construction site plans for construction projects. In Southbridge, the ConCom volunteers complete all of the Post-Construction Stormwater Management control measure requirements. Consequently, Southbridge's cost of compliance with the Post-Construction Stormwater Management control measure is zero (Ken Pickerin, 2014).

The town of Holden handles this differently, because they are within the Wachusett watershed and the Department of Conservation and Recreation (DCR) performs a number of the required elements of this control measure without any cost to the town (Robert Lowell, 2014). The $1,760 annual cost is from collaborative efforts between the Department of Conservation and Recreation (DCR) (paid by their agency), and Holden DPW workers paid under Holden. Because of this, Holden does have a notable cost of $1,760 to pay its workforce.

In Millbury, developers of a construction project handle the cost of the post construction control measure for that project. As part of the requirements for development within Millbury, a developer must pay for all required inspection programs themselves (Robert McNeil, 2014). This method is aligned with some of the innovative funding techniques Millbury utilizes, which we discuss in Section 5. Developers who secure the appropriate grants to fund the projects perform many of the projects in the town. As part of the grant, the developers pay for the costs of the post-construction control measures as well.

4.2.6 Current Cost of Good Housekeeping

The final requirement in the 2003 MS4 permit is Good Housekeeping. The USEPA designed this control measure to minimize or prevent the effects of stormwater runoff from municipal operations (US EPA, 2013). Generally, this means the towns must implement maintenance activities, inspection procedures for structural controls, employee training, and the upkeep of BMPs. In the implementation of this control measure, the towns have varying costs.

The annual cost for complying with this control measure for Southbridge is $255,200, while the annual cost for Holden is $180,246, and the annual cost for Millbury is $555,123, as illustrated in Table 8. There is a large degree of variation between the towns on cost of current good housekeeping practices. However, this large variation in expenditures is not unique to these three towns.

Town	Cost
Southbridge	$255,200
Holden	$180,246
Millbury	$555,123

Table 8: Good Housekeeping Costs by Town

In 2011, the USEPA conducted an analysis of the cost of complying with the good housekeeping control measure and found similar results. In this analysis the USEPA found that the Massachusetts towns of Bellingham, Franklin, and Milford, good housekeeping expenditures had a difference of $791,000 between the highest and lowest costs for existing programs (Committee, 2011).

In the town of Southbridge, good housekeeping costs are primarily due to catch basin cleanings, salt and sand road management, a leaf collection program, and an employee training program. Of Southbridge's $255,200, 85% is due to the salt and sand road management, BMP maintenance schedule, street sweepings, and the cleaning of catch basins and outfalls every two years.

In Millbury, the town maintains a schedule of yearly catch basin and outfall cleanings, as well as street sweeping, and the use of salt in their roadway management. Their roadway

management constitutes 83% of the cost for complying with this control measure in Millbury, and represents the largest cost in Millbury's entire stormwater management program. While these costs are part of stormwater management, the actions are not for the stormwater management alone. A few of these procedures are part of other departments, such as the Highway Department (Robert McNeil, 2014), and so the costs do not accurately represent the total budget for a municipality.

4.2.7 Total Current Cost Comparison

When we combined the current costs of the control measure, we were able to obtain an estimation of the total costs of compliance for each town. In implementing their stormwater program, the town of Southbridge spends an estimated $268,604 annually, as illustrated in Table 9. The town of Holden spends an annual $186,526 to fund their stormwater management program, as we illustrate in Table 9. Our third town of Millbury annually spends $584,960 on 2003 MS4 compliance as we illustrate in Table 9. We compiled these total costs from available information provided by the towns.

Town	Cost
Southbridge	$268,604
Holden	$186,526
Millbury	$584,960

Table 9: Total Annual Costs by Town

Based on our research, each town appears to go above what is required for the 2003 MS4 permit, but the magnitude of this differs by town.

For example, Millbury cleans its catch basins and outfalls annually, while Holden cleans them every two years. Despite these differences, both towns maintain compliance with the permit, and do so through different methods. Between each municipality, there are differing divisions of stormwater management responsibility. In our experience interacting with each town, they divide their stormwater management programs amongst multiple departments. Because of this, there is a degree of reporting bias in our cost estimation for each town. These

biases are because different town representatives in different towns are all looking for or maintaining and providing different records. This means that towns may have over or underreported what their actual costs were, even with this, we hope that they can be used by towns in comparing the costs for different categories, if not the total costs.

4.3 Comparative Cost Analysis of 2014 MS4 Draft Permit

In this section, we analyze the cost of compliance with the 2014 draft MS4 permit. We discuss each of the minimum control measures and the costs associated with them on a town-by-town basis in the sections below. To complete the analysis we created a system of charts and created estimations with the assistance of Frederick Civian. The charts detail the costs of each of the requirements of the 2014 draft MS4 permit. There are columns in the charts for information about the control measure, the estimated cost of the specific requirement, the reference number to the MS4 Draft permit, and a justification for our estimation. Within the charts, and this section, we use three different frequencies of costs to describe when costs are applicable: annual, one-time, and intermittent.

Annual costs are costs that the towns will have to spend every year to maintain compliance, such as submitting an annual report, and yearly street sweeping. One-time costs include costs that towns have to pay for only once either in the beginning of the permit term or at some point during the permit term. One-time costs include mapping outfalls, submitting a notice of intent, and labeling outfalls. Finally, intermittent costs are costs that occur inconsistently, such as removing an illicit discharge. Appendices A, B, and C contain the completed cost sheets for Southbridge, Holden, and Millbury.

4.3.1 Future Public Education and Outreach Cost

In the 2014 MS4 Draft permit, requirements for the Public Education minimum control measure have increased. Specifically, in addition to the 2003 MS4 permit Public Education

requirements, the 2014 MS4 Draft permit requires towns to measure the effectiveness of their messages, such as educational materials released to the municipality public. Lawrence Pistrang, Environmental Analyst with the Wachusett Watershed DCR, explained that it will cost towns approximately $8,820 to comply with the measuring effectiveness requirement under this control measure. In both Holden and Millbury, the additional cost of assessing the effectiveness of Public Education control measure would increase their cost by over eight times what they spend currently in this control measure. The increase in cost for would amount to double the town's present expenditures on Public Education. The Public Education minimum control measure has small low-cost administrative tasks, but the bulk of the cost comes from continuing the education efforts and adding an evaluative component to the program.

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$19,242	$0	$0
Holden	$9,908	$0	$0
Millbury	$12,106	$0	$0

Table 10: Estimated Public Education Costs

Table 10 shows the cost of compliance of each of the towns, and as we can infer from the values present in the table, the annual costs have increased by 75.2% for Southbridge, 890% for Holden, and 2003% for Millbury. To save money on this control measure, the towns can reuse education materials that already exist within the town or the CMRSWC. The towns can also reduce costs by sharing the metrics and tools used to analyze the effectiveness of their education.

By regionalizing, and working with other towns, every town can save money since towns do not have to work complete these minimum control measures on their own.

4.3.2 Future Public Participation Cost

The Public Participation control measure changed little between the 2003 MS4 permit and the 2014 draft MS4 permit. Consequently, the towns will not have to expend any additional costs to maintain compliance with this control measure. Table 11 shows the expected costs of this minimum control measure based on our estimated costs to update and maintain compliance. The costs do not change for any of the towns since the requirements changed only slightly, the changes that did occur were minor administrative tasks such as adding a section in the annual report, which describes this control measure, and requiring that towns comply with public notice requirements outside of the MS4 permit.

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$0	$0	$0
Holden	$0	$0	$0
Millbury	$0	$0	$0

Table 11: Estimated Public Participation Costs

4.3.3 Future IDDE Cost

The IDDE control measure of the 2014 MS4 Draft permit represents a large portion of the cost associated with the permit. Much of this cost is due to more stringent requirements, including mapping, outfall sampling, and priority ranking outfalls. These requirements will

generate many material and labor costs, as the towns will have to sample all of their outfalls, while they currently only sample a small fraction of them.

As we show in Table 12, Millbury and Southbridge share similar annual costs on implementing the IDDE control measure of the 2014 draft MS4 permit. However, Holden's cost is much lower. The main reason for this difference is the variation in number of outfalls between

Town	Annual Cost	One-Time Cost	Intermittent Costs	Number of Outfalls
Southbridge	$19,242	$304,006	$50,440	206
Holden	$7,872	$314,494	$50,440	144
Millbury	$11,523	$306,833	$76,730	267

Table 12: Estimated IDDE Costs

the towns. Much of the annual cost for the IDDE control measure is due to the need for the towns to sample all of their outfalls. Southbridge and Millbury have 206 and 267 outfalls respectively, while Holden only has 144 outfalls.

The one-time cost of implementing the IDDE control measure is similar between our three subject towns. This similarity is because most of the one-time requirements are applicable to all of the towns. For example, all of the towns will be required to update their mapping system, which will cost approximately the same amount for all three towns, as they have a similar number of outfalls to map. The towns will also be required to develop an IDDE ordinance, as well as priority ranking catch basins based on conditions and other factors(US

EPA, 2014a). These requirements are of similar cost as the towns all have a similar number of catch basins, and similar resources from which to develop the ordinance.

The intermittent costs listed are very similar between the towns because many of these intermittent costs are indeterminable at this point. Consequently, for comparison purposes, we operated under the assumption that each town will have to treat one illicit discharge per year. We explain our assumptions in more detail in Appendices D, E, and F.

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$0	$770	$0
Holden	$0	$770	$0
Millbury	$350	$858	$0

Table 13: Estimated Construction Site Costs

4.3.4 Future Construction Site Runoff Cost

As we demonstrate in Table 13, the towns are almost identical in the cost that will be required for them to implement the construction site runoff control measure of the 2014 draft MS4 permit. There is only one annual cost associated with this control measure, which is to continue implementing the construction ordinance from the 2003 MS4 permit. Because of this, the town's only have to spend a minimal amount of funds in maintaining this already-establish construction ordinance. Since Millbury is the only town that actually has to spend money to implement this requirement, they are the only town with a future cost associated with it.

The one-time costs of the construction site runoff control measure are all administrative tasks, which should take a similar amount of labor from each town to implement. There is no intermittent cost associated with implementing this measure in any of the towns, as there is only

one intermittent requirement of this control measure, which is to develop and implement a construction site runoff program. In all of the subject towns, the responsibility of this cost primarily falls on independent contractors working on town projects. We found that every town official we spoke informed us that when stormwater runoff issues are found on-site, the responsibility for correcting these issues falls to the developer.

4.3.5 Future Post-Construction Costs

The 2014 MS4 Draft permit, contains numerous additional requirements for the post-construction site runoff minimum control measure. Some of these new requirements include the development, implementation, and enforcement of a post-construction stormwater program for new developments and redevelopments (US EPA, 2014a). Frederick Civian assisted us in analyzing this control measure, and making estimations for the completion of individual items as we demonstrate in Appendices D, E, and F. For the town of Southbridge, we estimated that to implement the requirements of the Post Construction control measure would require an annual cost of $5,280, as we show in Table 14. This cost is joined by a $1,496 cost to update from 2003 MS4 requirements, and an

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$5,280	$1,496	$7,436
Holden	$5,280	$1,496	$7,436
Millbury	$5,280	$1,496	$7,480

Table 14: Estimated Post Construction Costs

estimated $7,436 in intermittent costs as we show in Table 14. We have estimated that Holden will need to pay $5,280 annually, $1,496 in one-time costs, and $7,436 in intermittent costs as we illustrate in Table 14. We estimate our third town, Millbury, will need to pay $5,280 annually, $1496 in one-time costs, and $7,436 in intermittent costs as we show in Table 14. These are all estimated costs that each town should expect to pay, but they may be different depending on how the town plans to implement it. For example, Millbury could expect to reduce its costs by following its current grant funding system. If Millbury imparts these costs onto developers funded by grants, they will be significantly lower (Rob McNeil, 2014). Similarly, if Holden utilizes DCR services; they may be able to forgo some of these costs as well (Robert Lowell, 2014). This section needs some additional detail so we understand where each of the separate costs is coming from.

4.3.6 Future Good Housekeeping Costs

In the new 2014 draft MS4 permit, the Pollution Prevention and Good Housekeeping control measures represent an on average 20% increase in annual costs in comparison to the 2003 MS4 permit cost of compliance. This is because there are many new and specific requirements for this draft permit, where municipalities have to be far more specific in their practices to comply with the permit. We based these cost on our estimates provided in part by Mr. Civian.

We have estimated that the town of Southbridge will have an annual Good Housekeeping cost of $283,458, a onetime cost of $6,292, and an intermittent cost of $0 as illustrated in Table 15. The town of Holden will need to expend an estimated $220,562 annually, as well as $6,292 in one-time costs, but similarly to Southbridge, Holden will have $0 in intermittent costs as

illustrated in Table 15. We have estimated that the town of Millbury will need to pay an annual cost of $693,578, a one-time cost of $6, 292, and no intermittent cost we illustrate in Table 15.

We deduce these costs based on what the towns currently expend in good housekeeping compliance for the 2003 MS4 permit. The 2003 MS4 permit costs, shown in Table 7, represent the current costs for compliance for the subject towns. In the case of annual costs, the largest contributors for this value in each town were their current snow and ice road management. This is a requirement that the USEPA did not update from the 2003 MS4 permit to the 2014 MS4 permit draft.

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$283,458	$6,292	$0
Holden	$220,562	$6,292	$0
Millbury	$693,578	$6,292	$0

Table 15: Estimated Good Housekeeping Costs

The annual cost for Millbury is an estimated 275% increase from the average cost of Holden and Southbridge As mentioned earlier in Section 2.4.7, such a large deviation should not come as a surprise. After being interviewed, DPW Director for Millbury Rob McNeil provided us with the costs of salt, the largest contributor to this control measure cost as seen in Appendix F, in the 2014 Fiscal Year.

4.3.7 Total Future Cost Comparison

Beyond the cost of compliance with each of the control measures, there are many miscellaneous requirements that are located elsewhere in the permit. These requirements include: the submission of a notice of intent, total maximum daily load requirements, and the development of a stormwater management program. These costs are difficult to estimate, as some of them have not been performed before (such as meeting Total Maximum Daily Load requirements), and are not implemented as numbers in our cost sheets located in Appendices A (Southbridge 2003 Cost Analysis), B (Holden 2003 Cost Analysis), and C (Millbury 2003 Cost Analysis). The annual miscellaneous costs in each individual town are $15,168, $2,376 in one-time costs and $0 in intermittent costs we illustrate in Table 16 and Appendices A, B, and C. When all of the values in Tables 10 through 15 of this chapter have been summed up in Table 17, we estimate Southbridge's annual cost of compliance with the 2014 Draft MS4 permit to be $343,008 per year. We have also estimated their one-time cost for the 2014 MS4 permit to be $314,940, which we included in Table 17. In terms of intermittent costs, we expect the towns of Southbridge and Holden to have to pay $57,876 per year as we illustrate in Table 17. We estimate the town of Millbury to need to pay $84,210, as indicated in Table 17. In the Town of Holden, their annual costs are $258,790, their one-time costs are $325,428, and their

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$15,168	$2,376	$0
Holden	$15,168	$2,376	$0
Millbury	$15,168	$2,376	$0

Table 16: Estimated Miscellaneous Costs

intermittent costs are $57,876 as we include in Table 17. In the Town of Millbury, we expect the annual costs to total $753,173, their one-time costs to total $320,231, and their intermittent costs to total $84,210 per year, as illustrated in Table 17. These costs reflect the current stormwater management programs in each town that will continue, as well as a multitude of new requirements. We calculated these cost estimates in direct collaboration with Frederick Civian.

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$343,008	$314,940	$57,876
Holden	$258,790	$325,428	$57,876
Millbury	$753,173	$320,231	$84,210

Table 17: Estimated Total Costs

5.0 Findings and Recommendations

5.1 Introduction

Having completed our goals, objectives, and cost analysis, we were able to develop many findings and recommendations for the towns of Southbridge, Holden, and Millbury, Massachusetts, the Central Massachusetts Regional Stormwater Coalition (CMRSWC), and other Massachusetts towns. In this chapter, we discuss the results of our research and recommendations for the CMRSWC and the towns so they can be adequately prepared for the 2014 Municipal Separate Storm Sewer System (MS4) draft permit. Our findings detail the cost of implementing the 2014 draft MS4 permit, as well as the difficulties associated with implementing the draft permit in our subject towns. Despite our rigorous methods, our research may not have revealed all potential costs of compliance with the new draft permit. Therefore, the towns should read our cost analysis as an estimate guideline or starting point. We believe, however, that our findings will be accurate and can help our towns effectively implement the 2014 draft MS4 permit.

5.2 Finding 1: The 2014 MS4 permit may cost too much for the towns to effectively implement

Southbridge, Holden, and Millbury, Massachusetts all struggle to finance elements of their stormwater management programs. Currently, Southbridge spends an estimated $ 326,118 annually on their stormwater programs. Comparatively, the towns of Holden and Millbury spend approximately $150,232 and approximately $647,475 respectively on their annual stormwater budgets. We have compiled these reports from information that individual town representatives have provided us as well as our own observations. We also obtained financial information from town archives, such as 2014 annual stormwater reports from each town. In order to ensure the validity of each wage, capital cost, and reoccurring cost, we obtained each value from

representatives of their respective towns. In cases where we could not find specific details, we translated financial estimates for certain services and programs from one town to another and checked the numbers with Frederick Civian, Stormwater Coordinator for the Commonwealth of Massachusetts.

Based on the reports that each town has provided us, each of our subject towns are experiencing difficulties in meeting these requirements, both financially, and with enough workers. Heather Blakeley, the Director of the Southbridge Department of Public Works (DPW), has expressed concern for the town's ability to fund its stormwater management program. Southbridge is running into difficulty with Proposition 2.5, which prevents towns from increasing taxes by more than 2.5% per year, and citizens can vote to reject an increase in taxes. This issue makes compliance with new MS4 requirements more difficult (Heather Blakely, 2014). Based on our interview, Southbridge is especially concerned with the lack of available labor. There are a large number of new requirements in the current MS4 Draft permit, and Southbridge does not have the dedicated labor force to tackle so many new programs (Heather Blakely, 2014).

John Woodsmall, the Director of the DPW in Holden, has expressed similar concerns. He has stated, "A lot of it depends on what the final format of the permit will be, and what the magnitude is in the increase in costs. We're able to absorb some but not too much generally. If it's substantial then that's going to be a real concern." (John Woodsmall, 2014).
Millbury's DPW director Robert McNeil has also indicated a similar situation. He said, "Particularly since it's still in draft form, we have not made any effort to determine the cost of the changes. So I think part of this whole effort, the hope is to work through that. Either [our IQP team] Figure out where the gap is, or what's changing, or work through the [CMRSWC] to

determine what those costs are" (Robert McNeil, 2014). Mr. McNeil also stated in our interview that of all the preparations, funding lacks the most assistance, even though funding is the backbone for the whole system.

After collecting financial data from each town, we were able to create a cost estimate for each town's stormwater management costs as we show in the Finding 1. These cost estimates represent their total costs of compliance with the 2003 MS4 based on currently available information. We were able to contact representatives in the Massachusetts Department of Conservation and Recreation (DCR) during our project. We interviewed Robert Lowell, Stormwater Manager for the DCR, and Lawrence Pistrang, Environmental Analyst for the DCR. They were able to provide us with cost estimates for educational programs, as well as guidelines for estimating the costs of certain requirements. With these resources, we were able to construct a separate cost estimation of complying with the 2014 MS4 Draft permit for Southbridge, Holden, and Millbury. Appendix H contains the blank cost sheets, Appendix D for contains the completed sheets for Southbridge, Appendix E contains the completed sheets for Holden, and Appendix F for Millbury. In total, we expect an annual cost increase of 28% for Southbridge, 39% for Holden, and 30% for Millbury. These costs do not take into account the one-time costs for each town to update mapping systems, ordinances, and other one-time programs. Based on these increases in cost and the current state of the stormwater management programs in each town, we believe that the requirements in the 2014 MS4 Draft permit may cost too much for towns to effectively implement.

5.3 Recommendation 1: Effective regionalization will allow towns to better implement their stormwater management programs

If towns can regionalize their stormwater management programs, they will be able to implement the 2014 MS4 permit more effectively and at a lower cost. In our findings, we have

determined that towns can more effectively manage and fund their stormwater programs if they are part of a regional organization. In our study, the CMRSWC unified 30 towns by providing them an effective and centralized stormwater management resource. With the CMRSWC, the members do not have to produce many of the materials required under the 2014 MS4 Draft permit. Our project did not involve municipalities that were not part of a Coalition. Based on our interviews with DCR representatives and Massachusetts Stormwater Coordinator Frederick Civian, a municipality not part of a regional organization would need to expend an excess of $9,433 to develop these materials in house or hire a contractor. We discuss the benefits of regionalization further in finding 4 and recommendation 4.

5.4 Finding 2: Using innovative funding techniques can help the towns spend less from their general fund on stormwater management

With the new draft permit having so many new requirements, towns will have to use innovative funding techniques such as grants, stormwater taxes, or stormwater utilities to fund all of the necessary changes. When funding large construction projects, towns look outside of the town for assistance. Many towns, however, do not look for additional funding outside of their town for stormwater management. When we interviewed the directors of the DPW in Southbridge and Holden, Heather Blakely and John Woodsmall respectively, both said that they have a line item in the town's general fund that funds the stormwater management program. In addition, when we asked how they planned to fund the required changes, both said they would just seek additional funding from the town. However, our other subject town Millbury did not use the same funding strategy as Southbridge and Holden. Millbury uses a unique method of partially funding their stormwater management, which we learned about when we spoke with the Millbury's DPW director Robert McNeil.

As all towns do, Millbury has contractors bid for projects within the town, such as replacing pipes, building new municipal buildings, and repairing municipal buildings. As a part of this system, Millbury asks some of the contractors to write grant requests for the town. If the town gets the grant, then the town gives the project to the contractor. This is an innovative way for both the town and the contractor to benefit; the town has the project completed with all of, or some of the grant money, and the contractor gets the contract. Innovative ways of funding stormwater management are becoming increasingly necessary, as the Community Innovation Challenge (CIC) grant continues to decrease the amount of funds that the CMRSWC receives.

The CIC grant is an innovative way to get community projects off the ground, but the state government established the grant program to start the projects, not sustain the projects, so every year the funding decreases. The CMRSWC is in its 3rd year of CIC funding, and the funding decreased by 62.9% in the first year and 30.4% in the second year. Therefore, the Coalition should explore other ways to fund their efforts. The CMRSWC member towns help the CMRSWC continue to operate by contributing annual dues. Some towns in the CMRSWC are considering implementing a stormwater tax or a stormwater utility, and in some cases that will be necessary. However, by using innovative funding methods, towns can minimize the amount that their residents have to pay for these measures.

5.5 Recommendation 2: The towns should seek alternative sources of funding such as additional grants beyond the CIC

As we mentioned in Finding 2, towns should start to seek new ways of funding stormwater management. When the United States Environmental Protection Agency (USEPA) releases a new MS4 permit, towns are going to have to find ways to fund the permit, and their current method of funding stormwater management through the general fund can only work for a limited amount of time. Some towns in the CMRSWC have talked about implementing a

stormwater tax, but according to Southbridge's DPW director Heather Blakeley, town residents will be hesitant to vote for this tax. This reservation may be due to the citizens' lack of information of the need for and importance of stormwater management. Another method for funding the necessary changes to stormwater management is to create a stormwater utility. This is most likely the best option for many towns, since it is a small increase in cost to the property owners: $11 per single-family household or some similar number. Gathering this money from all of the properties in the town would significantly help towns pay for stormwater management (USEPA, 2009). The stormwater utility allows the town to gather funding based on a factor such as impervious surface or total area, or just a flat rate. A utility would also not have to through the town approval process, so it may be easier for towns to implement.

As we mentioned in Finding 2, Millbury has contractors look for grants that the town could apply for and has the contractors do the application for the town as part of bidding for a project. This way, the towns can source funding for stormwater management outside of their town with little effort, according to Robert McNeil. When we interviewed Mr. McNeil, he told us that the contractor does almost all of the work in this process, which means that even if the town does not get the grant they did not spend much time and money applying for it. The contractor does most of the actual work and it pays off for them if they can manage to get the grant for the town, since the town is much more willing to fund the project with grant money.

A few examples of grants the towns could apply for is the 604(b) grant from the Massachusetts Department of Environmental Protection (MassDEP), Wastewater grants from the Massachusetts Environmental and Energy Agency (MassEEA), and River Revitalization Grants from the Massachusetts Department of Fish and Game (MassDFG). The 604(b) grant program through the MassDEP serves to help towns determine issues in their current stormwater

management systems. The River Revitalization grant from the MassDFG directs the grant at towns for revitalizing rivers in the towns. The towns should apply for funding as quickly as possible before these funds go away. The Coalition should also lobby for additional future funding from the USEPA and the MassDEP

5.6 Finding 3: Using innovative stormwater management techniques can help towns save money and thus implement the MS4 permit more effectively

Millbury utilizes many innovative methods of stormwater management, which helps them save money in implementing the MS4 permit. During our interview with Millbury's DPW director Robert McNeil, we learned about many of these innovative techniques. Millbury has begun the process of removing sump pump lines from their sewer system and directing them into the stormwater system. The town initiated this process in order to prevent combined sewer overflows (CSOs). In anticipation of the increased flow volume from this project, Millbury has begun installing larger drainpipes. These pipes are much larger than they need to be to handle the flow volume from the current project. The town has installed these larger pipes in case they ever decide to tie more discharges into the stormwater system. If Millbury had installed pipes that were only of adequate size to handle the flow volume from the current project, then they would need to perform additional construction if they ever decided to tie more discharges into the stormwater system. Since Millbury has installed these larger pipes, they have eliminated the need to perform additional construction in the event that they decide to increase the flow volume through the stormwater system. Therefore, by anticipating the need for future construction, Millbury will save money over time, thus reducing their costs for stormwater management.

Millbury also saves money by performing innovative public participation programs. The town promoted an art contest to raise awareness of stormwater management in both their middle school and high school. The middle school art contest involved the entire 5^{th} and 6^{th} grade classes

in Millbury's public schools. The high school art contest targeted about 25 students (Rob McNeil, 2014). However, Mr. McNeil expressed interest in targeting the entire high school, which holds students from 7th through 12th grades, in the future. The town rewarded some of the students by allowing them to paint their artwork on the town's snowplows. The art contest was an effective way to target a large number of people. In addition, the contest only involved about four hours of labor from the town DPW. By keeping the cost of fulfilling the public participation control measure low, the town can focus more of their monetary resources on implementing the Illicit Discharge Detection and Elimination (IDDE) control measure, anticipated to be the most costly requirement of the 2014 draft permit.

5.7 Recommendation 3: The towns should strive to utilize innovative stormwater management techniques

As we have discussed in finding 3, the towns can save money by using innovative stormwater management techniques. The 2014 draft MS4 permit allows for a degree of creativity when designing BMPs. The permit allows the permittee to add a Best Management Practice (BMP) to their Stormwater Management Program (SWMP) at any time. If the towns strive to generate creative ideas, they may end up creating a new BMP, which is far more effective than any BMP, which is currently in use. Therefore, generating innovative ideas can be a tremendously helpful way to reduce the cost of implementing the 2014 draft MS4 permit.

5.8 Finding 4: Towns that communicate with other towns, even to a small extent, can more effectively manage and fund their stormwater management programs

In gathering data for our financial report, we have found that there is a lack of communication and sharing of information between towns to improve their stormwater management programs. Within the municipalities of the CMRSWC, there is a group called the Steering Committee, which meets on a monthly basis to discuss stormwater management within their municipalities. During our IQP term, we were able to attend two of these meetings, and in

both of these meetings, we noted the attendance of DPW Director for Millbury, Robert McNeil, DPW Director for Holden, John Woodsmall, and Town Engineer from Holden, Isabel McCauley. In addition, we noted the attendance of ten other members. These members represented other towns within the Coalition, and from the roster of attendees, we noted representatives from Auburn, Leicester, Millbury, Northborough, Shrewsbury, and Spencer. Of the thirty towns in the CMRSWC, only about 25% of towns were represented. Although there are many new members to the CMRSWC, this still represents a low level of communication between towns on this topic, even among towns that are members of a dedicated stormwater coalition. Despite this, the collaboration within the CMRSWC has benefitted all members. Based on our cost analysis efforts seen in Appendices D, E, and F, towns can save approximately $9,433, not including the thousands in a Global Positioning System (GPS) mapping tools such as a Leica, in the implementation of the new permit as members of the CMRSWC.

In our meetings with representatives within the towns of Millbury and Southbridge, we have found that some cost-saving practices of one town may not appear in another. For example, Southbridge prints and mails all of their public education materials, but Millbury uses digital materials from the CMRSWC. Using the materials from the CMRSWC and digitally distributing them, Millbury saves the $6,500 that Southbridge spends on postage. Millbury also has undertaken a way to gather grant funding that was unique among our subject towns the municipalities. Even though both of these towns are part of the CMRSWC, they were unaware of these cost saving techniques that they could apply to their own stormwater management programs.

In working with these towns in the CMRSWC, we have found that even though they do not always communicate their own techniques, they are able to save money through CMRSWC

membership. There are some requirements within the 2014 MS4 draft that require significant investment within a town, but other requirements that will have little or no financial cost. We found this particularly evident in the Public Education minimum control measure. This control measure requires information materials, such as pamphlets, brochures, or information on a website. Additionally, there are requirements such as a sump pump discharge policy, a municipal Stormwater Pollution Prevention Plan (SWPPP), and various ordinances that do not necessarily need to be uniquely tailored to every municipality. The CMRWSC has templates for these materials, and municipalities can save money by using these materials provided as opposed to developing their own.

5.9 Recommendation 4: Regionalization can help towns save money by sharing information and resources.

The CMRSWC is a great example of towns working together to help each other with stormwater management. Not every town needs to join the same coalition, but towns should form coalitions with neighboring towns to share knowledge and tools. The small $4,000 cost of membership to the CMRSWC more than covers the amount that the towns would normally spend on consultants, testing kits, mapping tools, and educational messages. All towns have to map their MS4 system and test their outfalls. This mapping does not have to happen every year, so a single town buying this equipment would be highly inefficient. Additionally, having to purchase water quality testing kits individually would also be a financial burden, based on the seven different factors to test for in the 2014 MS4 permit draft (US EPA, 2014a).

In the CMRSWC, there are monthly steering committee meetings where members talk about current issue in stormwater management as well as issues that they are facing in their town. This is a great place for the person who is in charge of stormwater to learn more from their peers and discuss the current methods of stormwater management. Towns looking to form their

own coalition should look to the CMRSWC as a model or if they are in the region, they should look into joining the CMRSWC.

5.10 Finding 5: In each of our subject towns, stormwater management information was divided amongst different departments

Since the USEPA released the 2014 draft MS4 permit, the towns recognized the increased importance of updating their stormwater management programs. However, some towns struggle to find all of their stormwater management data. Neither Millbury, Southbridge, nor Holden had a centralized source of stormwater management information. In Southbridge, Heather Blakeley knew some of the general costs of stormwater management, but had to send us to Ken Pickerin for information on the conservation commission and to the fire chief Mark DiFronzo for information on hazardous waste removal. Mr. Pickerin and Mr. DiFronzo both dealt with stormwater management indirectly, which led to some confusion as to what information we needed from them. In Holden, we spoke with Isabel McCauley and John Woodsmall, both of whom were knowledgeable on the stormwater management relating to their jobs, but had to send us to town planner Pamela Harding for information on the conservation commission. In our towns, we eventually received the data that we needed, but always after talking with many different people and looking at many different cost sheets. The people we interviewed were often located between different departments in the town.

In Millbury when we interviewed the director of the DPW, Robert McNeil, he had to check for some of the stormwater data, given that he is in charge of the whole department and there is not a single place for that information. However, the numbers he provided to us were from all from different parts of the town's records, which was the case for all three of our subject towns. Many requirements of the 2003 MS4 permit are likely to be performed by multiple departments, such as ordinance creation and street sweeping being two completely different

programs requiring completely different personnel. For all three of our subject towns, these records were not located in a single place, because the required tasks of stormwater management were handled by multiple departments.

5.11 Recommendation 5: Having a central source of stormwater management would allow for easier implementation of future MS4 permits and make continuous compliance easier for the towns.

Based on our previous finding, having a single person in charge of stormwater management, for example, a stormwater coordinator, would make compliance much easier for towns. According to the Department of Conservation and Recreation's (DCR) Stormwater Coordinator Robert Lowell, the USEPA classifies the Wachusett Watershed as a non-traditional MS4 system. Therefore, looking at the Wachusett Watershed DCR for stormwater management is not too different from looking at a town; there are just some different requirements. When interviewing Mr. Lowell, he was able to access information easily because of his position. Since Mr. Lowell is in charge of stormwater management for the Wachusett Watershed DCR, he had intimate knowledge of how many of the requirements the DCR are meeting and what their plans were for the future with the new 2014 draft MS4 permit. If towns were able to replicate what the Wachusett Watershed DCR does with a stormwater manager, then they would be in a much better position for the any future MS4 permits. We recommend that towns research the feasibility of either creating a full-time position to manage stormwater, or make it part of an already-existing position within the municipality. We realize that small towns may not be able to afford this option, and we suggest some towns research the potential of Regional Stormwater Coordinators. These could be Stormwater Managers for multiple municipalities, whose wages are paid in part by each municipality the manage stormwater for. This option may allow smaller

municipalities to be able to consolidate their stormwater management information within their municipal budget.

5.12 Finding 6: The IDDE control measure will be a significant contributor to the increase in cost between the 2003 and 2014 draft MS4 permits

The IDDE control measure of the 2014 draft MS4 permit will cause a significant increase in the cost of implementation in onetime costs. When researching the permits, we found that the IDDE control measure is much longer and has many more requirements in the 2014 draft MS4 permit than in the 2003 MS4 permit. These more stringent requirements will cause a significant increase in the cost of compliance with the MS4 permit, as we illustrate in Table 18. For example, the town of Southbridge should anticipate a large increase in the cost of testing their outfalls. Southbridge has 206 outfalls. In the 2014 fiscal year, they sampled 25 outfalls. Under the 2003 permit, this effort is enough to fulfill the permit requirements. However, the 2014 draft MS4 permit requires each town to sample all of their outfalls, which will result in an eightfold increase in cost for the town. Many of the other permittees will likely face the same challenge as Southbridge and have to increase their sampling work. Massachusetts's towns should anticipate much higher costs in order to fulfill the new requirements of the IDDE measure.

Town	2003	2014 Draft
Southbridge	$3,520	$7,872
Holden	$4,678	$11,523
Millbury	$2,452	$19,242

Table 18: Annual Cost Comparison of IDDE

5.13 Recommendation 6: The CMRSWC should have one person in charge of keeping track of and maintaining the field sampling kits.

One issue that we often faced during our project was with the field sampling kits. The kits often had disorganized and expired components. For example, there was one day we could not run the ammonia test in the field because of expired components. If town workers discover expired components while they sample in the field, this would delay their opportunity to run the test. The workers would have to take the time to find new components and return to their sampling locations. This delay would raise the labor costs for the towns. It was also difficult to find some of the kits. There was one day we had to travel to Oxford in order to find the Total Dissolved Solids (TDS) meter and the Turbidity test. As we discuss in finding 6, the condition of the sampling kits often made it difficult to perform the tests in the field. The kits often had expired components or were in many different locations. If one person was in charge of tracking and maintaining the kits, the CMRSWC would save time trying to find kits and would not have to perform repeat sampling days at outfalls. Therefore, having one person in charge of the kits will save the CMRSWC money.

5.14 Finding 7: The current Asus tablet in use by the CMRSWC is slow and ineffective

When we were in Holden doing outfall testing, we used the tablet from the CMRSWC, which towns use for mapping and data collection. The tablet was not able to connect to the Internet without Wi-Fi, which made it difficult to use in the field. The current solution to that issue is to have an AT&T wireless hotspot to create a mobile hotspot for the tablet. This was not always reliable since the mobile hot spot could be lost or be out of range of the tablet.

The next issue that we learned about with the tablet system was the software. According to Isabel McCauley, Holden's Town Engineer, the software was slow on the tablet and was hard

for the DPW workers to use. When we used the CMRSWC tools on the tablet in the field, we saw this delay. However, when we tried the same tools on one of our smart phones, an iPhone 5, the tools worked smoothly. The screen of the iPhone was smaller than that of the tablet, but the CMRSWC's software was clearly not the issue, the issue was with the tablet.

5.15 Recommendation 7: The towns should use software, which can collect data offline and then upload it to an online database later, as well as a tablet, which is more up to date. This would allow the DPW workers to work more efficiently, thus saving the town labor costs

There are many issues with using the current CMRSWC tablet. Sometimes there just is no cellular signal, which a new tablet could help with, but not be able to completely fix. For this issue, we recommend that the CMRSWC develop an offline mode for the tablet so that anyone using the tablet can collect data and save it so that when the tablet can connect to the network, either via Wi-Fi or via a cellular network, the tablet can upload any data it saved while in offline mode.

Since the tablet is almost three years old, and there are new tablets that would work better, we recommend that the CMRSWC buy a new tablet on which to use their software. Buying a tablet would decrease the amount of time that anyone using the tablet has to wait for loading and reloading when the tools crash. There are tablets that have built-in cell signal receptors, which may be better so the hot spot is not lost and there is a better signal. The combination of the mobile hotspot and the older tablet causes unnecessary frustration and loss of time. When buying the new tablet, the CMRSWC should invest in model that will be durable and will function well over time and with many different users.

For this purpose, we recommend that the CMRSWC purchase a low-end Apple iPad, since they run much better and have a much better life span compared to an Asus tablet. A low-end iPad would cost about $530 for the lowest end full iPad with a diagonal screen size of 9.7in.

A cheaper option is an iPad Mini, which costs $380 with a diagonal screen size of 7.87in. Either of those options would easily out-perform the current Asus tablet. The Asus tablet costs about $250 with a screen size of about 7in and lasted probably two good years. With either iPad they would continue to function well into four years after they are purchased. While working on the current Asus tablet, we lost about four minutes per outfall having to wait for pages to load and reloading pages. If a town is paying a DPW employee $22/hour to use this tablet and they lose four minutes per outfall, they are losing about $2 per outfall. Since the town has to go to each outfall for some of the new requirements approximating 145 outfalls a town, the town is losing $290 due to the cost of the inadequate technology. Just in that savings from one town, the CMRSCW is making the money back in timesaving, especially since the CMRSWC distributes the tablet to many different towns.

5.16 Other Recommendations

5.16.1 The Massachusetts Department of Environmental Protection should research the potential of providing standardized materials available to Massachusetts municipalities

Based on our findings, we believe the MassDEP should consider making available a collection of materials that municipalities could use for their permit compliance when administering the new 2014 MS4 permit. Within the requirements of the 2014 draft MS4 permit, there are many line items that municipalities must develop and implement. These materials primarily consist of those in the Public Education and Public Involvement control measures, such as pamphlets, brochures, and public notices. Beyond these two control measures there are still a number of material requirements, including Stormwater Pollution Prevention Plans (SWPPPs), outfall-screening procedures, and construction site stormwater plans. These materials will require a significant investment from municipalities to implement (See Appendices D, E, and F for cost estimations in our subject towns). In one case, Mr. Lowell provided our team with a high-end

cost estimate for complying with the Public Education requirement. Based on the requirements of the current MS4 Draft permit, a high-end public education program for a town of approximately 17,000 individuals costs an estimated $19,787 annually (Robert Lowell, 2014). This cost can be different, depending on how the municipality chooses to implement certain requirements. Some towns like Millbury are working to abolish paper materials completely (Robert McNeil, 2014). In regards to the Central Massachusetts Regional Stormwater Coalition (CMRSWC), these materials are made by the CMRSWC for its member municipalities, and are available as part of the paid membership to the CMRSWC. Beyond this Coalition, there is also the Massachusetts Watershed Coalition. Formed in 1991, this Coalition works with community partners across Massachusetts in order to protect and restore watershed ecosystems across the state (Coalition, 2014). As part of its goal, the Mass Watershed Coalition also provides information and other services relating to stormwater to many communities in the state (Coalition, 2014). In the 2014 MS4 Draft permit, Most of the requirements are not specific to individual municipalities. The USEPA made the MS4 permit to be applicable to many different municipalities, and the materials that are required are similarly nonspecific to any municipality. With special attention paid to the success of Coalitions distributing materials, it may be highly beneficial for the MassDEP to develop certain materials in-house, as opposed to municipalities developing them themselves. These would be materials like standard operating procedures, ordinances, and other administrative tools that are required under the 2014 draft permit. The MassDEP should certainly not force municipalities to use these materials, but the materials should be available in electronic and physical forms. Even if only a few towns make use of these materials, they could potentially save tens of thousands of dollars.

5.16.2 The CMRSWC should streamline and update the digital forms. This practice would reduce the time needed to inspect outfalls, thus saving money

While we performed outfall sampling in Holden, we completed wet and dry weather sampling forms. We spent roughly ten minutes per outfall in order to complete these forms. As noted by Matthew St. Pierre of Tata & Howard, these forms have many additional categories. These categories include test results for pollutants that are not regulated by the MS4 permit. It is worth noting that, by having categories that go beyond the regulations of the MS4 permit, the CMRSWC can create a cleaner and less polluted environment. The detail of these forms illustrates the CMRSWC's admirable commitment to protecting the environment. However, the cost of implementing the 2014 draft MS4 permit is significant, and will likely strain many towns' budgets. If the CMRSWC updates these forms and removes the categories unrelated to the draft MS4 permit, it will save the town workers time, and thus streamline the process of outfall sampling. These times savings will also save the towns labor costs.

The CMRSWC should also utilize these updated forms on their digital system. Digital sampling forms are easy to upload to a database or the CMRSWC's website. When we were performing field work in Holden, Ms. McCauley demonstrated how to complete the dry and wet weather sampling forms on the CMRSWC tablet and then upload them to the CMRSWC website. Having a database of these forms makes it easy to see trends in pollution, both within a single town, and between towns, which have shared watersheds. Therefore, the database makes it much easier to perform outfall sampling and inspections, thus saving money. A previous IQP group detailed the efficiency of uploading digital forms to the People GIS database using the Leica tablet. This process circumvented the need to submit the forms outside of the field, and also prevented municipal employees from making repeated trips to outfalls in order to inspect

them (Barat, Chin, & Feraco, 2012). Therefore, the use of a digital database makes sampling and inspection easier and more efficient.

5.16.3 Recommendations for Future Research

In the future, we recommend project groups perform an assessment of the cost of implementing Total Maximum Daily Load (TMDL) measures. According to Frederick Civian, the cost of implementing TMDL measures could be overwhelmingly significant for the towns. Although not much research has been done on TMDL, the USEPA has shown the extent of these costs. The USEPA estimated the cost of implementing TMDL requirements in Bellingham, Franklin, and Milford Massachusetts at $23,595,000, $62,810,000, and $67,363,000, respectively (Group, 2011). A proper assessment of these costs could prove to be valuable to the USEPA, as well as the towns, in the future.

We also recommend future project groups attempt to fill the gaps in our research. We received most of our data from the town officials, with few outside sources except for the DCR. We attempted to contact Environmental Partners Group for information about Holden, but we were unable to reach them. In addition, we had to estimate many of our costs. These factors made our cost numbers difficult to verify as being accurate. Because of this lack of verification, some of our data could have resulted in bias. We recommend that future research groups find a method to eliminate some of the biases in our data, such as by finding budget data from multiple sources.

6.0 Conclusion

Stormwater runoff is one of the leading contributors to water pollution in the United States. In order to combat this pollution, the United States Environmental Protection Agency

(USEPA) created the Municipal Separate Storm Sewer System (MS4) permit. On September 30, 2014, the USEPA released the 2014 draft MS4 permit. Once the USEPA releases the permit in full, towns throughout Massachusetts will have to comply with it, which will lead to substantial spending increases.

In our cost analysis chapter, we discuss the predicted annual costs of complying with the 2014 draft MS4 permit in our subject towns of Holden, Millbury, and Southbridge. From our cost analysis, we predict an annual cost of implementing the 2014 draft MS4 permit of $258,790 for Holden, $735,629 for Millbury, and $343,008 for Southbridge. These costs represent an increase in the annual cost of implementation from the 2003 MS4 permit of 39% for Holden, 26% for Millbury, and 28% for Southbridge.

These cost increases are significant, and we propose several potential methods for defraying the cost increases of effectively implementing the 2014 Draft MS4 to individual towns. In addition, we recommend that towns reach out to the Massachusetts Department of Environmental Protection (MassDEP) for advice on implementing the permit. In our findings and recommendations chapter, we provide recommendations to towns, and the Central Massachusetts Regional Stormwater Coalition (CMRSWC) for effective implementation of the 2014 draft MS4 permit. Among our most important recommendations, we emphasize the benefits of regionalization, the use of innovative stormwater management and funding techniques, and centralization of stormwater management in each town.

The task of effective stormwater management is daunting. However, by implementing the proper procedures, the towns can plan effectively manage stormwater management, thus protecting human health and the environment.

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Appendix A

Public Education and Outreach	Materials			Consultant	Legal	Staff Labor									Total cost
						Technician/ Equipment Operator		Foreman		Administrative		Director			
	Costs per unit	Multiplier	Total Materials Cost	Total	Total	Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Pamphlets/Brochures to residents	6500	1	$6,500.00											$0.00	$6,500.00
Pamphlets/Brochures to businesses	0		$0.00											$0.00	$0.00
Meetings	0		$0.00											$0.00	$0.00
Poster	0		$0.00											$0.00	$0.00
Video	0		$0.00											$0.00	$0.00
Newspapers	500	1	$500.00											$0.00	$500.00
Signs	0		$0.00											$0.00	$0.00
Broadcasting	0		$0.00											$0.00	$0.00
Develop collection program for hazardous waste	0		$0.00							22	80	40	40	$3,360.00	$3,360.00
Develop school curriculum and distribute to schools	1		$0.00			23	4							$92.00	$92.00
Educational training materials	0		$0.00											$0.00	$0.00
Media campaign	500	1	$500.00											$0.00	$500.00
Website	1		$0.00											$0.00	$0.00
Total															**$10,952.00**

Public Involvement and Participation	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Mark storm drains	0		$0.00											$0.00	$0.00
Stormwater telephone hotline	0		$0.00											$0.00	$0.00
River, stream and pond cleanups	0		$0.00											$0.00	$0.00
Native tree and shrub planting	0		$0.00											$0.00	$0.00
Classroom education program	0		$0.00											$0.00	$0.00
Prepare press releases	0		$0.00											$0.00	$0.00
Develop and implement composting program	0		$0.00											$0.00	$0.00
Coordinate Household Hazardous Waste collection events	1		$0.00											$0.00	$0.00
Form citizen watch groups to identify polluters	0		$0.00											$0.00	$0.00
Educational outreach materials	0		$0.00											$0.00	$0.00
Roadside cleanup day	0		$0.00											$0.00	$0.00
Catch basin stenciling/ medallion installation	0		$0.00											$0.00	$0.00
Poster contest for students	0		$0.00											$0.00	$0.00
Stormwater management committee	0		$0.00											$0.00	$0.00
Trash Removal	1		$0.00											$0.00	$0.00
Public meeting to discuss stormwater management plan	0		$0.00											$0.00	$0.00
Total															**$0.00**

		Materials		Consultant	Legal	Staff Labor									Total cost
IDDE Program	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Outfall mapping (Not Completed yearly)	20000	0	$0.00											$0.00	$0.00
Catch basin mapping (Not completed yearly)	20000	0	$0.00											$0.00	$0.00
Map structural BMPs	0		$0.00											$0.00	$0.00
Illicit discharge prohibition ordinance	0		$0.00											$0.00	$0.00
Incorporate information into public education	0		$0.00											$0.00	$0.00
Identify department to take stormwater calls	0		$0.00											$0.00	$0.00
Develop employee training program to identify discharges	0		$0.00											$0.00	$0.00
Host IDDE communication meeting with other Town Departments	0		$0.00											$0.00	$0.00
Water quality screening with field kits	30	25	$750.00			23	52							$1,196.00	$1,946.00
"Sewage sniffing dogs"	0														
CCTV System (camera and equipment)	0														
Vac truck and equipment	0														
Elimination of identified illicit discharge	0		$0.00											$0.00	$0.00
Bylaw prohibiting non storm water discharges into storm sewer system	0		$0.00											$0.00	$0.00
Program to evaluate and report on cond. after illicit material removed	0		$0.00											$0.00	$0.00
Develop stormwater management program web based GIS system	0		$0.00											$0.00	$0.00
Retention Ponds	1		$0.00											$0.00	$0.00
Disposal of Waste	0		$0.00			23	22							$506.00	$506.00
IDDE plan and implementation activities	0		$0.00											$0.00	$0.00
Total															**$2,452.00**

	Materials			Consultant	Legal	Staff Labor									Total cost
Construction Site Stormwater Runoff Control	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Develop erosion control regulations	0		$0.00											$0.00	$0.00
Conduct inspections for erosion controls	0		$0.00											$0.00	$0.00
Identify department to take stormwater calls	0		$0.00											$0.00	$0.00
Inform public of upcoming projects	0		$0.00											$0.00	$0.00
Develop and implementation site plan review process for sites	0		$0.00											$0.00	$0.00
Implement construction inspection program with fines for violations	0		$0.00											$0.00	$0.00
Develop construction inspection program and inspect	0		$0.00											$0.00	$0.00
Implement pre construction review of SW plan for site	0		$0.00											$0.00	$0.00
Develop and implement erosion and sediment control ordinances	0		$0.00											$0.00	$0.00
Total															**$0.00**

Post Construction Stormwater Management	Materials			Consultant	Legal	Staff Labor									
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Develop BMP regulation	0		$0.00											$0.00	$0.00
Develop and implementation inspection program	0		$0.00											$0.00	$0.00
review existing BMPs	0		$0.00											$0.00	$0.00
Develop inspection program of installed BMPs	0		$0.00											$0.00	$0.00
Zoning	0		$0.00											$0.00	$0.00
Urban forestry	0		$0.00											$0.00	$0.00
Eliminate curbs and gutters	0		$0.00											$0.00	$0.00
Conduct inspections of BMPs within 1st year of operation	0		$0.00											$0.00	$0.00
Develop operation and maintenance procedures for structural BMPs	0		$0.00											$0.00	$0.00
Total															**$0.00**

Good House Keeping and Pollution Prevention	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Clean catch basins	1		$2,500.00			23	672	32.5	120			50	24	$20,556.00	$23,056.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Number of basins cleaned, per year															
Street sweeping	1		$5,000.00			23	1376	32.5	80	22	8	50	24	$35,624.00	$40,624.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Curb miles swept, per year															
Road salt/sand management	150000	1	$150,000.00			23	40	32.5	40					$2,220.00	$152,220.00
Has equipment been calibrated?	yes														
Leaf collection program	1		$2,500.00			23	1280	32.5	64					$31,520.00	$34,020.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Snow removal procedures	1		$0.00					32.5	40			50	40	$3,300.00	$3,300.00
Develop an inspection and maintenance Plan	0		$0.00											$0.00	$0.00
Evaluate alternative vehicle washing options	0		$0.00											$0.00	$0.00
Develop and implement maintenance schedules for BMPs	0		$0.00											$0.00	$0.00
Employee training program	1		$0.00			23	40	32.5	8			50	16	$1,980.00	$1,980.00
Management program for fertilizer and pesticide application	0		$0.00											$0.00	$0.00
Training: fertilizer and pesticide applicators	0		$0.00											$0.00	$0.00
Training: Maintenance and repair for municipal vehicles	0		$0.00											$0.00	$0.00
Sump pump discharge policy	0		$0.00											$0.00	$0.00
Municipal SWPPP	0		$0.00											$0.00	$0.00
Total															**$255,200.00**

Grand Total **$268,604.00**

Appendix B

Public Education and Outreach	Materials			Consultant	Legal	Staff Labor									Total cost
						Technician/ Equipment Operator		Foreman		Administrative		Director			
	Costs per unit	Multiplier	Total Materials Cost	Total	Total	Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Pamphlets/Brochures to residents	500	1	$500.00											$0.00	$500.00
Pamphlets/Brochures to businesses	500	1	$500.00											$0.00	$500.00
Meetings	0		$0.00											$0.00	$0.00
Poster	0		$0.00											$0.00	$0.00
Video	0		$0.00											$0.00	$0.00
Newspapers	0		$0.00											$0.00	$0.00
Signs	0		$0.00											$0.00	$0.00
Broadcasting	0		$0.00											$0.00	$0.00
Develop collection program for hazardous waste	0		$0.00											$0.00	$0.00
Develop school curriculum and distribute to schools	0		$0.00											$0.00	$0.00
Educational training materials	0		$0.00											$0.00	$0.00
Media campaign	0		$0.00											$0.00	$0.00
Website	0		$0.00											$0.00	$0.00
Total															**$1,000.00**

	Materials			Consultant	Legal	Staff Labor									Total cost
Public Involvement and Participation	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Mark storm drains			$0.00											$0.00	$0.00
Stormwater telephone hotline	0		$0.00											$0.00	$0.00
River, stream and pond cleanups	0		$0.00											$0.00	$0.00
Native tree and shrub planting	0		$0.00											$0.00	$0.00
Classroom education program	0		$0.00											$0.00	$0.00
Prepare press releases	0		$0.00											$0.00	$0.00
Develop and implement composting program	0		$0.00											$0.00	$0.00
Coordinate Household Hazardous Waste collection events	0		$0.00											$0.00	$0.00
Form citizen watch groups to identify polluters	0		$0.00											$0.00	$0.00
Educational outreach materials	0		$0.00											$0.00	$0.00
Roadside cleanup day	0		$0.00											$0.00	$0.00
Catch basin stenciling/ medallion installation	0		$0.00											$0.00	$0.00
Poster contest for students	0		$0.00											$0.00	$0.00
Stormwater management committee	0		$0.00											$0.00	$0.00
Public meeting to discuss stormwater management plan	0		$0.00											$0.00	$0.00
Total															**$0.00**

	Materials			Consultant	Legal	Staff Labor									Total cost
IDDE Program	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Outfall mapping	0		$0.00											$0.00	$0.00
Catch basin mapping	0		$0.00											$0.00	$0.00
Map structural BMPs	0		$0.00											$0.00	$0.00
Illicit discharge prohibition ordinance	0		$0.00											$0.00	$0.00
Incorporate information into public education	0		$0.00											$0.00	$0.00
Identify department to take stormwater calls	0		$0.00											$0.00	$0.00
Develop employee training program to identify discharges	0		$0.00											$0.00	$0.00
Host IDDE communication meeting with other Town Departments	0		$0.00											$0.00	$0.00
Water quality screening with field kits	0		$0.00											$0.00	$0.00
"Sewage sniffing dogs"	0		0											0	0
CCTV System (camera and equipment)	0		0											0	0
Vac truck and equipment			0			22	160							3520	3520
Elimination of identified illicit discharge (last done in 2011)	4000	0	$0.00											$0.00	$0.00
Bylaw prohibiting non storm water discharges into storm sewer system	0		$0.00											$0.00	$0.00
Program to evaluate and report on cond. after illicit material removed	0		$0.00											$0.00	$0.00
Develop stormwater management program web based GIS system	0		$0.00											$0.00	$0.00
IDDE plan and implementation activities	0		$0.00											$0.00	$0.00
Total															**$3,520.00**

	Materials			Consultant	Legal	Staff Labor									Total cost
Construction Site Stormwater Runoff Control	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Develop erosion control regulations	0		$0.00											$0.00	$0.00
Conduct inspections for erosion controls	0		$0.00											$0.00	$0.00
Identify department to take stormwater calls	0		$0.00											$0.00	$0.00
Inform public of upcoming projects	0		$0.00											$0.00	$0.00
Develop and implementation site plan review process for sites	0		$0.00											$0.00	$0.00
Implement construction inspection program with fines for violations	0		$0.00											$0.00	$0.00
Develop construction inspection program and inspect	0		$0.00											$0.00	$0.00
Implement pre construction review of SW plan for site	0		$0.00											$0.00	$0.00
Develop and implement erosion and sediment control ordinances	0	1	$0.00											$0.00	$0.00
Total															**$0.00**

Post Construction Stormwater Management	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	
Develop BMP regulation	0		$0.00											$0.00	$0.00
Develop and implementation inspection program	0		$0.00											$0.00	$0.00
review existing BMPs	0		$0.00											$0.00	$0.00
Develop inspection program of installed BMPs	0		$0.00											$0.00	$0.00
Zoning	0		$0.00											$0.00	$0.00
Urban forestry	0		$0.00											$0.00	$0.00
Eliminate curbs and gutters	0		$0.00											$0.00	$0.00
Conduct inspections of BMPs within 1st year of operation	0		$0.00			22	80							$1,760.00	$1,760.00
Develop operation and maintenance procedures for structural BMPs	0		$0.00											$0.00	$0.00
Total															**$1,760.00**

Good House Keeping and Pollution Prevention	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Clean catch basins	0		$0.00			22	320							$7,040.00	$7,040.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Number of basins cleaned, per year															
Street sweeping	0		$0.00			22	480							$10,560.00	$10,560.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Curb miles swept, per year															
Road salt/sand management	150000	1	$150,000.00			23	40	32.5	40					$2,220.00	$152,220.00
Has equipment been calibrated?															
Leaf collection program	0		$0.00											$0.00	$0.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Snow removal procedures	0		$0.00											$0.00	$0.00
Develop an inspection and maintenance Plan	0		$0.00											$0.00	$0.00
Evaluate alternative vehicle washing options	0		$0.00											$0.00	$0.00
Develop and implement maintenance schedules for BMPs	5956.39	1	$5,956.39											$0.00	$5,956.39
Employee training program	0		$0.00											$0.00	$0.00
Management program for fertilizer and pesticide application	0		$0.00											$0.00	$0.00
Training: fertilizer and pesticide applicators	0		$0.00											$0.00	$0.00
Training: Maintenance and repair for municipal vehicles	0		$0.00											$0.00	$0.00
Sump pump discharge policy	0		$0.00											$0.00	$0.00
Municipal SWPPP	0		$0.00											$0.00	$0.00
Audits	4470	1	$4,470.00											$0.00	$4,470.00
Total															**$180,246.39**

Grand Total **$186,526.39**

Appendix C

Public Education and Outreach	Materials			Consultant	Legal	Staff Labor									Total cost
						Technician/ Equipment Operator		Foreman		Administrative		Director			
	Costs per unit	Multiplier	Total Materials Cost	Total	Total	Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Pamphlets/Brochures to residents	0	0	$0.00											$0.00	$0.00
Pamphlets/Brochures to businesses	0	0	$0.00											$0.00	$0.00
Meetings	500	1	$500.00											$0.00	$500.00
Poster	0	0	$0.00											$0.00	$0.00
Video	0	1	$0.00											$0.00	$0.00
Newspapers	0	0	$0.00											$0.00	$0.00
Signs	0	1	$0.00											$0.00	$0.00
Broadcasting	0	1	$0.00											$0.00	$0.00
Develop collection program for hazardous waste	0	1	$0.00							22	3			$66.00	$66.00
Develop school curriculum and distribute to schools	0	0												$0.00	$0.00
Educational training materials	0	1	$0.00											$0.00	$0.00
Media campaign	0	0	$0.00											$0.00	$0.00
Website	0	1	$0.00											$0.00	$0.00
Total															**$566.00**

Public Involvement and Participation	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Mark storm drains	0	1	$0.00											$0.00	$0.00
Stormwater telephone hotline	0	0	$0.00											$0.00	$0.00
River, stream and pond cleanups	0	1	$0.00							0	0			$0.00	$0.00
Native tree and shrub planting	0	0	$0.00											$0.00	$0.00
Classroom education program	0	0	$0.00											$0.00	$0.00
Prepare press releases	0	0	$0.00											$0.00	$0.00
Develop and implement composting program	0	0	$0.00											$0.00	$0.00
Coordinate Household Hazardous Waste collection events	0	0	$0.00							22	3			$66.00	$66.00
Form citizen watch groups to identify polluters	0	0	$0.00											$0.00	$0.00
Educational outreach materials	0	0	$0.00											$0.00	$0.00
Roadside cleanup day	0	1	$0.00											$0.00	$0.00
Catch basin stenciling/ medallion installation	0	1	$0.00											$0.00	$0.00
Poster contest for students	3000	1	$3,000.00							22	8			$176.00	$3,176.00
Stormwater management committee	0	0	$0.00											$0.00	$0.00
Public meeting to discuss stormwater management plan	*0*	*0*	$0.00											$0.00	$0.00
Total															**$3,242.00**

IDDE Program	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Outfall mapping	0	1	$0.00											$0.00	$0.00
Catch basin mapping	0	1	$0.00											$0.00	$0.00
Map structural BMPs	0	1	$0.00											$0.00	$0.00
Illicit discharge prohibition ordinance	0	1	$0.00											$0.00	$0.00
Incorporate information into public education	0	0	$0.00											$0.00	$0.00
Identify department to take stormwater calls	0	0	$0.00											$0.00	$0.00
Develop employee training program to identify discharges	0	1	$0.00											$0.00	$0.00
Host IDDE communication meeting with other Town Departments	0	0	$0.00											$0.00	$0.00
Water quality screening with field kits	0	1	$0.00											$0.00	$0.00
"Sewage sniffing dogs"	0	0													
Elimination of identified illicit discharge	0	1	$0.00											$0.00	$0.00
Bylaw prohibiting non storm water discharges into storm sewer system	1	0	$0.00	2500		22	20			20	20	50	20	$1,840.00	$4,340.00
Program to evaluate and report on cond. after illicit material removed	0	0	$0.00			22	4							$88.00	$88.00
Develop stormwater management program web based GIS system	0	0	$0.00											$0.00	$0.00
IDDE plan and implementation activities	250	1	$250.00											$0.00	$250.00
Total															**$4,678.00**

Construction Site Stormwater Runoff Control	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Develop erosion control regulations	0	1	$0.00											$0.00	$0.00
Conduct inspections for erosion controls	0	1	$0.00	350										$0.00	$350.00
Identify department to take stormwater calls	0		$0.00											$0.00	$0.00
Inform public of upcoming projects	0		$0.00											$0.00	$0.00
Develop and implement site plan review process for sites	0		$0.00											$0.00	$0.00
Implement construction inspection program with fines for violations	0		$0.00											$0.00	$0.00
Develop construction inspection program and inspect	0		$0.00											$0.00	$0.00
Implement pre construction review of SW plan for site	0		$0.00											$0.00	$0.00
Develop and implement erosion and sediment control ordinances	0		$0.00											$0.00	$0.00
Total															**$350.00**

Post Construction Stormwater Management	Materials			Consultant	Legal	Staff Labor									
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Develop BMP regulation	0	1	$0.00											$0.00	$0.00
Develop and implementation inspection program			$0.00											$0.00	$0.00
review existing BMPs			$0.00											$0.00	$0.00
Develop inspection program of installed BMPs	0	1	$0.00											$0.00	$0.00
Zoning			$0.00											$0.00	$0.00
Urban forestry			$0.00											$0.00	$0.00
Eliminate curbs and gutters			$0.00											$0.00	$0.00
Conduct inspections of BMPs within 1st year of operation	0	1	$0.00											$0.00	$0.00
Develop operation and maintenance procedures for structural BMPs			$0.00											$0.00	$0.00
Total															**$0.00**

Good House Keeping and Pollution Prevention	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Clean catch basins	21.5	610	$13,115.00			22	610							$13,420.00	$26,535.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Number of basins cleaned, per year	1210														
Street sweeping	75	600	$45,000.00			35	600							$21,000.00	$66,000.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Curb miles swept, per year															
Road salt/sand management	105.76	4505	$476,448.80											$0.00	$476,448.80
Has equipment been calibrated?															
Leaf collection program			$0.00											$0.00	$0.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Snow removal procedures			$0.00											$0.00	$0.00
Develop an inspection and maintenance Plan	2000	1	$2,000.00											$0.00	$2,000.00
Evaluate alternative vehicle washing options			$0.00											$0.00	$0.00
Develop and implement maintenance schedules for BMPs			$0.00			22	120							$2,640.00	$2,640.00
Employee training program	0	0	$0.00											$0.00	$0.00
Management program for fertilizer and pesticide application	1000	1	$1,000.00											$0.00	$1,000.00
Training: fertilizer and pesticide applicators			$0.00	500										$0.00	$500.00
Training: Maintenance and repair for municipal vehicles			$0.00	1000										$0.00	$1,000.00
Sump pump discharge policy			$0.00											$0.00	$0.00
Municipal SWPPP			$0.00											$0.00	$0.00
CCTV System (camera and equipment)	8000	1													8000
Vac truck and equipment	0	1	0											0	0
Total															**$576,123.80**

Grand Total **$584,959.80**

Appendix D

Control Measure	Estimated Annual Costs	Estimated One-time Costs	Estimated Intermittent Costs
Public Education and Outreach	$19,860	$0	$0
Public Involvement and Participation	$0	$0	$0
Illicit Discharge Detection and Elimination Program	$19,242	$304,006	$50,440
Construction Site Stormwater Runoff Control	$0	$770	$0
Post Construction Stormwater Management	$5,280	$1,496	$7,436
Good Housekeeping	$283,458	$6,292	$0
Non-Control Measure			
Miscellaneous	$15,168	$2,376	$0
Totals	**$343,008**	**$314,940**	**$57,876**

KEY:

Yearly	No. = Reference Number
Once	BMP/Admin = Is the requirement completed with either a BMP or Administrative work
As Needed	X Requirement = The short name for a requirement
	Requirement = Section in the 2014 MS4 permit draft
	Cost = Cost of completing the requirement
	Justification = List of methods used to complete the requirement, as well supporting data from sources
	In Place (Y/N) = Is the requirement listed currently in place

No.	BMP/Admin	Public Education and Outreach Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	Continue public education program required by 2003 permit	2.3.2 a	$10,952	Pamphlets (6500), Hazardous Waste Collection (3360), Newspaper Article (500), Media Campaign (500), Develop a curriculum for school system (92)	Yes
2	Admin	*Define goals, express specific messages define audience for each message	2.3.2 a	$44	2hrs @ $22/hr	No
3	Admin	*Identify parties responsible for each message	2.3.2 a	$22	1hr @ $22/hr, once a year for 8 years	No
4	Admin	*Develop and send out two separate messages for each of 4 different audiences	2.3.2 c	$22	1hr @ $22/hr	No
5	Admin	*Show evidence that messages are achieving results	2.3.2 e	$8,820	DCR explanation for assessing effectiveness	No
6	Admin	*Identify method used to evaluate effectiveness of messages	2.3.2 e	$0	Included in No. 5	No
7	Admin	*Put in annual report the methods of distribution and methods to assess effectiveness	2.3.2 g	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$19,860
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Public Involvement and Participation Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*Comply with state public Notice requirements	2.3.3 a	$0	Minimal cost, can post on website	No
2	Admin	Provide annual opportunity for public to participate in review and implementation of SWMP	2.3.3 b	$0	In compliance with public meeting requirement	Yes
3	Admin	*Put in annual report these public participation activities	2.3.3 c	$0	See Miscellaneous No. 50	Yes

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Illicit Discharge Detection and Elimination Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Eliminate any illicit discharge to the stormwater system as expeditiously as possible	2.3.4.2	$25,000	Varies depending on severity of infraction average cost, actual cost may vary	Yes
2	BMP	*Identify who is responsible for any such discharges	2.3.4.2	$0	Included in No. 1	Yes
3	Admin	*If elimination takes more than 60 days, establish an expeditious schedule for elimination	2.3.4.2	$44	2hr @ $22/hr for scheduling	Yes
4	Admin	*If more than 60 days, report dates of identification and schedules in annual report	2.3.4.2	$0	See Miscellaneous No. 50	Yes
5	BMP	Implement measures to control non-stormwater discharges if they add significant pollution	2.3.4.3	$25,000	Varies depending on severity of infraction around 25000-50000	No
6	Admin	*Identify all known locations where SSOs have discharged to the MS4 in last 5 years	2.3.4.4 b	$44	2hrs @ $22/hr if records are available	No
7	Admin	*For each such SSO discharge, include date and time, location, volume, suspected cause	2.3.4.4 b	$44	2hrs @ $22/hr to determine the information	No
8	Admin	*Also include whether each entered any surface water and what corrective actions were taken	2.3.4.4 b	$0	Included in No. 7	No
9	Admin	*Also include corrective measures planned and implementation schedule	2.3.4.4 b	$0	Included in No. 7	No
10	Admin	*Maintain the SSO inventory as part of the SWMP and the Annual Reports	2.3.4.4 b	$0	See Miscellaneous No. 50	No
11	Admin	*Provide oral and written notice to EPA and MassDEP for any SSO occurrence	2.3.4.4 c	$44	2hrs @ $22/hr for informing EPA/MassDEP orally/written	Yes
12	BMP	*Develop an inventory of each MS4 outfall, including location, interconnections, and condition (different only in that it requires the condition of the outfall)	2.3.4.5	$1,133	15min/outfall (includes travel), 206 outfalls, @ $22/hr	No
13	Admin	*Update inventory annually to include monitoring program	2.3.4.5 b	$0	See Miscellaneous No. 50	No
14	BMP	*Physically label all MS4 outfall pipes	2.3.4.5 b	$1,183	10min/outfall (includes travel), 206 outfalls, @ $22/hr, + materials ($2 stick per outfall + spraypaint + sharpie)	No
15	Admin	*For each outfall list unique identifier, receiving water, date of most recent inspection	2.3.4.5 c	$0	Included in No. 14	No
16	Admin	*Also include dimensions, shape, material, physical condition and indicators of non-SW discharges	2.3.4.5 c	$0	Included in No. 14	Yes
17	BMP	*Revise existing map of stormwater system within 2 years of effective date of the permit	2.3.4.6	$250,000	Enough new requirements to have to add new data elements, cost assuming outside contracting and implementation into GIS map	No
18	BMP	*Map shall include all outfalls, pipes, manholes, catch basins, interconnections, open channels	2.3.4.6 a i	$0	Included in No. 17	No
19	BMP	*Also include all municipally-owned BMPs (e.g., retention basins, oil/water separators, etc.)	2.3.4.6 a i	$0	Included in No. 17	No
20	BMP	*Also include catchment delineation and all waters listed on the 303(d) or 305 (b) list	2.3.4.6 a i	$0	Included in No. 17	No
21	BMP	*Also include municipal sanitary sewers or combined sewer systems	2.3.4.6 a ii	$0	Included in No. 17	No
22	BMP	*Include various recommended elements	2.3.4.6 a iii	$0	Included in No. 17	No
23	BMP	*Update the map to reflect newly discovered information and corrections or modifications	2.3.4.6 b	$1,144	1hr/week @ $22/hr for continuous additions to stormwater systems	No
24	Admin	*Report on the progress toward completion of the map in each annual report	2.3.4.6 c	$0	See Miscellaneous No. 50	Yes
25	BMP	*Write an Illicit Discharge Detection and Elimination (IDDE) program document (Discrete, specifically mentions the document must be written out)	2.3.4.7	$10,000	Complete redevelopment of the program, review and upgrades	No
26	Admin	Adopt an IDDE ordinance	2.3.4.7 a	$1,430	Change ordinance, 13 weeks @ 5hrs/week @ $22/hr, has to go to different committees	Yes
27	Admin	*Program shall clearly identify IDDE responsibilities and provide description of areas of responsibility	2.3.4.7 b	$0	Included in No. 25	No
28	BMP	*Assess and priority rank each catchment into one of 4 possible categories (soupped up from previous "priority" mark in 2003)	2.3.4.7 c i	$13,200	Approx. 1200 catch basins, approx. 30 min/basin @ $22/hr	No
29	Admin	*Priority rank each catchment within each category (except those "excluded") using 8 factors (soupped up from previous "priority" mark in 2003)	2.3.4.7 c ii	$26,400	Approx. 1200 catch basins, approx. 1hr/basin @ $22/hr	No
30	Admin	*Gather all information needed for the 8 screening factors (e.g., industrial areas > 40 years old)	2.3.4.7 c ii	$0	Included in No. 29	No
31	Admin	*Complete ranking using existing information within 1 year; update in annual report	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
32	Admin	*In annual report include summary of evidence of known/suspected illicit discharges by catchment	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
33	Admin	*Also include corrective measures and schedule for correcting each illicit discharge	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
34	Admin	*Develop written procedure for screening and sampling of outfalls	2.3.4.7 d	$0	$0 with CMRSWC Membership	Yes
35	Admin	*Include procedures for sample collection, use of field kits and storage and conveyance of samples	2.3.4.7 d i	$0	Included in No. 34	Yes
36	BMP	*If outfall is inaccessible, report the first accessible upstream structure	2.3.4.7 d ii	$0	Possible time extensions, no cost	Yes
37	BMP	*Perform dry weather screening when and how prescribed; identify in annual report any follow-up needed	2.3.4.7 d iii	$2,266	206 outfalls, approximately 30min/outfall @ $22/hr	Yes
38	BMP	*Perform wet weather screening when and how prescribed	2.3.4.7 d iv	$0	Included in No. 39	Yes
39	BMP	*Sample at minimum for 7 listed factors	2.3.4.7 d v	$15,656	206 outfalls, done by contractor, $30/outfall, $23/hr, 2hrs/outfall Testing Kits (0) b/c CMRSWC membership	Yes
40	Admin	*Catchments with specified septic or other results shall be listed as "High Priority" catchments	2.3.4.7 d vi	$44	2hrs @ $22/hr, if records are available	No
41	BMP	*Develop written Catchment Investigation Procedure including review of maps and historic records	2.3.4.7 e	$352	16hrs @ $22/hr	No
42	BMP	*Also include manhole investigation methodology and procedures to confirm sources of illicit discharges	2.3.4.7 e	$0	Included in No. 41	No
43	BMP	*For each catchment review sanitary sewer and storm sewer construction plans; prior work on either	2.3.4.7 e i	$88	Assuming 4 catchments, 1 hr/catchment @ $22/hr	No
44	BMP	*Also review Health department records for septic system or sanitary sewer system failures or complaints	2.3.4.7 e i	$0	Included in No.43	No
45	Admin	*Identify and record any of the 12 System Vulnerability Factors (e.g., infrastructure > 40 years old)	2.3.4.7 e i	$0	Included in No.43	No
46	Admin	*Document and annually report presence or absence of the 12 System Vulnerability Factors for each catchment	2.3.4.7 e i	$0	Assuming using WPI spreadsheet, otherwise about 10min per catchment	No
47	Admin	*Include these required elements of written manhole investigation and catchment investigation procedures	2.3.4.7 e ii	$0	$0 since CMRSWC Membership	No
48	Admin	*Include these required elements in written dry weather investigation procedure	2.3.4.7 e ii a	$0	Included in No. 47	No
49	Admin	*Include these required elements in written wet weather investigation procedure	2.3.4.7 e ii b	$0	Included in No. 47	No
50	Admin	*Develop procedures to isolate and confirm illicit sources (e.g., dye testing, smoke testing, caulk dams, etc.)	2.3.4.7 e iii	$176	8hrs @ $22/hr, for scheduling	Yes
51	Admin	*In annual report, for each illicit source list the location, its source, description of the discharge	2.3.4.7 f	$0	See Miscellaneous No. 50	No
52	Admin	*Also list date and method of discovery, date of elimination, mitigation or enforcement action	2.3.4.7 f	$0	Included in No. 51	No
53	Admin	*And estimate volume of flow reduced	2.3.4.7 f	$0	Included in No. 51	No
54	BMP	*One year after illicit discharge removal, perform confirmatory screening; wet, dry or both	2.3.4.7 f	$132	$22/hr 30min/screening, approximately 1.5hr/illicit, assuming 3 illicit	Yes
55	BMP	*Schedule follow up screening within 5 years after confirmatory screening	2.3.4.7 g	$132	$22/hr 30min/screening, approximately 1.5hr/illicit, assuming 3 illicit	No
56	BMP	*Develop and implement procedures to prevent illicit discharges and SSOs	2.3.4.7 h	$0	$0 since CMRSWC Membership	No
57	Admin	*Complete and report dry weather screening and sampling of High and Low Priority outfalls within 3 years	2.3.4.8 a	$0	Included in No. 37 and No. 38	No
58	Admin	*"All data shall be reported in each annual report . . ."	2.3.4.8 a	$0	See Miscellaneous No. 50	No
59	Admin	*Begin implementation of 2.3.4.7 d work no later than 15 months	2.3.4.8 b	$0	Deadlines, See No. 38 and 37	No
60	Admin	*Implement and report Catchment Investigation Procedure in every catchment . . .	2.3.4.8 c	$0	Deadlines, See No. 28	No
61	Admin	*In a minimum of 80% of the MS4 area serviced by Problem Catchments within 3 years and 100% within 5 years	2.3.4.8 c i	$0	Deadlines, See No. 28	No
62	Admin	*For all catchments where sampling indicates sewer input within 5 years	2.3.4.8 c ii	$0	Deadlines, See No. 28	No
63	Admin	*In 40% of all area served by all MS4 catchments within 5 years and in 100% of 4 area in 10 years	2.3.4.8 c iii	$0	Deadlines, See No. 28	No
64	Admin	*Track progress toward these milestones in each annual report	2.3.4.8 e	$0	See Miscellaneous No. 50	No
65	Admin	*Define or describe indicators for tracking program success; demonstrate efforts to locate illicit discharges	2.3.4.9	$176	8hrs @ $22/hr	No
66	Admin	*Also include percent and area in acres evaluated; volume of sewage removed; place in annual report (more detailed, 2003 only asks to measure progress)	2.3.4.9	$0	See Miscellaneous No. 50	No
67	Admin	provide annual training to employees involved in IDDE program	2.3.4.10	$0	$0 since CMRSWC Membership	Yes
68	Admin	*Include type and frequency of training in the annual report (2003 -> The program must include an employee training component)	2.3.4.10	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$19,242
Estimated One-time Costs	$304,006
Estimated Intermittent Costs	$50,440

No.	BMP/Admin	Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Continue to implement construction ordinance work from 2003 permit; expand to include 1 acre or more	2.3.5 a	$0	Volunteer based program	Yes
2	BMP	Develop and implement a construction site runoff program	2.3.5 c	$0	See No. 3-12	Yes
3	Admin	An ordinance that requires sediment and erosions controls and for other wastes at construction sites	2.3.5 c i	$22	1hrs @ $22/hr, for review of current document	No
4	Admin	Adopt written procedures for inspections and enforcement of the ordinance within 1 year (2003 -> (g.) Procedures for inspections and enforcement of control measures at construction sites.)	2.3.5 c ii	$44	2hrs @ $22/hr, for review of current document	No
5	Admin	*Document the procedures and responsibilities to implement in the SWMP	2.3.5 c ii	$88	4hrs @ $22/hr	No
6	Admin	*Include requirements for site operators to implement BMPs (e.g., reduce disturbed area, protect slopes, etc.)	2.3.5 c iii	$88	4hrs @ $22/hr	No
7	Admin	*Include requirements for site operators to control other wastes	2.3.5 c iv	$88	4hrs @ $22/hr	No
8	Admin	*Develop written procedures for site plan review and inspection and enforcement within 1 year (003 -> nearly same, now has time requirement)	2.3.5 c v	$88	4hrs @ $22/hr	No
9	Admin	*Include pre-construction review, consideration for protection of water quality impacts, LID components	2.3.5 c v	$88	4hrs @ $22/hr	No
10	Admin	*And receipt of information from the public, inspections during and after BMP installation (now covers post construction)	2.3.5 c v	$88	4hrs @ $22/hr	No
11	Admin	*And "qualifications necessary to perform the inspections"	2.3.5 c v	$88	4hrs @ $22/hr	No
12	Admin	*And procedure for tracking the number of site reviews, inspections and enforcement actions	2.3.5 c v	$88	4hrs @ $22/hr	No
13	Admin	*All to be included in the annual report	2.3.5 c v	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$0
Estimated One-time Costs	$770
Estimated Intermittent Costs	$0

No.	BMP/Admin	Post Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*develop implement and enforce a post-construction SW program for new developments and redevelopments	2.3.6 a	$0	depends on previous program, should already be in place	Yes
2	Admin	*adopt or amend a local ordinance to control projects that disturb an acre or more	2.3.6 a ii	$176	Already in place, but 8hrs @ $22/hr if not	Yes
3	BMP	*retain and/or treat first inch of runoff; where technically feasible do retention first	2.3.6 a ii a	$1,760	80hrs @ $22/hr, assumes no controversy and 4 people working	No
4	BMP	*"from all impervious surfaces on site"	2.3.6 a ii a	$0	Included in No. 3	No
5	Admin	*sites with soil contamination problems or at industrial sites shall not include any infiltration BMPs	2.3.6 a ii b	$0	Rule, does not require anything to be implemented, Possibly need Attorney	No
6	Admin	*infiltration systems near environmentally sensitive areas must include shutdown and containment systems	2.3.6 a ii c	$0	Rule, does not require anything to be implemented	No
7	Admin	*all BMPs must be constructed in accordance with the MA Stormwater Handbook	2.3.6 a ii d	$0	Rule, does not require anything to be implemented	Yes
8	Admin	*this system shall include development of a long term O&M plan to inspect and repair BMPs	2.3.6 a ii e	$0	Rule, does not require anything to be implemented	No
9	Admin	*systems shall be designed "to avoid disturbance of areas susceptible to erosion and sediment loss"	2.3.6 a ii f	$0	Rule, does not require anything to be implemented	Yes
10	BMP	*systems shall require submittal of as-built drawings that depict all on site controls	2.3.6 a iii	$1,100	Submitted by construction company, 50hrs @ $22/hr, if it's new	No
11	Admin	*shall have procedures to ensure O&M, such as dedicated funds, escrow accounts or management contracts	2.3.6 a iii	$4,576	5hrs w/ an attorney, 208hrs @ 22/hr, legal authority adds complexity and cost	No
12	Admin	*may include annual self-certification program	2.3.6 a iii	$0	Included in No. 11	No
13	Admin	*annual report shall include measures that the permittee has done to meet these requirements	2.3.6 a iii	$0	See Miscellaneous No. 50	Yes
14	BMP	*w/in 3 years document current street design and parking rules that affect creation of impervious cover	2.3.6 b	$1,320	60hrs @ $22/hr	No
15	BMP	*shall be used by permittee to determine if changes "can be made to support low impact design options"	2.3.6 b	$0	Included in No. 14	No
16	BMP	*if changes can be made, assessment shall include recommendations and proposed schedules to adopt changes	2.3.6 b	$0	Included in No. 14	No
17	BMP	*permittee "shall implement all recommendations . . ."; assessment must be placed in the SWMP	2.3.6 b	$0	Included in No. 14	No
18	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 b	$0	See Miscellaneous No. 50	No
19	BMP	*w/in 4 years assess local rules to determine feasibility of allowing green roofs, water harvesting and LID BMPs	2.3.6 c	$880	40hrs @ $22/hr	No
20	Admin	*assessment shall indicate if and under what circumstances these practices are allowed	2.3.6 c	$0	Included in No. 19	No
21	BMP	*if practices not allowed, determine what hinders use of these practices and what changes can be made	2.3.6 c	$0	Included in No. 19	No
22	BMP	*provide a schedule of implementation of recommendations	2.3.6 c	$0	Included in No. 19	No
23	BMP	*"permittee shall implement all recommendations, in accordance with the schedules . . ."	2.3.6 c	$0	Included in No. 19	No
24	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 c	$0	See Miscellaneous No. 50	Yes
25	Admin	*estimate the annual increase or decrease in Impervious Area and Directly Connected Impervious Area	2.3.6 d	$1,760	80hr @ $22/hr, a lot of data required	No
26	Admin	*tabulate results by sub-basins delineated per 2.3.4.6 a I	2.3.6 d i	$0	See No. 17 in IDDE	No
27	Admin	*must include conventional pavements, driveways, parking lots and rooftops	2.3.6 d i	$0	See No. 17 in IDDE	No
28	Admin	*starting with second annual report, estimate each sub-basin added or removed each year	2.3.6 d ii	$0	See Miscellaneous No. 50	No
29	Admin	*break out those figures by development, redevelopment or retrofit by permittee, by others voluntarily	2.3.6 d ii	$0	See Miscellaneous No. 50	No
30	Admin	*. . . or in compliance with the permittee's ordinances or bylaws	2.3.6 d ii	$0	See Miscellaneous No. 50	No
31	Admin	*within 4 years complete inventory and ranking of Municipal property suitable for modification or retrofit to . . .	2.3.6 d iii	$2,640	120hrs @ $22/hrs, many properties to assess	No
32	Admin	*. . .reduce frequency, volume and pollutant loads of stormwater discharges by reduction of impervious area	2.3.6 d iii	$0	Included in No. 32	No
33	Admin	*shall include both on site and off site reduction of IA and DCIA (e.g., parking lots, buildings, etc.)	2.3.6 d iii	$0	Included in No. 32	No
34	Admin	*also include existing rights-of-way,	2.3.6 d iii	$0	Included in No. 32	No
35	Admin	*for suitability the evaluation shall consider factors such as depth to water table; subsurface geology; access	2.3.6 d iii	$0	Included in No. 32	No
36	Admin	*priority ranking shall consider factors such as CIP schedules; current storm sewer level of service, etc.	2.3.6 d iii	$0	Included in No. 32	No
37	Admin	*starting with fifth year annual report, report on status of all such inventoried properties	2.3.6 d iii	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$5,280
Estimated One-time Costs	$1,496
Estimated Intermittent Costs	$7,436

No.	BMP/Admin	Pollution Prevention and Good Housekeeping Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*W/in 1 year develop or update written O&M procedures for listed municipal facilities	2.3.7 a i	$176	8hrs @ $22/hrs	No
2	Admin	*w/in 1 year inventory all permittee owned facilities in these "good housekeeping" categories	2.3.7 a ii	$0	Included in No. 1	No
3	Admin	*For Parks and Open Space: procedures to address the use, storage and minimization of pesticides, fertilizers, etc	2.3.7 a ii a	$2,640	120hrs @ $22/hr, Large amount of spaces to review plans for	No
4	Admin	*to be reviewed annually and updated as necessary	2.3.7 a ii a	$0	Included in No. 3	No
5	Admin	*evaluate lawn maintenance and landscaping activities to be protective of water quality	2.3.7 a ii a	$0	Included in No. 3	No
6	Admin	*including reduced mowing, proper disposal of lawn clippings, use of drought resistant plantings	2.3.7 a ii a	$0	Included in No. 3	No
7	Admin	*establish pet waste handling collection, disposal and signage at all parks and open spaces	2.3.7 a ii a	$0	Included in No. 3	No
8	Admin	*establish procedures for scheduled cleaning and sufficient number of trash containers	2.3.7 a ii a	$0	Included in No. 3	No
9	Admin	*For Buildings and Facilities, such as town offices, police and fire stations, municipal pools, etc	2.3.7 a ii b	$1,760	80hrs @ $22/hr	No
10	Admin	*evaluate the use. Storage and disposal of petroleum products and train employees on proper procedures	2.3.7 a ii b	$0	Included in No. 9	No
11	Admin	*ensure that spill prevention is in place and coordinate with fire department	2.3.7 a ii b	$0	Included in No. 9	No
12	Admin	*develop management procedures for dumpsters and other waste management equipment	2.3.7 a ii b	$0	Included in No. 9	No
13	Admin	*For Vehicles and Equipment: establish procedures for storage of permittee vehicles, including inside storage	2.3.7 a ii c	$176	4hrs @ $22/hr	No
14	Admin	*establish procedures to ensure that vehicle wash water does not enter the SW system	2.3.7 a ii c	$0	Included in No. 13	No
15	Admin	*evaluate fueling areas to minimize exposure	2.3.7 a ii c	$0	Included in No. 13	No
16	Admin	*Infrastructure O&M: w/in 1 year develop and implement procedures to take care for the MS4 system	2.3.7 a iii a	$0	See Below through No. 22	No
17	Admin	*optimize routine inspections (e.g., prioritize catch basins located near construction sites)	2.3.7 a iii b	$0	Included in No. 16	No
18	BMP	*ensure that "no catch basin at anytime will be more than 50 percent full"	2.3.7 a iii b	$440	2hrs/basin @ $22/hr, assuming 10 basins/year	No
19	BMP	*if more than 50% full during two routine cleanings, investigate the cause for excessive sediment loading	2.3.7 a iii b	$0	See No. 17 & Annual Report	No
20	Admin	*describe these actions in the annual report	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
21	Admin	*document in annual report the plan for optimizing catch basin cleaning, inspections or scheduling	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
22	Admin	*include metrics used to determine that the plan is optimal for the MS4	2.3.7 a iii b	$0	Included in No. 17	No
23	Admin	*in each annual report list the total number of catch basins, number inspected and/or cleaned	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
24	Admin	*and "volume or mass of material removed from each catch basin draining to water quality limited waters"	2.3.7 a iii b	$0	Included in No. 23	No
25	Admin	*and "total volume or mass of material removed from all catch basins"	2.3.7 a iii b	$0	Included in No. 23	No
26	BMP	*Sweeping: develop and implement procedures for sweeping streets and municipal-owned lots	2.3.7 a iii c	$40,624	Materials + Labor given by town	Yes
27	BMP	*sweep all streets (rural exceptions apply) a minimum of once a year in the spring	2.3.7 a iii c	$0	Included in No. 26	Yes
28	BMP	*procedures shall include more frequent sweeping of targeted area based on various listed criteria	2.3.7 a iii c	$0	Minimal Development Cost	No
29	BMP	*criteria include inspections, pollutant loads, catch basin cleanings, land use, TMDL or impaired waters	2.3.7 a iii c	$0	Minimal Development Cost	No
30	Admin	*Each annual report shall include number of miles cleaned and volume or mass of material removed	2.3.7 a iii c	$0	See Miscellaneous No. 50	No
31	Admin	*for rural exception areas, either sweep per usual or develop specific procedures and place in first annual report	2.3.7 a iii c	$0	See Miscellaneous No. 50	No
32	BMP	*properly store catch basin cleanings so they do not discharge to receiving waters	2.3.7 a iii d	$0	$0 Since Southbridge owns their own landfill	Yes
33	BMP	*establish and implement procedures for winter road maintenance including storage of salt and sand	2.3.7 a iii e	$0	Properly house materials in municipally owned properties	Yes
34	BMP	*minimize use of sodium chloride and other salts; evaluate opportunities for alternative materials	2.3.7 a iii e	$176	8hrs @ $22/hr	Yes
35	Admin	*ensure that snow is not disposed into surface waters	2.3.7 a iii e	$0		Yes
36	Admin	*establish procedures for O&M or all permittee-owned stormwater BMPs (e.g., swales, retention basins etc.)	2.3.7 a iii f	$176	8hrs @ $22/hr	No
37	BMP	*inspect all such structures at least once annually	2.3.7 a iii f	$11,000	Inspect each BMP, assuming 2000/year 15min/BMP @ 22/hr	No
38	Admin	*in annual report include status of work required in this part	2.3.7 a iv	$0	See Miscellaneous No. 50	No
39	Admin	*permittees shall keep a written record of all required activities	2.3.7 a v	$2,200	100hrs @ $22/hr, based on templates from the CMRSWC	No
40	BMP	*develop and fully implement a SWPPP for each of the listed facilities no later than 2 years after effective date	2.3.7 b	$1,540	4hrs to update existing SWPPPs, 10hrs for new SWPPPS, @ $22/hr, assume 5 new facilities + 5 old facilities	No
41	BMP	*includes maintenance garages, public works yards, transfer stations, other waste handling facilities	2.3.7 b	$0	Included in No. 40	No
42	BMP	*Identify name and title of staff of the Pollution Prevention Team for each facility	2.3.7 b ii a	$0	Included in No. 40	No
43	BMP	*for each facility: include map, description of activities, outfall locations, receiving waters and structural controls	2.3.7 b ii b	$0	Included in No. 40	No
44	BMP	*select , sign, install and implement the following 9 control measures to prevent or reduce discharge of pollutants	2.3.7 b ii c	$10,000	Depends on variations of the extent of impaired waters varies about 10000-25000	No
45	BMP	*take all reasonable measure to address quality of discharges that may not originate at the facility	2.3.7 b ii c	$0	Included in No. 44	No
46	Admin	*for areas that discharge to impaired waters, identify the control measures to address that issue	2.3.7 b ii c	$0	Included in No. 44	No
47	BMP	*SWPP Required Elements: Minimize or Prevent Exposure (e.g., move activities or materials under cover)	2.3.7 d 1	$0	Included in No. 44	No
48	BMP	*Good Housekeeping	2.3.7 d 2	$189,540	Snow removal (3300), leaf collection (34020), salt/sand distribution (152220)	Yes
49	BMP	*Preventative Maintenance	2.3.7 d 3	$23,056	Catchment cleaning (23056)	Yes
50	BMP	*Spill Prevention and Response	2.3.7 d 4	$0	Included in No. 44	Yes
51	BMP	*Erosion and Sediment Control	2.3.7 d 5	$0	Included in No. 44	Yes
52	BMP	*Management of Runoff	2.3.7 d 6	$0	Included in No. 44	Yes
53	BMP	*Salt Storage or Piles Containing Salt	2.3.7 d 7	$0	Included in No. 44	Yes
54	BMP	*Employee Training; document training date, title and duration; attendees; subjects covered during training	2.3.7 d 8	$1,980	Given by town	Yes
55	BMP	*Maintenance of Control Measures	2.3.7 d 8	$0	Included in No. 44	Yes
56	BMP	*Inspect all areas exposed to stormwater and all stormwater control measures at least every calendar quarter	2.3.7 b iii a	$2,000	30min/inspection, assume 10 facilities with 4 areas each @ $100/area	No
57	BMP	*at least one inspection shall occur when a stormwater discharge is occurring	2.3.7 b iii a	$2,266	206 outfalls, approx. 30min/outfall @ $22/hr	No
58	Admin	*document the date, time, name of inspector, weather, any control measures needing maintenance or repair, etc	2.3.7 b iii a	$0	Included in No. 44	No
59	BMP	*permittee shall repair or replace any control measures needing repair before the next anticipated storm event	2.3.7 b iii a	$0	Included in No. 44	No
60	Admin	*shall report the findings from the Site inspections in the annual report	2.3.7 b iii a	$0	See Miscellaneous No. 50	No
61	Admin	*keep a written record of all required activities required in this section	2.3.7 b iv	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$283,458
Estimated One-time Costs	$6,292
Estimated Intermittent Costs	$0

No.	BMP/Admin	Miscellaneous Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	Submit an NOI	1.7.1	$176	8hrs @ $22/hour, historical properties or endangered species will increase this cost	No
2	Admin	*Document endangered species status (part of NOI)	1.9.1	$0	Included under No. 1	No
3	BMP	*Implement measures to protect endangered species	1.9.1	$0	Included under No. 1	No
4	Admin	Document Historic Properties Observation (part of NOI)	1.9.2	$0	See Miscellaneous No. 50	No
5	BMP	*Describe effect of discharges on Historic properties	1.9.2	Varies	Included under No. 1	No
6	Admin	*Report documents received re: such discharges	1.9.2	$0	Included under No. 1	No
7	Admin	*Provide results of Appendix D historic property screening	1.9.2	$0	Included under No. 1	No
8	BMP	Describe efforts to avoid or minimize impacts on such properties	1.9.2	Varies	Included under No. 1	No
9	BMP	Develop a SWMP	1.10	$1,760	80hrs @ $22/hr	Yes
10	BMP	Implement a SWMP	1.10	$0	Included under No. 10	Yes
11	Admin	*Update/modify SWMP	1.10	$440	20hrs @ $22/hr	No
12	Admin	Provide SWMP "immediately" to various agencies and public	1.10.1	$0	Included under No. 9	No
13	Admin	*Post SWMP online	1.10.1	$0	Included under No. 9	No
14	Admin	Identify Names and titles of people implementing the SWMP	1.10.2	$0	Included under No. 9	No
15	Admin	***Include status of 2003 permit requirements**	1.10.2	$0	Included under No. 9	Yes
16	Admin	*List all receiving water bodies, classifications, pollutants of concern	1.10.2	$0	Included under No. 9	No
17	Admin	*list all applicable TMDLs, WLAs	1.10.2	$0	Included under No. 9	No
18	Admin	*List all outfalls that discharge to each water body	1.10.2	$0	Included under No. 9	No
19	Admin	*list all public water sources that may be affected by SW discharges	1.10.2	$0	Included under No. 9	No
20	Admin	*List all interconnected MS4s and receiving water body	1.10.2	$0	Included under No. 9	No
21	Admin	*Include applicable TMDLs, WLAs and pollutants of concern	1.10.2	$0	Included under No. 9	No
22	Admin	*Document all new or increased discharges	1.10.2	$0	Included under No. 9	No
23	Admin	*Include map of separate storm sewer system (Map must be improved)	1.10.2	$0	Included under No. 9	No
24	Admin	List all discharges to impaired water and the response	1.10.2	$0	Included under No. 9	No
25	Admin	*Describe BMPs proposed to meet TMDL requirements	1.10.2	$0	Included under No. 9	No
26	Admin	For each BMP, list the milestone, timeframe and assessment measure	1.10.2	$0	Included under No. 9	No
27	Admin	*For each BMP, list person or department responsible for implementation	1.10.2	$0	Included under No. 9	No
28	Admin	*Describe BMPs proposed to meet impaired waters requirements	1.10.2	$0	Included under No. 9	No
29	Admin	Describe BMPs used to meet the 6 minimum control measures	1.10.2	$0	Included under No. 9	No
30	Admin	*List measures to avoid/minimize impacts to surface drinking waters	1.10.2	$0	Included under No. 9	No
31	BMP	*Ensure that discharges "do not cause or contribute" to an exceedance of WQ standards	2.1	$0	Included under No. 9	Yes
32	BMP	*For TMDL waters, meet requirements of Appendix F (NB: contains multiple add'l req'ts)	2.1.1 b	Varies	May range into millions of dollars, no one has estimated this yet	No
33	BMP	*For impaired waters meet requirements of Appendix H (NB: contains multiple add'l req'ts)	2.1.1 c	Varies	May range into millions of dollars, no one has estimated this yet	No
34	BMP	*For any exceedances of WQ standards to TMDL or impaired waters, eliminate it within 60 days	2.1.1 d	Varies	May range into millions of dollars, no one has estimated this yet	No
35	BMP	*For any increased discharge, comply with MassDEP's regulations at 314 CMR 4.04	2.1.2 a	Varies	Cost will vary	No
36	BMP	*Demonstrate no net increase in pollutants for discharges to any 303 (d) or 305(b) water (previously only had to identify if 303 d)	2.1.2 b	Varies	Cost will vary	No
37	Admin	*Identify all discharges to waters that are impaired or which have TMDLs (Both in SWMP and Annual report)	2.2	$0	Varies depending on EPA interpretations	No
38	Admin	*Permittee shall annually self-evaluate and maintain the evaluation in its SWMP	4.1 a	$0	Included in No. 9	No
39	Admin	*In evaluating the appropriateness of BMPs, permittees may add BMPs at any time	4.1 b	$88	4hrs @ $22/hrs, of paperwork for new BMP	Yes
40	Admin	Subtracting or replacing BMPs may only be done in limited circumstances, after showing the BMP is ineffective	4.1 b	Varies	Cost of replacement will depend on the BMP being used	No
41	Admin	*Each Annual shall include a brief explanation of any BMP modification	4.1 b	$0	See Miscellaneous No. 50	No
42	Admin	EPA or MassDEP may require the permittee to add, modify, etc., any BMP to satisfy conditions of the permit	4.1.c	$0	Minimal cost	No
43	Admin	*The permittee shall keep all record required by this permit for at least five years	4.2 a	$880	40hrs at $22/hr, week of work annually	No
44	Admin	*"Records" includes "information used in the development of any written program . . . monitoring results, etc."	4.2 a	$0	Record keeping, doesn't cost anything to implement	No
45	Admin	these records all be made available to the public	4.2 c	$0	Record keeping, doesn't cost anything to implement	No
46	Admin	*the permittee "shall document all monitoring results each year in the annual report"	4.3 b	$0	See Miscellaneous No. 50	No
47	Admin	*that shall include the date, outfall identifier, location, weather, precipitation and screening or analysis results	4.3 b	$0	Part of annual report, see No. 46	No
48	Admin	*include all monitoring results for the current reporting period and for the entire permit term	4.3 b	$0	Part of annual report, see No. 46	No
49	Admin	*permittee shall include "results from any other stormwater or receiving water quality monitoring or studies . . ."	4.3 c	$0	Part of annual report, see No. 46	No
50	Admin	The annual report shall include a self-assessment of compliance; an assessment of the appropriateness of BMPs	4.4 b i	$14,200	The Consultant fee for creating the annual report increased based off of the increase in requirements	Yes
51	Admin	*The status of any required plans	4.4 b iii	$0	Part of annual report, see No. 50	No
52	Admin	*"Identification of all discharges determined to be causing or contributing to an exceedance" of WQ standards	4.4 b iii	$0	Part of annual report, see No. 50	No
53	Admin	*For discharges to TMDLs, identify specific BMPs used to address those requirements	4.4 b iii	$0	Part of annual report, see No. 50	No
54	Admin	*For discharges to impaired waters, "a description of each BMP required by Appendix H" and all deliverables	4.4 b iii	$0	Part of annual report, see No. 50	No
55	Admin	*Assessment of the progress toward meeting the requirements for the 6 minimum control measures (see details)	4.4 b iv	$0	Part of annual report, see No. 50	No
56	Admin	*"All outfall screening and monitoring data" for the reporting term and cumulative for the permit term	4.4 b v	$0	Part of annual report, see No. 50	No
57	Admin	Description of activities for the next reporting cycle	4.4 b vi	$0	Part of annual report, see No. 50	Yes
58	Admin	Description of any changes in identified BMPs or measurable goals	4.4 b vii	$0	Part of annual report, see No. 50	Yes
59	Admin	*Description of activities undertaken by any entity contracted for achieving any requirement of the permit	4.4 b viii	$0	Part of annual report, see No. 50	No

Estimated Annual Costs	$15,168
Estimated One-time Costs	$2,376
Estimated Intermittent Costs	$0

Appendix E

Control Measure	Annual	One-Time	Intermittent
Public Education and Outreach	$9,908	$0	$0
Public Involvement and Participation	$0	$0	$0
Illicit Discharge Detection and Elimination Program	$7,872	$314,494	$50,440
Construction Site Stormwater Runoff Control	$0	$770	$0
Post Construction Stormwater Management	$5,280	$1,496	$7,436
Good Housekeeping	$220,562	$6,292	$0
Non-Control Measure			
Miscellaneous	$15,168	$2,376	$0
Totals	**$258,790**	**$325,428**	**$57,876**

KEY:	
Yearly	No. = Reference Number
Once	BMP/Admin = Is the requirement completed with either a BMP or Administrative work
As Needed	X Requirement = The short name for a requirement
	Requirement = Section in the 2014 MS4 permit draft
	Cost = Cost of completing the requirement
	Justification = List of methods used to complete the requirement, as well supporting data from sources
	In Place (Y/N) = Is the requirement listed currently in place

No.	BMP/Admin	Public Education and Outreach Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	Continue public education program required by 2003 permit	2.3.2 a	$1,000	Pamphlets to homes, $500 and businesses,$500	Yes
2	Admin	*Define goals, express specific messages define audience for each message	2.3.2 a	$44	2 hrs @ $22/hr	No
3	Admin	*Identify parties responsible for each message	2.3.2 a	$22	1 hr @ $22/hr	No
4	Admin	*Develop and send out two separate messages for each of 4 different audiences	2.3.2 c	$22	1 hr @ $22/hr, once a year for 8 years	No
5	Admin	*Show evidence that messages are achieving results	2.3.2 e	$8,820	DCR explanation for assessing effectiveness	No
6	Admin	*Identify method used to evaluate effectiveness of messages	2.3.2 e	$0	Included in No. 5	No
7	Admin	*Put in annual report the methods of distribution and methods to assess effectiveness	2.3.2 g	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$9,908
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Public Involvement and Participation Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*Comply with state public Notice requirements	2.3.3 a	$0	Minimal cost, can post on website	Yes
2	Admin	Provide annual opportunity for public to participate in review and implementation of SWMP	2.3.3 b	$0	In compliance with public meeting requirement	No
3	Admin	*Put in annual report these public participation activities	2.3.3 c	$0	See Miscellaneous No. 50	Yes

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Illicit Discharge Detection and Elimination Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Eliminate any illicit discharge to the stormwater system as expeditiously as possible	2.3.4.2	$25,000	Varies depending on severity of infraction average cost, actual cost may vary	Yes
2	BMP	*Identify who is responsible for any such discharges	2.3.4.2	$0	Included in No. 1	Yes
3	Admin	*If elimination takes more than 60 days, establish an expeditious schedule for elimination	2.3.4.2	$44	2hrs @ $22/hr, for scheduling	Yes
4	Admin	*If more than 60 days, report dates of identification and schedules in annual report	2.3.4.2	$0	See Miscellaneous No. 50	Yes
5	BMP	Implement measures to control non-stormwater discharges if they add significant pollution	2.3.4.3	$25,000	Varies depending on severity of infraction, around $25,000-$50,000	No
6	Admin	*Identify all known locations where SSOs have discharged to the MS4 in last 5 years	2.3.4.4 b	$44	2hrs @ $22/hr, if records are available	No
7	Admin	*For each such SSO discharge, include date and time, location, volume, suspected cause	2.3.4.4 b	$44	2hrs @ $22/hr, to determine the information	No
8	Admin	*Also include whether each entered any surface water and what corrective actions were taken	2.3.4.4 b	$0	Included in No. 7	No
9	Admin	*Also include corrective measures planned and implementation schedule	2.3.4.4 b	$0	Included in No. 7	No
10	Admin	*Maintain the SSO inventory as part of the SWMP and the Annual Reports	2.3.4.4 b	$0	See Miscellaneous No. 50	No
11	Admin	*Provide oral and written notice to EPA and MassDEP for any SSO occurrence	2.3.4.4 c	$44	2hrs @ $22/hr, for informing EPA/MassDEP orally/written	No
12	BMP	*Develop an inventory of each MS4 outfall, including location, interconnections, and condition (different only in that it requires the condition of the outfall)	2.3.4.5	$792	15min/outfall (includes travel), 144 outfalls, @ $22/hr	No
13	Admin	*Update inventory annually to include monitoring program	2.3.4.5 b	$0	See Miscellaneous No. 50	No
14	BMP	*Physically label all MS4 outfall pipes	2.3.4.5 b	$528	10min/outfall (includes travel), 144 outfalls, @ $22/hr, + materials ($2 stick per outfall + spraypaint+sharpie)	No
15	Admin	*For each outfall list unique identifier, receiving water, date of most recent inspection	2.3.4.5 c	$0	Included in No. 14	No
16	Admin	*Also include dimensions, shape, material, physical condition and indicators of non-SW discharges	2.3.4.5 c	$0	Included in No. 14	Yes
17	BMP	*Revise existing map of stormwater system within 2 years of effective date of the permit	2.3.4.6	$250,000	Enough new requirements to have to add new data elements, cost assuming outside contracting and implementation into GIS map	No
18	BMP	*Map shall include all outfalls, pipes, manholes, catch basins, interconnections, open channels	2.3.4.6 a i	$0	Included in No. 17	No
19	BMP	*Also include all municipally-owned BMPs (e.g., retention basins, oil/water separators, etc.)	2.3.4.6 a i	$0	Included in No. 17	No
20	BMP	*Also include catchment delineation and all waters listed on the 303(d) or 305 (b) list	2.3.4.6 a i	$0	Included in No. 17	No
21	BMP	*Also include municipal sanitary sewers or combined sewer systems	2.3.4.6 a ii	$0	Included in No. 17	No
22	BMP	*Include various recommended elements	2.3.4.6 a iii	$0	Included in No. 17	No
23	BMP	*Update the map to reflect newly discovered information and corrections or modifications	2.3.4.6 b	$1,144	1hr/week @ $22/hr, for continuous additions to stormwater systems	No
24	Admin	*Report on the progress toward completion of the map in each annual report	2.3.4.6 c	$0	See Miscellaneous No. 50	Yes
25	BMP	*Write an Illicit Discharge Detection and Elimination (IDDE) program document (Discrete, specifically mentions the document must be written out)	2.3.4.7	$10,000	Complete redevelopment of the program, review and upgrades	No
26	Admin	Adopt an IDDE ordinance	2.3.4.7 a	$1,430	Change ordinance, 13 weeks @ 5 hrs/week @$22/hr, has to go to different committees	Yes
27	Admin	*Program shall clearly identify IDDE responsibilities and provide description of areas of responsibility	2.3.4.7 b	$0	Included in No. 25	No
28	BMP	*Assess and priority rank each catchment into one of 4 possible categories	2.3.4.7 c i	$17,028	Approx. 1548 catch basins, approx. 30 min/basin @ $22/hr	No
29	Admin	*Priority rank each catchment within each category (except those "excluded") using 8 factors	2.3.4.7 c ii	$34,056	Approx. 1548 catch basins, approx. 60min/basin @ $22/hr	No
30	Admin	*Gather all information needed for the 8 screening factors (e.g., industrial areas > 40 years old)	2.3.4.7 c ii	$0	Included in No. 29	No
31	Admin	*Complete ranking using existing information within 1 year; update in annual report	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
32	Admin	*In annual report include summary of evidence of known/suspected illicit discharges by catchment	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
33	Admin	*Also include corrective measures and schedule for correcting each illicit discharge	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
34	Admin	*Develop written procedure for screening and sampling of outfalls	2.3.4.7 d	$0	8hr @ $22/hr, work day to complete process, ($0 W/CMRSWC Membership)	Yes
35	Admin	*Include procedures for sample collection, use of field kits and storage and conveyance of samples	2.3.4.7 d i	$0	See No. 34	Yes
36	BMP	*If outfall is inaccessible, report the first accessible upstream structure	2.3.4.7 d ii	$0	possible time extensions	Yes
37	BMP	*Perform dry weather screening when and how prescribed; identify in annual report any follow-up needed	2.3.4.7 d iii	$1,584	144 outfalls, approx. 30min/outfall @ $22/hr	Yes
38	BMP	*Perform wet weather screening when and how prescribed	2.3.4.7 d iv	$0	Included in No. 39	Yes
39	BMP	*Sample at minimum for 7 listed factors	2.3.4.7 d v	$4,968	144 outfalls, approx. 1.5hr/outfall @ $23/hr, Paperwork for wet weather sampling (2,266), Testing Kits (0) b/c CMRSWC membership	No
40	Admin	*Catchments with specified septic or other results shall be listed as "High Priority" catchments	2.3.4.7 d vi	$44	2hrs @ $22/hr, if records are available	No
41	BMP	*Develop written Catchment Investigation Procedure including review of maps and historic records	2.3.4.7 e	$352	16hrs @ $22/hr	No
42	BMP	*Also include manhole investigation methodology and procedures to confirm sources of illicit discharges	2.3.4.7 e	$0	Included in No. 41	No
43	BMP	*For each catchment review sanitary sewer and storm sewer construction plans; prior work on either	2.3.4.7 e i	$88	Assuming 4 catchments, 1 hr/catchment @ $22/hr	No
44	BMP	*Also review Health department records for septic system or sanitary sewer system failures or complaints	2.3.4.7 e i	$0	Included in No.43	No
45	Admin	*Identify and record any of the 12 System Vulnerability Factors (e.g., infrastructure > 40 years old)	2.3.4.7 e i	$0	Included in No.43	No
46	Admin	*Document and annually report presence or absence of the 12 System Vulnerability Factors for each catchment	2.3.4.7 e i	$0	Assuming using WPI spreadsheet, otherwise about 10min per catchment	No
47	Admin	*Include these required elements of written manhole investigation and catchment investigation procedures	2.3.4.7 e ii	$0	$0 since CMRSWC Membership	No
48	Admin	*Include these required elements in written dry weather investigation procedure	2.3.4.7 e ii a	$0	Included in No. 47	No
49	Admin	*Include these required elements in written wet weather investigation procedure	2.3.4.7 e ii b	$0	Included in No. 47	No
50	Admin	*Develop procedures to isolate and confirm illicit sources (e.g., dye testing, smoke testing, caulk dams, etc.)	2.3.4.7 e iii	$176	8hrs @ $22/hr, for scheduling	Yes
51	Admin	*In annual report, for each illicit source list the location, its source, description of the discharge	2.3.4.7 f	$0	See Miscellaneous No. 50	No
52	Admin	*Also list date and method of discovery, date of elimination, mitigation or enforcement action	2.3.4.7 f	$0	Included in No. 51	No
53	Admin	*And estimate volume of flow reduced	2.3.4.7 f	$0	Included in No. 51	No
54	BMP	*One year after illicit discharge removal, perform confirmatory screening; wet, dry or both	2.3.4.7 f	$132	$22/hr 30min/screening, 1.5hr/illicit, 3 illicit	No
55	BMP	*Schedule follow up screening within 5 years after confirmatory screening	2.3.4.7 g	$132	$22/hr 30min/screening, 1.5hr/illicit, 3 illicit	No
56	BMP	*Develop and implement procedures to prevent illicit discharges and SSOs	2.3.4.7 h	$0	$0 since CMRSWC Membership	No
57	Admin	*Complete and report dry weather screening and sampling of High and Low Priority outfalls within 3 years	2.3.4.8 a	$0	Included in No. 37 and No. 38	No
58	Admin	*"All data shall be reported in each annual report . . ."	2.3.4.8 a	$0	See Miscellaneous No. 50	No
59	Admin	*Begin implementation of 2.3.4.7 d work no later than 15 months	2.3.4.8 b	$0	Deadlines, See No. 38 and 37	No
60	Admin	*Implement and report Catchment Investigation Procedure in every catchment . . .	2.3.4.8 c	$0	Deadlines, See No. 28	No
61	Admin	*In a minimum of 80% of the MS4 area serviced by Problem Catchments within 3 years and 100% within 5 years	2.3.4.8 c i	$0	Deadlines, See No. 28	No
62	Admin	*For all catchments where sampling indicates sewer input within 5 years	2.3.4.8 c ii	$0	Deadlines, See No. 28	No
63	Admin	*In 40% of all area served by all MS4 catchments within 5 years and in 100% of 4 area in 10 years	2.3.4.8 c iii	$0	Deadlines, See No. 28	No
64	Admin	*Track progress toward these milestones in each annual report	2.3.4.8 e	$0	See Miscellaneous No. 50	No
65	Admin	*Define or describe indicators for tracking program success; demonstrate efforts to locate illicit discharges	2.3.4.9	$176	8hrs @ $22/hr	No
66	Admin	*Also include percent and area in acres evaluated; volume of sewage removed; place in annual report (more detailed, 2003 only asks to measure progress)	2.3.4.9	$0	See Miscellaneous No. 50	No
67	Admin	provide annual training to employees involved in IDDE program	2.3.4.10	$0	$0 since CMRSWC Membership	Yes
68	Admin	*Include type and frequency of training in the annual report (2003 -> The program must include an employee training component)	2.3.4.10	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$7,872
Estimated One-time Costs	$314,494
Estimated Intermittent Costs	$50,440

No.	BMP/Admin	Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Continue to implement construction ordinance work from 2003 permit; expand to include 1 acre or more	2.3.5 a	$0	Volunteer based program	Yes
2	BMP	Develop and implement a construction site runoff program	2.3.5 c	$0	See No. 3-12	Yes
3	Admin	An ordinance that requires sediment and erosions controls and for other wastes at construction sites	2.3.5 c i	$22	1 hr @ $22/hr, for review of current document	Yes
4	Admin	Adopt written procedures for inspections and enforcement of the ordinance within 1 year (2003 -> (g.) Procedures for inspections and enforcement of control measures at construction sites.)	2.3.5 c ii	$44	2hrs @ $22/hr, for review of current document	No
5	Admin	*Document the procedures and responsibilities to implement in the SWMP	2.3.5 c ii	$88	4hrs @ $22/hr	No
6	Admin	*Include requirements for site operators to implement BMPs (e.g., reduce disturbed area, protect slopes, etc.)	2.3.5 c iii	$88	4hrs @ $22/hr	No
7	Admin	*Include requirements for site operators to control other wastes	2.3.5 c iv	$88	4hrs @ $22/hr	No
8	Admin	*Develop written procedures for site plan review and inspection and enforcement within 1 year (003 -> nearly same, now has time requirement)	2.3.5 c v	$88	4hrs @ $22/hr	Yes
9	Admin	*Include pre-construction review, consideration for protection of water quality impacts, LID components	2.3.5 c v	$88	4hrs @ $22/hr	No
10	Admin	*And receipt of information from the public, inspections during and after BMP installation (now covers post construction)	2.3.5 c v	$88	4hrs @ $22/hr	No
11	Admin	*And "qualifications necessary to perform the inspections"	2.3.5 c v	$88	4hrs @ $22/hr	No
12	Admin	*And procedure for tracking the number of site reviews, inspections and enforcement actions	2.3.5 c v	$88	4hrs @ $22/hr	No
13	Admin	*All to be included in the annual report	2.3.5 c v	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$0
Estimated One-time Costs	$770
Estimated Intermittent Costs	$0

No.	BMP/Admin	Post Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*develop implement and enforce a post-construction SW program for new developments and redevelopments	2.3.6 a	$0	depends on previous program, should already be in place	Yes
2	Admin	*adopt or amend a local ordinance to control projects that disturb an acre or more	2.3.6 a ii	$176	Already in place, but 8hrs @ $22/hr minimum	Yes
3	BMP	*retain and/or treat first inch of runoff; where technically feasible do retention first	2.3.6 a ii a	$1,760	80hrs @ $22/hr, assumes no controversy and 4 people working	No
4	BMP	*"from all impervious surfaces on site"	2.3.6 a ii a	$0	See No. 3	No
5	Admin	*sites with soil contamination problems or at industrial sites shall not include any infiltration BMPs	2.3.6 a ii b	$0	Rule, does not require anything to be implemented, Possibly need Attorney	No
6	Admin	*infiltration systems near environmentally sensitive areas must include shutdown and containment systems	2.3.6 a ii c	$0	Rule, does not require anything to be implemented	No
7	Admin	*all BMPs must be constructed in accordance with the MA stormwater Handbook	2.3.6 a ii d	$0	Rule, does not require anything to be implemented	Yes
8	Admin	*this system shall include development of a long term O&M plan to inspect and repair BMPs	2.3.6 a ii e	$0	Rule, does not require anything to be implemented	No
9	Admin	*systems shall be designed "to avoid disturbance of areas susceptible to erosion and sediment loss"	2.3.6 a ii f	$0	Rule, does not require anything to be implemented	Yes
10	BMP	*systems shall require submittal of as-built drawings that depict all on site controls	2.3.6 a iii	$1,100	Submitted by construction company, 52hrs @ $22/hr, if it's new	No
11	Admin	*shall have procedures to ensure O&M, such as dedicated funds, escrow accounts or management contracts	2.3.6 a iii	$4,576	legal authority adds complexity and cost, 5hr w/ an attorney, 208hrs of labor @ $22/hr	No
12	Admin	*may include annual self-certification program	2.3.6 a iii	$0	Included in No. 11	No
13	Admin	*annual report shall include measures that the permittee has done to meet these requirements	2.3.6 a iii	$0	See Miscellaneous No. 50	Yes
14	BMP	*w/in 3 years document current street design and parking rules that affect creation of impervious cover	2.3.6 b	$1,320	60hrs @ $22/hr	No
15	BMP	*shall be used by permittee to determine if changes "can be made to support low impact design options"	2.3.6 b	$0	Included in No. 14	No
16	BMP	*if changes can be made, assessment shall include recommendations and proposed schedules to adopt changes	2.3.6 b	$0	Included in No. 14	No
17	BMP	*permitee "shall implement all recommendations . . ."; assessment must be placed in the SWMP	2.3.6 b	$0	Included in No. 14	No
18	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 b	$0	See Miscellaneous No. 50	No
19	BMP	*w/in 4 years assess local rules to determine feasibility of allowing green roofs, water harvesting and LID BMPs	2.3.6 c	$880	40 hrs @ $22/hr	No
20	Admin	*assessment shall indicate if and under what circumstances these practices are allowed	2.3.6 c	$0	Included in No. 19	No
21	BMP	*if practices not allowed, determine what hinders use of these practices and what changes can be made	2.3.6 c	$0	Included in No. 19	No
22	BMP	*provide a schedule of implementation of recommendations	2.3.6 c	$0	Included in No. 19	No
23	BMP	*"permittee shall implement all recommendations, in accordance with the schedules . . ."	2.3.6 c	$0	Included in No. 19	No
24	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 c	$0	See Miscellaneous No. 50	Yes
25	Admin	*estimate the annual increase or decrease in Impervious Area and Directly Connected Impervious Area	2.3.6 d	$1,760	80 hrs @ $22/hr, a lot of data required	No
26	Admin	*tabulate results by sub-basins delineated per 2.3.4.6 a I	2.3.6 d i	$0	See No. 17 in IDDE	No
27	Admin	*must include conventional pavements, driveways, parking lots and rooftops	2.3.6 d i	$0	See No. 17 in IDDE	No
28	Admin	*starting with second annual report, estimate each sub-basin added or removed each year	2.3.6 d ii	$0	See Miscellaneous No. 50	No
29	Admin	*break out those figures by development, redevelopment or retrofit by permitee, by others voluntarily	2.3.6 d ii	$0	See Miscellaneous No. 50	No
30	Admin	*. . . or in compliance with the permittee's ordinances or bylaws	2.3.6 d ii	$0	See Miscellaneous No. 50	No
31	Admin	*within 4 years complete inventory and ranking of Municipal property suitable for modification or retrofit to . . .	2.3.6 d iii	$2,640	120hrs @ $22/hr, many properties to assess	No
32	Admin	*. . .reduce frequency, volume and pollutant loads of stormwater discharges by reduction of impervious area	2.3.6 d iii	$0	Included in No. 32	No
33	Admin	*shall include both on site and off site reduction of IA and DCIA (e.g., parking lots, buildings, etc)	2.3.6 d iii	$0	Included in No. 32	No
34	Admin	*also include existing rights-of-way,	2.3.6 d iii	$0	Included in No. 32	No
35	Admin	*for suitability the evaluation shall consider factors such as depth to water table; subsurface geology; access	2.3.6 d iii	$0	Included in No. 32	No
36	Admin	*priority ranking shall consider factors such as CIP schedules; current storm sewer level of service, etc.	2.3.6 d iii	$0	Included in No. 32	No
37	Admin	*starting with fifth year annual report, report on status of all such inventoried properties	2.3.6 d iii	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$5,280
Estimated One-time Costs	$1,496
Estimated Intermittent Costs	$7,436

No.	BMP/Admin	Pollution Prevention and Good Housekeeping Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*W/in 1 year develop or update written O&M procedures for listed municipal facilities	2.3.7 a i	$176	8hr @ $22/hr	No
2	Admin	*w/in 1 year inventory all permitee owned facilities in these "good housekeeping" categories	2.3.7 a ii	$0	Included in No. 1	No
3	Admin	*For Parks and Open Space: procedures to address the use, storage and minimization of pesticides, fertilizers, etc.	2.3.7 a ii a	$2,640	120hrs @ $22/hr, Large amount of spaces to review plans for	No
4	Admin	*to be reviewed annually and updated as necessary	2.3.7 a ii a	$0	Included in No. 3	No
5	Admin	*evaluate lawn maintenance and landscaping activities to be protective of water quality	2.3.7 a ii a	$0	Included in No. 3	No
6	Admin	*including reduced mowing, proper disposal of lawn clippings, use of drought resistant plantings	2.3.7 a ii a	$0	Included in No. 3	No
7	Admin	*establish pet waste handling collection, disposal and signage at all parks and open spaces	2.3.7 a ii a	$0	Included in No. 3	No
8	Admin	*establish procedures for scheduled cleaning and sufficient number of trash containers	2.3.7 a ii a	$0	Included in No. 3	No
9	Admin	*For Buildings and Facilities, such as town offices, police and fire stations, municipal pools, etc.	2.3.7 a ii b	$1,760	80hrs @ $22/hr	No
10	Admin	*evaluate the use. Storage and disposal of petroleum products and train employees on proper procedures	2.3.7 a ii b	$0	Included in No. 9	No
11	Admin	*ensure that spill prevention is in place and coordinate with fire department	2.3.7 a ii b	$0	Included in No. 9	No
12	Admin	*develop management procedures for dumpsters and other waste management equipment	2.3.7 a ii b	$0	Included in No. 9	No
13	Admin	*For Vehicles and Equipment: establish procedures for storage of permittee vehicles, including inside storage	2.3.7 a ii c	$176	8hrs @ $22/hr	No
14	Admin	*establish procedures to ensure that vehicle wash water does not enter the SW system	2.3.7 a ii c	$0	Included in No. 13	No
15	Admin	*evaluate fueling areas to minimize exposure	2.3.7 a ii c	$0	Included in No. 13	No
16	Admin	*Infrastructure O&M: w/in 1 year develop and implement procedures to take care for the MS4 system	2.3.7 a iii a	$0	See Below through No. 22	No
17	Admin	*optimize routine inspections (e.g., prioritize catch basins located near construction sites)	2.3.7 a iii b	$0		No
18	BMP	*ensure that "no catch basin at anytime will be more than 50 percent full"	2.3.7 a iii b	$440	2hrs/basin @ $22/hr, assuming 10 basins /year	No
19	BMP	*if more than 50% full during two routine cleanings, investigate the cause for excessive sediment loading	2.3.7 a iii b	$0	See No. 17/Annual Report	No
20	Admin	*describe these actions in the annual report	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
21	Admin	*document in annual report the plan for optimizing catch basin cleaning, inspections or scheduling	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
22	Admin	*include metrics used to determine that the plan is optimal for the MS4	2.3.7 a iii b	$0	Included in No. 17	No
23	Admin	*in each annual report list the total number of catch basins, number inspected and/or cleaned	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
24	Admin	*and "volume or mass of material removed from each catch basin draining to water quality limited waters"	2.3.7 a iii b	$0	included in No. 23	No
25	Admin	*and "total volume or mass of material removed from all catch basins"	2.3.7 a iii b	$0	included in No. 23	No
26	BMP	*Sweeping: develop and implement procedures for sweeping streets and municipal-owned lots	2.3.7 a iii c	$10,560	Materials + Labor	Yes
27	BMP	*sweep all streets (rural exceptions apply) a minimum of once a year in the spring	2.3.7 a iii c	$0	See No. 26	Yes
28	BMP	*procedures shall include more frequent sweeping of targeted area based on various listed criteria	2.3.7 a iii c	$0	Minimal Development Cost	No
29	BMP	*criteria include inspections, pollutant loads, catch basin cleanings, land use, TMDL or impaired waters	2.3.7 a iii c	$0	Minimal Development Cost	No
30	Admin	*Each annual report shall include number of miles cleaned and volume or mass of material removed	2.3.7 a iii c	$0	See Miscellaneous No. 50	No
31	Admin	*for rural exception areas, either sweep per usual or develop specific procedures and place in first annual report	2.3.7 a iii c	$0	See Miscellaneous No. 50	No
32	BMP	*properly store catch basin cleanings so they do not discharge to receiving waters	2.3.7 a iii d	$0	$0 Since Southbridge owns their own landfill	Yes
33	BMP	*establish and implement procedures for winter road maintenance including storage of salt and sand	2.3.7 a iii e	$0	Properly house materials in municipally owned properties	Yes
34	BMP	*minimize use of sodium chloride and other salts; evaluate opportunities for alternative materials	2.3.7 a iii e	$176	8hrs @ $22/hr	Yes
35	Admin	*ensure that snow is not disposed into surface waters	2.3.7 a iii e	$0		Yes
36	Admin	*establish procedures for O&M or all permitee-owned stormwater BMPs (e.g., swales, retention basins etc.)	2.3.7 a iii f	$176	8hrs @ $22/hr	No
37	BMP	*inspect all such structures at least once annually	2.3.7 a iii f	$11,000	Inspect each BMP, assuming 2000/year 15min/BMP @ $22/hr	No
38	Admin	*in annual report include status of work required in this part	2.3.7 a iv	$0	See Miscellaneous No. 50	No
39	Admin	*permittees shall keep a written record of all required activities	2.3.7 a v	$2,200	100hrs @ $22/hr, based on templates from the CMRSWC	No
40	BMP	*develop and fully implement a SWPPP for each of the listed facilities no later than 2 years after effective date	2.3.7 b	$1,540	4hrs to update existing SWPPPs, 10hrs for new SWPPPS, @ 22/hr, assume 5 new facilities and 5 old facilities	No
41	BMP	*includes maintenance garages, public works yards, transfer stations, other waste handling facilities	2.3.7 b	$0	Included in No. 40	No
42	BMP	*Identify name and title of staff of the Pollution Prevention Team for each facility	2.3.7 b ii a	$0	Included in No. 40	No
43	BMP	*for each facility: include map, description of activities, outfall locations, receiving waters and structural controls	2.3.7 b ii b	$0	Included in No. 40	No
44	BMP	*select , sign, install and implement the following 9 control measures to prevent or reduce discharge of pollutants	2.3.7 b ii c	$10,000	depends on variations of the extent of impaired waters	No
45	BMP	*take all reasonable measure to address quality of discharges that may not originate at the facility	2.3.7 b ii c	$0	Included in No. 44	No
46	Admin	*for areas that discharge to impaired waters, identify the control measures to address that issue	2.3.7 b ii c	$0	Included in No. 44	No
47	BMP	*SWPP Required Elements: Minimize or Prevent Exposure (e.g., move activities or materials under cover)	2.3.7 d 1	$0	Included in No. 44	No
48	BMP	*Good Housekeeping	2.3.7 d 2	$180,246	$7,040 catch basin cleaning, $10,560 street sweeping, $152,200 salt/sand, $5,956 maintenance, $4,470 audits	Yes
49	BMP	*Preventative Maintenance	2.3.7 d 3	$0		Yes
50	BMP	*Spill Prevention and Response	2.3.7 d 4	$0	Included in No. 44	Yes
51	BMP	*Erosion and Sediment Control	2.3.7 d 5	$0	Included in No. 44	Yes
52	BMP	*Management of Runoff	2.3.7 d 6	$0	Included in No. 44	Yes
53	BMP	*Salt Storage or Piles Containing Salt	2.3.7 d 7	$0	Included in No. 44	Yes
54	BMP	*Employee Training; document training date, title and duration; attendees; subjects covered during training	2.3.7 d 8	$1,980		Yes
55	BMP	*Maintenance of Control Measures	2.3.7 d 8	$0	Included in No. 44	Yes
56	BMP	*Inspect all areas exposed to stormwater and all stormwater control measures at least every calendar quarter	2.3.7 b iii a	$2,200	30 minutes per inspection , assume 10 facilities with four areas each @ $100/hr	No
57	BMP	*at least one inspection shall occur when a stormwater discharge is occurring	2.3.7 b iii a	$1,584	144 outfalls, approx. 30min/outfall @ $22/hr	No
58	Admin	*document the date, time, name of inspector, weather, any control measures needing maintenance or repair, etc.	2.3.7 b iii a	$0	Included in No. 44	No
59	BMP	*permitee shall repair or replace any control measures needing repair before the next anticipated storm event	2.3.7 b iii a	$0	Included in No. 44	No
60	Admin	*shall report the findings from the Site inspections in the annual report	2.3.7 b iii a	$0	See Miscellaneous No. 50	No
61	Admin	*keep a written record of all required activities required in this section	2.3.7 b iv	$0		No

Estimated Annual Costs	$220,562
Estimated One-time Costs	$6,292
Estimated Intermittent Costs	$0

No.	BMP/Admin	Miscellaneous Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	Submit an NOI	1.7.1	$176	8hrs at $22/hr, historical properties or endangered species will increase this	No
2	Admin	*Document endangered species status (part of NOI)	1.9.1	$0	Included under No. 1	No
3	BMP	*Implement measures to protect endangered species	1.9.1	Varies	Included under No. 1	No
4	Admin	Document Historic Properties Observation (part of NOI)	1.9.2	$0	See Miscellaneous No. 50	No
5	BMP	*Describe effect of discharges on Historic properties	1.9.2	Varies	Included under No. 1	No
6	Admin	*Report documents received re: such discharges	1.9.2	$0	Included under No. 1	No
7	Admin	*Provide results of Appendix D historic property screening	1.9.2	$0	Included under No. 1	No
8	BMP	Describe efforts to avoid or minimize impacts on such properties	1.9.2	Varies	Included under No. 1	No
9	BMP	Develop a SWMP	1.10	$1,760	80hrs at $22/hr	Yes
10	BMP	Implement a SWMP	1.10	$0		Yes
11	Admin	*Update/modify SWMP	1.10	$440	20hrs at $22/hr	No
12	Admin	Provide SWMP "immediately" to various agencies and public	1.10.1	$0	Included under No. 9	No
13	Admin	*Post SWMP online	1.10.1	$0	Included under No. 9	No
14	Admin	Identify Names and titles of people implementing the SWMP	1.10.2	$0	Included under No. 9	No
15	Admin	***Include status of 2003 permit requirements**	1.10.2	$0	Included under No. 9	Yes
16	Admin	*List all receiving waterbodies, classifications, pollutants of concern	1.10.2	$0	Included under No. 9	No
17	Admin	*list all applicable TMDLs, WLAs	1.10.2	$0	Included under No. 9	No
18	Admin	*List all outfalls that discharge to each waterbody	1.10.2	$0	Included under No. 9	No
19	Admin	*list all public water sources that may be affected by SW discharges	1.10.2	$0	Included under No. 9	No
20	Admin	*List all interconnected MS4s and receiving waterbody	1.10.2	$0	Included under No. 9	No
21	Admin	*Include applicable TMDLs, WLAs and pollutants of concern	1.10.2	$0	Included under No. 9	No
22	Admin	*Document all new or increased discharges	1.10.2	$0	Included under No. 9	No
23	Admin	*Include map of separate storm sewer system (Map must be improved)	1.10.2	$0	Included under No. 9	No
24	Admin	List all discharges to impaired water and the response	1.10.2	$0	Included under No. 9	No
25	Admin	*Describe BMPs proposed to meet TMDL requirements	1.10.2	$0	Included under No. 9	No
26	Admin	For each BMP, list the milestone, timeframe and assessment measure	1.10.2	$0	Included under No. 9	No
27	Admin	*For each BMP, list person or department responsible for implementation	1.10.2	$0	Included under No. 9	No
28	Admin	*Describe BMPs proposed to meet impaired waters requirements	1.10.2	$0	Included under No. 9	No
29	Admin	Describe BMPs used to meet the 6 minimum control measures	1.10.2	$0	Included under No. 9	No
30	Admin	*List measures to avoid/minimize impacts to surface drinking waters	1.10.2	$0	Included under No. 9	No
31	BMP	*Ensure that discharges "do not cause or contribute" to an exceedance of WQ standards	2.1	$0	Included under No. 9	Yes
32	BMP	*For TMDL waters, meet requirements of Appendix F (NB: contains multiple add'l req'ts)	2.1.1 b	Varies	May range into millions of dollars, no one has estimated this yet	No
33	BMP	*For impaired waters meet requirements of Appendix H (NB: contains multiple add'l req'ts)	2.1.1 c	Varies	May range into millions of dollars, no one has estimated this yet	No
34	BMP	*For any exceedances of WQ standards to TMDL or impaired waters, eliminate it within 60 days	2.1.1 d	Varies	May range into millions of dollars, no one has estimated this yet	No
35	BMP	*For any increased discharge, comply with MassDEP's regulations at 314 CMR 4.04	2.1.2 a	Varies	Cost will vary	No
36	BMP	*Demonstrate no net increase in pollutants for discharges to any 303 (d) or 305(b) water (previously only had to identify if 303 d)	2.1.2 b	Varies	Cost will vary	No
37	Admin	*Identify all discharges to waters that are impaired or which have TMDLs (Both in SWMP and Annual report)	2.2	$0	Varies depending on EPA interpretations	No
38	Admin	*Permittee shall annually self-evaluate and maintain the evaluation in its SWMP	4.1 a	$0	Included under No. 9	No
39	Admin	*In evaluating the appropriateness of BMPs, permittees may add BMPs at any time	4.1 b	$88	4hrs @ $22/hr, paperwork for new BMP	Yes
40	Admin	Subtracting or replacing BMPs may only be done in limited circumstances, after showing the BMP is ineffective	4.1 b	Varies	Cost of replacement will depend on the BMP being used	No
41	Admin	*Each Annual shall include a brief explanation of any BMP modification	4.1 b	$0	See No. 50	No
42	Admin	EPA or MassDEP may require the permittee to add, modify, etc., any BMP to satisfy conditions of the permit	4.1.c	$0	Minimal cost	No
43	Admin	*The permittee shall keep all record required by this permit for at least five years	4.2 a	$880	Week of work annually, 40hrs at $22/hr	No
44	Admin	*"Records" includes "information used in the development of any written program . . . monitoring results, etc."	4.2 a	$0	Record keeping, doesn't cost anything to implement	No
45	Admin	these records all be made available to the public	4.2 c	$0	Record keeping, doesn't cost anything to implement	No
46	Admin	*the permittee "shall document all monitoring results each year in the annual report"	4.3 b	$0	See No. 50	No
47	Admin	*that shall include the date, outfall identifier, location, weather, precipitation and screening or analysis results	4.3 b	$0	Part of annual report, see No. 46	No
48	Admin	*include all monitoring results for the current reporting period and for the entire permit term	4.3 b	$0	Part of annual report, see No. 46	No
49	Admin	*permittee shall include "results from any other stormwater or receiving water quality monitoring or studies . . ."	4.3 c	$0	Part of annual report, see No. 46	No
50	Admin	The annual report shall include a self-assessment of compliance; an assessment of the appropriateness of BMPs	4.4 b i	$14,200	Consulting fee for annual report	No
51	Admin	*The status of any required plans	4.4 b iii	$0	Part of annual report, see No. 50	No
52	Admin	*"Identification of all discharges determined to be causing or contributing to an exceedance" of WQ standards	4.4 b iii	$0	Part of annual report, see No. 50	No
53	Admin	*For discharges to TMDLs, identify specific BMPs used to address those requirements	4.4 b iii	$0	Part of annual report, see No. 50	No
54	Admin	*For discharges to impaired waters, "a description of each BMP required by Appendix H" and all deliverables	4.4 b iii	$0	Part of annual report, see No. 50	No
55	Admin	*Assessment of the progress toward meeting the requirements for the 6 minimum control measures (see details)	4.4 b iv	$0	Part of annual report, see No. 50	No
56	Admin	*"All outfall screening and monitoring data" for the reporting term and cumulative for the permit term	4.4 b v	$0	Part of annual report, see No. 50	No
57	Admin	Description of activities for the next reporting cycle	4.4 b vi	$0	Part of annual report, see No. 50	Yes
58	Admin	Description of any changes in identified BMPs or measurable goals	4.4 b vii	$0	Part of annual report, see No. 50	Yes
59	Admin	*Description of activities undertaken by any entity contracted for achieving any requirement of the permit	4.4 b viii	$0	Part of annual report, see No. 50	No

Estimated Annual Costs	$15,168
Estimated One-time Costs	$2,376
Estimated Intermittent Costs	$0

Appendix F

Control Measure	Estimated Annual Costs	Estimated One-time Costs	Estimated Intermittent Costs
Public Education and Outreach	$12,106	$0	$0
Public Involvement and Participation	$0	$0	$0
Illicit Discharge Detection and Elimination Program	$11,347	$306,481	$76,972
Construction Site Stormwater Runoff Control	$350	$858	$0
Post Construction Stormwater Management	$5,280	$1,496	$7,480
Good Housekeeping	$693,578	$6,292	$0
Non-Control Measure			
Miscellaneous	$12,968	$2,376	$0
Totals	**$735,629**	**$317,503**	**$84,452**

KEY:			
Yearly	No. = Reference Number		
Once	BMP/Admin = Is the requirement completed with either a BMP or Administrative work		
As Needed	X Requirement = The short name for a requirement		
	Requirement = Section in the 2014 MS4 permit draft		
	Cost = Cost of completing the requirement		
	Justification = List of methods used to complete the requirement, as well supporting data from sources		
	In Place (Y/N) = Is the requirement listed currently in place		

No.	BMP/Admin	Public Education and Outreach Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	Continue public education program required by 2003 permit	2.3.2 a	$3,176	Art Contest (3000) for materials, 8 hr(s) @ $22/hr	Y
2	Admin	*Define goals, express specific messages define audience for each message	2.3.2 a	$44	2hrs @ $22/hr, a minor administrative cost	N
3	Admin	*Identify parties responsible for each message	2.3.2 a	$44	2hrs @ $22/hr, a minor administrative cost	N
4	Admin	*Develop and send out two separate messages for each of 4 different audiences	2.3.2 c	$22	1hr @ $22/hr, a minor administrative cost, once a year for 8 years	N
5	Admin	*Show evidence that messages are achieving results	2.3.2 e	$8,820	DCR explanation for assessing effectiveness	N
6	Admin	*Identify method used to evaluate effectiveness of messages	2.3.2 e	$0	No significant cost	N
7	Admin	*Put in annual report the methods of distribution and methods to assess effectiveness	2.3.2 g	$0	See Miscellaneous No. 50	N

Estimated Annual Costs	$12,106
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Public Involvement and Participation Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*Comply with state public Notice requirements	2.3.3 a	$0	No significant cost, website hosting	Y
2	Admin	Provide annual opportunity for public to participate in review and implementation of SWMP	2.3.3 b	$0	No significant cost	Y
3	Admin	*Put in annual report these public participation activities	2.3.3 c	$0	See Miscellaneous No. 50	N

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Illicit Discharge Detection and Elimination Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Eliminate any illicit discharge to the stormwater system as expeditiously as possible	2.3.4.2	$25,000	[Varies depending on infraction, ranges from ($0-50,000) provided by DCR Director Larry Pistrang]	Y
2	BMP	*Identify who is responsible for any such discharges	2.3.4.2	$0	See No. 1, part of identification process	Y
3	Admin	*If elimination takes more than 60 days, establish an expeditious schedule for elimination	2.3.4.2	$44	2hrs @ $22/hr, for scheduling	N
4	Admin	*If more than 60 days, report dates of identification and schedules in annual report	2.3.4.2	$0	See Miscellaneous No. 50	N
5	BMP	Implement measures to control non-stormwater discharges if they add significant pollution	2.3.4.3	$25,000	[Varies depending on infraction, ranges from ($0-50,000) provided by DCR Director Larry Pistrang]	Y
6	Admin	*Identify all known locations where SSOs have discharged to the MS4 in last 5 years	2.3.4.4 b	$44	2hrs @ $22/hr, assuming records are easily available	N
7	Admin	*For each such SSO discharge, include date and time, location, volume, suspected cause	2.3.4.4 b	$44	2hrs @ $22/hr, to determine the information	N
8	Admin	*Also include whether each entered any surface water and what corrective actions were taken	2.3.4.4 b	$0	Included under No. 7	N
9	Admin	*Also include corrective measures planned and implementation schedule	2.3.4.4 b	$0	Included under No. 7	N
10	Admin	*Maintain the SSO inventory as part of the SWMP and the Annual Reports	2.3.4.4 b	$0	See Miscellaneous No. 50	N
11	Admin	*Provide oral and written notice to EPA and MassDEP for any SSO occurrence	2.3.4.4 c	$44	2hrs @ $22/hr, informing EPA/MassDEP orally/written	N
12	BMP	*Develop an inventory of each MS4 outfall, including location, interconnections, and condition (different only in that it requires the condition of the outfall)	2.3.4.5	$1,469	2hrs @ $22/hr, about 15min/outfall, 267 outfalls	N
13	Admin	*Update inventory annually to include monitoring program	2.3.4.5 b	$0	See Miscellaneous No. 50	N
14	BMP	*Physically label all MS4 outfall pipes	2.3.4.5 b	$2,003	2hrs @ $22/hr, about 10min/outfall, 267 outfalls, materials included ($2 stick per outfall + spraypaint+sharpie)	N
15	Admin	*For each outfall list unique identifier, receiving water, date of most recent inspection	2.3.4.5 c	$0	Included under No. 14, materials are available from the Coalition	N
16	Admin	*Also include dimensions, shape, material, physical condition and indicators of non-SW discharges	2.3.4.5 c	$0	Included under No. 14, materials are available from the Coalition	N
17	BMP	*Revise existing map of stormwater system within 2 years of effective date of the permit	2.3.4.6	$250,000	Will likely require complete redevelopment of the map system, this numbers based on Millbury estimations for People GIS	N
18	BMP	*Map shall include all outfalls, pipes, manholes, catch basins, interconnections, open channels	2.3.4.6 a i	$0	Included under No. 17	N
19	BMP	*Also include all municipally-owned BMPs (e.g., retention basins, oil/water separators, etc.)	2.3.4.6 a i	$0	Included under No. 17	N
20	BMP	*Also include catchment delineation and all waters listed on the 303(d) or 305 (b) list	2.3.4.6 a i	$0	Included under No. 17	N
21	BMP	*Also include municipal sanitary sewers or combined sewer systems	2.3.4.6 a ii	$0	Included under No. 17	N
22	BMP	*Include various recommended elements	2.3.4.6 a iii	$0	Included under No. 17	N
23	BMP	*Update the map to reflect newly discovered information and corrections or modifications	2.3.4.6 b	$1,144	1hr/week @ $22/hr, for continuous developments and additions to stormwater systems	N
24	Admin	*Report on the progress toward completion of the map in each annual report	2.3.4.6 c	$0	See Miscellaneous No. 50	N
25	BMP	*Write an Illicit Discharge Detection and Elimination (IDDE) program document (Discrete, specifically mentions the document must be written out)	2.3.4.7	$10,000	A complete redevelopment of the program, smaller towns can expect a cost of 10,000	N
26	Admin	Adopt an IDDE ordinance	2.3.4.7 a	$1,430	65hrs @ $22/hr, will have to change ordinance and allow a representative to go to different committees	Y
27	Admin	*Program shall clearly identify IDDE responsibilities and provide description of areas of responsibility	2.3.4.7 b	$0	Included under No. 25	N
28	BMP	*Assess and priority rank each catchment into one of 4 possible categories	2.3.4.7 c i	$13,310	1210 catch basins, about 30min/basin @ $22/hr	N
29	Admin	*Priority rank each catchment within each category (except those "excluded") using 8 factors	2.3.4.7 c ii	$26,620	1210 catch basins, about 1hr/basin @ $22/hr	N
30	Admin	*Gather all information needed for the 8 screening factors (e.g., industrial areas > 40 years old)	2.3.4.7 c ii	$0	Included under No. 29	N
31	Admin	*Complete ranking using existing information within 1 year; update in annual report	2.3.4.7 c iii	$0	See Miscellaneous No. 50	N
32	Admin	*In annual report include summary of evidence of known/suspected illicit discharges by catchment	2.3.4.7 c iii	$0	See Miscellaneous No. 50	N
33	Admin	*Also include corrective measures and schedule for correcting each illicit discharge	2.3.4.7 c iii	$0	See Miscellaneous No. 50	N
34	Admin	*Develop written procedure for screening and sampling of outfalls	2.3.4.7 d	$0	No cost with Coalition Membership	N
35	Admin	*Include procedures for sample collection, use of field kits and storage and conveyance of samples	2.3.4.7 d i	$0	Included under No. 34	N
36	BMP	*If outfall is inaccessible, report the first accessible upstream structure	2.3.4.7 d ii	$0	Minimal cost, possible time extensions to test applicable outfalls	N
37	BMP	*Perform dry weather screening when and how prescribed; identify in annual report any follow-up needed	2.3.4.7 d iii	$979	267 outfalls, about 10min/outfall @ $22/hr	N
38	BMP	*Perform wet weather screening when and how prescribed	2.3.4.7 d iv	$1,469	267 outfalls, about 15min/outfall @ $22/hr	N
39	BMP	*Sample at minimum for 7 listed factors	2.3.4.7 d v	$8,811	267 outfalls, about 1.5hr/outfall @ $22/hr, along with applicable water quality testing kit costs (none with Coalition)	N
40	Admin	*Catchments with specified septic or other results shall be listed as "High Priority" catchments	2.3.4.7 d vi	$44	2hrs @ $22/hr, if files readily available	N
41	BMP	*Develop written Catchment Investigation Procedure including review of maps and historic records	2.3.4.7 e	$352	16hrs @ $22/hr, for development of procedure	N
42	BMP	*Also include manhole investigation methodology and procedures to confirm sources of illicit discharges	2.3.4.7 e	$0	Included under No. 41	N
43	BMP	*For each catchment review sanitary sewer and storm sewer construction plans; prior work on either	2.3.4.7 e i	$26,620	1210 catchments, 1 hr/catchment @ $22/hr	N
44	BMP	*Also review Health department records for septic system or sanitary sewer system failures or complaints	2.3.4.7 e i	$0	Included under No. 43	N
45	Admin	*Identify and record any of the 12 System Vulnerability Factors (e.g., infrastructure > 40 years old)	2.3.4.7 e i	$0	Included under No. 43	N
46	Admin	*Document and annually report presence or absence of the 12 System Vulnerability Factors for each catchment	2.3.4.7 e i	$0	See Miscellaneous No. 50	N
47	Admin	*Include these required elements of written manhole investigation and catchment investigation procedures	2.3.4.7 e ii	$0	No cost with Coalition Membership	N
48	Admin	*Include these required elements in written dry weather investigation procedure	2.3.4.7 e ii a	$0	Included under No. 47	N
49	Admin	*Include these required elements in written wet weather investigation procedure	2.3.4.7 e ii b	$0	Included under No. 47	N
50	Admin	*Develop procedures to isolate and confirm illicit sources (e.g., dye testing, smoke testing, caulk dams, etc.)	2.3.4.7 e iii	$22	1hr @ $22/hr, for scheduling	Y
51	Admin	*In annual report, for each illicit source list the location, its source, description of the discharge	2.3.4.7 f	$88	4hrs @ $22/hr, for scheduling	N
52	Admin	*Also list date and method of discovery, date of elimination, mitigation or enforcement action	2.3.4.7 f	$0	Included under No. 51	N
53	Admin	*And estimate volume of flow reduced	2.3.4.7 f	$0	Included under No. 51	N
54	BMP	*One year after illicit discharge removal, perform confirmatory screening; wet, dry or both	2.3.4.7 f	$132	$22/hr 30min/screening, approximately 1.5hr/illicit, assuming 3 illicit	N
55	BMP	*Schedule follow up screening within 5 years after confirmatory screening	2.3.4.7 g	$132	$22/hr 30min/screening, approximately 1.5hr/illicit, assuming 3 illicit	N
56	BMP	*Develop and implement procedures to prevent illicit discharges and SSOs	2.3.4.7 h	$0	8hrs @ $22/hr, one work day to complete process, no cost with Coalition membership	N
57	Admin	*Complete and report dry weather screening and sampling of High and Low Priority outfalls within 3 years	2.3.4.8 a	$0	Included under No. 37 and No. 38	N
58	Admin	*"All data shall be reported in each annual report . . ."	2.3.4.8 a	$0	See Miscellaneous No. 50	N
59	Admin	*Begin implementation of 2.3.4.7 d work no later than 15 months	2.3.4.8 b	$0	Included under No. 37 and No. 38, deadlines	N
60	Admin	*Implement and report Catchment Investigation Procedure in every catchment . . .	2.3.4.8 c	$0	Included under No. 28, deadlines	N
61	Admin	*In a minimum of 80% of the MS4 area serviced by Problem Catchments within 3 years and 100% within 5 years	2.3.4.8 c i	$0	Included under No. 28, deadlines	N
62	Admin	*For all catchments where sampling indicates sewer input within 5 years	2.3.4.8 c ii	$0	Included under No. 28, deadlines	N
63	Admin	*In 40% of all area served by all MS4 catchments within 5 years and in 100% of 4 area in 10 years	2.3.4.8 c iii	$0	Included under No. 28, deadlines	N
64	Admin	*Track progress toward these milestones in each annual report	2.3.4.8 e	$0	See Miscellaneous No. 50	N
65	Admin	*Define or describe indicators for tracking program success; demonstrate efforts to locate illicit discharges	2.3.4.9	$0	8hrs @ $22/hr, administrative work	N
66	Admin	*Also include percent and area in acres evaluated; volume of sewage removed; place in annual report (more detailed, 2003 only asks to measure progress)	2.3.4.9	$0	See Miscellaneous No. 50	N
67	Admin	provide annual training to employees involved in IDDE program	2.3.4.10	$0	No cost with Coalition membership	Y
68	Admin	*Include type and frequency of training in the annual report (2003 -> The program must include an employee training component)	2.3.4.10	$0	See Miscellaneous No. 50	N

Estimated Annual Costs	$11,347
Estimated One-time Costs	$306,481
Estimated Intermittent Costs	$76,972

No.	BMP/Admin	Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Continue to implement construction ordinance work from 2003 permit; expand to include 1 acre or more	2.3.5 a	$350	Compare to previous cost, Millbury cost provided by Laurie Connors	Y
2	BMP	Develop and implement a construction site runoff program	2.3.5 c	$0	as provided by Laurie Connors, Town planner	Y
3	Admin	An ordinance that requires sediment and erosions controls and for other wastes at construction sites	2.3.5 c i	$22	1hr @ $22/hr, included under No. 2	Y
4	Admin	Adopt written procedures for inspections and enforcement of the ordinance within 1 year (2003 -> (g.) Procedures for inspections and enforcement of control measures at construction sites.)	2.3.5 c ii	$44	2hrs @ $22/hr, for review of the established document included under No. 2	Y
5	Admin	*Document the procedures and responsibilities to implement in the SWMP	2.3.5 c ii	$176	4hrs @ $22/hr, included under No. 2	N
6	Admin	*Include requirements for site operators to implement BMPs (e.g., reduce disturbed area, protect slopes, etc.)	2.3.5 c iii	$88	4hrs @ $22/hr, included under No. 2	N
7	Admin	*Include requirements for site operators to control other wastes	2.3.5 c iv	$88	4hrs @ $22/hr, included under No. 2	N
8	Admin	*Develop written procedures for site plan review and inspection and enforcement within 1 year (003 -> nearly same, now has time requirement)	2.3.5 c v	$88	4hrs @ $22/hr, included under No. 2	N
9	Admin	*Include pre-construction review, consideration for protection of water quality impacts, LID components	2.3.5 c v	$88	4hrs @ $22/hr, included under No. 2	N
10	Admin	*And receipt of information from the public, inspections during and after BMP installation (now covers post construction)	2.3.5 c v	$88	4hrs @ $22/hr, included under No. 2	N
11	Admin	*And "qualifications necessary to perform the inspections"	2.3.5 c v	$88	4hrs @ $22/hr, included under No. 2	N
12	Admin	*And procedure for tracking the number of site reviews, inspections and enforcement actions	2.3.5 c v	$88	4hrs @ $22/hr, included under No. 2	N
13	Admin	*All to be included in the annual report	2.3.5 c v	$0	See Miscellaneous No. 50	N

Estimated Annual Costs	$350
Estimated One-time Costs	$858
Estimated Intermittent Costs	$0

No.	BMP/Admin	Post Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*develop implement and enforce a post-construction SW program for new developments and redevelopments	2.3.6 a	$0	depends on previous program, should already be in place	Y
2	Admin	*adopt or amend a local ordinance to control projects that disturb an acre or more	2.3.6 a ii	$176	Already in place, amendment would be 8 hr(s) @ 22/hr minimum	N
3	BMP	*retain and/or treat first inch of runoff; where technically feasible do retention first	2.3.6 a ii a	$1,760	80hrs @ $22/hr, difficult to assess cost, assumes no controversies or unresolved issues and four people working	N
4	BMP	*"from all impervious surfaces on site"	2.3.6 a ii a	$0	Included under No. 3	N
5	Admin	*sites with soil contamination problems or at industrial sites shall not include any infiltration BMPs	2.3.6 a ii b	$0	Rule, does not require anything to be implemented, Possibly need Attorney	N
6	Admin	*infiltration systems near environmentally sensitive areas must include shutdown and containment systems	2.3.6 a ii c	$0	Rule, does not require anything to be implemented	N
7	Admin	*all BMPs must be constructed in accordance with the MA Sstormwater Handbook	2.3.6 a ii d	$0	Rule, does not require anything to be implemented	N
8	Admin	*this system shall include development of a long term O&M plan to inspect and repair BMPs	2.3.6 a ii e	$0	Rule, does not require anything to be implemented	N
9	Admin	*systems shall be designed "to avoid disturbance of areas susceptible to erosion and sediment loss"	2.3.6 a ii f	$0	Rule, does not require anything to be implemented	N
10	BMP	*systems shall require submittal of as-built drawings that depict all on site controls	2.3.6 a iii	$1,144	52hrs @ $22/hr and submitted by construction company if it is new	N
11	Admin	*shall have procedures to ensure O&M, such as dedicated funds, escrow accounts or management contracts	2.3.6 a iii	$4,576	208hrs @ $22/hr, Submitted by construction company, legal authority and complexity add costs, including maybe 5 people inc/attorney	N
12	Admin	*may include annual self-certification program	2.3.6 a iii	$0	Included under No. 11	N
13	Admin	*annual report shall include measures that the permittee has done to meet these requirements	2.3.6 a iii	$0	See Miscellaneous No. 50	N
14	BMP	*w/in 3 years document current street design and parking rules that affect creation of impervious cover	2.3.6 b	$1,320	60hrs @$22/hr, including fire chief	N
15	BMP	*shall be used by permittee to determine if changes "can be made to support low impact design options"	2.3.6 b	$0	Included under No. 14	N
16	BMP	*if changes can be made, assessment shall include recommendations and proposed schedules to adopt changes	2.3.6 b	$0	Included under No. 14	N
17	BMP	*permitee "shall implement all recommendations . . ."; assessment must be placed in the SWMP	2.3.6 b	$0	Included under No. 14	N
18	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 b	$0	See Miscellaneous No. 50	N
19	BMP	*w/in 4 years assess local rules to determine feasibility of allowing green roofs, water harvesting and LID BMPs	2.3.6 c	$880	40hrs @ $22/hr	N
20	Admin	*assessment shall indicate if and under what circumstances these practices are allowed	2.3.6 c	$0	Included under No. 19	N
21	BMP	*if practices not allowed, determine what hinders use of these practices and what changes can be made	2.3.6 c	$0	Included under No. 19	N
22	BMP	*provide a schedule of implementation of recommendations	2.3.6 c	$0	Included under No. 19	N
23	BMP	*"permittee shall implement all recommendations, in accordance with the schedules . . ."	2.3.6 c	$0	Included under No. 19	N
24	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 c	$0	See Miscellaneous No. 50	N
25	Admin	*estimate the annual increase or decrease in Impervious Area and Directly Connected Impervious Area	2.3.6 d	$1,760	80hrs @ $22/hr, data intensive, devising system and updating yearly, assumes 4 people working	N
26	Admin	*tabulate results by sub-basins delineated per 2.3.4.6 a I	2.3.6 d i	$0	Included in IDDE No. 17	N
27	Admin	*must include conventional pavements, driveways, parking lots and rooftops	2.3.6 d i	$0	Included in IDDE No. 17	N
28	Admin	*starting with second annual report, estimate each sub-basin added or removed each year	2.3.6 d ii	$0	See Miscellaneous No. 50	N
29	Admin	*break out those figures by development, redevelopment or retrofit by permitee, by others voluntarily	2.3.6 d ii	$0	See Miscellaneous No. 50	N
30	Admin	*. . . or in compliance with the permittee's ordinances or bylaws	2.3.6 d ii	$0	See Miscellaneous No. 50	N
31	Admin	*within 4 years complete inventory and ranking of Municipal property suitable for modification or retrofit to . . .	2.3.6 d iii	$2,640	120hrs @ $22/hr, involving schools, DPW, fire, police etc. assume 13 weeks work time	N
32	Admin	*. . .reduce frequency, volume and pollutant loads of stormwater discharges by reduction of impervious area	2.3.6 d iii	$0	Included under No. 31	N
33	Admin	*shall include both on site and off site reduction of IA and DCIA (e.g., parking lots, buildings, etc.)	2.3.6 d iii	$0	Included under No. 31	N
34	Admin	*also include existing rights-of-way,	2.3.6 d iii	$0	Included under No. 31	N
35	Admin	*for suitability the evaluation shall consider factors such as depth to water table; subsurface geology; access	2.3.6 d iii	$0	Included under No. 31	N
36	Admin	*priority ranking shall consider factors such as CIP schedules; current storm sewer level of service, etc.	2.3.6 d iii	$0	Included under No. 31	N
37	Admin	*starting with fifth year annual report, report on status of all such inventoried properties	2.3.6 d iii	$0	See Miscellaneous No. 50	N

Estimated Annual Costs	$5,280
Estimated One-time Costs	$1,496
Estimated Intermittent Costs	$7,480

No.	BMP/Admin	Pollution Prevention and Good Housekeeping Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*W/in 1 year develop or update written O&M procedures for listed municipal facilities	2.3.7 a i	$176	8hrs @ $22/hr,	N
2	Admin	*w/in 1 year inventory all permitee owned facilities in these "good housekeeping" categories	2.3.7 a ii	$0	included under No. 1	N
3	Admin	*For Parks and Open Space: procedures to address the use, storage and minimization of pesticides, fertilizers, etc.	2.3.7 a ii a	$2,640	120hrs @ $22/hr, Large amount of spaces to review plans for	N
4	Admin	*to be reviewed annually and updated as necessary	2.3.7 a ii a	$0	included under No. 3	N
5	Admin	*evaluate lawn maintenance and landscaping activities to be protective of water quality	2.3.7 a ii a	$0	included under No. 3	N
6	Admin	*including reduced mowing, proper disposal of lawn clippings, use of drought resistant plantings	2.3.7 a ii a	$0	included under No. 3	N
7	Admin	*establish pet waste handling collection, disposal and signage at all parks and open spaces	2.3.7 a ii a	$0	included under No. 3	N
8	Admin	*establish procedures for scheduled cleaning and sufficient number of trash containers	2.3.7 a ii a	$0	included under No. 3	N
9	Admin	*For Buildings and Facilities, such as town offices, police and fire stations, municipal pools, etc.	2.3.7 a ii b	$1,760	80hrs @ $22/hr, to write procedures	N
10	Admin	*evaluate the use. Storage and disposal of petroleum products and train employees on proper procedures	2.3.7 a ii b	$0	included under No. 1	N
11	Admin	*ensure that spill prevention is in place and coordinate with fire department	2.3.7 a ii b	$0	included under No. 1	N
12	Admin	*develop management procedures for dumpsters and other waste management equipment	2.3.7 a ii b	$0	included under No. 1	N
13	Admin	*For Vehicles and Equipment: establish procedures for storage of permittee vehicles, including inside storage	2.3.7 a ii c	$176	8hrs @ $22/hr,	N
14	Admin	*establish procedures to ensure that vehicle wash water does not enter the SW system	2.3.7 a ii c	$0	Included under No. 13	N
15	Admin	*evaluate fueling areas to minimize exposure	2.3.7 a ii c	$0	Included under No. 13	N
16	Admin	*Infrastructure O&M: w/in 1 year develop and implement procedures to take care for the MS4 system	2.3.7 a iii a	$0	See Below through No. 22, will likely require significant investment	N
17	Admin	*optimize routine inspections (e.g., prioritize catch basins located near construction sites)	2.3.7 a iii b	$0	See below	N
18	BMP	*ensure that "no catch basin at anytime will be more than 50 percent full"	2.3.7 a iii b	$440	2hrs/catch basin, for example put 10 catch basins assume only 10 more than 50% each year	N
19	BMP	*if more than 50% full during two routine cleanings, investigate the cause for excessive sediment loading	2.3.7 a iii b	$0	See No. 17/Annual Report	N
20	Admin	*describe these actions in the annual report	2.3.7 a iii b	$0	See No. 17/Annual Report	N
21	Admin	*document in annual report the plan for optimizing catch basin cleaning, inspections or scheduling	2.3.7 a iii b	$0	See No. 17/Annual Report	N
22	Admin	*include metrics used to determine that the plan is optimal for the MS4	2.3.7 a iii b	$0	See No. 17/Annual Report	N
23	Admin	*in each annual report list the total number of catch basins, number inspected and/or cleaned	2.3.7 a iii b	$0	See No. 17/Annual Report	N
24	Admin	*and "volume or mass of material removed from each catch basin draining to water quality limited waters"	2.3.7 a iii b	$0	See No. 17/Annual Report	N
25	Admin	*and "total volume or mass of material removed from all catch basins"	2.3.7 a iii b	$0	See No. 17/Annual Report	N
26	BMP	*Sweeping: develop and implement procedures for sweeping streets and municipal-owned lots	2.3.7 a iii c	$0	Included under No. 27, already in place, Based on Estimations for one annual sweep	Y
27	BMP	*sweep all streets (rural exceptions apply) a minimum of once a year in the spring	2.3.7 a iii c	$165,000	Already implemented, Based on Estimations provided by Rob McNeil	Y
28	BMP	*procedures shall include more frequent sweeping of targeted area based on various listed criteria	2.3.7 a iii c	$0	Minimal Developmental cost	N
29	BMP	*criteria include inspections, pollutant loads, catch basin cleanings, land use, TMDL or impaired waters	2.3.7 a iii c	$0	Minimal Developmental cost	N
30	Admin	*Each annual report shall include number of miles cleaned and volume or mass of material removed	2.3.7 a iii c	$0	See Miscellaneous No. 50	N
31	Admin	*for rural exception areas, either sweep per usual or develop specific procedures and place in first annual report	2.3.7 a iii c	$0	Included under No. 28	N
32	BMP	*properly store catch basin cleanings so they do not discharge to receiving waters	2.3.7 a iii d	$33,200	400tons @ $83/ton, based on numbers provided by Rob McNeil	Y
33	BMP	*establish and implement procedures for winter road maintenance including storage of salt and sand	2.3.7 a iii e	$476,449	Properly house materials in municipally owned properties, performed yearly	Y
34	BMP	*minimize use of sodium chloride and other salts; evaluate opportunities for alternative materials	2.3.7 a iii e	$176	8hrs @ $22/hr	N
35	Admin	*ensure that snow is not disposed into surface waters	2.3.7 a iii e	$0	Announcement to DPW workers involved with snow procedures	N
36	Admin	*establish procedures for O&M or all permitee-owned stormwater BMPs (e.g., swales, retention basins etc.)	2.3.7 a iii f	$176	8hrs @ $22/hr,	N
37	BMP	*inspect all such structures at least once annually	2.3.7 a iii f	$11,000	Assuming 2000 per year, 15 minutes per structure	N
38	Admin	*in annual report include status of work required in this part	2.3.7 a iv	$0	See Miscellaneous No. 50	N
39	Admin	*permittees shall keep a written record of all required activities	2.3.7 a v	$2,200	100hrs @ $22/hr,	N
40	BMP	*develop and fully implement a SWPPP for each of the listed facilities no later than 2 years after effective date	2.3.7 b	$1,540	Assume 4 hrs to update existing SWPPPs, 10hrs for new SWPPPS, 70 hr(s) @ 22/hr, assume 5 new facilities a	N
41	BMP	*includes maintenance garages, public works yards, transfer stations, other waste handling facilities	2.3.7 b	$0	Included under No. 40	N
42	BMP	*Identify name and title of staff of the Pollution Prevention Team for each facility	2.3.7 b ii a	$0	Included under No. 40	N
43	BMP	*for each facility: include map, description of activities, outfall locations, receiving waters and structural controls	2.3.7 b ii b	$0	Included under No. 40	N
44	BMP	*select , sign, install and implement the following 9 control measures to prevent or reduce discharge of pollutants	2.3.7 b ii c	$0	Implementation of a number of control measures, cost will depend upon type of enforcement	N
45	BMP	*take all reasonable measure to address quality of discharges that may not originate at the facility	2.3.7 b ii c	$0	extra work, depends on variations of the extent of impaired waters	N
46	Admin	*for areas that discharge to impaired waters, identify the control measures to address that issue	2.3.7 b ii c	$0	Included under No. 44	N
47	BMP	*SWPP Required Elements: Minimize or Prevent Exposure (e.g., move activities or materials under cover)	2.3.7 d 1	$0	Included under No. 44	N
48	BMP	*Good Housekeeping	2.3.7 d 2	$0	Included under No. 44	N
49	BMP	*Preventative Maintenance	2.3.7 d 3	$0	Included under No. 44	N
50	BMP	*Spill Prevention and Response	2.3.7 d 4	$0	Included under No. 44	N
51	BMP	*Erosion and Sediment Control	2.3.7 d 5	$0	Included under No. 44	N
52	BMP	*Management of Runoff	2.3.7 d 6	$0	Included under No. 44	N
53	BMP	*Salt Storage or Piles Containing Salt	2.3.7 d 7	$0	Included under No. 44	N
54	BMP	*Employee Training; document training date, title and duration; attendees; subjects covered during training	2.3.7 d 8	$0	Included under No. 44	N
55	BMP	*Maintenance of Control Measures	2.3.7 d 8	$0	Included under No. 44	N
56	BMP	*Inspect all areas exposed to stormwater and all stormwater control measures at least every calendar quarter	2.3.7 b iii a	$2,000	20hrs @ $100/hr, assume 30min/inspection and 10 facilities with four areas each	N
57	BMP	*at least one inspection shall occur when a stormwater discharge is occurring	2.3.7 b iii a	$2,937	267 outfalls, about 30min/area @ $22/hr	N
58	Admin	*document the date, time, name of inspector, weather, any control measures needing maintenance or repair, etc.	2.3.7 b iii a	$0	Already included as operating costs, should be green	N
59	BMP	*permitee shall repair or replace any control measures needing repair before the next anticipated storm event	2.3.7 b iii a	$0	costs for maintenance procedures	N
60	Admin	*shall report the findings from the Site inspections in the annual report	2.3.7 b iii a	$0	See Miscellaneous No. 50	N
61	Admin	*keep a written record of all required activities required in this section	2.3.7 b iv	$0	Minimal investment for records keeping	N

Estimated Annual Costs	$693,578
Estimated One-time Costs	$6,292
Estimated Intermittent Costs	$0

No.	BMP/Admin	Miscellaneous Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	Submit an NOI	1.7.1	$176	8hrs @ $22/hr, historical properties or endangered species will increase this cost	Y
2	Admin	*Document endangered species status (part of NOI)	1.9.1	$0	Included under No. 1	N
3	BMP	*Implement measures to protect endangered species	1.9.1	$0	cost varies. included under No. 1	N
4	Admin	Document Historic Properties Observation (part of NOI)	1.9.2	$0	minimal cost, Included under No. 50	N
5	BMP	*Describe effect of discharges on Historic properties	1.9.2	$0	Varies, Included under No. 1	N
6	Admin	*Report documents received re: such discharges	1.9.2	$0	Included under No. 1	N
7	Admin	*Provide results of Appendix D historic property screening	1.9.2	$0	Included under No. 1	N
8	BMP	Describe efforts to avoid or minimize impacts on such properties	1.9.2	Varies	Included under No. 1	Y
9	BMP	Develop a SWMP	1.10	$1,760	80hrs @ $22/hr,	Y
10	BMP	Implement a SWMP	1.10	$0	Included under No. 9	Y
11	Admin	*Update/modify SWMP	1.10	$440	20hrs @ $22/hr,	N
12	Admin	Provide SWMP "immediately" to various agencies and public	1.10.1	$0	Included under No. 9	Y
13	Admin	*Post SWMP online	1.10.1	$0	Included under No. 9	Y
14	Admin	Identify Names and titles of people implementing the SWMP	1.10.2	$0	Included under No. 9	N
15	Admin	**Include status of 2003 permit requirements**	1.10.2	$0	Included under No. 9	Y
16	Admin	*List all receiving water bodies, classifications, pollutants of concern	1.10.2	$0	Included under No. 9	N
17	Admin	*list all applicable TMDLs, WLAs	1.10.2	$0	Included under No. 9	N
18	Admin	*List all outfalls that discharge to each water body	1.10.2	$0	Included under No. 9	N
19	Admin	*list all public water sources that may be affected by SW discharges	1.10.2	$0	Included under No. 9	N
20	Admin	*List all interconnected MS4s and receiving water body	1.10.2	$0	Included under No. 9	N
21	Admin	*Include applicable TMDLs, WLAs and pollutants of concern	1.10.2	$0	Included under No. 9	N
22	Admin	*Document all new or increased discharges	1.10.2	$0	Included under No. 9	N
23	Admin	*Include map of separate storm sewer system (Map must be improved)	1.10.2	$0	Included under No. 9	N
24	Admin	List all discharges to impaired water and the response	1.10.2	$0	Included under No. 9	Y
25	Admin	*Describe BMPs proposed to meet TMDL requirements	1.10.2	$0	Included under No. 9	N
26	Admin	For each BMP, list the milestone, timeframe and assessment measure	1.10.2	$0	Included under No. 9	Y
27	Admin	*For each BMP, list person or department responsible for implementation	1.10.2	$0	Included under No. 9	N
28	Admin	*Describe BMPs proposed to meet impaired waters requirements	1.10.2	$0	Included under No. 9	N
29	Admin	Describe BMPs used to meet the 6 minimum control measures	1.10.2	$0	Included under No. 9	Y
30	Admin	*List measures to avoid/minimize impacts to surface drinking waters	1.10.2	$0	Included under No. 9	N
31	BMP	*Ensure that discharges "do not cause or contribute" to an exceedance of WQ standards	2.1	$0	Included under No. 9	N
32	BMP	*For TMDL waters, meet requirements of Appendix F (NB: contains multiple add'l req'ts)	2.1.1 b	Varies	May range into millions of dollars, no one has estimated this yet	N
33	BMP	*For impaired waters meet requirements of Appendix H (NB: contains multiple add'l req'ts)	2.1.1 c	Varies	May range into millions of dollars, no one has estimated this yet	N
34	BMP	*For any exceedances of WQ standards to TMDL or impaired waters, eliminate it within 60 days	2.1.1 d	Varies	May range into millions of dollars, no one has estimated this yet	N
35	BMP	*For any increased discharge, comply with MassDEP's regulations at 314 CMR 4.04	2.1.2 a	Varies	Cost will vary	N
36	BMP	*Demonstrate no net increase in pollutants for discharges to any 303 (d) or 305(b) water (previously only had to identify if 303 d)	2.1.2 b	Varies	Cost will vary	N
37	Admin	*Identify all discharges to waters that are impaired or which have TMDLs (Both in SWMP and Annual report)	2.2	$0	Varies depending on EPA interpretations	N
38	Admin	*Permittee shall annually self-evaluate and maintain the evaluation in its SWMP	4.1 a	$0	Included under No. 9	N
39	Admin	*In evaluating the appropriateness of BMPs, permittees may add BMPs at any time	4.1 b	$88	4hrs @ $22/hr, paperwork for new BMP	N
40	Admin	Subtracting or replacing BMPs may only be done in limited circumstances, after showing the BMP is ineffective	4.1 b	Varies	Cost of replacement will depend on the BMP being used	Y
41	Admin	*Each Annual shall include a brief explanation of any BMP modification	4.1 b	$0	Included under Public Education No. 7	N
42	Admin	EPA or MassDEP may require the permitte to add, modify, etc., any BMP to satisfy conditions of the permit	4.1.c	$0	Minimal cost	Y
43	Admin	*The permittee shall keep all record required by this permit for at least five years	4.2 a	$880	40hrs at $22/hr	N
44	Admin	*"Records" includes "information used in the development of any written program . . . monitoring results, etc."	4.2 a	$0	Record keeping, doesn't cost anything to implement	N
45	Admin	these records all be made available to the public	4.2 c	$0	Record keeping, doesn't cost anything to implement	Y
46	Admin	*the permitee "shall document all monitoring results each year in the annual report"	4.3 b	$0	Included under Public Education No. 7	N
47	Admin	*that shall include the date, outfall identifier, location, weather, precipitation and screening or analysis results	4.3 b	$0	Included under No. 46	N
48	Admin	*include all monitoring results for the current reporting period and for the entire permit term	4.3 b	$0	Included under No. 46	N
49	Admin	*permittee shall include "results from any other stormwater or receiving water quality monitoring or studies . . ."	4.3 c	$0	Included under No. 46	N
50	Admin	The annual report shall include a self-assessment of compliance; an assessment of the appropriateness of BMPs	4.4 b i	$12,000	Consulting fee for annual report, increased from $3000 based on Matt's estimated	Y
51	Admin	*The status of any required plans	4.4 b iii	$0	Included under No. 50	N
52	Admin	*"Identification of all discharges determined to be causing or contributing to an exceedance" of WQ standards	4.4 b iii	$0	Included under No. 50	N
53	Admin	*For discharges to TMDLs, identify specific BMPs used to address those requirements	4.4 b iii	$0	Included under No. 50	N
54	Admin	*For discharges to impaired waters, "a description of each BMP required by Appendix H" and all deliverables	4.4 b iii	$0	Included under No. 50	N
55	Admin	*Assessment of the progress toward meeting the requirements for the 6 minimum control measures (see details)	4.4 b iv	$0	Included under No. 50	N
56	Admin	*"All outfall screening and monitoring data" for the reporting term and cumulative for the permit term	4.4 b v	$0	Included under No. 50	N
57	Admin	Description of activities for the next reporting cycle	4.4 b vi	$0	Included under No. 50	Y
58	Admin	Description of any changes in identified BMPs or measurable goals	4.4 b vii	$0	Included under No. 50	Y
59	Admin	*Description of activities undertaken by any entity contracted for achieving any requirement of the permit	4.4 b viii	$0	Included under No. 50	N

Estimated Annual Costs	$12,968
Estimated One-time Costs	$2,376
Estimated Intermittent Costs	$0

Appendix G

Appendix G

Sample Interview Material

Preamble

We are a group of students from Worcester Polytechnic Institute (WPI). We are conducting this interview in order to learn more about the cost of implementing the new 2014 MS4 permit. By participating in this interview, you will help us assess the total cost of compliance for _____(Town Name). If you want, we are able to keep your responses anonymous so you cannot be identified in this report. Your participation in this interview is completely voluntary and you can abstain from answering any question or stop the interview at any point. If you would like, we can provide you with a copy of the results at the end of our project. This project is a collaboration between the Massachusetts Department of Environmental Protection (MassDEP) and WPI, and all of us appreciate your participation.

Sample Interview Questions

1. Does your municipality use a contractor for stormwater management?
    a. If so, may we have their contact information?
2. How much does your municipality spend on public education?
    a. Does your municipality provide pamphlets?
    b. Does your municipality have public access television programs about stormwater management?
    c. How much do you spend on posting signage?

    d. Do you use social media to provide information? If so, how much does it cost?

3. How much does your municipality spend on public participation?
    a. Do you hold town meetings about stormwater management?
4. How much does your municipality spend on illicit discharge and elimination?
    a. Does your municipality use the database?
    b. How much does it cost you to map your catchment basins?
    c. Does your municipality have retention ponds for stormwater? If so, do you maintain them?
    d. How often does your municipality street sweep?
    e. How much does it cost you to remove illicit discharges?
    f. How much does it cost you to train municipal employees to use the detection equipment?
5. How much does your municipality spend on construction site runoff control?
    a. How much does it cost to notify municipal residents about impending construction projects?
    b. How much does it cost you to inspect construction sites?
6. How much does your municipality spend on post-construction site runoff control?
    a. How much does it cost for you to inspect the construction sites after completion of the construction?
7. How much does your municipality spend on good housekeeping?
    a. How much does it cost your municipality to maintain stormwater management BMPs every year?
    b. How much does it cost to train your employees to maintain BMPs?

c. How much does it cost you to inspect your best management practices?

d. How much does it cost you per year to street sweep?

8. Could you provide us with a cost report for your municipality?

    a. Itemized report stormwater spending?

9. Do you believe that your town effectively implemented the requirements of the 2003 MS4 permit?

10. To what extent do you believe your town is prepared to implement the requirements of the new MS4 permit?

    a. What challenges do you foresee in implementing the new MS4 permit?

    b. How do you plan to provide additional funding for implementing the new permit?

Appendix H

Control Measure	Estimated Annual Costs	Estimated One-time Costs	Estimated Intermittent Costs
Public Education and Outreach	$0	$0	$0
Public Involvement and Participation	$0	$0	$0
Illicit Discharge Detection and Elimination Program	$0	$0	$0
Construction Site Stormwater Runoff Control	$0	$0	$0
Post Construction Stormwater Management	$0	$0	$0
Good Housekeeping	$0	$0	$0
Non-Control Measure			
Miscellaneous	$0	$0	$0
Totals	**$0**	**$0**	**$0**

KEY:

Yearly	No. = Reference Number
Once	BMP/Admin = Is the requirement completed with either a BMP or Administrative work
As Needed	X Requirement = The short name for a requirement
	Requirement = Section in the 2014 MS4 permit draft
	Cost = Cost of completing the requirement
	Justification = List of methods used to complete the requirement, as well supporting data from sources
	In Place (Y/N) = Is the requirement listed currently in place

No.	BMP/Admin	Public Education and Outreach Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	Continue public education program required by 2003 permit	2.3.2 a			
2	Admin	*Define goals, express specific messages define audience for each message	2.3.2 a			
3	Admin	*Identify parties responsible for each message	2.3.2 a			
4	Admin	*Develop and send out two separate messages for each of 4 different audiences	2.3.2 c			
5	Admin	*Show evidence that messages are achieving results	2.3.2 e			
6	Admin	*Identify method used to evaluate effectiveness of messages	2.3.2 e			
7	Admin	*Put in annual report the methods of distribution and methods to assess effectiveness	2.3.2 g			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Public Involvement and Participation Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*Comply with state public Notice requirements	2.3.3 a			
2	Admin	Provide annual opportunity for public to participate in review and implementation of SWMP	2.3.3 b			
3	Admin	*Put in annual report these public participation activities	2.3.3 c			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Illicit Discharge Detection and Elimination Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Eliminate any illicit discharge to the stormwater system as expeditiously as possible	2.3.4.2			
2	BMP	*Identify who is responsible for any such discharges	2.3.4.2			
3	Admin	*If elimination takes more than 60 days, establish an expeditious schedule for elimination	2.3.4.2			
4	Admin	*If more than 60 days, report dates of identification and schedules in annual report	2.3.4.2			
5	BMP	Implement measures to control non-stormwater discharges if they add significant pollution	2.3.4.3			
6	Admin	*Identify all known locations where SSOs have discharged to the MS4 in last 5 years	2.3.4.4 b			
7	Admin	*For each such SSO discharge, include date and time, location, volume, suspected cause	2.3.4.4 b			
8	Admin	*Also include whether each entered any surface water and what corrective actions were taken	2.3.4.4 b			
9	Admin	*Also include corrective measures planned and implementation schedule	2.3.4.4 b			
10	Admin	*Maintain the SSO inventory as part of the SWMP and the Annual Reports	2.3.4.4 b			
11	Admin	*Provide oral and written notice to EPA and MassDEP for any SSO occurrence	2.3.4.4 c			
12	BMP	*Develop an inventory of each MS4 outfall, including location, interconnections, and condition (different only in that it requires the condition of the outfall)	2.3.4.5			
13	Admin	*Update inventory annually to include monitoring program	2.3.4.5 b			
14	BMP	*Physically label all MS4 outfall pipes	2.3.4.5 b			
15	Admin	*For each outfall list unique identifier, receiving water, date of most recent inspection	2.3.4.5 c			
16	Admin	*Also include dimensions, shape, material, physical condition and indicators of non-SW discharges	2.3.4.5 c			
17	BMP	*Revise existing map of stormwater system within 2 years of effective date of the permit	2.3.4.6			
18	BMP	*Map shall include all outfalls, pipes, manholes, catch basins, interconnections, open channels	2.3.4.6 a i			
19	BMP	*Also include all municipally-owned BMPs (e.g., retention basins, oil/water separators, etc.)	2.3.4.6 a i			
20	BMP	*Also include catchment delineation and all waters listed on the 303(d) or 305 (b) list	2.3.4.6 a i			
21	BMP	*Also include municipal sanitary sewers or combined sewer systems	2.3.4.6 a ii			
22	BMP	*Include various recommended elements	2.3.4.6 a iii			
23	BMP	*Update the map to reflect newly discovered information and corrections or modifications	2.3.4.6 b			
24	Admin	*Report on the progress toward completion of the map in each annual report	2.3.4.6 c			
25	BMP	*Write an Illicit Discharge Detection and Elimination (IDDE) program document (Discrete, specifically mentions the document must be written out)	2.3.4.7			
26	Admin	Adopt an IDDE ordinance	2.3.4.7 a			
27	Admin	*Program shall clearly identify IDDE responsibilities and provide description of areas of responsibility	2.3.4.7 b			
28	BMP	*Assess and priority rank each catchment into one of 4 possible categories (soupped up from previous "priority" mark in 2003)	2.3.4.7 c i			
29	Admin	*Priority rank each catchment within each category (except those "excluded") using 8 factors (soupped up from previous "priority" mark in 2003)	2.3.4.7 c ii			
30	Admin	*Gather all information needed for the 8 screening factors (e.g., industrial areas > 40 years old)	2.3.4.7 c ii			
31	Admin	*Complete ranking using existing information within 1 year; update in annual report	2.3.4.7 c iii			
32	Admin	*In annual report include summary of evidence of known/suspected illicit discharges by catchment	2.3.4.7 c iii			
33	Admin	*Also include corrective measures and schedule for correcting each illicit discharge	2.3.4.7 c iii			
34	Admin	*Develop written procedure for screening and sampling of outfalls	2.3.4.7 d			
35	Admin	*Include procedures for sample collection, use of field kits and storage and conveyance of samples	2.3.4.7 d i			
36	BMP	*If outfall is inaccessible, report the first accessible upstream structure	2.3.4.7 d ii			
37	BMP	*Perform dry weather screening when and how prescribed; identify in annual report any follow-up needed	2.3.4.7 d iii			
38	BMP	*Perform wet weather screening when and how prescribed	2.3.4.7 d iv			
39	BMP	*Sample at minimum for 7 listed factors	2.3.4.7 d v			
40	Admin	*Catchments with specified septic or other results shall be listed as "High Priority" catchments	2.3.4.7 d vi			
41	BMP	*Develop written Catchment Investigation Procedure including review of maps and historic records	2.3.4.7 e			
42	BMP	*Also include manhole investigation methodology and procedures to confirm sources of illicit discharges	2.3.4.7 e			
43	BMP	*For each catchment review sanitary sewer and storm sewer construction plans; prior work on either	2.3.4.7 e i			
44	BMP	*Also review Health department records for septic system or sanitary sewer system failures or complaints	2.3.4.7 e i			
45	Admin	*Identify and record any of the 12 System Vulnerability Factors (e.g., infrastructure > 40 years old)	2.3.4.7 e i			
46	Admin	*Document and annually report presence or absence of the 12 System Vulnerability Factors for each catchment	2.3.4.7 e i			
47	Admin	*Include these required elements of written manhole investigation and catchment investigation procedures	2.3.4.7 e ii			
48	Admin	*Include these required elements in written dry weather investigation procedure	2.3.4.7 e ii a			
49	Admin	*Include these required elements in written wet weather investigation procedure	2.3.4.7 e ii b			
50	Admin	*Develop procedures to isolate and confirm illicit sources (e.g., dye testing, smoke testing, caulk dams, etc.)	2.3.4.7 e iii			
51	Admin	*In annual report, for each illicit source list the location, its source, description of the discharge	2.3.4.7 f			
52	Admin	*Also list date and method of discovery, date of elimination, mitigation or enforcement action	2.3.4.7 f			
53	Admin	*And estimate volume of flow reduced	2.3.4.7 f			
54	BMP	*One year after illicit discharge removal, perform confirmatory screening; wet, dry or both	2.3.4.7 f			
55	BMP	*Schedule follow up screening within 5 years after confirmatory screening	2.3.4.7 g			
56	BMP	*Develop and implement procedures to prevent illicit discharges and SSOs	2.3.4.7 h			
57	Admin	*Complete and report dry weather screening and sampling of High and Low Priority outfalls within 3 years	2.3.4.8 a			
58	Admin	*"All data shall be reported in each annual report . . ."	2.3.4.8 a			
59	Admin	*Begin implementation of 2.3.4.7 d work no later than 15 months	2.3.4.8 b			
60	Admin	*Implement and report Catchment Investigation Procedure in every catchment . . .	2.3.4.8 c			
61	Admin	*In a minimum of 80% of the MS4 area serviced by Problem Catchments within 3 years and 100% within 5 years	2.3.4.8 c i			
62	Admin	*For all catchments where sampling indicates sewer input within 5 years	2.3.4.8 c ii			
63	Admin	*In 40% of all area served by all MS4 catchments within 5 years and in 100% of 4 area in 10 years	2.3.4.8 c iii			
64	Admin	*Track progress toward these milestones in each annual report	2.3.4.8 e			
65	Admin	*Define or describe indicators for tracking program success; demonstrate efforts to locate illicit discharges	2.3.4.9			
66	Admin	*Also include percent and area in acres evaluated; volume of sewage removed; place in annual report (more detailed, 2003 only asks to measure progress)	2.3.4.9			
67	Admin	provide annual training to employees involved in IDDE program	2.3.4.10			
68	Admin	*Include type and frequency of training in the annual report (2003 -> The program must include an employee training component)	2.3.4.10			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Continue to implement construction ordinance work from 2003 permit; expand to include 1 acre or more	2.3.5 a			
2	BMP	Develop and implement a construction site runoff program	2.3.5 c			
3	Admin	An ordinance that requires sediment and erosions controls and for other wastes at construction sites	2.3.5 c i			
4	Admin	Adopt written procedures for inspections and enforcement of the ordinance within 1 year (2003 -> (g.) Procedures for inspections and enforcement of control measures at construction sites.)	2.3.5 c ii			
5	Admin	*Document the procedures and responsibilities to implement in the SWMP	2.3.5 c ii			
6	Admin	*Include requirements for site operators to implement BMPs (e.g., reduce disturbed area, protect slopes, etc.)	2.3.5 c iii			
7	Admin	*Include requirements for site operators to control other wastes	2.3.5 c iv			
8	Admin	*Develop written procedures for site plan review and inspection and enforcement within 1 year (003 -> nearly same, now has time requirement)	2.3.5 c v			
9	Admin	*Include pre-construction review, consideration for protection of water quality impacts, LID components	2.3.5 c v			
10	Admin	*And receipt of information from the public, inspections during and after BMP installation (now covers post construction)	2.3.5 c v			
11	Admin	*And "qualifications necessary to perform the inspections"	2.3.5 c v			
12	Admin	*And procedure for tracking the number of site reviews, inspections and enforcement actions	2.3.5 c v			
13	Admin	*All to be included in the annual report	2.3.5 c v			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Post Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*develop implement and enforce a post-construction SW program for new developments and redevelopments	2.3.6 a			
2	Admin	*adopt or amend a local ordinance to control projects that disturb an acre or more	2.3.6 a ii			
3	BMP	*retain and/or treat first inch of runoff; where technically feasible do retention first	2.3.6 a ii a			
4	BMP	*"from all impervious surfaces on site"	2.3.6 a ii a			
5	Admin	*sites with soil contamination problems or at industrial sites shall not include any infiltration BMPs	2.3.6 a ii b			
6	Admin	*infiltration systems near environmentally sensitive areas must include shutdown and containment systems	2.3.6 a ii c			
7	Admin	*all BMPs must be constructed in accordance with the MA Stormwater Handbook	2.3.6 a ii d			
8	Admin	*this system shall include development of a long term O&M plan to inspect and repair BMPs	2.3.6 a ii e			
9	Admin	*systems shall be designed "to avoid disturbance of areas susceptible to erosion and sediment loss"	2.3.6 a ii f			
10	BMP	*systems shall require submittal of as-built drawings that depict all on site controls	2.3.6 a iii			
11	Admin	*shall have procedures to ensure O&M, such as dedicated funds, escrow accounts or management contracts	2.3.6 a iii			
12	Admin	*may include annual self-certification program	2.3.6 a iii			
13	Admin	*annual report shall include measures that the permittee has done to meet these requirements	2.3.6 a iii			
14	BMP	*w/in 3 years document current street design and parking rules that affect creation of impervious cover	2.3.6 b			
15	BMP	*shall be used by permittee to determine if changes "can be made to support low impact design options"	2.3.6 b			
16	BMP	*if changes can be made, assessment shall include recommendations and proposed schedules to adopt changes	2.3.6 b			
17	BMP	*permittee "shall implement all recommendations . . ."; assessment must be placed in the SWMP	2.3.6 b			
18	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 b			
19	BMP	*w/in 4 years assess local rules to determine feasibility of allowing green roofs, water harvesting and LID BMPs	2.3.6 c			
20	Admin	*assessment shall indicate if and under what circumstances these practices are allowed	2.3.6 c			
21	BMP	*if practices not allowed, determine what hinders use of these practices and what changes can be made	2.3.6 c			
22	BMP	*provide a schedule of implementation of recommendations	2.3.6 c			
23	BMP	*"permittee shall implement all recommendations, in accordance with the schedules . . ."	2.3.6 c			
24	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 c			
25	Admin	*estimate the annual increase or decrease in Impervious Area and Directly Connected Impervious Area	2.3.6 d			
26	Admin	*tabulate results by sub-basins delineated per 2.3.4.6 a I	2.3.6 d i			
27	Admin	*must include conventional pavements, driveways, parking lots and rooftops	2.3.6 d i			
28	Admin	*starting with second annual report, estimate each sub-basin added or removed each year	2.3.6 d ii			
29	Admin	*break out those figures by development, redevelopment or retrofit by permittee, by others voluntarily	2.3.6 d ii			
30	Admin	*. . . or in compliance with the permittee's ordinances or bylaws	2.3.6 d ii			
31	Admin	*within 4 years complete inventory and ranking of Municipal property suitable for modification or retrofit to . . .	2.3.6 d iii			
32	Admin	*. . .reduce frequency, volume and pollutant loads of stormwater discharges by reduction of impervious area	2.3.6 d iii			
33	Admin	*shall include both on site and off site reduction of IA and DCIA (e.g., parking lots, buildings, etc.)	2.3.6 d iii			
34	Admin	*also include existing rights-of-way,	2.3.6 d iii			
35	Admin	*for suitability the evaluation shall consider factors such as depth to water table; subsurface geology; access	2.3.6 d iii			
36	Admin	*priority ranking shall consider factors such as CIP schedules; current storm sewer level of service, etc.	2.3.6 d iii			
37	Admin	*starting with fifth year annual report, report on status of all such inventoried properties	2.3.6 d iii			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Pollution Prevention and Good Housekeeping Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*W/in 1 year develop or update written O&M procedures for listed municipal facilities	2.3.7 a i			
2	Admin	*w/in 1 year inventory all permittee owned facilities in these "good housekeeping" categories	2.3.7 a ii			
3	Admin	*For Parks and Open Space: procedures to address the use, storage and minimization of pesticides, fertilizers, etc	2.3.7 a ii a			
4	Admin	*to be reviewed annually and updated as necessary	2.3.7 a ii a			
5	Admin	*evaluate lawn maintenance and landscaping activities to be protective of water quality	2.3.7 a ii a			
6	Admin	*including reduced mowing, proper disposal of lawn clippings, use of drought resistant plantings	2.3.7 a ii a			
7	Admin	*establish pet waste handling collection, disposal and signage at all parks and open spaces	2.3.7 a ii a			
8	Admin	*establish procedures for scheduled cleaning and sufficient number of trash containers	2.3.7 a ii a			
9	Admin	*For Buildings and Facilities, such as town offices, police and fire stations, municipal pools, etc	2.3.7 a ii b			
10	Admin	*evaluate the use. Storage and disposal of petroleum products and train employees on proper procedures	2.3.7 a ii b			
11	Admin	*ensure that spill prevention is in place and coordinate with fire department	2.3.7 a ii b			
12	Admin	*develop management procedures for dumpsters and other waste management equipment	2.3.7 a ii b			
13	Admin	*For Vehicles and Equipment: establish procedures for storage of permittee vehicles, including inside storage	2.3.7 a ii c			
14	Admin	*establish procedures to ensure that vehicle wash water does not enter the SW system	2.3.7 a ii c			
15	Admin	*evaluate fueling areas to minimize exposure	2.3.7 a ii c			
16	Admin	*Infrastructure O&M: w/in 1 year develop and implement procedures to take care for the MS4 system	2.3.7 a iii a			
17	Admin	*optimize routine inspections (e.g., prioritize catch basins located near construction sites)	2.3.7 a iii b			
18	BMP	*ensure that "no catch basin at anytime will be more than 50 percent full"	2.3.7 a iii b			
19	BMP	*if more than 50% full during two routine cleanings, investigate the cause for excessive sediment loading	2.3.7 a iii b			
20	Admin	*describe these actions in the annual report	2.3.7 a iii b			
21	Admin	*document in annual report the plan for optimizing catch basin cleaning, inspections or scheduling	2.3.7 a iii b			
22	Admin	*include metrics used to determine that the plan is optimal for the MS4	2.3.7 a iii b			
23	Admin	*in each annual report list the total number of catch basins, number inspected and/or cleaned	2.3.7 a iii b			
24	Admin	*and "volume or mass of material removed from each catch basin draining to water quality limited waters"	2.3.7 a iii b			
25	Admin	*and "total volume or mass of material removed from all catch basins"	2.3.7 a iii b			
26	BMP	*Sweeping: develop and implement procedures for sweeping streets and municipal-owned lots	2.3.7 a iii c			
27	BMP	*sweep all streets (rural exceptions apply) a minimum of once a year in the spring	2.3.7 a iii c			
28	BMP	*procedures shall include more frequent sweeping of targeted area based on various listed criteria	2.3.7 a iii c			
29	BMP	*criteria include inspections, pollutant loads, catch basin cleanings, land use, TMDL or impaired waters	2.3.7 a iii c			
30	Admin	*Each annual report shall include number of miles cleaned and volume or mass of material removed	2.3.7 a iii c			
31	Admin	*for rural exception areas, either sweep per usual or develop specific procedures and place in first annual report	2.3.7 a iii c			
32	BMP	*properly store catch basin cleanings so they do not discharge to receiving waters	2.3.7 a iii d			
33	BMP	*establish and implement procedures for winter road maintenance including storage of salt and sand	2.3.7 a iii e			
34	BMP	*minimize use of sodium chloride and other salts; evaluate opportunities for alternative materials	2.3.7 a iii e			
35	Admin	*ensure that snow is not disposed into surface waters	2.3.7 a iii e			
36	Admin	*establish procedures for O&M or all permittee-owned stormwater BMPs (e.g., swales, retention basins etc.)	2.3.7 a iii f			
37	BMP	*inspect all such structures at least once annually	2.3.7 a iii f			
38	Admin	*in annual report include status of work required in this part	2.3.7 a iv			
39	Admin	*permittees shall keep a written record of all required activities	2.3.7 a v			
40	BMP	*develop and fully implement a SWPPP for each of the listed facilities no later than 2 years after effective date	2.3.7 b			
41	BMP	*includes maintenance garages, public works yards, transfer stations, other waste handling facilities	2.3.7 b			
42	BMP	*Identify name and title of staff of the Pollution Prevention Team for each facility	2.3.7 b ii a			
43	BMP	*for each facility: include map, description of activities, outfall locations, receiving waters and structural controls	2.3.7 b ii b			
44	BMP	*select , sign, install and implement the following 9 control measures to prevent or reduce discharge of pollutants	2.3.7 b ii c			
45	BMP	*take all reasonable measure to address quality of discharges that may not originate at the facility	2.3.7 b ii c			
46	Admin	*for areas that discharge to impaired waters, identify the control measures to address that issue	2.3.7 b ii c			
47	BMP	*SWPP Required Elements: Minimize or Prevent Exposure (e.g., move activities or materials under cover)	2.3.7 d 1			
48	BMP	*Good Housekeeping	2.3.7 d 2			
49	BMP	*Preventative Maintenance	2.3.7 d 3			
50	BMP	*Spill Prevention and Response	2.3.7 d 4			
51	BMP	*Erosion and Sediment Control	2.3.7 d 5			
52	BMP	*Management of Runoff	2.3.7 d 6			
53	BMP	*Salt Storage or Piles Containing Salt	2.3.7 d 7			
54	BMP	*Employee Training; document training date, title and duration; attendees; subjects covered during training	2.3.7 d 8			
55	BMP	*Maintenance of Control Measures	2.3.7 d 8			
56	BMP	*Inspect all areas exposed to stormwater and all stormwater control measures at least every calendar quarter	2.3.7 b iii a			
57	BMP	*at least one inspection shall occur when a stormwater discharge is occurring	2.3.7 b iii a			
58	Admin	*document the date, time, name of inspector, weather, any control measures needing maintenance or repair, etc	2.3.7 b iii a			
59	BMP	*permittee shall repair or replace any control measures needing repair before the next anticipated storm event	2.3.7 b iii a			
60	Admin	*shall report the findings from the Site inspections in the annual report	2.3.7 b iii a			
61	Admin	*keep a written record of all required activities required in this section	2.3.7 b iv			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Miscellaneous Requirement		Reference	Cost	Justification	In Place (Y/N)
1	BMP	Submit an NOI		1.7.1			
2	Admin	*Document endangered species status (part of NOI)		1.9.1			
3	BMP	*Implement measures to protect endangered species		1.9.1			
4	Admin	Document Historic Properties Observation (part of NOI)		1.9.2			
5	BMP	*Describe effect of discharges on Historic properties		1.9.2			
6	Admin	*Report documents received re: such discharges		1.9.2			
7	Admin	*Provide results of Appendix D historic property screening		1.9.2			
8	BMP	Describe efforts to avoid or minimize impacts on such properties		1.9.2			
9	BMP	Develop a SWMP		1.10			
10	BMP	Implement a SWMP		1.10			
11	Admin	*Update/modify SWMP		1.10			
12	Admin	Provide SWMP "immediately" to various agencies and public		1.10.1			
13	Admin	*Post SWMP online		1.10.1			
14	Admin	Identify Names and titles of people implementing the SWMP		1.10.2			
15	Admin	***Include status of 2003 permit requirements**		1.10.2			
16	Admin	*List all receiving water bodies, classifications, pollutants of concern		1.10.2			
17	Admin	*list all applicable TMDLs, WLAs		1.10.2			
18	Admin	*List all outfalls that discharge to each water body		1.10.2			
19	Admin	*list all public water sources that may be affected by SW discharges		1.10.2			
20	Admin	*List all interconnected MS4s and receiving water body		1.10.2			
21	Admin	*Include applicable TMDLs, WLAs and pollutants of concern		1.10.2			
22	Admin	*Document all new or increased discharges		1.10.2			
23	Admin	*Include map of separate storm sewer system (Map must be improved)		1.10.2			
24	Admin	List all discharges to impaired water and the response		1.10.2			
25	Admin	*Describe BMPs proposed to meet TMDL requirements		1.10.2			
26	Admin	For each BMP, list the milestone, timeframe and assessment measure		1.10.2			
27	Admin	*For each BMP, list person or department responsible for implementation		1.10.2			
28	Admin	*Describe BMPs proposed to meet impaired waters requirements		1.10.2			
29	Admin	Describe BMPs used to meet the 6 minimum control measures		1.10.2			
30	Admin	*List measures to avoid/minimize impacts to surface drinking waters		1.10.2			
31	BMP	*Ensure that discharges "do not cause or contribute" to an exceedance of WQ standards		2.1			
32	BMP	*For TMDL waters, meet requirements of Appendix F (NB: contains multiple add'l req'ts)		2.1.1 b			
33	BMP	*For impaired waters meet requirements of Appendix H (NB: contains multiple add'l req'ts)		2.1.1 c			
34	BMP	*For any exceedances of WQ standards to TMDL or impaired waters, eliminate it within 60 days		2.1.1 d			
35	BMP	*For any increased discharge, comply with MassDEP's regulations at 314 CMR 4.04		2.1.2 a			
36	BMP	*Demonstrate no net increase in pollutants for discharges to any 303 (d) or 305(b) water (previously only had to identify if 303 d)		2.1.2 b			
37	Admin	*Identify all discharges to waters that are impaired or which have TMDLs (Both in SWMP and Annual report)		2.2			
38	Admin	*Permittee shall annually self-evaluate and maintain the evaluation in its SWMP		4.1 a			
39	Admin	*In evaluating the appropriateness of BMPs, permittees may add BMPs at any time		4.1 b			
40	Admin	Subtracting or replacing BMPs may only be done in limited circumstances, after showing the BMP is ineffective		4.1 b			
41	Admin	*Each Annual shall include a brief explanation of any BMP modification		4.1 b			
42	Admin	EPA or MassDEP may require the permittee to add, modify, etc., any BMP to satisfy conditions of the permit		4.1.c			
43	Admin	*The permittee shall keep all record required by this permit for at least five years		4.2 a			
44	Admin	*"Records" includes "information used in the development of any written program . . . monitoring results, etc."		4.2 a			
45	Admin	these records all be made available to the public		4.2 c			
46	Admin	*the permittee "shall document all monitoring results each year in the annual report"		4.3 b			
47	Admin	*that shall include the date, outfall identifier, location, weather, precipitation and screening or analysis results		4.3 b			
48	Admin	*include all monitoring results for the current reporting period and for the entire permit term		4.3 b			
49	Admin	*permittee shall include "results from any other stormwater or receiving water quality monitoring or studies . . ."		4.3 c			
50	Admin	The annual report shall include a self-assessment of compliance; an assessment of the appropriateness of BMPs		4.4 b i			
51	Admin	*The status of any required plans		4.4 b iii			
52	Admin	*"Identification of all discharges determined to be causing or contributing to an exceedance" of WQ standards		4.4 b iii			
53	Admin	*For discharges to TMDLs, identify specific BMPs used to address those requirements		4.4 b iii			
54	Admin	*For discharges to impaired waters, "a description of each BMP required by Appendix H" and all deliverables		4.4 b iii			
55	Admin	*Assessment of the progress toward meeting the requirements for the 6 minimum control measures (see details)		4.4 b iv			
56	Admin	*"All outfall screening and monitoring data" for the reporting term and cumulative for the permit term		4.4 b v			
57	Admin	Description of activities for the next reporting cycle		4.4 b vi			
58	Admin	Description of any changes in identified BMPs or measurable goals		4.4 b vii			
59	Admin	*Description of activities undertaken by any entity contracted for achieving any requirement of the permit		4.4 b viii			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

Central Massachusetts Regional Stormwater Coalition

Comments to USEPA on 2014 Draft Massachusetts
Small Municipal Separate Storm Sewer System (MS4) Permit

February 27, 2015

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ATTACHMENT C

Maine Department of Environmental Protection. *General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems*. July 2013.

State of Maine
Department of Environmental Protection
Bureau of Land and Water Quality

General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems

MER041000

General Permit--Municipal Separate Storm Sewer Systems

Maine Pollutant Discharge Elimination System (MEPDES)

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PART I. General Coverage Under This Permit

A. Permit Coverage. This Municipal Separate Storm Sewer System General Permit, hereinafter described as the General Permit, authorizes the direct discharge of stormwater from a regulated small municipal separate storm sewer system ("MS4") to a MS4 or waters of the State other than groundwater, provided that the MS4 is located in an Urbanized Area as determined by the inclusive sum of the 2000 and 2010 Decennial Census by the Bureau of Census. Small MS4s are those entities which meet the definition in 40 CFR Part 122.26(b)(16). Regulated small MS4s are those entities required pursuant to 40 CFR 122.26(a)(9)(i)(A) to obtain stormwater permit coverage to operate their small MS4. Discharges from regulated small MS4s must meet the requirements of this General Permit and applicable provisions of Maine's waste discharge and water classification statutes and rules. Compliance with this General Permit authorizes a person to discharge stormwater, pursuant to Water Pollution Control Law, 38 M.R.S.A. § 413, as described below. Discharges listed in Part I(D)(2-6) are excluded from coverage under this General Permit. Unless otherwise explicitly noted, this permit only covers operations or activities associated with stormwater runoff from the regulated small MS4 within an identified Urbanized Area.

1. **Effective date of this General Permit.** This General Permit is effective July 1, 2013, and, except as provided in Continuation of General Permit Coverage (Part I, Section C), authorization to discharge under this General Permit expires at midnight June 30, 2018. This General Permit replaces Maine's General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems issued July 1, 2008.

2. **Waiver of authorization.** The Department may grant a regulated small MS4 a waiver from the requirement to obtain authorization if:

   a. The population within the Urbanized Area portion of the municipality is less than 1,000, and stormwater from the MS4 is not causing or contributing to the impairment of a receiving water body; and

   b. The MS4 does not contribute substantially to the pollutant load of a physically interconnected regulated MS4 (see 40 CFR 122.32(d)(1); and

   c. If the MS4 discharges any pollutant(s) that has/have been identified as a cause of impairment of any water body to which it discharges, stormwater controls are not needed based on waste load allocations that are part of an EPA approved or established "total maximum daily load" (TMDL) that addresses the pollutants of concern (see 40CFR 122.32 (d)(2)).

B. Authority. A waste discharge permit is required for the direct or indirect discharge of pollutants to waters of the State.[1] A general permit may be issued for point source discharges (direct discharges) of stormwater.[2] A violation of a condition or requirement of a general permit constitutes a violation of Maine's water quality laws and the federal Clean Water Act, and subjects the discharger to penalties under *Organization and Powers*, 38 M.R.S.A. § 349, and § 309 of the Clean Water Act[3]. Nothing in this General Permit is intended to limit the Department's authority under the waste discharge and water classification statutes or rules. This General Permit does not affect requirements under other applicable Maine statutes such as Site Location of Development (Site Law), Stormwater Management, and Natural Resources Protection (NRPA).

[1] See 38 M.R.S.A. § 413.
[2] See 06-096 CMR 529(2)(a)(2)(i) , 40 CFR §§122.32-122.35.
[3] See 40 CFR §122.36.

This General Permit does not prevent a municipality from adopting stricter standards than contained in this General Permit, or in state or federal law.

C. Continuation of General Permit Coverage. Coverage under this General Permit will be continued, provided there are no changes in the discharge as described in the Notice of Intent ("NOI"). If changes occur or are proposed, the permittee having filed the NOI shall notify the Department, as specified in this General Permit. Upon reissuance of a new general permit, a permittee wishing to continue coverage shall submit a new NOI to the Department.

If this permit is not reissued, revoked or replaced prior to the expiration date, it will be administratively continued and remain in force and effect. In that case, any permittee who was granted permit coverage prior to the expiration date will automatically remain covered by the continued permit until the earlier of:

1. Reissuance or replacement of this General Permit, at which time the permittee shall submit a new NOI to the Department in accordance with the new general permit to maintain authorization to discharge;
2. The permittee's submittal of a Notice of Termination;
3. Issuance of an individual permit for the permittee's discharges; or
4. A formal permit decision by the Commissioner not to reissue this General Permit, at which time the permittee shall seek coverage under an alternative general permit or individual permit.

D. Limitations on Coverage. This General Permit does not authorize a stormwater discharge that requires an individual waste discharge permit or is required to obtain coverage under another waste discharge general permit. The Department may require any person with a discharge authorized by this General Permit to apply for and obtain an individual permit or an alternative general permit.[4] Any interested person may petition the Department to take action under this paragraph. Examples of when an individual waste discharge permit may be required are specified in rule.[5]

1. Compliance with this general permit. Regulated small MS4s must remain in compliance with all standards and requirements of this General Permit. If the Department determines that the standards of this General Permit have not been met, the Department shall notify the permittee and may undertake one or more of the following actions:

a. Authorize coverage under this General Permit after appropriate controls and implementation procedures designed to bring the discharge into compliance with this General Permit and water quality standards have been implemented as determined by the Department;

b. Require an individual waste discharge permit;

c. Inform the person that the discharge is prohibited; or

d. Take enforcement action to address the violation(s).

2. Non-stormwater. This General Permit does not authorize discharges that are mixed with sources of non-stormwater, other than those discharges in compliance with Part IV (H)(3)(c).

3. Discharge of hazardous substances, chemicals, or oil. This General Permit does not authorize the discharge of hazardous substances, chemicals, or oil resulting from an on-site spill.

4. Total maximum daily load ("TMDL"). This General Permit does not authorize a direct discharge that

[4] See General Permits for Certain Wastewater Discharges, 06-096 CMR 529(2)(b)(3) (last amended June 27, 2007).
[5] See 06-096 CMR 529(2)(b)(3)(i)(A)-(G).

is inconsistent with any EPA approved TMDL waste load allocation, except where the TMDL does not provide adequate information to develop specific measures to protect water quality, and any implementation plan for the waterbody to which the direct discharge drains.

5. **Violation of water quality standards.** This General Permit does not authorize a discharge that causes or contributes to a violation of a water quality standard. Discharges covered under this permit may not:

   a. Contain any pollutant, including toxic substances, in quantities or concentrations, which may cause or contribute to any adverse impact on the receiving water;
   b. Be to a receiving water which is not meeting its classification standard for any characteristic which may be affected by the discharge; or
   c. Impart color, taste, turbidity, radioactivity, settleable materials, floating substances or other properties that cause the receiving water to be unsuitable for the designated uses ascribed to its classification.

6. **Waste discharge license (groundwater).** A waste discharge license ("WDL") may be required for the discharge of stormwater through any well or wells, including drywells and subsurface fluid distribution systems. For complete requirements, see Rules To Control The Subsurface Discharge Of Pollutants, 06-096 CMR 543 (effective October 6, 2006), and Stormwater Management, 06-096 CMR 500 Appendix D (last amended December 27, 2006).

   A "subsurface fluid distribution system" is an assemblage of perforated pipes, drain tiles, or similar mechanisms intended to distribute fluids below the surface of the ground. A "well" is a bored, drilled, or driven shaft the depth of which is greater than the largest surface dimension, whether the shaft is typically dry or contains liquid; or a dug hole the depth of which is greater than the largest surface dimension; or a subsurface fluid distribution system. "Well injection" means the subsurface discharge of fluids into or through a well.

7. **Reopener.** This General Permit may be modified or reopened by the Department as provided in Water Pollution Control, 38 M.R.S.A. § 414-A(5).

PART II. Definitions

The following terms have the following meanings as used in this General Permit in addition to the definitions found in Chapter 520 of the Department's rules, and applicable statutory definitions.

A. Applicant. "Applicant" means a municipality, sanitary or sewerage district which files an NOI pursuant to Part III of this General Permit.

B. Best Management Practices ("BMP"). "Best Management Practices" or "BMPs" means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

C. Commissioner. "Commissioner" means the Commissioner of the Maine Department of Environmental Protection.

D. Common Plan of Development or Sale. "Common Plan of Development or Sale" means a subdivision under municipal law as determined by the municipality where the subdivision is located.

E. Compensation Fee Utilization Plan. A "Compensation Fee Utilization Plan" means a plan that specifies how funds received as a fee payment will be allocated to reduce the impact of stormwater pollution to an impaired waterbody.

F. Construction Activity. "Construction Activity" or "activity" means:

1. Construction activity including one acre or more of disturbed area, or activity with less than one acre of total land area that is part of a common plan of development or sale, if the common plan of development or sale will ultimately disturb equal to or greater than one acre;[6] or

2. Any other construction activity designated by the Department based on the potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to waters of the State.

G. Department. "Department" means the State of Maine Department of Environmental Protection.

H. Direct Discharge. "Direct Discharge" or "point source" means any discernible, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation or vessel or other floating craft, from which pollutants are or may be discharged.[7]

I. **Discharge**. "Discharge" means any spilling, leaking, pumping, pouring, emptying, dumping, disposing or other addition of pollutants to the Waters of the State (for the purpose of this General Permit, other than groundwater.)

J. Disturbed Area. "Disturbed Area" means all land areas that are stripped, graded, grubbed, filled or excavated at any time during the site preparation or removing vegetation for, or construction of, a project. Cutting of trees, without grubbing, stump removal, disturbance or exposure of soil is not considered "disturbed area" "Disturbed area" does not include routine maintenance, but does include redevelopment and new impervious areas. "Routine maintenance" is maintenance performed to maintain the original line and grade, hydraulic capacity, and original purpose of the facility. Paving impervious gravel surfaces provided that an applicant or permittee can prove the original line and grade and hydraulic capacity will be maintained and original purpose of the gravel surface remains the same is considered routine maintenance.

K. Illicit Discharge. "Illicit Discharge" means any discharge to a municipal separate storm sewer that is not composed entirely of stormwater other than discharges authorized pursuant to another permit issued pursuant to 38 M.R.S.A. § 413 and the allowable non-stormwater discharges identified in Part IV(H)(3)(c) of this permit.

L. Impaired Waterbody. "Impaired Waterbody" means a waterbody that is not attaining water quality criteria or standards, as determined by the Department.

M. Low Impact Development ("LID"). "Low Impact Development" or "LID" means an approach to land development or redevelopment that provides water quality treatment of stormwater as close to its source as possible.

N. Maximum Extent Practicable ("MEP"). "Maximum Extent Practicable" or "MEP" means available and

[6] Common plan of development or sale has the same meaning as defined in the Maine Construction General Permit.

[7] See Water Classification Program, 38 M.R.S.A. § 466(5) (definition of "direct discharge") and 06-096 CMR 520 (definition of "point source").

feasible considering cost, existing technology, and logistics based on the overall purpose of the project. MEP is the Clean Water Act standard that establishes the level of pollutant reductions that operators of regulated small MS4s must achieve. The reduction of pollutants is achieved by implementing BMPs and other requirements of this General Permit in an iterative process that continually adapts to current conditions and BMP effectiveness, on a location-by-location basis, taking into consideration such factors as condition of receiving waters, specific local concerns, a comprehensive watershed plan, MS4 size, climate implementation schedules, current ability to finance the program, beneficial uses of receiving water, hydrology, geology, and capacity to perform operation and maintenance. The goal of the General Permit, and the projects required to be undertaken under the General Permit, is to protect and improve water quality.

O. Municipal Separate Storm Sewer System ("MS4"). "Municipal Separate Storm Sewer System" or ("MS4") means a conveyance or system of conveyances designed or used for collecting or conveying stormwater (other than a publicly owned treatment works (POTW), as defined at 40 CFR 122.2, or a combined sewer), including, but not limited to, roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels or storm drains owned or operated by any municipality, sewer or sewage district, Maine Department of Transportation (MaineDOT), Maine Turnpike Authority (MTA), State agency or Federal agency or other public entity that discharges directly to waters of the State other than groundwater.

P. Notice of Intent ("NOI"). "Notice of Intent" or "NOI" means a notification of intent to seek coverage under this General Permit, as provided in Part III(A), made by the applicant to the Department on an NOI form(s) provided by the Department. This is also the mechanism used to request coverage under this General Permit.

Q. Outfall. "Outfall" means the point source where the MS4 discharges from a pipe, ditch or other discrete conveyance to the waters of the State other than groundwater, or to another MS4 and does not include pipes, such as cross culverts, tunnels or other conveyances which connect segments of the same stream or other waters of the State and are used to convey waters of the State.

R. Permittee. "Permittee" means a municipality, sanitary or sewerage district that owns or operates the storm sewer system authorized under this General Permit.

S. Person. "Person" means an individual, firm, corporation, municipality, quasi-municipal corporation, state agency, federal agency or other legal entity which creates, initiates, originates or maintains a discharge authorized by this General Permit.[8]

T. Redevelopment. "Redevelopment" means, an activity undertaken to redevelop property in which the new developed area, not including maintenance, is located within the same footprint as the existing developed area. Redevelopment projects do not include such activities as exterior remodeling.

U. Regulated Small MS4. "Regulated Small MS4" means any Small MS4 authorized by this General Permit or the general permits for the discharge of stormwater from Maine Department of Transportation (MaineDOT) and Maine Turnpike Authority (MTA) small MS4s or State or Federally owned or operated small MS4s including all those located partially or entirely within an Urbanized Area ("UA") . A list of these regulated small MS4s owned or operated by municipalities is included in Appendix A of this General Permit.

V. Small MS4. "Small MS4" means any MS4 that is not already covered by the Phase I MS4 stormwater program including municipally owned or operated storm sewer systems, State or Federally-owned systems, such as colleges, universities, prisons, military bases and facilities, and transportation entities such as MaineDOT and MTA road systems and facilities. See also 40 CFR 122.26(b)(16).

[8] See Protection and Improvement of Waters Laws – General Provisions, 38 M.R.S.A. § 361-A(4).

W. Stormwater. "Stormwater" means the part of precipitation including runoff from rain or melting ice and snow that flows across the surface as sheet flow, shallow concentrated flow, or in drainageways. "Stormwater" has the same meaning as "storm water".

X. Stormwater Pollution Prevention Plan ("SWPPP"). "Stormwater Pollution Prevention Plan" or "SWPPP" means a written plan developed and implemented for select municipal operations to reduce or eliminate pollutants as described in this General Permit.

Y. Total Maximum Daily Load ("TMDL"). "Total Maximum Daily Load" or "TMDL" means the maximum capacity of a surface water to assimilate a pollutant as established by the Department and approved by the U.S. Environmental Protection Agency ("EPA"), consistent with conditions set forth in 40 CFR Part 130 including pollutants contributed by point and non-point sources and a margin of safety.

Z. Urban Impaired Stream. "Urban Impaired Stream" means a stream that fails to meet water quality standards because of effects of stormwater runoff from developed land. Urban impaired streams are those streams identified and listed in Chapter 502, Appendix B of the Department of Environmental Protection Rules as amended from time to time. A list of the urban impaired streams is included in Appendix B of this General Permit.

AA. Urban Runoff. "Urban Runoff" means stormwater runoff from an Urbanized Area, and may contain elevated levels of pollutants such as hydrocarbons, chlorides, heavy metals and nutrients which may cause or contribute to a waterbody's impairment. In many instances frequent elevated storm flows, low base flows, and high temperatures will also be significant contributors to a waterbody's impairment.

AB. Urbanized Area ("UA"). "Urbanized Area" or "UA" means the area of the State of Maine so defined by the inclusive sum of the 2000 decennial census and latest decennial census (2010) by the U.S. Bureau of the Census.

Part III. Procedure

A. NOI requirements. The operator of any regulated small MS4 that initiates, creates, originates or maintains a discharge described in Part I of this General Permit and that wishes to obtain coverage under this permit shall file with the Department an NOI that meets the requirements of this General Permit no later than July 30, 2013. By submitting a signed NOI, the applicant agrees to comply with the terms and conditions of this General Permit.

B. Scope of NOI. The applicant shall register on one set of NOI forms for all discharges from the regulated small MS4 within the Urbanized Area that are operated by the municipality.

C. Submission. The applicant shall file the NOI using a form(s) provided by the Department. The applicant shall sign the NOI in accordance with Part III(D)(2). The NOI must be submitted to the Department with the appropriate fee, with failure of proper payment resulting in summary rejection of the NOI as incomplete. An applicant is not prohibited from submitting an NOI after July 30, 2013. If a late NOI is submitted, authorization to discharge is only for discharges that occur after obtaining authorization pursuant to Part III(E). The Department reserves the right to take appropriate enforcement actions for any unpermitted discharges.

D. Contents of NOI.

1. NOI Form. The NOI must be filed on a form(s) provided by the Department and must include the following.

a. Name of the municipality and the name, title, address, email address, and telephone number of the chief elected official or principal executive officer.

b. Name, address, email address, and telephone number of the primary municipal contact person responsible for the stormwater management program.

c. Permit number assigned to the municipality under the previous Department MS4 permit, if any.

d. Name of the receiving stream(s), wetland(s) or waterbody(s) to which the Regulated Small MS4 discharges, and a list of the impaired waterbody(s) which receive stormwater from the Regulated Small MS4.

e. An estimate of the area in square miles, of the Urbanized Area.

2. **Signatory Requirements.** All Notices of Intent, reports certifications or information either submitted to the Department, or that this permit requires to be maintained by the permittee, must be signed and certified in accordance with Waste Discharge Licenses, 06-096 CMR 521(5) (effective date January 23, 2001).

   The signature of the applicant's chief elected official or principal executive officer of the municipality shall certify in writing as follows:

   > "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons that directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

3. **Filing an NOI form.** An NOI must be filed with the Department at the following address:

   Municipal/Industrial Stormwater Coordinator
   Department of Environmental Protection
   17 State House Station
   Augusta, Maine 04333-0017

4. **Additional information.** The Department may require an applicant to submit additional information that the Department reasonably deems necessary to evaluate the consistency of the subject activity with the requirements for authorization under this General Permit.

E. Obtaining Authorization.

1. **Interim Coverage.** Upon the Department's receipt of an NOI that meets the requirements of Part III(C) of this General Permit, the applicant is authorized to discharge on an interim basis for up to 180 days from the effective date of this permit. The Commissioner shall return as incomplete any NOI that does not satisfy the requirements of Part III (C) of this General Permit. The applicant shall meet the standards contained in this General Permit during the interim period. Interim coverage will terminate earlier than 180 days if a complete Stormwater Program Management Plan has been submitted and reviewed by the Department and coverage under this permit is either granted or denied by the Department. The Department shall provide written notice of interim coverage under the NOI.

2. Public Notice and Comment.

a. Applicant Public Notice and Comment. Applicants are required to publish a public notice that the NOI is being filed with the Department of Environmental Protection. The notice must be published within 30 days prior to the NOI being sent to the Department. The notice may be published in the legal advertisement section of a daily or weekly newspaper having general circulation in the area where the discharges authorized by this permit will occur or by making the notice available on the MS4's official internet web site. Applicants are required to provide a letter of notice to all regulated small MS4s into which the MS4 discharges, and also to persons who have requested to be notified of the NOI application, provided that the Department has provided the mailing addresses of such interested persons to the respective applicants. If the public notice is not published or made available at the proper time, or if the NOI is returned because it is incomplete, the Department may require that notice be published a second time.

b. Department Public Notice and Comment. The Department will provide a public notice and opportunity for comment on the contents of the submitted NOIs and Stormwater Program Management Plans by making information available on the internet.

The public comment period is a minimum of 20 days. Based on a review of the NOI, Stormwater Program Management Plan or other information, the Department may extend the public comment period, require additional information or may deny coverage under this permit and require submission of an application for an individual or alternative MEPDES permit.

3. Action by Commissioner. The Commissioner shall return as incomplete any NOI that does not satisfy the requirements of Part III (C) and Part III (D) of this General Permit.

a. The Commissioner may deny coverage under this General Permit if more than 30 days have elapsed following the applicant's receipt of a written request by the Commissioner that the applicant submit additional information required pursuant to this General Permit and the applicant has not timely and completely submitted such information.

b. The Commissioner shall deny coverage under this General Permit if the subject activity is ineligible for this General Permit, if the applicant cannot or is unlikely to comply with this General Permit, or for any other reason provided by law.

c. The Commissioner shall grant coverage under this General Permit if the Stormwater Program Management Plan is consistent with the requirement to reduce pollutants under the MEP standard, to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act.

4. Coverage under this General Permit. The applicant is authorized to discharge under the terms and conditions of this General Permit when coverage under this General Permit is granted. The grant or denial of coverage under this General Permit must be in writing.

5. Effect of Denial of Coverage. Denial of coverage under this General Permit constitutes notice to the applicant that the subject activity may not lawfully be conducted or maintained without issuance of an individual MEPDES permit or coverage under an alternative General Permit. Denial of coverage under this General Permit must be in writing.

Part IV. Requirements

The permittee shall at all times continue to meet the requirements for authorization set forth in Part I of this General Permit. In addition, the permittee shall assure that authorized discharges and activities are conducted in accordance with the following required conditions.

A. Stormwater Program Management Plan. The permittee shall develop, implement, and enforce a Stormwater Program Management Plan ("Plan") implementing six minimum control measures, set forth in Section H below, which are designed to reduce the discharge of pollutants from its regulated small MS4 to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act. For the purposes of this permit, narrative effluent limitations requiring implementation of BMPs are generally the most appropriate form of effluent limitations when designed to satisfy technology requirements (including reductions of pollutants to the MEP) and to protect water quality. The Plan and all Minimum Control Measures must be substantially implemented by June 30, 2018.

The permittee shall describe in its Stormwater Program Management Plan how it will reduce or eliminate polluted stormwater runoff to the maximum extent practicable, from its regulated MS4. The Stormwater Program Management Plan must be signed in accordance with the signatory requirements in Part III (D)(2). Upon receipt of the NOI and Stormwater Program Management Plan, the Department shall post the NOIs and "Plans" on the Department's website to provide public notice. The permittee shall submit the regulated small MS4's comprehensive Stormwater Program Management Plan for Department review in accordance with the following submittal schedule.

Stormwater Program Management Plan Submission Date	Municipalities
October 28, 2013	Hampden, Bangor, Brewer, Veazie, Orono, Old Town, Milford
November 15, 2013	Falmouth, Cumberland Yarmouth, Windham, Lewiston, Auburn, Sabattus, Lisbon
December 6, 2013	Biddeford, Old Orchard Beach, Scarborough, Cape Elizabeth, Westbrook, Gorham, Freeport
December 20, 2013	York, Kittery, Eliot, South Berwick, Berwick, Saco, South Portland, Portland

1. Stormwater Program Management Plan Requirements.

a. For each of the six Minimum Control Measures in Part IV(H), the following information must be included:

i. The measurable goal(s) by which each BMP will be evaluated;

ii. The person(s) or position(s) responsible for implementing each BMP; and

iii. The date by which each BMP will be implemented including as appropriate, time lines and milestones for implementation of BMPs.

Note: Guidance documents that may be used in the development of BMPs and measurable goals include, but are not limited to, the following:

- EPA's BMP menu:
- MaineDOT's Best Management Practices for Erosion & Sedimentation Control

b. Additional stormwater treatment controls are necessary for Urban Impaired Stream watersheds. For discharges from the permittee's infrastructure and operations, to an Urban Impaired Stream, the permittee shall implement structural and non-structural measures to the maximum extent practicable necessary to control, the discharge of stormwater runoff including known pollutants of concern. Pollutant(s) of concern refer to the pollutant(s) identified as causing or contributing to the waterbody's impairment. Urban runoff may be used as a surrogate pollutant of concern where information is lacking on specific causes of impairment.

B. Keeping Plans Current. The permittee shall keep the Plan current. Circumstances when the Plan must be amended include the following:

1. Amended plan. The Plan must be amended if the Department or the permittee determines that:

a. The actions required by the Plan fail to control pollutants to the maximum extent practicable or to adequately protect against pollution of the waters of the State other than groundwater;

b. The Plan does not prevent the potential for a significant contribution of pollutants to waters of the State other than groundwater;

c. The Plan does not meet one or more requirements of this General Permit; or

d. New information results in a shift in the Plan's priorities.

2. Department notification. The Department shall notify the permittee if Department determines that the Plan must be amended. Within 30 days of such notification, unless otherwise specified by the Department in writing, the permittee shall respond to the Department indicating how the permittee plans to modify the Plan to address these requirements. Within 90 days of this response or within 120 days of the original notification, whichever is less, unless otherwise specified by the Department in writing, the permittee shall revise the Plan. The permittee shall perform all actions required by the revised Plan in accordance with the timelines in the revised Plan, and certify to the Department that the requested changes have been made and implemented.

3. Permittee information. The permittee shall provide such information as the Department requires to evaluate the Plan and its implementation. The permittee shall note minor modifications to the Plan in its annual report. Major modifications to the Plan such as a change in the Plan's priorities must be submitted to the Department and approved prior to implementation.

C. Failure to Prepare or Amend the Plan. Failure to complete or update a Plan in accordance with this General Permit does not relieve a permittee of responsibility to implement actions required to protect the waters of the State other than groundwater and to comply with all conditions of this General Permit.

D. Evaluation and Assessment. As specified in Part IV(J)(1), the permittee shall evaluate program compliance, the appropriateness of identified best management practices, and progress towards achieving identified measurable goals.

E. Assessment of Stormwater Program Management Plan. The Plan must address the six Minimum Control Measures ("MCMs") as required in this permit. The Plan must, at a minimum, include the measures indicated as required within the UA of the municipality. The permittee may also include in the Plan those measures indicated as suggested and any other measures the permittee deems appropriate. Some municipalities may choose to implement required minimum control measures or portions of minimum control measures throughout the entire municipality, however this General Permit only requires implementation of the minimum control measures within the UA to the extent the measures will have an impact on the MS4, and for municipal facilities, operations and activities within the UA, that discharge to waters of the State other than groundwater.

F. Signature Requirements

1. **Signature.** The Plan must be signed by the chief elected municipal official or principal executive officer. The Plan must be retained by the chief elected official or principal executive officer for the duration of the permit period and copies must be available and retained by municipal officials or employees responsible for implementation of the Plan.

2. **Plan availability.** The permittee shall have a signed copy of the plan available either at the municipal office or on the official municipal web site and shall make a copy of the Plan available to the following immediately upon request:

a. The Commissioner of the Department;

b. In the case of a regulated small MS4 adjacent to or interconnected with the permittee's storm sewer system, to the operator of that regulated small MS4; and

c. In the case of a regulated small MS4 stormwater discharge to a water supply watershed, to the public water supply company.

G. Annual Fee. Coverage under an existing General Permit will be continued upon payment of an annual fee. An annual fee must be submitted by no later than July 20 each year, starting July 20, 2013. Fees must be paid by check or money order payable to **Treasurer, State of Maine.**

H. Minimum Control Measures. For each Minimum Control Measure, the permittee shall: define appropriate BMPs; designate a person(s) responsible for each BMP; define a time line for implementation of each BMP; and define measurable goals for each BMP. The Minimum Control Measures to be included in the Plan are as follows.

1. Public Education and Outreach on Stormwater Impacts.

The three goals of this minimum control measure are:
1. To raise awareness that polluted stormwater runoff is the most significant source of water quality problems for Maine's waters;
2. To motivate people to use Best Management Practices (BMPs) which reduce polluted stormwater runoff ; and
3. To reduce polluted stormwater runoff as a result of increased awareness and utilization of BMPs.

The permittee shall document changes in awareness and BMP adoption (behavior change) in target audiences.

a. Required Strategies.

i. Raise Awareness (Goal 1): Beginning July 1, 2013, the permittee shall continue their outreach efforts from the previous MS4 permit cycle while developing or revising an existing Awareness Plan.

1. Develop or Revise a Plan to Raise Awareness: By February 1, 2014, each permittee or stormwater group of which the permittee is a member shall have a new Awareness Plan or revise an existing Plan to raise awareness of stormwater issues for a target audience outside of municipal government. The Plan's goal must be to raise awareness of polluted stormwater

runoff issues such as the path stormwater runoff takes, sources of stormwater pollution, and the impact that polluted stormwater runoff has in the community or communities.

2. By December 1, 2013, the permittee shall submit draft Stormwater Awareness Plan to the Department for review and approval. The Stormwater Awareness Plan is considered approved as of February 1, 2014, unless the permittee receives written communication from the Department indicating non-approval. The permittee shall begin implementation of the Stormwater Awareness Plan within one week of its approval.

   The Stormwater Awareness Plan must identify:
   a) The target audience
   b) The outreach tool(s) to be used
   c) The message
   d) The distribution system
   e) The time line and implementation schedule
   f) The person(s) responsible for implementation
   g) An impact evaluation protocol
   h) A plan modification protocol (this must include DEP approval of significant plan modifications)
   i) The goals (e.g., the targeted level of change sought as a result of the education and outreach effort)

3. The permittee shall include a review of the Stormwater Awareness Plan in each of its Annual Reports. The review must include process indicators which assess the permittee's execution of the Stormwater Awareness Plan. The permittee shall also include impact indicators according to the following schedule unless otherwise indicated in the approved Stormwater Awareness Plan: in permit year three (3), the permittee shall conduct a cursory evaluation and assessment on both the progress of implementing the Stormwater Awareness Plan as well as the impact the efforts are having on the target audience. In permit year five (5) the permittee shall provide an in-depth assessment of both the implementation and the impact of the Stormwater Awareness Plan.

NOTE: Process indicators relate to the execution of the program (e.g., did people attend the meetings? did the press release result in media coverage?). Impact indicators relate to the achievement of the goals/objectives of the program (e.g., what effect did the effort have on behavior?).

The Department has available a number of evaluation tools as well as samples from other regions.

4. The permittee shall include a comprehensive review of the Stormwater Awareness Plan in its permit year five (5) Annual Report. The review must include an analysis of the process indicators and impact indicators.

ii. Raise Awareness of Both stormwater Pollution and the MS4 program requirements for municipal staff including municipal employees, volunteers, council members and other elected officials.

1. Develop or revise a Permit Awareness Plan to raise awareness and permit implementation and compliance: By March 1, 2014, each permittee shall have a new Permit Awareness Plan or revise an existing Plan to raise awareness of stormwater issues including MS4 permit

requirements for municipal employees, elected officials and volunteers within municipal government. The Permit Awareness Plan's goal is to raise awareness of polluted stormwater runoff such as the sources of stormwater pollution, the path polluted stormwater runoff takes from the pollution source to waters of the State, the impact polluted stormwater runoff has on the community, potential measures to reduce or eliminate pollution sources, and General Permit obligations and the permittee's obligations and responsibility to ensure permit compliance.

2. By January 6, 2014, the permittee shall submit the draft Permit Awareness Plan to the Department for review and approval. The Permit Awareness Plan is considered approved as of March 1, 2014, unless the permittee receives written communication from the Department indicating non-approval. The permittee shall begin implementation of the Permit Awareness Plan within one week of its approval.

   The Permit Awareness Plan must identify:
   a) The target audience
   b) The outreach tool(s) to be used
   c) The distribution system
   d) Method to address turnover of employees, elected officials and volunteers
   e) The time line and implementation schedule
   f) The person(s) responsible for implementation
   g) An impact evaluation protocol
   h) A plan modification protocol (this must include DEP approval of significant plan modifications)
   i) The goal (e.g. the target level of awareness for each audience)

3. The permittee shall include a review of the Permit Awareness Plan in each of its Annual Reports. The review must include process indicators which assess the permittee's execution of the Permit Awareness Plan. The permittee shall also include impact indicators according to the following schedule unless otherwise indicated in the approved Permit Awareness Plan: In year 3, the permittee will do an evaluation and assessment on both the progress of implementing the plan as well as the impact the efforts are having on the target audience. In year 5 the permittee shall provide an in-depth assessment of both the implementation and the impact of the Permit Awareness Plan.

4. The permittee shall include a comprehensive review of the Permit Awareness Plan in its permit year five (5) Annual Report. The review must include an analysis of the process indicators and impact indicators.

iii. Targeted BMP Adoption: Beginning July 1, 2013, the permittee shall continue outreach efforts from the previous MS4 General Permit while developing or revising a new BMP Adoption Plan.

1. By January 15, 2014, each permittee or stormwater group of which the permittee is a member shall have a new or revised Adoption Plan with the goal of promoting behavior change through the implementation of BMPs. Each permittee or stormwater group shall select at least one specific BMP to target for a focused outreach Plan. In order to facilitate statewide consistency and efficient use of resources, permittees may work collaboratively to develop and implement a Statewide BMP Adoption Plan that allows for regional flexibility.

The permittee shall target at least 15% of the segmented audience to adopt the targeted BMPs.

2. By November 1, 2013, the permittee shall submit the draft BMP Adoption Plan to the Department for review and approval. The BMP Adoption Plan is considered approved as of January 15, 2014, unless the permittee receives written communication from the Department indicating non-approval. The permittee shall begin implementation of the BMP Adoption Plan within one week of its approval.

   The BMP Adoption Plan must identify:
   a) The BMP
   b) The target audience
   c) The outreach tool(s) to be used
   d) The message
   e) The distribution system
   f) The time line and implementation schedule
   g) The person(s) responsible for implementation
   h) An impact evaluation protocol
   i) A plan modification protocol (this must include DEP approval of significant plan modifications)
   j) The goal (e.g. the target level BMP adoption for each audience)

NOTE: For example, if 10% of dog owners are picking up pet waste in public parks, then in five years the permittee will seek to raise the percentage of dog owners picking up pet waste and disposing of it in the trash to 25% in public parks. Or if 50% of the homeowners are using weed & feed lawn care chemicals, seek to reduce the number to 35%.

3. The permittee shall include a review of the BMP Adoption Plan in each of its Annual Reports. The review must include process indicators which assess the permittee's execution of the BMP Adoption Plan. The permittee shall also include impact indicators according to the following schedule unless otherwise indicated in the approved BMP Adoption Plan: in permit year 1, the permittee will assess the target audience to set the baseline and inform the development of the BMP Adoption Plan. In permit year three (3), the permittee will conduct a preliminary evaluation and assessment on both the progress of implementing the plan as well as the impact the efforts are having on the target audience. In permit year five (5) the permittee shall provide final assessment of both the implementation and the impact of the BMP Adoption Plan.

4. The permittee shall include in its fifth year Annual Report a comprehensive review of the BMP Adoption Plan. The review must include an analysis of the process indicators and impact indicators.

iv. Permittees will enhance their education and outreach effort in their impaired or priority watershed or work to address a stormwater pollutant issue of regional or statewide significance.

1. Permittees with an impaired waterbody may either target a specific activity that if successfully addressed will improve and/or protect water quality in the priority or impaired watershed(s) or the permittee may implement option 2 below. The effort can be undertaken individually or collectively by MS4s. Examples include developing an outreach effort to encourage stormwater BMP owners to properly maintain their BMPs or target an audience to increase the use of LID practices within the priority watershed.

2. Permittees may choose instead to work singly or collaboratively on a common regional or statewide stormwater pollutant issue. Such issues include but are not limited to elevated chloride in waterbodies from winter salt applications or the toxic constituents associated with the application of coal tar sealants. The goal of the effort should be to reduce or eliminate the pollutant(s) of concern.

3. By July 1, 2014, each permittee shall provide a draft plan on how it plans to meet either permit requirement iv 1 or 2 with elements a-h below, by November 1, 2014, each permittee shall provide a final plan with implementation to begin by January 5, 2015

    a. Identify the specific stormwater activity or pollutant to be addressed
    b. The target audience(s)
    c. The outreach tool(s) to be used
    d. The message and the BMPs to be encouraged
    e. The time line and implementation schedule
    f. The person(s) responsible for implementation
    g. The goal of the outreach effort
    h. An impact evaluation protocol.

4. The permittee shall report the progress and results of the targeted outreach effort in the Annual Report. In the fifth year Annual Report will include a comprehensive review of the outreach effort . The review must include an analysis of the process indicators and impact indicators

v. Compliance with this minimum control measure will be based upon whether the permittee:
    a) Continued existing education and outreach efforts
    b) Developed both the required plans in elements i though iv
    c) Successfully executed the plans
    d) Reported process and impact indicators, and
    e) Completed annual reports and a 5-year analysis of the plans.

Ultimately, the adoption and use of BMPs by the targeted audience(s) to reduce polluted stormwater runoff is the goal of this section but is not a condition of compliance with the education and outreach minimum control measure.

b. Suggested Strategies.

i Schools. Each permittee or regional stormwater group is encouraged to develop an outreach plan directed at its school age population. It is recommended that students receive information regarding:

- The definition of stormwater
- The path stormwater takes
- The sources of pollution in stormwater
- The harmful effects of polluted stormwater
- BMPs in age appropriate concepts and materials

1. The permittee is encouraged to include in each of its Annual Reports, a review of the plan. The review could include process indicators which assess the permittee's execution of the school Outreach Plan, and impact indicators which assess the effectiveness of the plan.

2. The permittee is encouraged to include in its fifth year Annual Report a comprehensive review of the school Outreach Plan. The review could include an analysis of the process indicators and an analysis of the impact indicators.

ii. Partnering with local organizations: A critical mass of a community (e.g., a neighborhood, a social group, or some sort of group with identifiable and similar characteristics) must accept new ideas and behaviors for those new ideas and behaviors to spread. With this in mind, a permittee may wish to include in its outreach efforts various local organizations which may be able to assist in helping to spread the stormwater message. Examples of potential partner organizations include: girl and boy scouts, fish & game clubs, water districts, conservation commissions, garden clubs, rotary, religious organizations, ethnically based groups, and watershed associations.

iii. Involving members of the community in the implementation of BMPs.

2. Public Involvement and Participation.

The goal of this minimum control measure is to involve the public in both the planning and implementation process of improving water quality and reducing stormwater quantity via the stormwater program. A program planned with a stakeholder group is more likely to be successful in achieving its goals. The public can provide valuable input and assistance to a MS4's municipal stormwater management program. Therefore, the public should be given opportunities to play an active role in both the development and implementation of the program. An active and involved community is crucial to the success of a municipal stormwater management program because it allows for broader public support, additional expertise and a conduit to other programs. Community members are also more likely to apply these lessons/BMPs at home.

a. Required Strategies.

i. Public notice requirements. The permittee shall comply with applicable state and local Public Notice requirements using effective mechanisms for reaching the public, and comply with the public notice requirements of the Maine Freedom of Access Act, 1 M.R.S.A. §§ 401 et seq. ("FOAA") when the permittee involves stakeholders in the implementation of this General Permit. The permittee shall document the meetings and attendance through the annual report as a way of measuring this goal.

ii. Public Event. The permittee or regional stormwater group of which the permittee is a member shall annually host/conduct or participate a public event (for example, storm drain stenciling, stream clean-up, household hazardous waste collection day, volunteer monitoring, neighborhood educational events, conservation commission outreach program, Urban Impaired Stream outreach program, or adopt a storm drain or local stream program). The event must include a pollution prevention and/or water quality theme. The target audience does not need to be the entire urbanized area but should be aimed at a segment of the population that the permittee wishes to reach. The permittee is encouraged to plan this event and consult with the Department to ensure it will satisfy this permit's requirements.

1. The permittee shall include a report of the public event in each of its Annual Reports. The report must include process indicators which assess the permittee's planning and execution, as well as impact indicators which assess the effectiveness of the event.

NOTE: The Department has available a number of evaluation tools as well as samples from other regions.

2. The permittee shall include a comprehensive review of the public events in its fifth year Annual Report that must include an analysis of the process indicators and impact indicators.

b. **Suggested Strategies.**

If there are a variety of ethnic or economic groups in the community, the permittee could develop specific public participation outreach opportunities for these communities.

3. Illicit Discharge Detection and Elimination.

a. Required Strategies. Each permittee shall develop, implement and enforce a program to detect and eliminate illicit discharges and non-stormwater discharges, as defined in 06-096 CMR 521(9)(b)(2), except as provided in Part IV(H)(3)(c) of this permit.

i. By June 30, 2018, Permittees not subject to the 2008 MS4 General Permit shall develop a watershed based storm sewer system infrastructure map or series of maps for its regulated area. The map(s) must show the location of all stormwater catch basins, connecting surface and subsurface infrastructure and depict the direction of in-flow and out-flow pipes, and the locations of all discharges from all stormwater outfalls operated by the regulated small MS4 to receiving waters or to an interconnected MS4. Each catch basin must be uniquely identified to facilitate control of potential illicit discharges, and to ensure proper operation and maintenance of these structures. For each outfall, the following information must be included: type (e.g. culvert or ditch), material, size of conveyance, the name and location of the nearest named waterbody to which the outfall eventually discharges. Permittees subject to the 2008 MS4 General Permit shall continue to keep their map(s) current and ensure that maps are reviewed for any updates at least annually.

ii. Permittees not subject to the 2008 MS4 General Permit shall develop and implement a non-stormwater discharge ordinance which effectively prohibits non-stormwater discharges and stipulates the implementation of appropriate enforcement procedures and actions by no later than January 10, 2015. Permittees subject to the 2008 MS4 General Permit shall to the extent allowable under State or local law, continue to implement, and provide annual reporting of the permittee's non-stormwater discharge ordinance that effectively prohibits, unauthorized non-stormwater discharges into the permittee's storm sewer system.

iii. Permittees not subject to the 2008 MS4 General Permit shall develop a prioritized dry weather outfall inspection plan by no later than June 30, 2014. This dry weather outfall inspection plan must pertain to a watershed or sub-watershed that the permittee has identified as having the greatest potential threat to the receiving water. (See *Guidelines and Standard Operating Procedures For Stormwater Phase II Communities in Maine* volumes 1 and 2) The SOP can be obtained from the following web site http://www.thinkbluemaine.org/docs/index.htm under the illicit discharge detection and elimination section. Permittees subject to the 2008 MS4 General Permit shall continue to implement its prioritized dry weather outfall inspection plan based on drainage areas such as an urban impaired stream watershed, or based on a watershed or sub-watershed that the permittee has identified as having the greatest potential threat to the receiving water. (See *Guidelines and Standard Operating Procedures For Stormwater Phase II Communities in Maine* volumes 1 and 2) The SOP can be obtained from the following web site. http://www.thinkbluemaine.org/docs/index.htm under the illicit discharge detection and elimination section.

Permittees not subject to the 2008 MS4 General Permit shall conduct a dry weather inspection of MS4 outfalls that discharge to the two highest priority sub-watersheds, as approved by the Department. In subsequent permit years, dry weather inspections must be expanded to other sub-watersheds within the permittee's two highest priority watersheds as approved by the Department. The municipality must have a defined procedure/policy or protocol in place that details the steps that must be taken when an illicit discharge is identified during these inspections to locate the source of the illicit discharge and eliminate it. Permittees subject to the 2008 MS4 General Permit shall revise their outfall inspection plan and continue conducting dry weather inspections in different watersheds or sub-watersheds as approved by the Department and evaluate discharges for illicit connections.

iv Permittees not subject to the 2008 MS4 General Permit shall, by no later than June 30, 2018, develop and implement a strategy to detect any illicit discharges to their open ditch system within their highest priority watershed, to the extent allowable under State or local law. Permittees subject to the 2008 MS4 General Permit shall continue to implement an illicit discharge/illicit connection detection program based upon a schedule approved by the Department.

v By June 30, 2016, each permittee shall develop a list of septic systems in its highest priority watershed that are 20 years old or greater and which may discharge to the MS4 if the system fails. By June 30, 2017, each permittee shall implement a drive-by evaluation and documentation program of septic systems in its highest priority watershed that are 20 years old or greater and which have the potential to discharge into the MS4. This septic system inspection and documentation program must include a mechanism for addressing any discharges to the MS4 from malfunctioning septic systems.

b. Suggested: Each permittee may develop and implement an annual municipal household hazardous waste collection, or participate in an annual regional household hazardous waste collection program, or provide some other mechanism for residents to dispose of household hazardous waste.

c. Non-stormwater discharges. This permit authorizes the following non-stormwater discharges provided they do not contribute to a violation of water quality standards as determined by the Department. These discharges must be addressed in the Plan if they are identified by the permittee as significant contributors of pollutants to the regulated small MS4.

- landscape irrigation
- diverted stream flows
- rising ground waters
- uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20))
- uncontaminated pumped ground water
- uncontaminated flows from foundation drains
- air conditioning and compressor condensate
- irrigation water
- flows from uncontaminated springs
- uncontaminated water from crawl space pumps
- uncontaminated flows from footing drains
- lawn watering runoff
- flows from riparian habitats and wetlands
- residual street wash water (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material has been removed and detergents are not used), and

- hydrant flushing and firefighting activity runoff
  - water line flushing and discharges from potable water sources
- individual residential car washing
- dechlorinated swimming pool discharges

4. **Construction Site Stormwater Runoff Control.** Each permittee shall develop, implement, and enforce a program, or modify an existing program, to reduce pollutants in any stormwater runoff to the regulated small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of stormwater discharges from construction activity disturbing less than one acre must be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more. The program must include, but not be limited to, the development and implementation of:

   a. If the permittee chooses to rely on either the Maine Construction General Permit ("MCGP") and if applicable Chapter 500, Stormwater Management, the program must include the development and implementation of:

      i. Procedures for notifying construction site developers and operators of the requirements for registration under the Maine Construction General Permit or Chapter 500, Stormwater Management for the discharge of stormwater associated with construction activities; and

      ii. Document every construction activity that disturbs one or more acres within the UA.

      ii. Implement site inspections procedures to ensure projects are in compliance with the MCGP and Chapter 500, Stormwater Management. In watersheds of Urban Impaired Streams, and in the permittee's highest priority watershed, inspect the construction activity at least three times with one inspection at project completion to ensure that all post construction BMPs were properly installed, and that final stabilization of the site has been completed. All construction inspections must be properly documented. For other watersheds, inspect the construction activity a minimum of twice, with one inspection at project completion to ensure that all post construction BMPs were properly installed, and that final stabilization of the site has been completed.

   b. Non-reliance on the MCGP. If the permittee <u>does not</u> choose to rely on the MCGP, the program must include the development and implementation of:

      i. An ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions for non-compliance, to the extent allowable under State or local law;

      ii. Procedures for notifying construction site developers and operators of the requirements for registration under the MCGP and Chapter 500, Stormwater Management for the discharge of stormwater associated with construction activities;

      iii. Requirements for construction site operators to implement appropriate erosion and sediment control best management practices in accordance with state law and any local requirements;

      iv. Requirements for construction site operators to control waste at the site such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste that may cause adverse impacts to water quality;

v. Procedures for site plan review that incorporate consideration of potential water quality impacts;

vi. Procedures for receipt and consideration of information submitted by the public; and

vii. Site inspections procedures to ensure projects are in compliance with the erosion and sedimentation control plan, MCGP and Chapter 500, Stormwater Management. In watersheds of Urban Impaired Streams and the permittee's highest priority watershed or sub-watershed, inspect and properly document the construction activity at least three times with one inspection just prior to or within 24 hours of a rain event greater than .2 inches, and one inspection at project completion to ensure that all post construction BMPs were properly installed, and that final stabilization of the site has been properly completed. For other watersheds, inspect the construction activity at least twice, with one inspection at project completion to ensure that all post construction BMPs were properly installed, and that final stabilization of the site has been properly completed.

5. Post-Construction Stormwater Management in New Development and Redevelopment.

a. Required Strategies.

i. Each permittee shall develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the MS4. This program shall ensure that controls are in place that will prevent or minimize water quality impacts.

ii. To ensure adequate long-term operation and maintenance of post construction BMPs, each permittee subject to the 2008 MS4 General Permit shall continue to implement a post construction discharge ordinance, or similar measure approved by the Department. Permittees not subject to the 2008 MS4 General Permit shall implement a post construction discharge ordinance, or similar measure approved by the Department, by no later than June 30, 2015. This ordinance or similar measure must stipulate that the owner or operator of a post construction BMP described in Part IV(H)(5)(a)(i) provide the permittee with an annual report documenting that the BMP is adequately maintained and is functioning as intended or requires maintenance. If the post construction BMP requires maintenance, the owner or operator shall provide a record of the deficiency and corrective action(s) taken to the permittee. In permit year two and in subsequent permit years, each permittee shall include the following in their annual report:

- the cumulative number of sites that have post construction BMPs discharging into their MS4;
- a summary of the number of sites that have post construction BMPs discharging into their MS4 that were reported to the municipality;
- the number of sites with documented functioning post construction BMPs; and
- the number of sites that required routine maintenance or remedial action to ensure that the post construction BMP is functioning as intended.

iii. Each permittee shall annually inspect a percentage of post construction BMPs located in the direct watershed of a lake most at risk from new development or in watersheds of an urban impaired stream. If the owner or operator of a post construction BMP hires a qualified third party inspector, the permittee will have no inspection requirements. If the owner or operator of a post construction BMP does a "self" inspection, the permittee is required to conduct the following inspection schedule.

1-10 post construction sites: inspect at least one site, or 40% (whichever is greater)
11-30 post construction sites: inspect at least four sites, or 30% (whichever is greater)
31-60 post construction sites: inspect at least nine sites, or 25% (whichever is greater)
61-100 post construction sites: inspect at least fifteen sites, or 20% (whichever is greater)
101-160 post construction sites: inspect at least twenty sites, or 17% (whichever is greater)
Over 160 post construction sites: inspect at least twenty seven sites, or 11% (whichever is greater)

NOTE: For the purposes of this Minimum Control Measure, a post construction site may be a large commercial development i.e. big box store, or a subdivision, or any activity that disturbed one of more acres. Construction sites may have multiple post construction BMPs.

iv. Develop and implement a procedure for notifying site developers to consider incorporating low impact development techniques.

6. Pollution Prevention/Good Housekeeping for Municipal Operations.

This program has the ultimate goal of preventing or reducing pollutant runoff from municipal operations.

a. Required Strategies.

i. Permittees not subject to the 2008 MS4 General Permit shall by the end of permit year one, develop an inventory of all municipal operations conducted in, on, or associated with facilities, buildings, golf courses, cemeteries, parks and open space owned or operated by the permittee that have the potential to cause or contribute to stormwater or surface water pollution. By the end of permit year two, Permittees not subject to the 2008 MS4 General Permit shall develop and implement written operation and maintenance procedures for its highest priority watershed that includes maintenance schedules and inspection procedures to ensure long term operation of structural and non-structural controls that reduce stormwater pollution to the maximum extent practicable. By the end of year three develop and implement operation and maintenance procedures for the remaining watersheds within the Urbanized Area. Permittees subject to the 2008 MS4 General Permit shall continue to maintain their inventory of properties, facilities and activities, and continue implementation of their operation and maintenance plans. These procedures must address as applicable:

- Proper use, storage and disposal of petroleum and non-petroleum products, hazardous materials, waste materials, pesticides and fertilizers including minimizing the use of these products, and an alternative product analysis;
- Spill response and prevention;
- Vehicle and equipment storage, maintenance and fueling;
- Amount and type(s) of deicing materials used each deicing season
- Landscaping and lawn care including, where applicable, an evaluation of reduced mowing frequencies, establishing and maintaining buffers, cutting vegetation within 100 feet of a stormwater conveyance or surface water;
- Erosion and sedimentation control;
- Feeding gulls, waterfowl or other wildlife.

ii. Using training materials that are available from the EPA, the State, regional stormwater groups or other organizations, *Guidelines and Standard Operating Procedures For Stormwater Phase II Communities in Maine* volumes 1 and 2, and the Think Blue Maine website, www.thinkbluemaine.org this program must include employee training to prevent and reduce

stormwater pollution from municipal operations and facilities. The permittee shall report annually on the types of trainings presented, the number of municipal and contract staff that received training, the length of the training, and training effectiveness.

iii. The permittee shall develop and implement a program to sweep all publicly accepted paved streets and publicly owned paved parking lots maintained by the permittee at least once a year as soon as possible after snowmelt.

iv. The permittee shall develop and implement a program to evaluate and, if necessary, clean catch basins and other stormwater structures that accumulate sediment at least once every other year and dispose of the removed sediments in accordance with current state law. The permittee shall clean catch basins more frequently if inspections indicate excessive accumulation of sediment. Excessive accumulation is greater than or equal to 50 percent filled.

v. The permittee shall evaluate and implement a prioritized schedule, as necessary, for repairing or upgrading the conveyances, structures and outfalls of the regulated small MS4.

vi. Permittees not subject to the 2008 MS4 General Permit shall by June 30, 2015, develop and implement a stormwater pollution prevention plan ("SWPPP") for the following municipal operations: public works facilities, transfer stations, and school bus maintenance facilities operated by the permittee unless the facility is currently regulated under Maine's Industrial Stormwater Program. The SWPPP must meet the conditions and requirements including quarterly visual monitoring per Maine's Multi-Sector General Permit ("MSGP") Stormwater Discharge Associated with Industrial Activity, published April 26, 2011. The SWPPP outlines sources of potential stormwater pollutants and the methods by which these pollutants will be reduced or prevented from entering Waters of the State, other than groundwater, or to an MS4. The Plan identifies in writing a SWPPP team of facility personnel as well as a SWPPP team leader who is ultimately responsible for SWPPP implementation. The Department has developed a generic SWPPP for municipal operations which can be modified by the permittee for individual facilities as required by this permit. Contact the Municipal and Industrial Stormwater Coordinator for an electronic copy of the SWPPP, Quarterly inspection forms, visual monitoring forms or for technical assistance, including on-site assistance, to meet this permit obligation. Permittees subject to the 2008 MS4 General Permit shall continue to implement and update their SWPPP(s) to ensure it meets Maine's April 26, 2011 MSGP requirements including visual monitoring. The Department shall honor request for technical assistance including on-site technical assistance inspections and SWPPP training.

b. Suggested Operational Strategies. At a minimum, consider the following in developing your program.

i. Structural and non-structural stormwater controls to reduce floatables and other pollutants discharged from your separate storm sewers.

ii. Controls for reducing or eliminating the discharge of pollutants from streets, roads, highways, municipal parking lots, and snow disposal areas.

iii. Ensure that new flood and stormwater management projects assess the impacts on water quality and examine existing projects for incorporating additional water quality protection devices or practices.

I. Sharing responsibility

1. **Reliance on other entity.** The permittee may satisfy the requirement to implement a BMP for a Minimum Control Measure by having a third party implement the BMP. For example, if a local watershed organization organized or funded by the permittee performs an annual "river clean-up", this event may be used to satisfy a BMP for the Public Participation and the Pollution Prevention and Good Housekeeping Minimum Control Measure.

   If the permittee is relying on a third party to implement one or more BMP(s), the permittee shall note that fact in the Stormwater Program Management Plan and annual report required in Part IV (J). If the third party fails to implement the BMP(s), the permittee remains responsible for its implementation.

2. **Qualifying state or federal program.** If a BMP or Minimum Control Measure is the responsibility of a third party under another NPDES or MEPDES permit, the permittee is not required to include such BMP or Minimum Control Measure in its stormwater management program. The permittee shall reference this qualifying program in their Stormwater Program Management Plan. However, the permittee is responsible for its implementation if the third party fails to perform. The permittee shall periodically confirm that the third party is still implementing this measure. If the third party fails to implement the measure, the Plan may be modified to address the measure, if necessary.

   In the case of a permitted municipal industrial activity, such as a publicly owned treatment works covered by the Multi Sector General Permit, the permittee may reference the activity's Stormwater Pollution Prevention Plan to address a portion of the permittee's Plan.

3. **Other MS4 Permittees.** The permittee shall identify interconnections within the regulated small MS4s and find ways to cooperate with other regulated entities. Where a portion of the separate storm sewer system within a municipality is owned, operated or otherwise the responsibility of another regulated small MS4, the two entities may coordinate the development and implementation of their respective Plans to address all elements of Part IV H (1-6). At the very least, a clear description of their respective responsibilities for these elements must be included in each regulated small MS4's Plan.

   For example, a storm sewer system within a municipality may be operated and maintained by the MaineDOT, or other public or quasi-public entity. In cases such as these, the two entities shall cooperate and coordinate their Plans to reduce duplicative efforts to address the Minimum Control Measures, particularly at the interconnections within storm sewer systems. Where an illicit discharge is detected from an outfall near an interface between two storm sewer systems and where there is more than one responsible entity, the two entities shall coordinate their efforts to detect and ultimately eliminate the cause of the illicit discharge. These efforts must be noted in both the regulated small MS4's annual reports.

J. Reporting and Record Keeping Requirements

1. The permittee shall keep records required by this permit for at least three (3) years following its expiration, or longer if requested by the Commissioner. The permittee shall make records, including its Stormwater Program Management Plan, available to the public at reasonable times during regular business hours.

   By September 15, 2014 and annually thereafter by September 15, the permittee shall submit a report for the Department's review and approval to:

Municipal/Industrial Stormwater Coordinator
Department of Environmental Protection
17 State House Station
Augusta, Maine 04333-0017

The report must include the following.

a. The status of compliance with permit conditions based on the permittees Plan, an assessment of the appropriateness of identified best management practices, progress towards achieving identified measurable goals for each of the Minimum Control Measures, and progress toward achieving to goal of reducing the discharge of pollutants to the MEP.

b. Results of information collected and analyzed, including monitoring data, if any, during the reporting period.

c. A summary of the stormwater activities the permittee intends to undertake pursuant to its Plan during the next reporting cycle.

d. A change in any identified BMPs or measurable goals that apply to the Plan.

e. A summary describing the activities, progress, and accomplishments for each of the minimum control measures #1 through #6 (including such items as the status of education and outreach efforts, public involvement activities, stormwater mapping efforts, dry weather inspections, detected illicit discharges, detected illicit connections, illicit discharges that were eliminated, construction site inspections, number and nature of enforcement actions, post construction BMP status and inspections, and the status of the permittee's good housekeeping/pollution prevention program.

2. Changes to the report based on the Department's review comment(s) must be submitted to the Department within 60 days of the receipt of the comment(s).

3. Suggested. Provide an estimate of annual expenditures for permit compliance for the reporting period and projected budget for the following year.[9]

K. Impaired Waters and Total Maximum Daily Load (TMDL). If the waterbody to which a discharge drains is impaired and has an EPA approved TMDL, then the discharge must be consistent with the TMDL waste load allocation ("WLA") and any implementation plan. This general permit does not authorize a direct discharge that is inconsistent with the WLA of any EPA approved TMDL. If a TMDL is approved or modified by EPA subsequent to the effective date of this General Permit, the Department shall notify the permittee and may:

1. Require the permittee to review its Plan for consistency with the TMDL, and propose any necessary modification to the Plan to be submitted to the Department within six months of the receipt of notification concerning the TMDL;

2. Issue a watershed-specific general permit for the area draining to the impaired waterbody. The watershed-specific MS4 general permit may reference parts of this General Permit; or

[9] The collection of expenditure data by the Department is solely for the purpose of determining generic program costs not as a measure of the permittee's program compliance or effectiveness. The Department recognizes that expenditure data tracking and reporting methodology may vary from one reporting entity to another, as well as over time, and will assess any data for its validity, relevance and utility as it pertains to the purpose stated above.

3. Require an individual permit.

PART V. Standard Conditions

A. Removed Substances. Solids, sludges, filter backwash or other pollutants removed or resulting from the treatment of wastewaters shall be disposed of in a manner approved by the Department.

B. Other Applicable Conditions. The conditions in Waste Discharge License Conditions,06-096 CMR 523(2) (effective January 23, 2001) also apply to discharges pursuant to this General Permit and are incorporated herein as if fully set forth. These conditions address areas such as: duty to comply; need to reduce or halt activity not a defense; duty to mitigate; permit actions; property rights; duty to provide information; and inspection and entry.

C. Monitoring Requirement. The Department may require monitoring of an individual discharge as may be reasonably necessary in order to characterize the nature, volume or other attributes of that discharge or its sources.

D. Other Information. When the permittee becomes aware that he or she failed to submit any relevant facts or submitted incorrect information in the Notice of Intent or in any other report to the Department, he or she shall promptly submit such facts or information.-

E. Endangered Species. Pursuant to State and Local Cooperation Law, 12 M.R.S.A. § 12806, A state agency or municipal government shall not permit, license, fund or carry out projects that will:

1. Significantly alter the habitat identified under Conservation of Endangered Species Law, 12 M.R.S.A. § 12804, subsection 2 of any species designated as threatened or endangered under this subchapter; or

2. Violate protection guidelines set forth in 12 M.R.S.A. § 12804, subsection 3.

F. Individual Permit or Alternative General Permit. When an individual permit is issued to a discharger otherwise subject to this permit, or the discharger is authorized to discharge under an alternative general permit, the applicability of this permit to the individual permittee is automatically terminated on the effective date of the individual permit or the date of authorization of coverage under the alternative general permit, whichever the case may be. When an individual permit is denied to an operator otherwise subject to this permit, or the operator is denied for coverage under an alternative general permit, the applicability of this permit to the individual NPDES permittee is automatically terminated on the date of such denial, unless otherwise specified by the Commissioner.

Appendix A

Regulated Small MS4 Municipal Operators

Auburn
Bangor
Berwick
Biddeford
Brewer
Cape Elizabeth
Cumberland
Eliot
Falmouth
Freeport
Gorham
Hampden
Kittery
Lewiston
Lisbon
Milford
Old Orchard Beach
Old Town
Orono
Portland
Sabattus
Saco
Scarborough
South Berwick
South Portland
Veazie
Westbrook
Windham
Yarmouth
York

Appendix B

Urban Impaired Streams

Logan Brook	Auburn
Penjajawoc Stream including Meadow Brook	Bangor
Birch Stream (Ohio Street)	Bangor
Capehart Brook (Pushaw Road)	Bangor
Arctic Brook (Valley Avenue)	Bangor
Shaw Brook	Bangor, Hampden
Frost Gully Brook	Freeport
Concord Gully	Freeport
Hart/Dill Brook	Lewiston
Jepson Brook	Lewiston
Capisic Brook	Portland
Fall Brook	Portland
Nasons Brook	Portland
Goosefare Brook	Saco, Old Orchard Beach
Trout Brook (including Kimball Brook)	South Portland, Cape Elizabeth
Barberry Creek	South Portland
Long Creek	South Portland, Portland, Westbrook, Scarborough
Phillips Brook	Scarborough
Red Brook	Scarborough, South Portland

This General Permit may be reopened to include or delete specific waterbodies or segments based upon new information. Reopening the General Permit for this purpose is subject to the requirements in 38 MRSA 414-A (5), including notice to interested parties of record and opportunity for hearing. Actions may be appealed as provided in 38 MRSA 341-D and 346.

Central Massachusetts Regional Stormwater Coalition

Comments to USEPA on 2014 Draft Massachusetts
Small Municipal Separate Storm Sewer System (MS4) Permit

February 27, 2015

ATTACHMENT D

Connecticut Department of Energy & the Environment. *Draft General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems*. July 2014.
(Attached without appendices)

Connecticut Department of
Energy & Environmental Protection
Bureau of Materials Management & Compliance Assurance
Water Permitting & Enforcement Division

General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems

Issued: TBD

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General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems

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Section 1. Authority

This general permit is issued under the authority of Section 22a-430b of the Connecticut General Statutes.

Section 2. Definitions

The definitions of terms used in this general permit shall be the same as the definitions contained in Sections 22a-423 of the Connecticut General Statutes and Section 22a-430-3(a) of the Regulations of Connecticut State Agencies. As used in this general permit, the following definitions shall apply:

"x-year, 24-hour rainfall event" means the maximum 24-hour precipitation event with a probable recurrence interval of once in the given number of years (i.e. x=2, 25 or 100), as defined by the National Weather Service in Technical Paper Number 40, "Rainfall Frequency Atlas of the United States," May 1961, and subsequent amendments, or equivalent regional or state rainfall probability information developed therefrom.

"Aquifer protection area" means aquifer protection area as defined in section 22a-354h of the Connecticut General Statutes.

"Best engineering practices" means the design of engineered control measures to control pollution to the maximum extent achievable using measures that are technologically available and economically practicable.

"Best Management Practices (*BMP*)" means schedules of activities, practices (and prohibitions of practices), structures, vegetation, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the state consistent with state, federal or other equivalent and technically supported guidance. BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from material storage.

"Coastal area" means coastal area as defined in Section 22a-93(3) of the Connecticut General Statutes.

"Coastal Jurisdiction Line" means the location of the topographical elevation of the highest predicted tide as defined in Section 22a-359(c) of the Connecticut General Statutes.

"Coastal waters" means coastal waters as defined in Section 22a-93(5) of the Connecticut General Statutes.

"Commissioner" means commissioner as defined in section 22a-2(b) of the Connecticut General Statutes.

"Control Measures" means any BMPs or other methods (including effluent limitations) used to prevent or reduce the discharge of pollutants to waters of the state.

"Department" means the Department of Energy & Environmental Protection.

"Directly Connected Impervious Area (DCIA)" means that impervious area from which stormwater runoff discharges directly to waters of the state or to a storm sewer system that discharges to waters of the state.

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"Effective Impervious Cover" is the total area of a site with a Rational Method runoff coefficient of 0.7 or greater (or other equivalent methodology) from which stormwater discharges directly to a surface water or to a storm sewer system.

"" means a tidal wetland located outside of coastal waters.

"Grab sample" means an individual sample collected in less than fifteen minutes.

"Guidelines" means the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, established pursuant to Section 22a-328 of the Connecticut General Statutes.

"High Quality Waters" means those waters defined as high quality waters in the Connecticut Water Quality Standards pursuant to Section 22a-426-1(36) of the Regulations of Connecticut State Agencies.

"Illicit Discharge" means any unpermitted discharge to waters of the state that does not consist entirely of stormwater or uncontaminated ground water except those discharges identified in Section 3(a)(2) of this general permit when such non-stormwater discharges are approved, in writing, by the Commissioner as discharges that are not significant contributors of pollution to a discharge from an identified MS4.

"Impaired water(s)" means those surface waters of the state designated by the Commissioner as impaired pursuant to Section 303(d) of the federal Clean Water Act and as identified in the most recent State of Connecticut Integrated Water Quality Report within Categories 4 or 5, including any subdivisions of these categories.

"Individual permit" means a permit issued to a named permittee under Section 22a-430 of the Connecticut General Statutes.

"Inland wetland" means wetlands as that term is defined in Section 22a-38 of the Connecticut General Statutes.

"Low Impact Development" or *"LID"* means a site design strategy that maintains, mimics or replicates pre-development hydrology through the use of numerous site design principles and small-scale treatment practices distributed throughout a site to manage runoff volume and water quality at the source.

"Maximum Extent Practicable" or "MEP" is a technology-based standard established by Congress in the Clean Water Act Section 402(p)(3)(B)(iii). Since no precise definition of MEP exists, it allows for maximum flexibility on the part of MS4 operators as they develop their programs. (40CFR 122.2, See also: Stormwater Phase II Compliance Assistance Guide EPA 833-R-00-002, March 2000). When trying to reduce pollutants to the MEP, there must be a serious attempt to comply, and practical solutions may not be lightly rejected. If a covered entity chooses only a few of the least expensive methods, it is likely that MEP has not been met. On the other hand, if a covered entity employs all applicable BMPs except those where it can be shown that they are not technically feasible in the locality, or whose cost would exceed any benefit to be derived, it would have met the standard. MEP required covered entities to choose effective BMPs, and to reject applicable BMPs only where other effective BMPs will serve the same purpose, the BMPs would not be technically feasible, or the cost would be prohibitive.

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"Minimize", for purposes of implementing the minimum control measures in Section 6 of this general permit, means to reduce and/or eliminate to the MEP.

"Municipal separate storm sewer system" or *"MS4"* means conveyances for stormwater (including roads with drainage systems, streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains) owned or operated by any municipality or by any state or federal institution and discharging to surface waters of the state.

"Municipality" means a city, town or borough of the state as defined in section 22a-423 of the Connecticut General Statutes.

"New or Increased Discharge" means new discharge or activity as defined in section 22a-426-8(b)(3) and increased discharge or activity as defined in section 22a-426-8(b)(2), as referenced to the Regulations of Connecticut State Agencies.

"Permittee" means any MS4 that initiates, creates, originates or maintains a discharge authorized by this general permit and that has filed a registration pursuant to Section 4 of this permit.

"Point Source" means any discernible, confined and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged.

"Qualified professional engineer" means a professional engineer who has, for a minimum of eight years, engaged in the planning and designing of engineered stormwater management systems for (i) municipal separate storm sewer systems and (ii) residential and commercial construction projects in accordance with the Guidelines and the Stormwater Quality Manual including, but not limited to, a minimum of four years in responsible charge of the planning and designing of engineered stormwater management systems for such projects.

"Registrant" means a municipality or institution which files a registration pursuant to Section 4 of this general permit.

*"*Redevelopment*"* means any construction activity (including, but not limited to, clearing and grubbing, grading, excavation, and dewatering) within existing drainage infrastructure or at an existing site to modify or expand or add onto existing buildings or structures, grounds, or infrastructure.

"Registration" means a registration form filed with the Commissioner pursuant to Section 4 of this general permit.

"Retain" means to hold runoff on-site to promote vegetative uptake and groundwater recharge through the use of runoff reduction or LID practices or other measures. In addition, it means there shall be no subsequent point source release to surface waters from a storm event defined in this general permit or as approved by the Commissioner.

"Runoff reduction practices" means those post-construction stormwater management practices used to reduce post-development runoff volume delivered to the receiving water, as defined by retaining the volume of runoff from a storm up to the first half inch or one inch of rainfall in accordance with Sections 6(*a*)(5)(B) or 6(*b*)(5)(B), respectively. Runoff reduction is quantified as the total annual

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post-development runoff volume reduced through canopy interception, soil amendments, evaporation, rainfall harvesting, engineered infiltration, extended filtration or evapotranspiration.

"Small MS4" means any MS4 that is not already covered by the Phase I MS4 stormwater program (pursuant to 40CFR 122.26(a)(3)) including municipally-owned systems as well as state- and federally-owned systems, such as colleges, universities, prisons, and military bases. (Note: the Department of Transportation is authorized under a separate general permit.)

"Standard of care", as used in Section 3(*b*)(9), means to endeavor to perform in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances.

"State or Federal Institution" means any facility (including, but not limited to, state and federal prisons, office complexes, hospitals; university campuses, public housing authorities, schools, or other special districts) consisting of more than one building that is owned by an agency or department of the State of Connecticut (except the Department of Transportation) or a federal agency and has an average daily population of 1,000 people or more.

"Stormwater" means waters consisting of rainfall runoff, including snow or ice melt during a rain event.

"Stormwater Quality Manual" means the 2004 Connecticut Stormwater Quality Manual published by the Connecticut Department of Energy & Environmental Protection, as amended.

"Surface water" means those waters as defined in Section 22a-426-1(60) of the Regulations of Connecticut State Agencies.

"Tidal wetland" means a wetland as that term is defined in Section 22a-29(2) of the Connecticut General Statutes.

"Tier 1 Small MS4" means any municipally-owned or -operated Small MS4 (as defined above) including all those located partially or entirely within an Urbanized Area and all state- and federally-operated Small MS4s and any other MS4s located outside an Urbanized Area as may be designated by the Commissioner. (Note: A list of Tier 1 municipalities is included in Appendix A1 of this general permit.)

"Tier 2 Small MS4" means any municipally-owned or municipally-operated Small MS4 (as defined above) other than those designated as a Tier 1 Small MS4 or as may be designated by the Commissioner. (Note: A list of Tier 2 municipalities is included in Appendix A2 of this general permit.)

"Total Maximum Daily Load (*TMDL*)" means a water quality implementation plan established pursuant to Section 303 of the federal Clean Water Act.

"Urbanized Area (*UA*)" means the areas of the State of Connecticut so defined by the U.S. Census Bureau for the 2000 or 2010 census.

"Water Quality Standards or Classifications" means those water quality standards or classifications contained in Sections 22a-426 -1 through 22a-426-9, inclusive, of the Regulations of Connecticut State Agencies and the Classification Maps adopted pursuant to Section 22a-426 of the Connecticut General Statutes, which together constitute the Connecticut Water Quality Standards., as may be

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amended.

"Water Quality Volume" or *"WQV"* means the volume of runoff generated by one inch of rainfall on a site as defined in the 2004 Connecticut Stormwater Quality Manual, as amended.

Section 3. Authorization Under This General Permit

(a) Eligible Activities

(1) This general permit authorizes the discharge of stormwater from or associated with a Tier 1 or Tier 2 Small MS4, provided the requirements of subsection (*b*) of this section are satisfied and the activity is conducted in accordance with the conditions listed in Section 5 of this general permit.

(2) This permit authorizes the following non-stormwater discharges provided they do not contribute to a violation of water quality standards and such discharges are documented in the Stormwater Management Plan and are not significant contributors of pollutants to any identified MS4:

- uncontaminated ground water discharges including, but not limited to, pumped ground water, foundation drains, water from crawl space pumps and footing drains;
- irrigation water including, but not limited to, landscape irrigation and lawn watering runoff;
- residual street wash water;
- discharges or flows from fire fighting activities (except training); and
- naturally occurring discharges such as rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)), springs, diverted stream flows and flows from riparian habitats and wetlands.

(b) Requirements for Authorization

This general permit authorizes the activity listed in the "Eligible Activities" section (Section 3(*a*)) of this general permit provided:

(1) Coastal Management Act

Such activity is consistent with all applicable goals and policies in Section 22a-92 of the Connecticut General Statutes, and must not cause adverse impacts to coastal resources as defined in Section 22a-93(15) of the Connecticut General Statutes.

(2) Endangered and Threatened Species

Implementation of the MS4's Stormwater Management Plan shall not threaten the continued existence of any species listed pursuant to section 26-306 of the Connecticut General Statutes as endangered or threatened and must not result in the destruction or adverse modification of habitat designated as essential to such species.

(3) Aquifer Protection Areas

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Such activity, if it is located within an aquifer protection area as mapped under section 22a-354b of the Connecticut General Statutes, must comply with regulations adopted pursuant to section 22a-354i of the Connecticut General Statutes.

(4) Discharge to POTW

The stormwater is *not* discharged to a Publicly Owned Treatment Works (POTW).

(5) Discharge to Groundwater

The stormwater is *not* discharged entirely to groundwater, meaning a stormwater discharge to a surface water will not occur up to a 100-year, 24-hour rainfall event.

(6) New or Increased Discharges to High Quality Waters

On or before thirty (30) days prior to the commencement of a new or increased discharge to a High Quality Waters from its MS4, the permittee must document compliance with the Connecticut Anti-Degradation Implementation Policy in the Water Quality Standards, as amended. Before commencing any new or increased discharge, the permittee shall identify in its Stormwater Management Plan ("Plan"), the control measures it will implement to ensure compliance with anti-degradation provisions and the terms of this Permit. At a minimum, the permittee shall evaluate and implement to the Maximum Extent Practicable practices which will prevent the discharge of the Water Quality Volume to a surface water body or other practices necessary to protect and maintain designated uses and meet standards and criteria contained in the Water Quality Standards.

(7) New or Increased Discharges to Impaired Waters

(8) Certification Requirements for Registrants and other Individuals

As part of the registration for this general permit, the registrant and any other individual or individuals responsible for preparing the registration submits to the Commissioner a written certification which, at a minimum, complies with the following requirements:

(A) The registrant and any other individual or individuals responsible for preparing the registration and signing the certification has completely and thoroughly reviewed, at a minimum, this general permit and the following regarding the activities to be authorized under such general permit: (i) all registration information provided in accordance with Section 4(*c*)(2) of such general permit, (ii) the Stormwater Management Plan, and (iii) any plans and specifications and any Department approvals regarding such Stormwater Management Plan;

(B) The registrant and any other individual or individuals responsible for preparing the registration and signing the certification pursuant to this general permit has, based on the review described in section 3(*b*)(8)(A) of this general permit, made an affirmative determination to: (i) comply with the terms and conditions of this general permit; (ii) maintain compliance with all plans and documents prepared pursuant to this general permit including, but not limited to, the Stormwater Management Plan; (iii) properly implement and maintain the elements of the Stormwater Management Plan; and (iv) properly operate and maintain all stormwater management measures and systems in compliance with the terms and conditions of this general permit to protect the waters of the state from pollution;

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(C) Such registrant and any other individual or individuals responsible for preparing the registration certifies to the following statement:

"I hereby certify that I am making this certification in connection with a registration under the General Permit for the Discharge of Stormwater from Small Municipal Storm Sewer Systems, submitted to the Commissioner by [INSERT NAME OF REGISTRANT] for an activity located at or within [NAME OF MUNICIPALITY OR ADDRESS OF THE REGISTERED ACTIVITY] and that all terms and conditions of the general permit are being met for all discharges which have been created, initiated or maintained and such activity is eligible for authorization under such permit. I further certify that a system is in place to ensure that all terms and conditions of this general permit will continue to be met for all discharges authorized by this general permit at the site. I certify that I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(*b*)(8)(A) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I certify that I have made an affirmative determination in accordance with Section 3(*b*)(8)(B) of this general permit. I understand that the registration filed in connection with such general permit is submitted in accordance with and shall comply with the requirements of Section 22a-430b of Connecticut General Statutes, as amended by Public Act 12-172. I also understand that knowingly making any false statement made in the submitted information and in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment, under section 53a-157b of the Connecticut General Statutes and any other applicable law."

(9) Stormwater Management Plan Certification

As part of the registration for this general permit, the registrant submits to the Commissioner a written certification by a qualified professional engineer who has reviewed the Stormwater Management Plan (Plan) in accordance with the following requirements:

(A) The qualified professional engineer did not engage in any activities associated with the preparation, planning, designing or engineering of the Plan.

(B) The qualified professional engineer has, at a minimum, completely and thoroughly reviewed this general permit and the following regarding the discharges to be authorized under such general permit: (i) all registration information provided in accordance with Section 4(*c*)(2) of such general permit, (ii) the Stormwater Management Plan, and (iii) all non-engineered and engineered stormwater management measures and systems, including any plans and specifications and any Department approvals regarding such stormwater management measures and systems.

(C) Affirmative Determination

A qualified professional engineer signing the certification must have made an affirmative determination, based on the review described in section 3(*b*)(9)(B) of this general permit and on best engineering practices, that the Plan and control measures therein are adequate to assure that the activity authorized under this general permit will comply with the terms and conditions of such general permit and all non-engineered and

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engineered stormwater management measures and systems: (i) have been designed in accordance with best engineering practices; (ii) will function properly as designed; (iii) are adequate to ensure compliance with the terms and conditions of this general permit; and (iv) will protect the waters of the state from pollution.

(D) The qualified professional engineer, as specified in sections 3(*b*)(9)(A) and (B), above, shall certify to the following statement:

"I hereby certify that I am a qualified professional engineer, as defined in the General Permit for the Discharge of Stormwater from Small Municipal Storm Sewer Systems and as further specified in sections 3(*b*)(9)(A) of such general permit. I am making this certification in connection with a registration under such general permit, submitted to the Commissioner by [INSERT NAME OF REGISTRANT] for an activity located at or within [NAME OF MUNICIPALITY OR ADDRESS OF THE REGISTERED ACTIVITY]. I have personally examined and am familiar with the information that provides the basis for this certification, including but not limited to all information described in Section 3(*b*)(9)(B) of such general permit, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining such information, that the information upon which this certification is based is true, accurate and complete to the best of my knowledge and belief. I certify, based on my review of all information described in Section 3(*b*)(9)(B) of such general permit and on the standard of care for such projects, that I have made an affirmative determination in accordance with Section 3(*b*)(9)(C) of this general permit. I understand that this certification is part of a registration submitted in accordance with Section 22a-430b of Connecticut General Statutes, as amended by Public Act 12-172, and is subject to the requirements and responsibilities for a qualified professional in such statute. I also understand that knowingly making any false statement in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment, under section 53a-157b of the Connecticut General Statutes and any other applicable law."

(E) Nothing in this subsection shall be construed to authorize a qualified professional engineer to engage in any profession or occupation requiring a license under any other provision of the Connecticut General Statutes without such license.

(c) Registration

Pursuant to the "Registration Requirements" section (Section 4) of this permit, a Tier 1 or Tier 2 Small MS4 shall submit an electronic Registration Form (accessible from the DEEP website) to the Commissioner at least one hundred eighty (180) days prior to the effective date of this general permit. The electronic form will guide the registrant to submit the appropriate information.

Include any additional forms and information regarding compliance and/or consistency with the Coastal Management Act, National Historic Preservation Act, High Quality Waters, Impaired Waters (including TMDL requirements), Endangered and Threatened Species, and Aquifer Protection Areas that may be required pursuant to the "Requirements of Authorization" section (Section 3(*b*)).

(d) Geographic Area

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This general permit applies throughout the State of Connecticut.

(e) Effective Date and Expiration Date of this General Permit

This general permit is effective TBD and expires on TBD.

(f) Effective Date of Authorization

An activity is authorized by this general permit: on the date the general permit becomes effective; on the date a complete registration meeting the requirements of Section 4(*c*) is submitted; for registrants that did not register as required by Section 3(*c*), on the date the authorized activity is initiated; or on another date approved by the Commissioner, whichever is latest.

(g) Redesignation of Authorization

A municipality designated as a Tier 1 Small MS4 may request a redesignation for authorization as a Tier 2 Small MS4 under this general permit if the population within the Urbanized Area portion of town, as determined by the 2000 and 2010 United States censuses, is less than 1000 people and the Commissioner issues such waiver in writing.

Section 4. Registration Requirements

(a) Who Must File a Registration

Any municipality or state or federal institution that initiates, creates, originates or maintains a discharge of stormwater from or associated with a Tier 1 or Tier 2 Small MS4 shall file with the Commissioner a registration form that meets the requirements of this section of this general permit. Such form shall be submitted along with the applicable fee within the timeframes and in the amounts specified in Sections 3(*c*) and 4(*c*)(1)(A), respectively.

(b) Scope of Registration

A registrant must register on one set of registration forms for all discharges that are operated by the registering MS4. A MS4 may not submit more than one registration under this general permit.

(c) Contents of Registration

(1) Fees

(A) The registration fee for a Tier 1 or Tier 2 Small MS4 shall be $625 to be submitted with the registration form.

(B) The fees for municipalities shall be half of those indicated in subsection (A) above pursuant to section 22a-6(b) of the Connecticut General Statutes. State and Federal agencies shall pay the full fees specified in this subsection.

(C) The registration fee shall be paid electronically or by check or money order payable to the **Department of Energy & Environmental Protection**.

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(D) No activity shall be authorized by this general permit until the registration fee has been paid in full.

(E) The registration fee is non-refundable.

(2) Registration Form

The registration shall be filed electronically in a form prescribed and provided by the Commissioner (available on the DEEP website) and shall include the following:

(A) Name of the MS4 and the name, title, address, telephone number, and email address of the chief elected official or principal executive officer.

(B) An indication of the status of the MS4 as either a Tier 1 or Tier 2 Small MS4 (see Appendices A1 and A2).

(C) Name, address, telephone number, and email address of the primary contact person for the MS4.

(D) Name, primary contact, address, telephone number, and email address of any consultant(s) or engineer(s) retained by the MS4 to prepare the registration,

(E) Name of receiving stream(s), watershed(s) or waterbody(s) (including waterbody ID number which can be identified at *www.**cteco**.uconn.edu*) to which the MS4 discharges and indication of whether or not a receiving stream is listed as an impaired water, with or without a TMDL, and including identification of the impairment in the most recent State of Connecticut Integrated Water Quality Report or identification of the receiving stream as a high quality water by the Commissioner as defined in the Connecticut Water Quality Standards.

(F) An electronic map or a paper copy of the relevant portion or a full-sized original of a United States Geological Survey (USGS) quadrangle map with a scale of 1:24,000, showing the MS4 boundaries and limits of its separate storm sewer system. If a paper copy of a map is submitted, identify the quadrangle name on the map and be sure to include the name of the MS4.

(G) Assurance that the Stormwater Management Plan for the MS4 is consistent with the following provisions of state statutes and regulations, as appropriate:

(i) For sites within the Coastal Boundary, the MS4 must address all applicable goals and policies in Section 22a-92 of the Connecticut General Statutes, and must not cause adverse impacts to coastal resources as defined in Section 22a-93(15) of the Connecticut General Statutes.

(ii) The MS4's Stormwater Management Plan will not threaten the continued existence of any species listed pursuant to section 26-306 of the Connecticut General Statutes as endangered or threatened and will not result in the destruction or adverse modification of habitat designated as essential to such species.

(iii) The implementation of the MS4's Stormwater Management Plan for any part of the MS4 located within an aquifer protection area (see Appendix C) as mapped under

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section 22a-354b of the Connecticut General Statutes will comply with regulations adopted pursuant to section 22a-354i of the Connecticut General Statutes. For any activity regulated pursuant to sections 8(c) and 9(b) of the Aquifer Protection Regulations (section 22a-354i(1)-(10) of the Regulations of Connecticut State Agencies), the Stormwater Management Plan must assure that stormwater run-off generated from the MS4 is managed in a manner so as to prevent pollution of groundwater.

(iv) The Stormwater Management Plan has been reviewed for consistency with state Historic Preservation statutes, regulations, and policies including identification of any potential impacts on property listed or eligible for listing on the Connecticut Register of Historic Places. A review conducted for an Army Corps of Engineers Section 404 wetland permit would meet this qualification.

(v) The Stormwater Management Plan appropriately addresses new or increased discharges to high quality waters, as specified in Section 3(*b*)(6).

(vi) The Stormwater Management Plan appropriately addresses new or increased discharges to impaired waters, as specified in Section 3(*b*)(7).

(H) For each of the Minimum Control Measures in Section 6(*a*), the following information shall be included:

(i) each Best Management Practice (BMP) to be implemented;

(ii) the person(s) responsible for implementing and maintaining each BMP;

(iii) the date by which each BMP will be implemented;

(iv) the measurable goal(s) by which each BMP will be evaluated.

(I) Provide an internet address (URL) where the Stormwater Management Plan required by Section 5(*b*) and the Annual Reports required by Section 6(*k*) are accessible for public review. Also provide a physical address where a paper copy of the Plan and Annual Reports are available for inspection. If the registrant claims that certain elements of their Plan constitute secure information (pursuant to Section 4(*d*)(2)(C)) or are otherwise exempt from the disclosure requirements of the state Freedom of Information Act (section 1-210 et seq of the Connecticut General Statutes, also called FOIA) as specified in that Act, the registrant shall follow the procedures provided in the registration form instructions for this general permit regarding information subject to FOIA requirements. The process of complying with the FOIA requirements does not exempt the registrant from the registration and Plan preparation deadlines of this general permit.

(J) The certification of the registrant and of the individual or individuals responsible for actually preparing the registration, in accordance with Section 3(*b*)(8).

(K) Certification (pursuant to the requirements and conditions of Section 3(*b*)(9)) that the Stormwater Management Plan has been reviewed by a qualified professional engineer (as defined in Section 2) licensed in the State of Connecticut.

(d) Availability of Registrations, Stormwater Management Plans and Annual Reports

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(1) Registration and Plan Availability

Within thirty (30) days of receipt of a registration, the Commissioner shall post on the DEEP website a list of registrations submitted and identify the location where the Stormwater Management Plan is available for review.

On or before thirty (30) days from the date of posting of a registration by the Commissioner, members of the public may review the registration and Stormwater Management Plan and submit written comments to the Commissioner.

(2) Stormwater Management Plan Availability

A Regulated Small MS4 shall make its Stormwater Management Plan available, electronically and at a publicly available location, for public review and comment. In addition to the internet address (URL) required as part of the registration (pursuant to Section 4(*c*)(2)(I)), reasonable efforts to inform the public of this document shall be undertaken by the MS4. The Plan shall be made available at the MS4's main office, a local library or other publicly available location for public inspection and copying consistent with the federal and state Freedom of Information Acts. On or before thirty (30) days from the date of the availability of the Plan, members of the public may review the Plan and submit written comments on it to the Commissioner. The Plan shall be made available in accordance with the following:

(A) Re-Registrants

For a Regulated Small MS4 that was previously permitted under the General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems issued January 9, 2004, the Plan shall be made available at least one hundred eighty (180) days prior to the effective date of this general permit.

(B) New Registrants

For a Regulated Small MS4 that was **not** previously permitted under the General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems issued January 9, 2004, the Plan shall be made available at least ninety (90) days prior to the effective date of this general permit.

(C) Secure Information

If the registrant claims that certain elements of their Plan constitute secure information subject to restrictions related to Homeland Security or other security issues otherwise exempt from the disclosure requirements of the state Freedom of Information Act (section 1-210 et seq of the Connecticut General Statutes, also called FOIA) as specified in that Act, they shall follow the procedures provided in the registration form instructions for this general permit regarding information subject to FOIA requirements. The process of complying with the FOIA requirements does not exempt the registrant from the registration and Plan preparation deadlines in this general permit.

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Following the comment period specified above, the final Plan shall remain available for public inspection on-line and a paper copy made available at the location specified above during regular business hours.

(3) Annual Report Availability

At least forty five (45) days prior to submission of each Annual Report to the Department, pursuant to Section 6(*k*), each MS4 shall make available for public review and comment a draft copy of the complete Annual Report. Comments on the Annual Report may be made to the MS4 and are *not* submitted to the Department. Reasonable efforts to inform the public of this document shall be undertaken by the MS4. Such draft copies shall be made available electronically on the MS4 website and at the MS4's main office, a local library or other central publicly available location for public inspection and copying consistent with the federal and state Freedom of Information Acts. Following submission of the Annual Report (pursuant to Section 6(*k*)), a copy of the final report shall be made available for public inspection during regular business hours.

(e) Where to File a Registration

A registration shall be filed electronically with the Commissioner through the DEEP website.

In the event that electronic submission is not available, contact the DEEP's Stormwater Section at (860) 424-3025.

(f) Additional Information

The commissioner may require a registrant to submit additional information, which the commissioner reasonably deems necessary to evaluate the consistency of the subject activity with the requirements for authorization under this general permit.

(g) Additional Notification

For discharges authorized by this general permit to another Regulated Small MS4 or to the City of Stamford, a copy of the registration and all attachments thereto shall also be submitted to the owner and operator of that system.

For discharges authorized by this general permit to a DOT separate storm sewer system, a copy of the registration and all attachments thereto shall also be submitted to the DOT upon request.

For discharges within a public drinking water supply watershed or aquifer area, a copy of the registration and the Plan described in subsection 5(*b*) of this general permit shall be submitted to the water company.

For discharges to river components and tributaries which have been designated as Wild and Scenic under the Wild and Scenic Rivers Act, a copy of the registration and the Plan described in 5(*b*) of this general permit shall be submitted to the applicable Wild and Scenic Coordinating Committee.

(h) Action by Commissioner

(1) The Commissioner may require that a permittee obtain an individual permit for any

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discharge authorized by this permit in accordance with Section 22a-430b of the Connecticut General Statutes.

(2) The Commissioner may reject without prejudice a registration if he or she determines that it does not satisfy the registration requirements (Section 4(*c*)) of this general permit. Any registration refiled after such a rejection shall be accompanied by the fee specified in the "Fees" section (Section 4(*c*)(1)) of this general permit.

(3) The Commissioner may disapprove a registration if he or she finds that the subject activity is inconsistent with the "Requirements for Authorization" section (Section 3(*b*)) of this general permit, or for any other reason provided by law.

(4) Disapproval of a registration under this subsection shall constitute notice to the registrant that the subject activity must be authorized by an individual permit.

(5) Disapproval of a registration shall be in writing.

Section 5. Requirements of this General Permit

The permittee shall at all times continue to meet the requirements for authorization set forth in Section 3 of this general permit. In addition, a permittee shall ensure that authorized activities are conducted in accordance with the following conditions:

(a) Conditions Applicable for Certain Discharges

(1) If the permittee initiates, creates, or originates a discharge of stormwater which is located less than 500 feet from a tidal wetland that is not a fresh-tidal wetland, such discharge shall flow through a system designed to retain the Water Quality Volume, as defined in Section 2.

(2) If the permittee wishes to initiate, create, or originate a discharge of stormwater below the coastal jurisdiction line into coastal, tidal, or navigable waters for which a permit is required under the Structures and Dredging Act in accordance with Section 22a-361(a) of the Connecticut General Statutes or into tidal wetlands for which a permit is required under the Tidal Wetlands Act in accordance with Section 22a-32 of the Connecticut General Statutes, the municipality shall obtain such permit(s) from the Commissioner prior to initiating, creating or originating such discharge.

(3) There shall be no distinctly visible floating scum, oil or other matter contained in the stormwater discharge. Excluded from this are naturally occurring substances such as leaves and twigs provided no person has placed such substances in or near the discharge.

(4) The stormwater discharge shall not result in pollution which may cause or contribute to acute or chronic toxicity to aquatic life, impair the biological integrity of aquatic or marine ecosystems, or result in an unacceptable risk to human health.

(5) The stormwater discharge shall not cause or contribute to an exceedance of the applicable Water Quality Standards in the receiving water.

(6) Any new stormwater discharge to high quality waters (as identified by the Commissioner consistent with the Water Quality Standards) shall be discharged in accordance with the Connecticut Anti-Degradation Implementation Policy in the Water Quality Standards

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manual. At a minimum, the permittee shall evaluate and implement to the Maximum Extent Practicable practices which will prevent the discharge of the Water Quality Volume to a surface water body or other practices necessary to protect and maintain designated uses and meet standards and criteria contained in the Water Quality Standards.

(7) Any stormwater discharge to the waters identified in Appendix D shall be managed for the Stormwater Pollutant of Concern identified in the appendix consistent with the requirements in Section 6 of this permit.

(b) Stormwater Management Plan

The permittee shall develop, implement, and enforce a stormwater management plan designed to reduce the discharge of pollutants from the Small MS4 to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the federal Clean Water Act. Under this program, the permittee shall prepare a Stormwater Management Plan pursuant to Section 6 of this general permit, which plan must be completed by such time as specified in Section 4(*d*)(2) of this general permit. The permittee shall continue to implement the Stormwater Management Plan and all Minimum Control Measures required by this general permit throughout the entire term of the general permit. The permittee shall continue to provide for adequate staffing and economic resources for such implementation throughout the entire term of the general permit. If at any time the Commissioner finds that the Plan is not adequate to protect the waters of the state from pollution, the Commissioner may terminate authorization under this permit and require the MS4 to submit an individual permit application.

Section 6. Development of Stormwater Management Plan (the Plan)

The Plan shall address the Minimum Control Measures as indicated in this section. Section 6(*a*) contains the requirements for Tier 1 Small MS4s and section 6(*b*) contains the requirements for Tier 2 Small MS4s. These measures shall be implemented throughout the boundaries of the municipality or institution.

(a) Tier 1 Minimum Control Measures

For each Minimum Control Measure, the permittee shall: define appropriate BMPs; designate a person(s) and job title responsible for each BMP; define a time line for implementation of each BMP; where appropriate, identify the location, including the address and latitude and longitude, for each BMP; and define measurable goals for each BMP. The Minimum Control Measures in the Plan include, but are not limited to:

(1) Public education and outreach

(A) Implement a public education program to distribute educational materials to the community (i.e. residents, business and commerce, students, staff, contractors, etc.) or conduct equivalent outreach activities about the sources and impacts of stormwater discharges on waterbodies and the steps that the public can take to reduce pollutants in stormwater runoff. The education program shall include, but not be limited to, information on management of pet waste, application of fertilizers, herbicides, and pesticides, impervious cover and impacts of illicit discharges and improper disposal of waste into the MS4. Educational information may be developed or acquired from other MS4s, governmental agencies, academia, and/ or environmental advocacy organizations. Information may be disseminated with flyers, brochures, door hangers, television public

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service announcements, and web based tools. Each Annual Report shall summarize the types, sources, number of, and methods by which materials disseminated.

(i) Municipalities regulated by the MS4 permit issued on January 9, 2004 and this permit shall implement this measure upon the effective date of this permit and continue until permit expiration.

(ii) Municipalities and institutions newly regulated by this permit shall implement this measure within 6 months of the effective date of this permit and continue until permit expiration. Permittees shall utilize the 6 month period following the effective date of this permit to develop the content of the outreach materials.

(B) To implement the public education and outreach program, the permittee shall develop or acquire current educational material that identifies the pollutants (such as pathogens/ bacteria, nitrogen, phosphorus, sediments, metals, oils & greases) associated with stormwater discharges, the potential sources of the pollutants, the environmental impacts of these pollutants, and related pollution reduction practices.

(C) Additional measures for discharges to waters associated with a Stormwater Pollutant of Concern

(i) For waters for which **Phosphorus** is a Stormwater Pollutant of Concern, educational materials shall be specifically tailored and targeted to educate on the sources, impacts, and available pollution reduction practices from the following:

a. Septic systems
b. Fertilizer use
c. Grass clippings and leaves management
d. Detergent use
e. Discharge of sediment (to which Phosphorus binds) from Construction sites
f. Other erosive surfaces

(ii) For waters for which **Nitrogen** is a Stormwater Pollutant of Concern, educational materials shall be specifically tailored and targeted to educate on the sources, impacts, and available pollution reduction practices from the following:

a. Septic systems
b. Fertilizer use
c. Grass clippings and leaves management
d. Discharge of sediment (to which Nitrogen binds) from Construction sites
e. Other erosive surfaces

(iii) For waters for which **Bacteria** is a Stormwater Pollutant of Concern, educational materials shall be specifically tailored and targeted to educate on the sources, impacts, and available pollution reduction practices from the following:

a. Septic systems
b. Sanitary cross connections
c. Waterfowl
d. Pet waste

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e. Manure piles associated with livestock and horses

(iv) For waters for which **Mercury** is a Stormwater Pollutant of Concern, educational materials shall be specifically tailored and targeted to educate on the sources, impacts and available recycling programs for elemental mercury and mercury-containing items such as:
a. Thermometers
b. Thermostats
c. Fluorescent lights
d. Button cell batteries

(2) Public Involvement/Participation

(A) Publish a public notice, which complies with state and local public notice and Freedom of Information requirements, of the Plan and Annual Report required by Section 5(*k*) of this permit and hold an annual public meeting to inform the public of the Plan and Annual Report information. The notice shall provide a contact name (with phone number, address, and email) to whom the public can send comments and a publicly accessible location (such as the MS4's main office, a local library or other central publicly available location) and/or URL where the Plan and Annual Report are available for public review. Where state and local notice requirements are inconsistent, the notice provisions providing for the most notice and opportunity for public comment shall be followed. The public notice shall allow for a 30 day comment period, at a minimum. Municipalities and institutions shall publish this public notice annually no later than January 31. The annual public meeting shall be held no later than February 28.

(B) The permittee is encouraged to enlist local organizations to help implement the elements of their SMP.

(C) No requirements in addition to those specified in subsections (A)-(B) above exist for discharges to waters impaired for Phosphorus, Nitrogen, Bacteria, or Mercury.

(3) Illicit discharge detection and elimination.

The permittee shall develop an Illicit Discharge Detection and Elimination (IDDE) program designed to: provide the legal authority to prohibit and eliminate illicit discharges (as defined in 40CFR 122.26(b)(2) except for those discharges noted in the Section 3(*a*)(2) of this permit) to the MS4; find the source of any illicit discharges; eliminate those illicit discharges; and ensure ongoing screening and tracking to prevent and/or eliminate future illicit discharges.

(A) IDDE Program Elements

(i) Illicit discharges to the MS4 are prohibited, and any such discharges are a violation of this permit and remain a violation until they are eliminated. The permittee shall prohibit all illicit discharges from entering its MS4. Upon detection, the permittee shall eliminate illicit discharges as soon as possible and require the immediate cessation of such discharges upon confirmation of responsible parties in accordance with its enforceable legal authorities established pursuant to subsection (B) below. Where elimination of an illicit discharge within thirty (30) days of its confirmation is not possible, the permittee shall establish a schedule for its elimination; such schedule

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not to exceed six (6) months. No later than six (6) months after confirmation, such discharges shall be eliminated or the permittee shall initiate appropriate enforcement actions. If the source of the illicit discharge cannot be identified in 6 months, despite reasonable efforts, the permittee shall amend the Plan to provide an alternate timeframe, not to exceed one (1) year after confirmation of responsible parties. In the interim, the permittee shall take all reasonable and prudent measures to minimize the discharge of pollutants to its MS4.

(ii) The permittee shall implement outfall screening and an illicit discharge detection protocol pursuant to subsections A and B of **Appendix B** to identify, prioritize, and investigate separate storm sewer catchments for suspected illicit discharges of pollutants.

(iii) The permittee shall maintain a record of illicit discharge abatement activities including, at a minimum: location (identified with an address and latitude and longitude), description, method of discovery, date(s) of inspection, sampling data (if applicable), action(s) taken, date of removal or repair, responsible party(ies), costs associated with removal or repair, and estimated daily flow or total volume removed. This information shall be included in the permittee's Annual Report pursuant to the Section 6(*k*) of this permit.

(iv) Timelines – permittees shall implement IDDE program elements in accordance with the schedule below:

		% of MS4				
MS4 Type	Population	Year 1	Year 2	Year 3	Year 4	Year 5
Old Muni[1]	<15,000	-	25%	50%	75%	100%
	15,000-50,000	-	25%	30%	40%	50%
	>50,000	-	-	10%	-	20%
New Muni[1]	<15,000	-	25%	50%	75%	100%
	15,000-50,000	-	25%	30%	40%	50%
	>50,000	n/a				
Institutions[2]	<15000	-	25%	50%	75%	100%
	15,000-50,000	-	25%	35%	40%	50%
	>50,000	-	-	10%	-	20%

[1] "Old Muni" means MS4s previously permitted by the MS4 general permit issued on January 9, 2004. "New Muni" means MS4s newly permitted under this general permit.
[2] The population of a state or federal institution is the average daily population including staff, residents and those receiving or providing services on-site.

(B) Establish the necessary and enforceable legal authority by statute, ordinance, rules and regulations, permit, easement, contract, order and any other means, to eliminate illicit discharges.

(i) The legal authority shall:

a. prohibit illicit discharges to its storm sewer system and require removal of such discharges consistent with subsection (3)(A), above; and

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b. control the discharge of spills and prohibit the dumping or disposal of materials including, but not limited to, residential, industrial and commercial wastes, trash, used motor vehicle fluids, pesticides, fertilizers, food preparation waste, leaf litter, grass clippings, and animal wastes into its MS4; and

c. assess fines or penalties and/or recoup costs incurred by the permittee from anyone creating an illicit discharge or spilling or dumping as specified in subsection (3)(A), above.

(ii) Municipalities regulated by the MS4 permit issued on January 9, 2004 and this permit must establish and implement this ordinance or regulatory mechanism by the effective date of this permit.

(iii) Municipalities and institutions newly regulated by this permit must implement an ordinance or regulatory mechanism on or before one (1) year of the effective date of this permit.

(C) Develop a list (spreadsheet or database) and map or series of maps at a minimum scale of 1"=2000' and maximum scale of 1"=100' showing all stormwater discharges from a pipe or conduit with a diameter of 12" or greater (or equivalent cross-sectional area) located within and owned or operated by the municipality or institution. The map(s) should be developed in a GIS format.

(i) The list and map(s) shall include for each discharge:

a. Type, material, size, and location (identified with a latitude and longitude) of conveyance, outfall or channelized flow (e.g. 24" concrete pipe);

b. the name, water body ID and Surface Water Quality Classification of the immediate surface waterbody or wetland to which the stormwater runoff discharges;

c. if the outfall does not discharge directly to a named waterbody, the name and water body ID of the nearest named waterbody to which the outfall eventually discharges; and

d. the name of the watershed, including the subregional drainage basin number (available from CT ECO at www.cteco.uconn.edu) in which the discharge is located.

e. the spreadsheet or database should be prepared in a format compatible with Microsoft Excel.

(ii) For municipalities regulated by the MS4 permit issued on January 9, 2004 and this permit, this list and mapping must be completed by the effective date of this permit.

(iii) For municipalities and institutions newly regulated by this permit, this list and mapping must commence upon the effective date of this permit and be completed in minimum increments of twenty-five percent (25%) no later than **2, 3, 4, and 5 years**, respectively, from the effective date of this permit. The entirety of the

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municipal or institutional MS4 shall be mapped by the expiration date of this permit.

(D) For waters for which **Phosphorus**, **Nitrogen**, or **Bacteria** is a Stormwater Pollutant of Concern:

(i) To address septic system failures, the IDDE program shall prioritize the IDDE program in areas with a high potential to discharge bacteria, phosphorus, and nitrogen to the MS4. Such areas shall be identified based on assessment of the following criteria: historic on-site sanitary system failures, proximity to bacteria impaired waters, low infiltrative soils, and shallow groundwater. The Annual Report shall include a summary of the program, the number of areas identified with failing systems, actions taken by the permittee to respond to and address the failures, and the anticipated pollutant reduction.

(E) No requirements in addition to those specified in subsections (A) - (C) above exist for discharges to waters for which **Mercury** is a Stormwater Pollutant of Concern.

(4) Construction Site Stormwater Runoff Control

The permittee shall implement and enforce a program to control stormwater discharges (to its MS4) associated with land disturbance or development (including re-development) activities from areas with one half acre or more of soil disturbance, whether considered individually or collectively as part of a larger common plan. Such program shall include the following elements:

(A) Legal Authority

(i) The permittee shall establish an ordinance, bylaw, regulation, or other appropriate legal authority that requires or allows:

a. developers, construction site operators, or contractors to maintain consistency with the 2002 Guidelines for Soil Erosion and Sedimentation Control, as amended, the 2004 Connecticut Stormwater Quality Manual, as amended, and all stormwater discharge permits issued by the DEEP within the municipal or institutional boundary pursuant to CGS 22a-430 and 22a-430b,

b. the implementation of additional measures to protect/improve water quality (in addition to the above requirements) as deemed necessary by the municipality or institution.

c. the permittee to carry out all inspection, surveillance and monitoring procedures necessary to determine compliance with municipal regulations or institutional requirements related to the management of the permittee's MS4. Specifically, inspections shall be conducted to inventory the number of privately-owned retention ponds, detention ponds and other stormwater basins that discharge to or receive drainage from the permittee's MS4.

d. A long term maintenance plan and schedule to ensure the performance and

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pollutant removal efficiency of privately-owned retention ponds, detention ponds and other stormwater basins that discharge to or receive discharge from the permittee's MS4. Such authority will require the plan to specify short-term and long-term inspection and maintenance measures to be implemented by the private owner and measures to provide financial assurance to implement this plan.

e. the permittee to control through interagency or inter-jurisdictional agreements, the contribution of pollutants between the permittee's MS4 and MS4s owned or operated by others.

(ii) For municipalities regulated by the MS4 permit issued on January 9, 2004 and this permit, within one (1) year from the start of the permittee's first fiscal year that begins after the effective date of this permit, the permittee shall implement, upgrade (if necessary) and enforce its land use regulations to meet the requirements of subsections 4(A)(i)a. – e. above.

(iii) For municipalities and institutions newly regulated by this permit, within three (3) years from the start of the permittee's first fiscal year that begins after the effective date of this permit, the permittee shall implement, upgrade (if necessary) and enforce its land use regulations (for municipalities) or its construction requirements (for institutions) to meet the requirements of Sections 4(A)(i)a. – e. above.

(B) Interdepartmental Coordination

(i) The permittee will develop and implement a plan outlining how all municipal or institutional departments and boards with jurisdiction over the review, permitting, or approval of land disturbance and development projects within the MS4 will coordinate their functions with one another.

(ii) All municipalities and institutions shall implement this measure upon the effective date of this permit.

(C) Site Review and Inspection

(i) The permittee will conduct site plan reviews that incorporate consideration of stormwater controls or management practices to prevent or minimize impacts to water quality.

(ii) The permittee will conduct site inspection(s) and enforcement to assess the adequacy of the installation, maintenance, operation, and repair of construction and post construction control measures.

(iii) All municipalities and institutions shall implement this measure upon the effective date of this permit.

(D) Public Involvement

(i) The permittee will implement a procedure for receipt and consideration of information submitted by the public concerning proposed and ongoing land disturbance and development activities.

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(ii) All municipalities and institutions shall implement this procedure upon the effective date of this permit.

(E) State Permit Notification

(i) The permittee will implement a procedure for notifying developers (working in a municipality) or contractors (working for an institution) of their potential obligation to obtain authorization under the DEEP's General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities ("construction general permit") if their development or redevelopment project disturbs one or more acres of land, either individually or collectively, as part of a larger common plan, and results in a point source discharge to the surface waters of the state directly or through the permittee's MS4. The notification shall include a provision informing the developer/ contractor of their obligation to provide a copy of the Storm Water Pollution Control Plan (required by the construction general permit) to the permittee upon request.

(ii) All municipalities and institutions shall implement this procedure upon the effective date of this permit.

(F) No requirements in addition to those specified in subsections (A)-(E) above exist for discharges to waters for which **Phosphorus**, **Nitrogen**, **Bacteria**, or **Mercury** is a Stormwater Pollutant of Concern.

(5) Post –construction stormwater management

(A) Legal Authority

(i) The permittee shall establish an ordinance, bylaw, regulation, or other appropriate legal authority that requires or allows the use of runoff reduction and low impact development ("LID") practices in its land use regulations or construction project requirements to meet the following standards: 1) for development or redevelopment of sites that are currently developed with an effective impervious cover of forty percent or more, retain on-site half the water quality volume for the site, or 2) for new development and redevelopment of sites with less than forty percent effective impervious cover, retain the water quality volume for the site, or 3) an alternate retention/ treatment standard as outlined in subsections 5(B)(i)-(ii) below. All permittees shall identify and eliminate existing local regulatory barriers to implementing LID and runoff reduction practices. These may include site planning requirements, zoning regulations, street design regulations, or infrastructure specifications that address minimal dimensional criteria for the creation of roadways, parking lots, and other impervious cover. If such barriers cannot be eliminated within the timeframe dictated by subsections 5(A)(ii) and (iii) below, the permittee shall provide in the Annual Report(s) required by Section 6(*k*) a justification and a revised schedule for implementation.

(ii) For municipalities regulated by the MS4 permit issued on January 9, 2004 and this permit, the permittee shall implement this requirement within two (2) years after the

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effective date of this permit.

(iii) For municipalities and institutions newly regulated by this permit as Tier 1 MS4s, the permittee shall implement this requirement within three (3) years after the effective date of this permit.

(B) Runoff Reduction/ Low Impact Development ("LID") Measures

Pursuant to the requirements of subsection 5(A)(i) above, the permittee shall require the party responsible (i.e. a developer within a municipal boundary or a developer/contractor with the institution) for development and redevelopment projects within its MS4 to:

(i) For development or redevelopment of sites that are currently developed with an effective impervious cover of forty percent or more, retain on-site half the water quality volume for the site. In cases where this entire amount cannot be retained, the permittee shall require the responsible party to retain runoff volume to the maximum extent achievable using control measures that are technologically available and economically practicable and achievable in light of best industry practice. In such cases, additional stormwater treatment, to the maximum extent achievable using control measures that are technologically available and economically practicable and achievable in light of best industry practice, shall be required for sediment, floatables and nutrients for the volume above that which can be retained up to the water quality volume. In cases where the runoff retention requirement cannot be met, the developer/ contractor shall submit, for the permittee's review, a report detailing factors limiting the capability of achieving this goal. The report shall include: the measures taken to maximize runoff reduction practices on the site; the reasons why those practices constitute the maximum extent achievable; the alternative retention volume; and a description of the measures used to provide additional stormwater treatment above the alternate volume up to the water quality volume. In the case of linear redevelopment projects (e.g. roadway reconstruction or widening) for the developed portion of the right of way: (1) for projects that may be unable to comply with the full retention standard, the alternate retention and treatment provisions may also be applied as specified above, or (2) for projects that will not increase the effective impervious cover within a given watershed, the developer/ contractor shall implement the additional stormwater treatment measures referenced above, but will not be required to retain half of the water quality volume.

(ii) For all new development and for redevelopment of sites with less than forty percent effective impervious cover, retain the water quality volume for the site. If there are site constraints that would prevent retention of this volume on-site (e.g., brownfields, capped landfills, bedrock, elevated groundwater, etc.), documentation must be submitted, for the permittee's review and written approval, which: explains the site limitations; provides a description of the runoff reduction practices implemented; provides an explanation of why this constitutes the maximum extent achievable; offers an alternative retention volume; and provides a description of the measures used to provide additional stormwater treatment for sediment, floatables and nutrients above the alternate volume up to the water quality volume. Any such treatment shall be designed, installed and maintained in accordance with the Stormwater Quality Manual. In the case of linear projects that do not involve

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impervious surfaces (e.g. electrical transmission rights-of-way or natural gas pipelines), retention of the water quality volume is not required as long as the post-development runoff characteristics do not differ significantly from pre-development conditions.

(iii) Consider the limitation of turf areas to those areas necessary to construct buildings, utilities, stormwater management measures, parking, access ways, reasonable lawn areas and contouring necessary to prevent future site erosion,

(iv) Maintain consistency with the Connecticut Stormwater Quality Manual (as amended), or if inconsistent, provide an explanation of why consistency is not feasible or practicable and information that the proposed plan of development is adequately protective.

(v) For municipalities regulated by the MS4 permit issued on January 9, 2004 and this permit, the permittee shall implement this requirement within two (2) years after the effective date of this permit.

(vi) For municipalities and institutions newly regulated by this permit, the permittee shall implement this requirement within three (3) years from the start of the permittee's first fiscal year that begins after the effective date of this permit.

(C) Impervious Cover

(i) Using mapping provided by the Commissioner (available at www.ct.gov/deep/stormwater), the permittee shall estimate the Directly Connected Impervious Area (DCIA) that contributes stormwater to each of its MS4 outfalls. In its SMP and initial annual report, the Permittee shall describe the methodology and assumptions used to estimate the DCIA. Each annual report shall document the progress of this task until its completion. The Permittee shall revise its DCIA estimate as development, redevelopment, or retrofit projects effectively add or remove DCIA to its MS4.

(ii) All municipalities and institutions shall implement measurement of DCIA upon the effective date of this permit and complete the DCIA estimate within four (4) years of the date of the effective date of this permit.

(D) Long Term Maintenance

(i) The permittee shall implement a maintenance plan for ensuring the long-term effectiveness of retention or detention ponds which discharge to, or receive stormwater from, its MS4. This shall include ponds that are owned by the permittee and all privately-owned ponds where the permittee maintains an easement or other legal authority pursuant to Section 6(*a*)(4)(A)(i) of this permit. At a minimum, the permittee shall annually inspect all such retention or detention ponds and remove accumulated sediment to restore full solids capture design capacity where found to be in excess of 50% design capacity.

(ii) The permittee shall implement a maintenance plan for ensuring the long-term effectiveness of stormwater treatment structures or measures (such as swirl concentrators, oil/ grit separators, water quality wetlands or swales, etc) installed

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within its MS4. This shall include structures that are owned by the permittee or those for which the permittee maintains an easement or other legal authority pursuant to Section 6(*a*)(4)(A)(i) of this permit. At a minimum, the permittee shall annually inspect all such structures/ measures and remove accumulated pollutants (such as sediment, oils, leaves, litter, etc) to restore full solids capture design capacity where found to be in excess of 50% design capacity.

(iii) For municipalities regulated by the MS4 permit issued on January 9, 2004 and this permit, the permittee shall implement this requirement upon the effective date of this permit.

(iv) For municipalities and institutions newly regulated by this permit as Tier 1 MS4s, the permittee shall implement this requirement within two (2) years after the effective date of this permit.

(E) Additional measures for discharges to impaired waters (with or without a TMDL)

(i) For waters for which **Nitrogen, Phosphorus** or **Bacteria** is a Stormwater Pollutant of Concern:

To address erosion and sediment problems noted during the course of conducting the inspections required by subsection D above and identified by other means, the permittee shall develop, fund, implement, and prioritize a Retrofit program to correct the problem(s) in a specific timeframe and to establish short term and long term maintenance. Each annual report shall include which problem areas were retrofitted, the cost of the retrofit, and the anticipated pollutant reduction.

(ii) No requirements in addition to those specified in subsections (A)-(D) above exist for discharges to waters for which **Mercury** is a Stormwater Pollutant of Concern.

(6) Pollution Prevention/ Good Housekeeping

(A) Employee Training

The permittee shall continue a formal employee training program to increase awareness of water quality related issues in management of its MS4. In addition to providing key staff with topical training regarding standard operating procedures and other activities necessary to comply with the provisions of this permit, the training program shall include establishing an awareness of the general goals and objectives of the SMP; identification and reporting of illicit discharges and improper disposal; and spill response protocols and respective responsibilities of involved personnel.

(B) Infrastructure Repair and Rehabilitation

The permittee shall repair and rehabilitate its MS4 infrastructure in a timely manner in order to reduce or eliminate the discharge of pollutants from its MS4 to receiving waters. Priority for repair and rehabilitation shall be based on the following:

(i) For municipalities regulated by the MS4 permit issued on January 9, 2004 and this permit, the permittee shall utilize the information developed pursuant to Section

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6(a)(6)(A)(v) of the 2004 general permit to fund and implement a program for repairing, retrofitting or upgrading the conveyances, structures and outfalls of the MS4. This program shall be updated based on new information on outfalls discharging pollutants, impaired waters, inspection observations or observations made during outfall mapping pursuant to Section 6(*a*)(3)(C) of this permit

(ii) For municipalities and institutions newly regulated by this permit as Tier 1 MS4s, the permittee shall develop a program to identify conveyances, structures and outfalls in need of repairing, retrofitting or upgrading utilizing new and existing information on outfalls discharging pollutants, impaired waters, inspection observations or observations made during outfall mapping pursuant to Section 6(*a*)(3)(C) of this permit.

(C) MS4 Property and Operations Maintenance

Streets/ road and associated rights-of-way, parking lots, parks, and facilities that are owned, operated, or otherwise the legal responsibility of the permittee shall be maintained so as to minimize the discharge of pollutants to its MS4. Such maintenance shall include, but not be limited to:

(i) Parks and open space

The permittee shall optimize the application of fertilizers by municipal employees, institutional staff, or private contractors on lands and easements for which it is responsible for maintenance. Optimization practices considered shall include conducting soil testing and analysis to determine soil phosphorus levels are inadequate, the reduction or elimination of fertilizers, reduction of usage by adhering to the manufacturers' instructions, and use of alternative fertilizers forms (i.e., products with reduced, slow-releasing, or insoluble phosphorus compositions). Additional optimization practices to be considered include: proper storage and application practices (i.e. avoid impervious surfaces), application schedule (i.e., appropriate season or month) and timing (i.e., coordinated with climatic conditions to minimize runoff potential); develop and implement standard operating practices for the handling, storage, application, and disposal of pesticides and herbicides in compliance with applicable state and federal laws; evaluate lawn maintenance and landscaping activities to promote water quality (protective practices include reduced mowing frequencies, proper disposal of lawn clippings, and use of alternative landscaping materials like drought resistant and native plantings); and establish procedures for management of trash containers at parks (scheduled cleanings; sufficient number).

The permittee shall establish practices for the proper disposal of grass clippings and leaves at municipal owned lands. Clippings shall be composted or otherwise appropriately disposed. Clippings should not be enter the MS4 system or waters of the state.

(ii) Pet waste management

The permittee shall identify locations within its community/ institution where inappropriate pet waste management practices are immediately apparent and pose a

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threat to receiving water quality due to proximity and potential for direct conveyance of waste to its storm system and waters. In such areas, implement targeted management efforts such as public education and enforcement (e.g., increased patrol for violators). In municipally-owned recreational areas where dog walking is allowed, the permittee shall install educational signage, pet waste baggies, and disposal receptacles (or require carry-out). In order to measure the effectiveness of its pet waste management practices, the permittee shall document in its annual reports information regarding the scope and extent of its education, compliance, and enforcement efforts (including the number of violations pursued and fines levied).

(iii) Waterfowl management

Identify lands where waterfowl congregate and feeding by the public or institutional staff/ residents occurs. To raise awareness regarding the water quality impacts, the permittee shall install signage or use other targeted techniques to educate the public about the detrimental impacts of feeding waterfowl (including the resulting feces deposition) and discourage such feeding practices. The permittee shall also implement practices that discourage the undesirable congregation of waterfowl in these areas, or otherwise isolate the direct drainage from these areas away from its storm system and waters.

(iv) Buildings and facilities (schools under the jurisdiction of the permittee, town offices, police and fire stations, pools, parking garages and other permittee-owned or operated buildings or utilities)

Evaluate the use, storage, and disposal of both petroleum and non-petroleum products; ensure, through employee training, that those responsible for handling these products know proper procedures; ensure that Spill Prevention Plans are in place, if applicable, and coordinate with the fire department as necessary; develop management procedures for dumpsters and other waste management equipment; sweep parking lots and keep areas surrounding the facilities clean to minimize runoff of pollutants; and ensure that all interior building floor drains are not connected to the MS4. This permit does not authorize such discharges; wastewaters from interior floor drains must be appropriately permitted.

(v) Vehicles and Equipment

Establish procedures for the storage of permittee-owned vehicles; require vehicles with fluid leaks to be stored indoors or in contained areas until repaired; evaluate fueling areas owned by the permittee and used by permittee-owned vehicles and if possible, place fueling areas under cover in order to minimize exposure; establish procedures to ensure that vehicle wash waters are not discharged to the municipal storm sewer system or to surface waters. This permit does not authorize such discharges; wastewaters from interior floor drains must be appropriately permitted.

(vi) Parking lots

Establish and implement procedures for sweeping and/or cleaning permittee-owned parking lots with a minimum frequency of once per year in the spring (following winter activities); establish a more frequent sweeping/ cleaning frequency of

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targeted areas determined by the permittee to have an increased pollution potential (based on inspections, pollutant loads, catch basin cleaning or inspection results, land use, impaired or TMDL waters or other factors established by the permittee); and report in each annual report the number of miles cleaned and the volume or mass of material removed. For new and redeveloped municipal parking lots, evaluate options from reducing stormwater runoff to surface waters and/ or the storm sewer system by the installing pervious pavements and/ or other measures to promote sheet flow of stormwater.

(vii) Snow Management Practices

a. Deicing Material Management

Develop and implement standard operating practices for the use, handling, storage, application, and disposal of deicing products such as salt and sand to minimize exposure to stormwater; explore means to minimize the use and optimize the application of chloride-based or other salts or deicing product (while maintaining public safety) and evaluate opportunities for use of alternative materials; for any exterior containers of liquid deicing materials installed after the effective date of this permit, provide secondary containment; ensure that areas used for snow disposal will not result in discharges to waters; and maintain consistency with the DEEP's Best Management Practices for Disposal of Snow Accumulations from Roadways and Parking Lots, revised 2/4/11 and as amended (see link at: www.ct.gov/deep/stormwater).

b. Snow Removal

The permittee shall implement and refine its standard operating practices regarding its snow and ice control operations to minimize the discharge of pollutants. The permittee shall establish goals for the optimization of chemical application rates through the use of automated application equipment (e.g. zero-velocity spreaders), anti-icing and pre-wetting techniques, implementation of pavement management systems, and alternate chemicals. The permittee shall maintain records of the application of anti-icing and/ or de-icing chemicals to document the reduction of chemicals to meet established goals. The permittee shall ensure the proper training for deicing applications for municipal employees, institutional staff, or private contractors on lands and easements for which it is responsible for maintenance;

The permittee shall maintain consistency with the DEEP's Best Management Practices for Disposal of Snow Accumulations from Roadways and Parking Lots (Snow Disposal BMPs), as amended, for the stockpiling or disposal of post-plowing snow. The permittee shall not dispose of snow accumulations in waters of the state except as may be allowed for emergency purposes in the Snow Disposal BMPs document. In its Annual Report, the permittee shall document results of its snow removal program including, at a minimum: the type of staff training conducted on application methods and equipment, type(s) of deicing materials used; lane-miles treated; total amount of each deicing material used; type(s) of deicing equipment used; any changes in deicing practices (and the reasons for the change); and snow disposal methods.

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(viii)Sweeping

a. Conduct a street sweeping program to remove sand, sediment and debris at a minimum frequency below in Table 1. Include methods for dust suppression while sweeping. If wet dust suppression is conducted, the use of water should be minimized such that a discharge of excess water to surface waters and/ or the storm sewer system does not occur.

b. Ensure the proper disposal of street sweeping in accordance with Department policies, guidance and regulations. Sweepings shall not be discharged back into the storm drain system and/or surface waters.

c. In its Annual Report, the permittee shall document results of its sweeping program including, at a minimum: curb miles swept, dates of cleaning, cubic yards of material collected, and method(s) of reuse or disposal.

(ix) Leaf Collection

All permittees shall conduct a town- or institution-wide leaf pickup program annually on or before December 15. Permittee shall ensure proper disposal of yard waste.

(x) Catch Basin Cleaning

The Permittee shall conduct routine cleaning of all catch basins. The Permittee shall track catch basin inspection observations. Utilizing information compiled through its inventory of catch basins, operational staff and public complaints, the Permittee shall optimize routine cleaning frequencies for particular structures or catchment areas as follows to maintain acceptable sediment removal efficiencies:

a. For the first two years of this permit, those catch basins serving catchment areas that discharge to a receiving water identified as impaired shall be inspected and cleaned, if necessary, at a minimum frequency of once every six (6) months in order to establish a cleaning frequency determined such that no sump shall become more than fifty percent (50%) full. Once this frequency has been determined, it shall be included in the SMP and noted in the Permittee's Annual Reports.

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			Table 1 - Sweeping Schedule [1]					
Municipal or institutional[2] population	Main line roads	Arteries to main line roads	Event gathering places	Commercial/ business district main roads	Commercial/ business district sidewalks	City wide residential	All other streets	Public or institutional parking lots
<15,000	Monthly	Monthly	Prior to event & within 48 hrs of event (or within 24 hrs if rain is forecast)	Monthly	Quarterly	Annually	Annually	Monthly
15,000-50,000	Monthly	Quarterly	Prior to event & within 48 hrs of event (or within 24 hrs if rain is forecast)	Twice monthly	Monthly	Semiannually	Annually	Quarterly
>50,000	Weekly	monthly	Prior to event & within 48 hrs of event (or within 24 hrs if rain is forecast)	Daily	Weekly	Quarterly	Twice annually	Monthly
	[1] Sweeping shall be conducted year-round, with the exception of winter months (Dec 1 – Mar 31). At least one sweeping event shall be conducted at the end of the winter season, between April 1-June 30. Street sweeping shall be conducted so as to minimize the amount of excess runoff of street sweeping water. [2] The population of a state or federal institution is the average daily population including staff, residents and those receiving or providing services on-site.							

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b. For all other catch basins, during the first two years of this permit, the Permittee shall inspect and, if necessary, clean these catch basins at least once to establish a cleaning frequency determined such that no catch basin sump is found to be more than fifty percent (50%) full during routine cleaning events. If any of these catch basins are found to be more than fifty percent (50%) full, such basins shall be cleaned and re-inspected within six (6) months to determine the appropriate cleaning frequency. Once this frequency has been determined, it shall be included in the SMP and noted in the Permittee's Annual Reports.

c. Following the establishment of appropriate cleaning frequencies pursuant to subparagraphs (i) and (ii) above, and notwithstanding extenuating circumstances (such as excessive erosion from an active construction site), if a catch basin sump is found to be more than fifty percent (50%) full during each of two consecutive routine cleaning events, the Permittee shall investigate the contributing drainage area for sources of excessive sediment loading, and to the extent practical, abate contributing sources through appropriate measures. Appropriate measures may include stabilization practices, drainage modifications, and increased frequencies of catch basin cleaning and street sweeping, and structural controls suitable for controlling the excessive loading. The Permittee shall describe in its annual report actions taken or its plans to abate areas of persistent sedimentation (including a timeframe for the implementation of such actions), including stabilization practices, structural improvements or operational modifications. After implementation of these measures, if subsequent inspections continue to find the sump more than fifty percent (50%) full, cleaning frequency shall be increased as appropriate to maintain levels below fifty percent (50%). Such changes in frequency shall be included in the SMP and noted in the Permittee's Annual Report.

(xi) Interconnected MS4s

As part of interagency agreements established pursuant to Section 6(*c*)(3) of this permit, the Permittee shall coordinate with operators of interconnected MS4s (such as neighboring municipalities and DOT) regarding the contribution of potential pollutants from the storm sewer systems, contributing land use areas and stormwater control measures in the respective MS4s. This same coordination shall be conducted regarding operation and maintenance procedures utilized in the respective systems.

(xii) Sources contributing pollutants to the MS4

The permittee shall develop and implement a program to control the contribution of pollutants to its MS4 from commercial, industrial, municipal, institutional or other facilities, not otherwise authorized by permit issued pursuant to Sections 22a-430 or 22a-430b of the Connecticut General Statutes.

(D) Additional measures for discharges to waters associated with a Stormwater Pollutant of Concern

(i) For waters for which **Nitrogen** or **Phosphorus** is a Stormwater Pollutant of Concern:

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a. On MS4 owned lands, implement a turf management practices and procedures policy which includes, but is not limited to, procedures for proper fertilizer application and the planting of native plant materials to lessen the amount of turf area requiring mowing and the application of chemicals. Each Annual Report shall discuss the actions taken to implement this policy with an estimate of fertilizer and turf area reduction.

(ii) For waters for which **Bacteria** is a Stormwater Pollutant of Concern:

a. On MS4 owned lands with a high potential to contribute bacteria (such as dog parks, parks with open water, sites with failing septic systems), the permittee shall develop, fund, implement, and prioritize a Retrofit program to correct the problem(s) within a specific timeframe. Each Annual Report shall identify which problems areas were retrofitted, the cost of the retrofit, and the anticipated pollutant reduction.

b. On MS4 owned lands, prohibit the feeding of geese or waterfowl and implement a program to manage geese and waterfowl populations. Each Annual Report shall discuss the actions taken to implement this program.

(iii) No additional requirements in addition to those specified in subsections (A)-(C) above exist for discharges to waters for which **Mercury** is a Stormwater Pollutant of Concern.

(b) Tier 2 Minimum Control Measures

For each Minimum Control Measure, the permittee shall: define appropriate BMPs; designate a person(s) and job title responsible for each BMP; define a time line for implementation of each BMP; where appropriate, identify the location, including the address and latitude and longitude, for each BMP; and define measurable goals for each BMP. The Minimum Control Measures in the Plan include, but are not limited to:

(1) Public education and outreach

(A) Within 1 year of the effective date of this permit and continue until permit expiration, implement a public education program to distribute educational materials to the community (i.e. residents, business and commerce, students, staff, contractors, etc.) or conduct equivalent outreach activities about the sources and impacts of stormwater discharges on waterbodies and the steps that the public can take to reduce pollutants in stormwater runoff. The education program shall include, but not be limited to, information on management of pet waste and yard waste, application of fertilizers, herbicides, and pesticides, and impacts of illicit discharges and improper disposal of waste into the MS4. Educational information may be developed or acquired from other MS4s, governmental agencies, academia, and/ or environmental advocacy organizations. Information may be disseminated with flyers, brochures, door hangers, television public service announcements, and web based tools. The permittee shall utilize the 1 year period following the effective date of this permit to develop the content of the outreach materials. Each annual report shall summarize the types, sources, number of, and methods by which materials disseminated.

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(B) To implement the public education and outreach program, the permittee shall develop or acquire current educational material that identifies the pollutants (such as pathogens/ bacteria, nitrogen, phosphorus, sediments, oils & greases) associated with stormwater discharges, the potential sources of the pollutants, the environmental impacts of these pollutants, and related pollution reduction practices.

(C) Additional measures for discharges to waters associated with a Stormwater Pollutant of Concern

(i) For waters for which **Phosphorus** is a Stormwater Pollutant of Concern, educational materials shall be specifically tailored and targeted to educate on the sources, impacts, and available pollution reduction practices from the following:

a. Septic systems
b. Fertilizer use
c. Grass clippings and leaves management
d. Detergent use
e. Discharge of sediment (to which Phosphorus binds) from Construction sites
f. Other erosive surfaces

(ii) For waters for which **Nitrogen** is a Stormwater Pollutant of Concern, educational materials shall be specifically tailored and targeted to educate on the sources, impacts, and available pollution reduction practices from the following:

a. Septic systems
b. Fertilizer use
c. Grass clippings and leaves management
d. Discharge of sediment (to which Nitrogen binds) from Construction sites
e. Other erosive surfaces

(iii) For waters for which **Bacteria** is a Stormwater Pollutant of Concern, educational materials shall be specifically tailored and targeted to educate on the sources, impacts, and available pollution reduction practices from the following:

a. Septic systems
b. Sanitary cross connections
c. Waterfowl
d. Pet waste
e. Manure piles associated with livestock and horses

(iv) No requirements in addition to those specified in subsection (A)-(B) above exist for discharges to waters for which **Mercury** is a Stormwater Pollutant of Concern.

(2) Public Involvement/Participation.

(A) Publish a public notice, which complies with state and local public notice and Freedom of Information requirements, of the Plan and Annual Report required by Section 6(*k*) of this permit and hold an annual public meeting to inform the public of the Plan and Annual Report information. The notice shall provide a contact name (with phone number, address, and email) to whom the public can send comments and a publicly accessible location (such as the MS4's main office, a local library or other central

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publicly available location) and/or URL where the Plan and Annual Report are available for public review. Where state and local notice requirements are inconsistent, the notice provisions providing for the most notice and opportunity for public comment shall be followed. The public notice shall allow for a 30 day comment period, at a minimum. The MS4 shall implement this measure annually between October 31 and January 31.

(B) The permittee is encouraged to enlist local organizations to help implement the elements of their SMP.

(C) No requirements in addition to those specified in subsection (A)-(B) above exist for discharges to waters for which Phosphorus, Nitrogen, Bacteria, or Mercury is a Stormwater Pollutant of Concern.

(3) Illicit discharge detection and elimination.

Illicit discharges to the MS4 are prohibited, and any such discharges are a violation of this permit and remain a violation until they are eliminated. The permittee shall prohibit all illicit discharges from entering its MS4. The permittee shall provide the legal authority to prohibit and eliminate illicit discharges (as defined in 40CFR 122.26(b)(2) except for those discharges noted in the Section 3(*a*)(2) of this permit) to the MS4.

(A) Establish the necessary and enforceable legal authority by statute, ordinance, rules and regulations, permit, easement, contract, order and any other means, to prohibit and eliminate illicit discharges.

(i) The legal authority shall:

a. prohibit illicit discharges to its storm sewer system and require removal of such discharges; and

b. prohibit the dumping or disposal of materials including, but not limited to, residential, industrial and commercial wastes, trash, used motor vehicle fluids, pesticides, fertilizers, food preparation waste, leaf litter, grass clippings, and animal wastes into its MS4; and

c. assess fines or penalties and/or recoup costs incurred by the permittee from anyone creating an illicit discharge or spilling or dumping to the MS4.

(ii) The permittee must implement this ordinance or regulatory mechanism on or before three (3) years from the effective date of this permit.

(B) Develop a means for citizen reporting of possible illicit discharges. Include in the Annual Report a summary of such citizen reporting and investigative/ corrective actions by the permittee to respond to and address the complaints.

(C) For waters for which **Phosphorus**, **Nitrogen**, or **Bacteria** is a Stormwater Pollutant of Concern:

Develop a program to address reports of illicit discharges with a high potential to discharge bacteria, phosphorus, and nitrogen to the MS4. The Annual Report shall

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include a summary of the illicit discharge complaints received, and the investigative and corrective actions taken to identify and eliminate the illicit discharge, and the anticipated pollutant reduction.

(D) No requirements in addition to those specified in subsections (A) - (B) above exist for discharges to waters for which **Mercury** is a Stormwater Pollutant of Concern.

(4) Construction Site Stormwater Runoff Control

The permittee shall implement and enforce a program to control stormwater discharges (to its MS4) associated with land disturbance or development (including re-development) activities from areas with one half acre or more of soil disturbance, whether considered individually or collectively as part of a larger common plan. Such program shall include the following elements:

(A) Legal Authority

(i) The permittee shall establish an ordinance, bylaw, regulation, or other appropriate legal authority that requires or allows:

a. developers, construction site operators, or contractors to maintain consistency with the 2002 Guidelines for Soil Erosion and Sedimentation Control, as amended, the 2004 Connecticut Stormwater Quality Manual, as amended, and all stormwater discharge permits issued by the DEEP within the municipal boundary pursuant to CGS 22a-430 and 22a-430b,

b. the implementation of additional measures to protect/ improve water quality (in addition to the above requirements) as deemed necessary by the municipality.

c. the permittee to carry out all inspection, surveillance and monitoring procedures necessary to determine compliance with municipal regulations related to the management of the permittee's MS4.

d. the permittee to control through interagency or inter-jurisdictional agreements, the contribution of pollutants between the permittee's MS4 and MS4s owned or operated by others.

(ii) Within three (3) years from effective date of this permit, the permittee shall implement, upgrade (if necessary) and enforce its land use regulations to meet the requirements of subsection 4(A)(i) above.

(B) Interdepartmental Coordination

(i) The permittee will develop and implement a plan outlining how all municipal departments and boards with jurisdiction over the review, permitting, or approval of land disturbance and development projects within the MS4 will coordinate their functions with one another.

(ii) All permittee shall implement this measure within one (1) year of the effective date

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of this permit.

(C) Site Review and Inspection

(i) The permittee will conduct site plan reviews that incorporate consideration of stormwater controls or management practices to prevent or minimize impacts to water quality.

(ii) The permittee will conduct site inspection(s) and enforcement to assess the adequacy of the installation, maintenance, operation, and repair of construction and post construction control measures.

(iii) The permittee shall implement this measure within one (1) year of the effective date of this permit.

(D) Public Involvement

(i) The permittee will implement a procedure for receipt and consideration of information submitted by the public concerning proposed and ongoing land disturbance and development activities.

(ii) The permittee shall implement this procedure within one (1) year of the effective date of this permit.

(E) State Permit Notification

(i) The permittee will implement a procedure for notifying developers of their potential obligation to obtain authorization under the DEEP's General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities ("construction general permit") if their development or redevelopment project disturbs one or more acres of land, either individually or collectively, as part of a larger common plan, and results in a point source discharge to the surface waters of the state directly or through the permittee's MS4. The notification shall include a provision informing the developer of their obligation to provide a copy of the Storm Water Pollution Control Plan (required by the construction general permit) to the permittee upon request.

(ii) The permittee shall implement this procedure within one (1) year of the effective date of this permit.

(F) No requirements in addition to those specified in subsections (A)-(E) above exist for discharges to waters for which **Phosphorus**, **Nitrogen**, **Bacteria**, or **Mercury** is a Stormwater Pollutant of Concern.

(5) Post –construction stormwater management

(A) Legal Authority

(i) The permittee shall establish an ordinance, bylaw, regulation, or other appropriate legal authority that requires or allows the use of runoff reduction and low impact development ("LID") practices in its land use regulations or construction project

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requirements to meet the following standards:

a. for development or redevelopment of sites that are currently developed with an effective impervious cover of forty percent or more, retain on-site half the water quality volume (as defined in Section 2 of this general permit) for the site,

b. for new development and redevelopment of sites with less than forty percent effective impervious cover, retain the water quality volume for the site,

c. an alternate retention/ treatment standard as outlined in subsection 5(B) below.

(ii) All permittees shall identify and eliminate existing local regulatory barriers to implementing LID and runoff reduction practices. These may include site planning requirements, zoning regulations, street design regulations, or infrastructure specifications that address minimal dimensional criteria for the creation of roadways, parking lots, and other impervious cover. If such barriers cannot be eliminated within the timeframe dictated by subsection 5(D) below, the permittee shall provide in the Annual Report(s) required by Section 6(*k*) a justification and a revised schedule for implementation

(B) Runoff Reduction/ Low Impact Development ("LID") Measures

Pursuant to the requirements of subsection 5(A)(i) above, the permittee shall require the party responsible (i.e. a developer) for development and redevelopment projects within its MS4 to:

(i) for development or redevelopment of sites that are currently developed with an effective impervious cover of forty percent or more, retain on-site half the water quality volume for the site. In cases where this entire amount cannot be retained, the permittee shall require the responsible party to retain runoff volume to the maximum extent achievable using control measures that are technologically available and economically practicable and achievable in light of best industry practice. In such cases, additional stormwater treatment, to the maximum extent achievable using control measures that are technologically available and economically practicable and achievable in light of best industry practice, shall be required for sediment, floatables and nutrients for the volume above that which can be retained up to the water quality volume. In cases where the runoff retention requirement cannot be met, the developer/ contractor shall submit, for the permittee's review, a report detailing factors limiting the capability of achieving this goal. The report shall include: the measures taken to maximize runoff reduction practices on the site; the reasons why those practices constitute the maximum extent achievable; the alternative retention volume; and a description of the measures used to provide additional stormwater treatment above the alternate volume up to the water quality volume. In the case of linear redevelopment projects (e.g. roadway reconstruction or widening) for the developed portion of the right of way: (1) for projects that may be unable to comply with the full retention standard, the alternate retention and treatment provisions may also be applied as specified above, or (2) for projects that will not increase the effective impervious cover within a given

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watershed, the developer/ contractor shall implement the additional stormwater treatment measures referenced above, but will not be required to retain half of the water quality volume.

(ii) for all new development and for redevelopment of sites with less than forty percent effective impervious cover, retain the water quality volume for the site. If there are site constraints that would prevent retention of this volume on-site (e.g., brownfields, capped landfills, bedrock, elevated groundwater, etc.), documentation must be submitted, for the permittee's review and written approval, which: explains the site limitations; provides a description of the runoff reduction practices implemented; provides an explanation of why this constitutes the maximum extent achievable; offers an alternative retention volume; and provides a description of the measures used to provide additional stormwater treatment for sediment, floatables and nutrients above the alternate volume up to the water quality volume. Any such treatment shall be designed, installed and maintained in accordance with the Stormwater Quality Manual. In the case of linear projects that do not involve impervious surfaces (e.g. electrical transmission rights-of-way or natural gas pipelines), retention of the water quality volume is not required as long as the post-development runoff characteristics do not differ significantly from pre-development conditions.

(iii) consider the limitation of soil disturbance to that necessary to construct buildings, utilities, stormwater management measures, parking, access ways, reasonable lawn areas and contouring necessary to prevent future site erosion,

(iv) maintain consistency with the Connecticut Stormwater Quality Manual (as amended), or if inconsistent, provide an explanation of why consistency is not feasible or practicable and information that the proposed plan of development is adequately protective.

(C) The permittee shall implement a maintenance plan for ensuring the long-term effectiveness of stormwater treatment structures or measures (such as swirl concentrators, oil/ grit separators, stormwater treatment wetlands or swales, etc) installed within its MS4. This shall include structures that are owned by the permittee or those for which the permittee maintains an easement or other legal authority. At a minimum, the permittee shall annually inspect all such structures/ measures and remove accumulated pollutants (such as sediment, oils, leaves, litter, etc) to restore full solids capture design capacity where found to be in excess of 50% design capacity.

(D) The permittee shall implement the requirements of this subsection within three (3) years after the effective date of this permit.

(E) Additional measures for discharges to impaired waters (with or without a TMDL)

(i) For waters for which **Nitrogen, Phosphorus,** or **Bacteria** is a Stormwater Pollutant of Concern**:**

a. To address erosion and sediment problems identified by MS4 staff, residents, and/or contractors, the permittee must develop, fund, implement, and prioritize a Retrofit program to correct the problem(s) in a specific timeframe and to establish short term and long term maintenance, as necessary. Each annual

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report shall identify which problems areas were retrofitted, the cost of the retrofit, and the anticipated pollutant reduction.

(ii) No requirements in addition to those specified in subsections (A)-(D) above exist for discharges to waters for which **Mercury** is a Stormwater Pollutant of Concern.

(6) Pollution Prevention/ Good Housekeeping

(A) Employee Training

The permittee shall implement a formal employee training program to increase awareness of water quality related issues in management of its MS4. In addition to providing key staff with topical training regarding standard operating procedures and other activities necessary to comply with the provisions of this permit, the training program shall include, at a minimum: establishing an awareness of the general goals and objectives of the SMP; identification and reporting of illicit discharges and improper disposal; winter road maintenance application procedures; deicing equipment maintenance and training, snow disposal and storage practices; and spill response protocols and respective responsibilities of involved personnel.

(B) Infrastructure Repair and Rehabilitation

The permittee shall repair and rehabilitate its MS4 infrastructure in a timely manner in order to reduce or eliminate the discharge of pollutants from its MS4 to receiving waters. Priority for repair and rehabilitation shall be based on existing information on outfalls discharging pollutants, impaired waters or inspection observations. This shall include refinement of the permittee's standard operating procedures and good housekeeping practices for management of its MS4.

(C) MS4 Property and Operations Maintenance

Streets/ road and associated rights-of-way, parking lots, parks, and facilities that are owned, operated, or otherwise the legal responsibility of the permittee shall be maintained so as to minimize the discharge of pollutants to its MS4. Such maintenance shall include, but not be limited to:

(i) Parks and open space

The permittee shall optimize the application of fertilizers by municipal employees, or private contractors on lands and easements for which it is responsible for maintenance. Optimization practices considered shall include conducting soil testing and analysis to determine soil phosphorus levels are inadequate, the reduction or elimination of fertilizers, reduction of usage by adhering to the manufacturers' instructions, and use of alternative fertilizers forms (i.e., products with reduced, slow-releasing, or insoluble phosphorus compositions). Additional optimization practices to be considered include proper storage practices and application practices (i.e. avoid impervious surfaces), application schedule (i.e., appropriate season or month) and timing (i.e., coordinated with climatic conditions to minimize runoff potential); develop and implement standard operating practices for the handling, storage, application, and disposal of pesticides and herbicides in compliance with applicable state and federal laws; evaluate lawn maintenance and

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landscaping activities to promote water quality (protective practices include reduced mowing frequencies, proper disposal of lawn clippings, and use of alternative landscaping materials like drought resistant and native plantings); and establish procedures for management of trash containers at parks (scheduled cleanings; sufficient number).

The permittee shall establish practices for the proper disposal of grass clippings and leaves at municipal owned lands. Clippings shall be composted or otherwise appropriately disposed. Clippings should not enter the MS4 system or waters of the state.

(ii) Pet waste management

The permittee shall identify locations within its community where inappropriate pet waste management practices are immediately apparent and pose a threat to receiving water quality due to proximity and potential for direct conveyance of waste to its storm system and surface waters. In such areas, implement targeted management efforts such as public education and enforcement (e.g., increased patrol for violators). In municipally-owned recreational areas where dog walking is allowed, the permittee shall install educational signage, pet waste baggies, and disposal receptacles (or require carry-out).

(iii) Waterfowl management

Identify lands where waterfowl congregate and feeding by the public occurs. To raise awareness regarding the water quality impacts, the permittee shall install signage or use other targeted techniques to educate the public about the detrimental impacts of feeding waterfowl (including the resulting feces deposition) and discourage such feeding practices. The permittee shall also implement practices that discourage the undesirable congregation of waterfowl in these areas, or otherwise isolate the direct drainage from these areas away from its storm sewer system and surface waters.

(iv) Buildings and facilities (schools under the jurisdiction of the permittee, town offices, police and fire stations, pools, parking garages and other permittee-owned or operated buildings or utilities)

Evaluate the use, storage, and disposal of both petroleum and non-petroleum products; ensure, through employee training, that those responsible for handling these products know proper procedures; ensure that Spill Prevention Plans are in place, if applicable, and coordinate with the fire department as necessary; develop management procedures for dumpsters and other waste management equipment; sweep parking lots and keep areas surrounding the facilities clean to minimize runoff of pollutants; and ensure that all interior building floor drains are not connected to the MS4. This permit does not authorize such discharges; wastewaters from interior floor drains must be appropriately permitted.

(v) Vehicles and Equipment

Establish procedures for the storage of permittee-owned vehicles; require vehicles with fluid leaks to be stored indoors or in contained areas until repaired; evaluate

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fueling areas owned by the permittee and used by permittee-owned vehicles and if possible, place fueling areas under cover in order to minimize exposure; establish procedures to ensure that vehicle wash waters are not discharged to the municipal storm sewer system or to surface waters. This permit does not authorize such discharges; wastewaters from interior floor drains must be appropriately permitted.

(vi) Parking lots

Establish and implement procedures for sweeping and/or cleaning permittee-owned parking lots with a minimum frequency of once per year in the spring (following winter activities); establish a more frequent sweeping/ cleaning frequency of targeted areas determined by the permittee to have an increased pollution potential (based on inspections, pollutant loads, catch basin cleaning or inspection results, land use, impaired or TMDL waters or other factors established by the permittee); and report in each annual report the number of parking lots cleaned, the approximate area of the lots and the volume or mass of material removed.

(vii)Deicing material & snow management practices

Develop and implement standard operating practices for the use, handling, storage, application, and disposal of deicing products such as salt and sand to minimize exposure to stormwater; for roadways and parking lots, explore means to minimize the use and optimize the application of chloride-based or other salts or deicing product (while maintaining public safety) and evaluate opportunities for use of alternative materials; for any exterior containers of liquid deicing materials installed after the effective date of this permit, provide secondary containment; ensure that areas used for snow disposal will not result in discharges to waters; and maintain consistency with the DEEP's Best Management Practices for Disposal of Snow Accumulations from Roadways and Parking Lots, revised 2/4/11 and as amended (see link at: www.ct.gov/deep/stormwater).

(viii)Sweeping

a. Conduct a street sweeping program to remove sand, sediment and debris at a minimum frequency of once per year after snow melt but no later than June 30. Include methods for dust suppression while sweeping. If wet dust suppression is conducted, the use of water should be minimized such that a discharge of excess water to surface waters and/ or the storm sewer system does not occur.

b. Ensure the proper disposal of street sweeping in accordance with Department policies, guidance and regulations. Sweepings shall not be discharged back into the storm drain system and/or surface waters.

c. In its Annual Report, the permittee shall document results of its sweeping program including, at a minimum: curb miles swept, dates of cleaning, cubic yards of material collected, and method(s) of reuse or disposal.

(ix) Leaf Collection

All permittees shall conduct a town-wide leaf pickup program annually on or before December 15. Permittee shall ensure proper disposal or reuse of collected leaves.

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(x) Catch Basin Cleaning

The permittee shall develop and implement a program for the routine cleaning of all catch basins and stormwater structures. The permittee shall inspect all catch basins and structures at least once a year for the first two years of the permit and track inspection observations. Catch basins identified as being more than fifty percent (50%) full during these inspections shall be cleaned. Utilizing information compiled through its inspection program and public complaints, the permittee shall develop a schedule for the routine cleaning of all catch basins and stormwater structures.

(xi)Interconnected MS4s

As part of interagency agreements established pursuant to Section 6(*c*)(3) of this permit, the Permittee shall coordinate with operators of interconnected MS4s (such as neighboring municipalities and DOT) regarding the contribution of potential pollutants from the storm sewer systems, contributing land use areas and stormwater control measures in the respective MS4s. This same coordination shall be conducted regarding operation and maintenance procedures utilized in the respective systems.

(D) Additional measures for discharges to waters associated with a Stormwater Pollutant of Concern

(i) For waters for which **Nitrogen** is a Stormwater Pollutant of Concern:

a. Implement a turf management practices and procedures policy which includes, but is not limited to, procedures for proper fertilizer application on lands owned by the permittee and the planting of native plant materials to lessen the amount of turf area requiring mowing and the application of chemicals. Each annual report shall discuss the actions taken to implement this policy with an estimate of fertilizer and turf area reduction.

(ii) For waters for which **Bacteria** is a Stormwater Pollutant of Concern:

a. On MS4 owned lands (such as dog parks, parks or areas with open water, sites with failing septic systems) with a high potential to contribute bacteria, the permittee shall develop, fund, implement, and prioritize a Retrofit program to correct the problem(s) within a specific timeframe. Each annual report shall identify which problems areas were retrofitted, the cost of the retrofit, and the anticipated pollutant reduction.

b. On municipal owned lands, prohibit the feeding of geese and implement a program to manage goose populations on lands. Each annual report shall discuss the actions taken to implement this program.

(iii) No additional requirements in addition to those specified in subsections (A)-(C) above exist for discharges to waters for which **Phosphorus** or **Mercury** is a Stormwater Pollutant of Concern.

(c) Sharing Responsibility

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(1) Qualifying Local Program

The permittee may satisfy the requirement to implement a BMP for a Minimum Control Measure by having a third party implement the BMP.

When a permittee is relying on a third party to implement one or more BMP(s), the permittee shall note that fact in the registration and annual report required in subsection (i) below. If the third party fails to implement the BMP(s), the permittee remains responsible for its implementation.

(Note: For example, if a local watershed organization performs an annual "river clean-up", this event may be used to satisfy a BMP for the Public Participation and/or the Pollution Prevention and Good Housekeeping Minimum Control Measure.)

(2) Qualifying State or Federal Program

If a BMP or Minimum Control Measure is the responsibility of a third party under another NPDES stormwater permit, the permittee is not required to include such BMP or Minimum Control Measure in its Stormwater Management Plan. The permittee shall reference this qualifying program in their Stormwater Management Plan. However, the permittee is not responsible for its implementation if the third party fails to perform. The permittee shall periodically confirm that the third party is still implementing this measure. If the third party fails to implement the measure, the Stormwater Management Plan may be modified to address the measure, if necessary.

In the case of a permitted municipal industrial activity that is covered by the General Permit for the Discharge of Stormwater Associated with Industrial Activity, the permittee may reference the activity's Stormwater Pollution Prevention Plan to address a portion of the permittee's Stormwater Management Plan.

(Note: For example, the permittee may reference a regional mall's requirement to perform sweeping and catch basin cleaning under the General Permit for the Discharge of Stormwater Associated with Commercial Activity. This third party action may be used to address a portion of the permittee's requirement under the Good Housekeeping and Pollution Prevention Minimum Control Measure.)

(3) Coordination of Permit Responsibilities

Where a portion of the separate storm sewer system within a municipality is owned or otherwise the responsibility of another municipality, institution or a state or federal agency the entities shall coordinate the development and implementation of their respective Stormwater Management Plans to address all the elements of Section 6. A description of the respective responsibilities for these elements shall be included in the Stormwater Management Plan for each municipality.

(Note: For example, a storm sewer system within a municipality may be operated and maintained by the DOT. In cases such as these, the two entities shall coordinate their Stormwater Management Plans to address the Minimum Control Measures, particularly at the interface between the two storm sewer systems.)

(4) Co-Permitting

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When a municipal Regulated Small MS4s is co-located within the corporate boundary of another Regulated Small MS4, the two may, at their discretion, submit a single registration and share a single Plan as co-permittees. In such a case, the Plan shall clearly indicate which MS4 is responsible for implementing each of the control measures and other elements of the Plan.

(Note: This provision currently applies only to the City of Groton within the Town of Groton and the Borough of Stonington within the Town of Stonington.)

(d) Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control, including related appurtenances, which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee when necessary to achieve compliance with this permit.

(e) Signature Requirements

The Plan shall be signed by the chief elected official or principal executive officer, as those terms are defined in Section 22a-430-3(b)(2) of the Regulations of Connecticut State Agencies. The Plan shall be retained by the chief elected official or principal executive officer and copies retained by MS4 officials or employees responsible for implementation of the Plan.

(f) Plan Review Fee

When submitting a Stormwater Management Plan as requested by the Commissioner pursuant to Section 6(*g*), below, the permittee shall submit a plan review fee of $375.

(g) Keeping Plans Current

The permittee shall amend the Plan whenever; (1) there is a change which has the potential to cause pollution of the waters of the state; or (2) the actions required by the Plan fail to prevent pollution of the waters of the state or fail to otherwise comply with any other provision of this general permit; or (3) the Commissioner requests modification of the Plan. The amended Plan shall be completed and all actions required by such Plan shall be completed within a time period determined by the Commissioner.

The Commissioner may notify the permittee in writing at any time that the Plan does not meet one or more of the requirements of this general permit. Within 30 days of such notification, unless otherwise specified by the Commissioner in writing, the permittee shall respond to the Commissioner indicating how they plan to modify the Plan to address these requirements. Within 90 days of this response or within 120 days of the original notification, whichever is less, unless otherwise specified by the Commissioner in writing, the permittee shall then revise the Plan, perform all actions required by the revised Plan, and shall certify to the Commissioner that the requested changes have been made and implemented. The permittee shall provide such information as the Commissioner requires to evaluate the Plan and its implementation. If at any time the Commissioner finds that the Plan is not adequate to protect the waters of the state from pollution, the Commissioner may terminate authorization under this permit and require the MS4 to submit an individual permit application.

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(h) Failure to Prepare or Amend Plan

In no event shall failure to complete or update a Plan in accordance with Sections 5(*b*) and 6 of this general permit relieve a permittee of responsibility to implement actions required to protect the waters of the state and to comply with all conditions of this general permit.

(i) Plan Review Certification

A copy of the Plan review certification made in accordance with Section 3(*b*)(9) shall be maintained with the Plan.

(j) Monitoring Requirements

All Tier 1 MS4s shall comply with the monitoring requirements in this subsection. Tier 2 MS4s are not required to comply with this subsection.

(1) In-stream Dry and Wet Weather Monitoring of Receiving Water Quality

In-stream dry and wet weather monitoring shall be conducted by the permittee in accordance with the provisions of this subsection. These in-stream samples shall be taken at a location representative, as much as possible, of the nature of the stream flow at the chosen location. Dry weather in-stream samples shall be taken at the same locations as the wet weather in-stream samples. The permittee should avoid sampling in close proximity to a stormwater outfall or any other location that could alter the representative nature of the in-stream sample. Each sample shall be a composite sample taken in accordance with Section 6(*j*)(4) below.

(A) Location

In-stream dry and wet weather monitoring shall be conducted at the number of locations specified in the table below. Where feasible, these locations should be along the primary stem of the principal watercourse in separate subregional watersheds (as identified in mapping available at www.cteco.uconn.edu) that fall entirely or partially within the corporate boundaries of the MS4. Specific monitoring locations shall be established by the permittee through consideration of criteria that may include; location of significant development, nearby land-use, illicit discharge "hot spots", previous in-stream sampling locations, or other criteria as may be determined by the permittee. The location of these sampling points and the rationale for their location shall be included in the Stormwater Management Plan.

Municipal or Institutional[1] Population	Number of in-stream locations
<15,000	4
15,000 – 50,000	8
>50,000	12

[1] The population of a state or federal institution is the average daily population including staff, residents and those receiving or providing services on-site.

(B) Frequency

(i) Dry Weather Monitoring

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The permittee shall perform dry weather in-stream monitoring once a year in the first and second years following the effective date of this general permit in accordance with the procedures in Section 6(*j*)(4) below. Dry weather monitoring shall be conducted between July 1 and September 30.

(ii) Wet Weather Monitoring

The permittee shall perform wet weather in-stream monitoring once a year in the third, fourth and fifth years following the effective date of this general permit. Monitoring must be conducted during a rain event in accordance with the stormwater monitoring procedures in Section 6(*j*)(4) below. Monitoring may be conducted at any time of year as long as the watercourse is accessible (i.e. not frozen or in a hazardous flooding condition) and there is no significant snow cover in the watershed.

(C) Institutions

Where an appropriate watercourse (as specified in Section 6(*j*)(1)(A), above) is not located within the corporate boundaries of the MS4, an institution authorized under this general permit is not required to conduct in-stream monitoring. In such a case, the institution shall monitor its outfalls in accordance with the wet weather outfall monitoring provisions of Sections 6(*j*)(2) below.

(2) Wet Weather Outfall Monitoring

The permittee shall monitor the number of outfalls specified in the table below that are twelve (12) inches or greater from the MS4 once in each year of this general permit. Different outfall locations shall be selected each year. The order in which outfall locations are monitored shall be prioritized, with discharges to impaired waters receiving the highest priority in accordance with Section 6(*j*)(6) below. Other criteria to be considered may include; location of significant development, nearby land-use, illicit discharge "hot spots", previous in-stream sampling locations, or other criteria as may be determined by the permittee. Monitoring may be conducted at any time of year when there is no significant snow cover in the watershed and shall be conducted in accordance with the procedures in Section 6(*j*)(4) below.

Municipal or Institutional[1] Population	Number of outfall locations
<15,000	4
15,000 – 50,000	8
>50,000	12

[1] The population of a state or federal institution is the average daily population including staff, residents and those receiving or providing services on-site.

(3) Monitoring Parameters

(A) In-Stream Monitoring Parameters

The parameters to be monitored for in-stream dry and wet weather monitoring shall include:

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pH (SU)
Temperature
Dissolved Oxygen (mg/l)
Hardness (mg/l)
Conductivity (umos)
Oil and grease (mg/l)
Chemical Oxygen Demand (mg/l)
Surfactants as MBAS (mg/l)
Chloride (mg/l)
Magnesium (mg/l)
Cyanide (mg/l)
Turbidity (NTU)
Total Suspended Solids (mg/l)
Total Phosphorous (mg/l)
Ammonia (mg/l)
Total Kjeldahl Nitrogen (mg/l)
Nitrate plus Nitrite Nitrogen (mg/l)
Total Copper (mg/l)
Total Lead (mg/l)
Total Zinc (mg/l)
E. coli and Total Coliform (col/100ml) (for Class AA, A and B surface waters)
Fecal coliform and Entercocci (col/100ml) (for Class SA and SB surface waters)

In addition to this list of parameters, uncontaminated rainfall pH shall be measured at the time the in-stream sample is taken.

(B) Outfall Monitoring Parameters

The parameters to be monitored for wet weather outfall monitoring shall include:

pH (SU)
Temperature
Dissolved Oxygen (mg/l)
Hardness (mg/l)
Conductivity (umos)
Chloride (mg/l)
Magnesium (mg/l)
Cyanide (mg/l)
Surfactants as MBAS (mg/l)
Total Petroleum Hydrocarbons (mg/l)
Oil and grease (mg/l)
Chemical Oxygen Demand (mg/l)
Total Suspended Solids (mg/l)
Total Phosphorous (mg/l)
Ammonia (mg/l)
Total Kjeldahl Nitrogen (mg/l)
Nitrate plus Nitrite Nitrogen (mg/l)
Total Copper (mg/l)
Total Lead (mg/l)
Total Zinc (mg/l)

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E. coli and Total Coliform (col/100ml) (for Class AA, A and B surface waters)
Fecal coliform and Entercocci (col/100ml) (for Class SA and SB surface waters)

In addition to this list of parameters, uncontaminated rainfall pH shall be measured at the time the outfall sample is taken.

(4) Stormwater Monitoring Procedures

(A) In-Stream Dry Weather Monitoring

Dry weather monitoring shall be performed only when there has been no rain storm producing runoff to the stream for at least 48 hours prior to sampling. Monitoring methodology shall consist of collecting a minimum of four (4) separate grab samples spaced at a minimum interval of 5 minutes each. Grab samples will be combined into a single composite sample from each station, preserved, and delivered to the laboratory for analysis.

(B) In-Stream Wet Weather Monitoring

Samples shall be collected in-stream during any rain storm that produces runoff into the stream and occurs at least 48 hours after any previous storm event that produced runoff into the stream. In-stream monitoring shall be conducted no sooner than two (2) hours after the start of the rain event and no later than two (2) hours after cessation of rainfall. Composite samples shall be used for in-stream monitoring. Monitoring methodology will consist of collecting a minimum of four (4) separate grab samples spaced at a minimum interval of 5 minutes each. Grab samples will be combined into a single composite sample from each sampling location, preserved, and delivered to the laboratory for analysis. The uncontaminated rainfall pH measurement shall also be taken at the time sampling is conducted. At the time of sampling, the permittee shall record any observed erosion of stream banks, scouring, or sedimentation in streams, such as sand bars or deltas. Monitoring shall be consistent with guidance provided by DEEP (at www.ct.gov/deep/stormwater) on quality assurance protocols for required storm water sampling of surface waters and outfalls.

(C) Wet Weather Outfall Monitoring

Samples shall be collected from discharges resulting from any rain storm that produces a discharge from the outfall(s) being monitored and that occurs at least 48 hours after any previous rain storm that produced a discharge from the outfall. Runoff events resulting from snow or ice melt alone cannot be used to meet these monitoring requirements. However, monitoring may be conducted during a rain event that may include insignificant amounts of snow or ice melt. Monitoring shall consist of a single grab sample taken within the first six (6) hours of discharge from the outfall. Monitoring shall be consistent with guidance provided by DEEP (at www.ct.gov/deep/stormwater) on quality assurance protocols for required storm water sampling of surface waters and outfalls.

(D) Rain Event Information

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For monitoring conducted during a rain event (wet weather in-stream or wet weather outfall monitoring), the following information shall be collected for the rain events monitored:

(i) The date, temperature, time of the start of the discharge, time of sampling, and magnitude (in inches) of the rain event sampled.

(ii) The duration between the rain event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) rain event.

(E) Test Procedures

Unless otherwise specified in this permit, all pollutant parameters shall be tested according to methods prescribed in Title 40, CFR, Part 136 (1990). Laboratory analyses must be consistent with Connecticut Reasonable Confidence Protocols.

(5) Illicit Discharge Monitoring

The permittee must conduct monitoring in support of the Illicit Discharge Detection and Elimination (IDDE) program in Section 6(*a*)(3). Monitoring locations, frequency, parameters and methodology are included in that section.

(6) Water Quality Based Monitoring

Regulated Small MS4s that discharge to waters, as identified in Section 6(*l*) below, must monitor additional parameter(s) in the wet weather outfall monitoring required in Section 6(j)(2) above.

(A) Discharges to Impaired Waters Without an Established Total Maximum Daily Load (TMDL)

If the permittee discharges to an impaired water without a TMDL, the permittee must include in their monitoring plan any indicator pollutants identified as contributing to the impairment (and for which a standard analytical method exists) in their wet weather outfall monitoring. Outfall(s) discharging to an impaired water shall be prioritized and sampled in accordance with Section 6(*j*)(2), above. Impaired waters monitoring priorities do not apply when a waterbody's biological communities are impaired but no pollutant, including indicator or surrogate pollutants, is identified as an indicator of the impairment, or when a waterbody's impairment is related to hydrologic modifications, impaired hydrology, or temperature.

(B) Discharges to Waters Included in a Total Maximum Daily Load (TMDL)

For stormwater discharges to waters for which Phosphorus, Nitrogen, Bacteria, or Mercury are stormwater pollutants of concern, outfall(s) discharging to an impaired water shall be prioritized and sampled in accordance with Section 6(*j*)(2) above. For other pollutants for which pollutant load reductions are identified within a TMDL, the permittee is not required to monitor for any indicator pollutant identified in the TMDL unless informed in writing by the commissioner, upon examination of the applicable TMDL and/or Waste Load Allocation (WLA), that the permittee is subject to such a requirement consistent with the assumptions of the applicable TMDL and/or WLA. The

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commissioner's notice will include specifications on which indicator pollutant to monitor and the required monitoring frequency. Following the first monitoring event:

(C) If the indicator pollutant is not detected in an outfall discharge sample, the permittee shall make note of this in the Annual Report and Stormwater Monitoring Report form.

(k) Reporting & Record Keeping Requirements

(1) The permittee shall keep records required by this permit for at least 5 years following its expiration or longer if requested by the Commissioner in writing. Such records, including the Stormwater Management Plan, shall be available to the public at reasonable times during regular business hours.

(2) Annual Report

By April 1 of the second year following the effective date of this general permit and annually thereafter by April 1, the permittee shall submit an Annual Report for the preceding calendar year electronically to the Department. The DEEP stormwater webpage (www.ct.gov/deep/stormwater) will provide guidance on Annual Report submittal. The Annual Report must be in Microsoft Word©, Adobe Acrobat© or other format acceptable to the Commissioner. In the event that electronic submission is not available or possible, please contact the Stormwater Section at (860) 424-3025.

The report shall include:

(A) The Annual Report review fee is $375.00.

(i) The fees for municipalities shall be half of those indicated above pursuant to section 22a-6(b) of the Connecticut General Statutes. State and Federal agencies shall pay the full fees specified in this subsection.

(B) A written discussion of the status of compliance with this general permit including, but not limited to:

(i) a listing and brief description (including, where appropriate, the address and latitude and longitude) of all BMPs within each Minimum Control Measure;

(ii) an implementation schedule for each BMP and an indication of whether or not the BMP or any portion of the BMP was scheduled to be implemented during the year covered by the Annual Report;

(iii) the status of implementation for each BMP scheduled to be completely or partially implemented during the year covered by the Annual Report, including an assessment of the appropriateness of the BMP and progress towards achieving the implementation dates and measurable goals for that BMP;

(iv) for any portion of a BMP implementation scheduled for the year covered by the Annual Report that was *not* completed as scheduled, a discussion of the circumstances and reasons for non-implementation, a modified implementation schedule, and, if necessary, a modified or alternate BMP to replace the BMP not implemented including the rationale for such modification or alternate BMP;

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(v) the overall status of each of the six categories of the Minimum Control Measures and an discussion of the effectiveness of each category in achieving its goals;

(vi) a discussion of any changes to personnel responsible for the Plan or BMP implementation;

(vii) a description of any new BMPs added to the Plan during the year including a description of the BMP, the reason or rationale for adding the BMP, the timeline for implementation, the party responsible for implementation and the measurable goal for the BMP and, where appropriate, the location for each BMP, including the address and latitude and longitude;

(viii) a discussion of the progress and status of the MS4's IDDE program (see Section 6(*a*)(3) for Tier 1 or 6(*b*)(3) for Tier 2) including outfall screening, mapping, drainage area evaluation and prioritization, illicit discharge tracking activities, IDDP field monitoring results, number and type of illicit discharges detected, and number of illicit discharges eliminated;

(ix) a discussion of measures included in the Plan for the control of discharges to impaired waters (see Section 6(*l*) below) including a list of BMPs in the Minimum Control Measures that are targeted for such discharges, progress in implementing these measures, any evaluation of the effectiveness of these measures in meeting the goals of the Plan's impaired waters program, and any new or modified BMPs to be added to the Plan to improve its effectiveness;

(x) a discussion of the MS4's stormwater monitoring program describing the status of monitoring for the year of the report, the overall status of the monitoring program, a summary of the findings, any significant observations regarding the results, any modifications to the Plan as a result of the monitoring results;

(xi) a discussion of any planned BMP implementation in the coming year, including a discussion of any new or modified BMPs planned for future implementation;

(C) All monitoring data collected and analyzed pursuant to Section 6(*j*).

(D) All other information collected and analyzed, including data collected under the Illicit Discharge Detection Protocol (Appendix B), during the reporting period;

(l) Discharges to Impaired Waters or Water bodies subject to a Pollutant Load Reduction within a TMDL

MS4s that discharge to impaired waters (with or without a TMDL), waters for which nitrogen, phosphorus, bacteria or mercury are stormwater pollutants of concern, or waters which have pollution load reductions specified within a TMDL are required to meet certain criteria identified in this section and other sections of this general permit.

(1) Existing Discharge to an Impaired Water without an Established TMDL

If the permittee discharges to an impaired water without an established TMDL, the permittee must follow:

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(A) For waters for which Phosphorus, Nitrogen, Bacteria, or Mercury are stormwater pollutants of concern, the control measures in Section 6(*a*) (Tier 1) or 6(*b*) (Tier 2) and the annual monitoring requirements of Section 6(*j*)(6),

(B) For all other impairments, implement control measures to reduce the discharge of the pollutant(s) associated with the impairment, or as directed by the Commissioner.

(2) Existing Discharge to a Water with an Established TMDL or with a Pollutant Load Reduction specified within the TMDL

If the permittee discharges to a water included in a TMDL, the permittee must follow:

(A) For waters for which Phosphorus, Nitrogen, Bacteria, or Mercury is a stormwater pollutant of concern, the control measures in Section 6(*a*) (Tier 1) or 6(*b*) (Tier 2) and the annual monitoring requirements of Section 6(*j*)(6),

(B) For all other discharges subject to a pollutant load reduction contained within a TMDLs, implement control measures to be consistent with the Waste Load Allocation in the specific TMDL. The permittee must also conduct the appropriate monitoring in accordance with Section 6(*j*)(6).

(C) The permittee shall implement BMPs as necessary to achieve the Waste Load Allocation, Load Allocation or Water Quality Targets specified within the TMDL (see Appendix D).

(3) New Discharge to an Impaired Water Without an Established TMDL

If a new discharge to an impaired water without a TMDL is authorized pursuant to the conditions of Section 3(*b*)(7), the permittee must implement and maintain any control measures or conditions on the site that enabled such authorization, and modify such measures or conditions as necessary to maintain such authorization. The permittee must also maintain compliance with this subsection and Section 6(*j*).

(4) New Discharge to a Water with an Established TMDL or with a Pollutant Load Reduction specified within the TMDL

If a new discharge to a water with a TMDL or with a pollutant load reduction established within the TMDL is authorized pursuant to the conditions of Section 3(*b*)(7), the permittee must follow the discharge consistent with the applicable Wasteload Allocations, Load Allocations or Water Quality Targets for that TMDL. The permittee must also conduct the appropriate monitoring in accordance with Section 6(*j*)(6).

Section 7. Additional Requirements of this General Permit

(a) Regulations of Connecticut State Agencies Incorporated into this General Permit

The permittee shall comply with all laws applicable to the subject discharges, including but not limited to, the following Regulations of Connecticut State Agencies which are hereby incorporated into this general permit, as if fully set forth herein:

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(1) Section 22a-430-3:

Subsection (b) General - subparagraph (1)(D) and subdivisions (2),(3),(4) and (5)
Subsection (c) Inspection and Entry
Subsection (d) Effect of a Permit - subdivisions (1) and (4)
Subsection (e) Duty to Comply
Subsection (f) Proper Operation and Maintenance
Subsection (g) Sludge Disposal
Subsection (h) Duty to Mitigate
Subsection (i) Facility Modifications, Notification - subdivisions (1) and (4)
Subsection (j) Monitoring, Records and Report Requirements - subdivisions (1), (6), (7), (8), (9) and (11) (except subparagraphs (9) (A) (2) and (9) (c)
Subsection (k) Bypass
Subsection (m) Effluent Limitation Violations
Subsection (n) Enforcement
Subsection (p) Spill Prevention and Control
Subsection (q) Instrumentation, Alarms, Flow Recorders
Subsection (r) Equalization

(2) Section 22a-430-4

Subsection (t) Prohibitions
Subsection (p) Revocation, Denial, Modification
Appendices

(b) Reliance on Registration

In evaluating the permittee's registration, the Commissioner has relied on information provided by the permittee. If such information proves to be false or incomplete, the permittee's authorization may be suspended or revoked in accordance with law, and the Commissioner may take any other legal action provided by law.

(c) Duty to Correct and Report Violations

Upon learning of a violation of a condition of this general permit, a permittee shall immediately take all reasonable action to determine the cause of such violation, correct and mitigate the results of such violation and prevent further such violation. The permittee shall report in writing such violation and such corrective action to the Commissioner within five (5) days of the permittee's learning of such violation. Such information shall be filed in accordance with the certification requirements prescribed in Section 7(*e*) of this general permit.

(d) Duty to Provide Information

If the Commissioner requests any information pertinent to the authorized activity or to compliance with this general permit or with the permittee's authorization under this general permit, the permittee shall provide such information within thirty (30) days of such request. Such information shall be filed in accordance with the certification requirements prescribed in Section 7(e) of this general permit.

(e) Certification of Documents

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Any document, including but not limited to any notice, information or report, which is submitted to the Commissioner under this general permit shall be signed by the chief elected official or principal executive officer of the municipality or institution, and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows:

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in this document or its attachments may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the Connecticut General Statutes, and in accordance with any other applicable statute."

(f) Date of Filing

For purposes of this general permit, the date of filing with the Commissioner of any document is the date such document is received by the Commissioner. The word "day" as used in this general permit means the calendar day; if any date specified in the general permit falls on a Saturday, Sunday, or legal holiday, such deadline shall be the next business day.

(g) False Statements

Any false statement in any information submitted pursuant to this general permit may be punishable as a criminal offense, in accordance with Section 22a-6, under Section 53a-157b of the Connecticut General Statutes.

(h) Correction of Inaccuracies

Within fifteen days after the date the permittee becomes aware of a change in any information in any material submitted pursuant to this general permit, or becomes aware that any such information is inaccurate or misleading or that any relevant information has been omitted, the permittee shall correct the inaccurate or misleading information or supply the omitted information in writing to the Commissioner. Such information shall be filed in accordance with the certification requirements prescribed in Section 7(*e*) of this general permit.

(i) Other Applicable Law

Nothing in this general permit shall relieve the permittee of the obligation to comply with any other applicable federal, state and local law, including but not limited to the obligation to obtain any other authorizations required by such law.

(j) Other Rights

This general permit is subject to and does not derogate any present or future rights or powers of the State of Connecticut and conveys no rights in real or personal property nor any exclusive privileges, and is subject to all public and private rights and to any federal, state, and local laws pertinent to the property or activity affected by such general permit. In conducting any activity authorized hereunder, the permittee may not cause pollution, impairment, or destruction of the air, water, or other natural resources of this state. The issuance of this general permit shall not create any presumption that this general permit should or will be renewed.

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Section 8. Commissioner's Powers

(a) Abatement of Violations

The Commissioner may take any action provided by law to abate a violation of this general permit, including but not limited to penalties of up to $25,000 per violation per day under Chapter 446k of the Connecticut General Statutes, for such violation. The Commissioner may, by summary proceedings or otherwise and for any reason provided by law, including violation of this general permit, revoke a permittee's authorization hereunder in accordance with Sections 22a-3a-2 through 22a-3a-6, inclusive, of the Regulations of Connecticut State Agencies. Nothing herein shall be construed to affect any remedy available to the Commissioner by law.

(b) General Permit Revocation, Suspension, or Modification

The Commissioner may, for any reason provided by law, by summary proceedings or otherwise, revoke or suspend this general permit or modify to establish any appropriate conditions, schedules of compliance, or other provisions which may be necessary to protect human health or the environment.

(c) Filing of an Individual Application

If the Commissioner notifies a permittee in writing that such permittee shall obtain an individual permit under Section 22a-430 of the Connecticut General Statutes if he wishes to continue lawfully conducting the authorized activity, the permittee shall file an application for an individual permit within thirty (30) days of receiving the Commissioner's notice, or at such other date as the Commissioner may allow. While such application is pending before the Commissioner, the permittee shall comply with the terms and conditions of this general permit and the subject approval of registration. If the Commissioner issues an individual permit to a permittee under this general permit, this general permit, as it applies to such permittee, shall automatically terminate on the date such individual permit is issued. Nothing herein shall affect the Commissioner's power to revoke a permittee's authorization under this general permit at any time.

Issued: TBD

Macky McCleary
Deputy Commissioner

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Central Massachusetts Regional Stormwater Coalition

Comments to USEPA on 2014 Draft Massachusetts
Small Municipal Separate Storm Sewer System (MS4) Permit

February 27, 2015

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ATTACHMENT E

Letters of Support from Members of the
Central Massachusetts Regional Stormwater Coalition

TOWN OF CHARLTON

37 Main Street

Charlton, MA 01507

WWW.TOWNOF CHARLTON.NET

Phone (508) 248-2206

Fax (508) 248-2066

Support for Central Massachusetts Regional Stormwater Coalition Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Charlton (the Town) is a member of the Coalition. This signature page documents the support of the Town for the comments submitted by the Coalition. The Town hereby reserves the following rights:

- The right to submit individual comments on the 2014 Draft Massachusetts MS4 Permit (and any and all revisions), in addition to these Coalition comments.
- The right to submit additional comments to any Response to Comments prepared by the USEPA after the close of the public comment period for the 2014 Draft Massachusetts MS4 Permit.
- The right to submit additional comments on the Final Massachusetts MS4 Permit to address any and all changes made by the USEPA subject to comments the agency receives on the 2014 Draft Massachusetts MS4 Permit.
- The right to appeal any provision of the Final Massachusetts MS4 Permit when it is issued, regardless of whether that provision has been specifically noted in these Coalition comments, in subsequent Coalition comments, or in any comments the Town submits to USEPA individually.

The Coalition and the Town hereby adopt and support, in whole or in part, by reference, comments submitted by the Northern Middlesex Stormwater Collaborative, the Merrimack Valley Stormwater Collaborative, the Neponset Valley Stormwater Collaborative, the Massachusetts Municipal Association, Department of Environmental Protection, and the Massachusetts Coalition for Water Resources Stewardship.

TOWN OF CHARLTON
By its Board of Selectmen

Frederick C. Swensen, Chairman

Joseph J. Szafarowicz, Vice-Chairperson

Cynthia B. Cooper, Clerk

David M. Singer, Member

John P. McGrath, Member

Dated: 12/9/14

TOWN OF GRAFTON

GRAFTON MEMORIAL MUNICIPAL CENTER
30 PROVIDENCE ROAD
GRAFTON, MASSACHUSETTS 01519
(508) 839-5335 • FAX (508) 839-4602
www.grafton-ma.gov

TOWN OF GRAFTON

Support for Central Massachusetts Regional Stormwater Coalition Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Grafton (the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

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The Coalition has also been in communication with the Massachusetts Department of Environmental Protection for on the Department's comments on the 2014 Draft Massachusetts MS4 Permit. While

not yet available to the public, we understand that many of the Department's comments will mirror the concerns of Coalition members about the administrative burden many provisions impose on municipalities without direct benefit on water quality. As such, we incorporate comments submitted by the Massachusetts Department of Environmental Protection by reference, in whole or in part.

This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

TOWN OF GRAFTON
By its TOWN ADMINISTRATOR

Timothy P. McInerney
Name

Town Administrator

Additional Signatories

Douglas Willardson
Name

Assistant Town Administrator

Brian Szczurko
Name

Engineer

Maria Mast
Name

Conservation Agent

David E Crouse
Name

Highway Superintendant

Dated: 2/25/15

TOWN OF HARDWICK
Commonwealth of Massachusetts

Board of Selectmen, P.O. Box 575, Gilbertville, MA 01031
Phone: (413) 477-6197

TOWN OF HARDWICK

Support for Central Massachusetts Regional Stormwater Coalition Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Hardwick (the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

- The right to submit individual comments on the 2014 Draft Massachusetts MS4 Permit (and any and all revisions), in addition to these Coalition comments.
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- The right to submit additional comments on the Final Massachusetts MS4 Permit to address any and all changes made by the USEPA subject to comments the agency receives on the 2014 Draft Massachusetts MS4 Permit.
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The Coalition has also been in communication with the Massachusetts Department of Environmental Protection for on the Department's comments on the 2014 Draft Massachusetts MS4 Permit. While not yet available to the public, we understand that many of the Department's comments will mirror the concerns of Coalition members about the administrative burden many provisions impose on municipalities without direct benefit on water quality. As such, we incorporate comments submitted by the Massachusetts Department of Environmental Protection by reference, in whole or in part.

This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

TOWN OF HARDWICK
By its Board of Selectmen

Kenan P. Young

Chairman

Dated: 12-15-2014

Town of Holden
MASSACHUSETTS

OFFICE OF THE TOWN MANAGER

Jacquelyn M. Kelly
Town Manager

Support for Central Massachusetts Regional Stormwater Coalition
Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Holden, MA (the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

- The right to submit individual comments on the 2014 Draft Massachusetts MS4 Permit (and any and all revisions), in addition to these Coalition comments.
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This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

TOWN of Holden, MA

Jasquelyn M. Kelly
Town Manager

Cc: Holden Board of Selectmen
Central MA Regional Stormwater Coalition
John Woodsmall, DPW Director

TOWN OF HOPKINTON
OFFICE OF THE SELECTMEN
18 Main Street, Hopkinton, MA 01748 | 508-497-9700
selectmen@hopkintonma.gov

February 24, 2015

TOWN OF HOPKINTON, MA

Support for Central Massachusetts Regional Stormwater Coalition
Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Hopkinton, MA (the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

- The right to submit individual comments on the 2014 Draft Massachusetts MS4 Permit (and any and all revisions), in addition to these Coalition comments;
- The right to submit additional comments to any Response to Comments prepared by the USEPA after the close of the public comment period for the 2014 Draft Massachusetts MS4 Permit;
- The right to submit additional comments on the Final Massachusetts MS4 Permit to address any and all changes made by the USEPA subject to comments the agency receives on the 2014 Draft Massachusetts MS4 Permit; and
- The right to appeal any provision of the Final Massachusetts MS4 Permit when it is issued, regardless of whether that provision has been specifically noted in these Coalition comments, in subsequent Coalition comments, or in any comments the Town submits to USEPA individually.

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The Coalition has also been in communication with the Massachusetts Department of Environmental Protection for on the Department's comments on the 2014 Draft Massachusetts MS4 Permit. While not yet available to the public, we understand that many of the Department's comments will mirror the concerns of Coalition members about the administrative burden many provisions impose on municipalities without direct benefit on water quality. As such, we incorporate comments submitted by the Massachusetts Department of Environmental Protection by reference, in whole or in part.

This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

TOWN OF HOPKINTON, MA
By its Board of Selectmen

Todd A. Cestari, Chair

John M. Mosher, Vice-Chair

Michelle A. Gates, Member

Benjamin L. Palleiko, Member

John M. Coutinho

Dated: February 24, 2015

Town of Leicester
BOARD OF SELECTMEN
TOWN HALL, 3 WASHBURN SQUARE, LEICESTER MA 01524 Tel: (508) 892-7000
FAX: (508) 892-7070
www.leicesterma.org

TOWN OF LEICESTER

Support for Central Massachusetts Regional Stormwater Coalition
Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Leicester (the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

- The right to submit individual comments on the 2014 Draft Massachusetts MS4 Permit (and any and all revisions), in addition to these Coalition comments.
- The right to submit additional comments to any Response to Comments prepared by the USEPA after the close of the public comment period for the 2014 Draft Massachusetts MS4 Permit.
- The right to submit additional comments on the Final Massachusetts MS4 Permit to address any and all changes made by the USEPA subject to comments the agency receives on the 2014 Draft Massachusetts MS4 Permit.
- The right to appeal any provision of the Final Massachusetts MS4 Permit when it is issued, regardless of whether that provision has been specifically noted in these Coalition comments, in subsequent Coalition comments, or in any comments the Town submits to USEPA individually.

The Coalition and the Town hereby adopt and support by reference, in whole or in part, comments submitted by the Northern Middlesex Stormwater Collaborative, the Merrimack Valley Stormwater Collaborative, the Neponset Valley Stormwater Collaborative, the Massachusetts Municipal Association, and the Massachusetts Coalition for Water Resources Stewardship.

The Coalition has also been in communication with the Massachusetts Department of Environmental Protection for on the Department's comments on the 2014 Draft Massachusetts MS4 Permit. While not yet available to the public, we understand that many of the Department's comments will mirror the concerns of Coalition members about the administrative burden many provisions impose on municipalities without direct benefit on water quality. As such, we incorporate comments submitted by the Massachusetts Department of Environmental Protection by reference, in whole or in part.

This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

TOWN OF LEICESTER
By its Board of Selectmen

Thomas E. Buckley, III — 2/23/15 — Chair

Dianna Provencher — 2/23/15 — Vice-Chair

Matthew Dennison — 2/23/15 — 2nd Vice-Chair

Sandra Wilson — 2/23/15 — Selectman

Douglas Belanger — 2/23/15 — Selectmen

Dated: February 23, 2015

TOWN OF MILLBURY *Office of the Board of Selectmen*

MUNICIPAL OFFICE BUILDING • 127 ELM STREET • MILLBURY, MA 01527 • TEL. 508/865-4710 • FAX 508/865-0843

TOWN OF MILLBURY

Support for Central Massachusetts Regional Stormwater Coalition Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Millbury(the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

- The right to submit individual comments on the 2014 Draft Massachusetts MS4 Permit (and any and all revisions), in addition to these Coalition comments.
- The right to submit additional comments to any Response to Comments prepared by the USEPA after the close of the public comment period for the 2014 Draft Massachusetts MS4 Permit.
- The right to submit additional comments on the Final Massachusetts MS4 Permit to address any and all changes made by the USEPA subject to comments the agency receives on the 2014 Draft Massachusetts MS4 Permit.
- The right to appeal any provision of the Final Massachusetts MS4 Permit when it is issued, regardless of whether that provision has been specifically noted in these Coalition comments, in subsequent Coalition comments, or in any comments the Town submits to USEPA individually.

The Coalition and the Town hereby adopt and support by reference, in whole or in part, comments submitted by the Northern Middlesex Stormwater Collaborative, the Merrimack Valley Stormwater Collaborative, the Neponset Valley Stormwater Collaborative, the Massachusetts Municipal Association, and the Massachusetts Coalition for Water Resources Stewardship.

The Coalition has also been in communication with the Massachusetts Department of Environmental Protection for on the Department's comments on the 2014 Draft Massachusetts MS4 Permit. While not yet available to the public, we understand that many of the Department's comments will mirror the concerns of Coalition members about the administrative burden many provisions impose on municipalities without direct benefit on water quality. As such, we incorporate comments submitted by the Massachusetts Department of Environmental Protection by reference, in whole or in part.

This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

TOWN OF MILLBURY
By its Board of Selectmen

FRANCIS B. KING
Name

Francis B. King
Chairman, Francis B. King

Additional Signatories

SANDY CRISTO
Name

Sandy J. Cristo
Vice Chairman, Sandy J. Cristo

MARY KRUMSIEK
Name

Mary Krumsiek
Mary Krumsiek, Clerk

BRIAN ASHMANKAS
Name

Brian M. Ashmankas

William Borowski
Name

William Borowski

Dated: 12-09-2014

TOWN OF NORTHBOROUGH TOWN OFFICES
63 Main Street • Northborough, MA 01532 • www.town.northborough.ma.us

TOWN OF NORTHBOROUGH

Support for Central Massachusetts Regional Stormwater Coalition Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Northborough (the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

- The right to submit individual comments on the 2014 Draft Massachusetts MS4 Permit (and any and all revisions), in addition to these Coalition comments.
- The right to submit additional comments to any Response to Comments prepared by the USEPA after the close of the public comment period for the 2014 Draft Massachusetts MS4 Permit.
- The right to submit additional comments on the Final Massachusetts MS4 Permit to address any and all changes made by the USEPA subject to comments the agency receives on the 2014 Draft Massachusetts MS4 Permit.
- The right to appeal any provision of the Final Massachusetts MS4 Permit when it is issued, regardless of whether that provision has been specifically noted in these Coalition comments, in subsequent Coalition comments, or in any comments the Town submits to USEPA individually.

The Coalition and the Town hereby adopt and support by reference, in whole or in part, comments submitted by the Northern Middlesex Stormwater Collaborative, the Merrimack Valley Stormwater Collaborative, the Neponset Valley Stormwater Collaborative, the Massachusetts Municipal Association, and the Massachusetts Coalition for Water Resources Stewardship.

The Coalition has also been in communication with the Massachusetts Department of Environmental Protection regarding the Department's comments on the 2014 Draft Massachusetts MS4 Permit. While not yet available to the public, we understand that many of the Department's comments will mirror the concerns of Coalition members about the administrative burden many provisions impose on municipalities without direct benefit on water quality. As such, we incorporate comments submitted by the Massachusetts Department of Environmental Protection by reference, in whole or in part.

This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

TOWN OF NORTHBOROUGH

John W. Coderre, Town Administrator

Dated: 2/25/15

TOWN OF NORTHBRIDGE
OFFICE OF THE TOWN MANAGER
NORTHBRIDGE TOWN HALL
7 MAIN STREET
WHITINSVILLE, MASSACHUSETTS 01588
Phone- (508) 234-2095 Fax- (508) 234-7640
www.northbridgemass.org

Theodore D. Kozak
Town Manager

TOWN OF NORTHBRIDGE
Support for Central Massachusetts Regional Stormwater Coalition Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Northbridge (the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

- The right to submit individual comments on the 2014 Draft Massachusetts MS4 Permit (and any and all revisions), in addition to these Coalition comments.
- The right to submit additional comments to any Response to Comments prepared by the USEPA after the close of the public comment period for the 2014 Draft Massachusetts MS4 Permit.
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The Coalition and the Town hereby adopt and support by reference, in whole or in part, comments submitted by the Northern Middlesex Stormwater Collaborative, the Merrimack Valley Stormwater Collaborative, the Neponset Valley Stormwater Collaborative, the Massachusetts Municipal Association, and the Massachusetts Coalition for Water Resources Stewardship.

The Coalition has also been in communication with the Massachusetts Department of Environmental Protection for on the Department's comments on the 2014 Draft Massachusetts MS4 Permit. While not yet available to the public, we understand that many of the Department's comments will mirror the concerns of Coalition members about the administrative burden many provisions impose on municipalities without direct benefit on water quality. As such, we incorporate comments submitted by the Massachusetts Department of Environmental Protection by reference, in whole or in part.

This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

TOWN OF NORTHBRIDGE
By its Board of Selectmen

Charles Ampagoomian, Jr., Chairman

Thomas J. Melia, Selectman

James R. Marzec, Selectman

Daniel J. Nolan, Selectman

James J. Athanas, Selectman

Dated: February 24, 2015

Town of Oxford

Town Manager's Office

325 Main Street
Oxford, Massachusetts 01540
TownManagerOffice@town.oxford.ma.us

Telephones:
(508) 987-6030
(508) 987-6031
Fax: (508) 987-5868

TOWN OF OXFORD

Support for Central Massachusetts Regional Stormwater Coalition
Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that Stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Oxford (the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

- The right to submit individual comments on the 2014 Draft Massachusetts MS4 Permit (and any and all revisions), in addition to these Coalition comments.
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The Coalition and the Town hereby adopt and support by reference, in whole or in part, comments submitted by the Northern Middlesex Stormwater Collaborative, the Merrimack Valley Stormwater Collaborative, the Neponset Valley Stormwater Collaborative, the Massachusetts Municipal Association, and the Massachusetts Coalition for Water Resources Stewardship.

The Coalition has also been in communication with the Massachusetts Department of Environmental Protection for on the Department's comments on the 2014 Draft Massachusetts MS4 Permit. While not yet available to the public, we understand that many of the Department's comments will mirror the concerns of Coalition members about the administrative burden many provisions impose on municipalities without direct benefit on water quality. As such, we incorporate comments submitted by the Massachusetts Department of Environmental Protection by reference, in whole or in part.

This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

TOWN OF OXFORD
By its Town Manager

Brian Palaia — Town Manager

Additional Signatories

Sean Divoll — Director of Public Works

Dated: 2/25/2015

Town of Palmer

"Bondsville, Depot Village, Thorndike & Three Rivers"

Charles T. Blanchard
Town Manager

Palmer Town Building
4417 Main Street
Palmer, MA 01069
Town: (413) 283-2603
Cell: (371)667-4672
cblanchard@townofpalmer.com

December 15, 2014

TOWN OF PALMER

Support for Central Massachusetts Regional Stormwater Coalition
Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Palmer (the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

- The right to submit individual comments on the 2014 Draft Massachusetts MS4 Permit (and any and all revisions), in addition to these Coalition comments.
- The right to submit additional comments to any Response to Comments prepared by the USEPA after the close of the public comment period for the 2014 Draft Massachusetts MS4 Permit.
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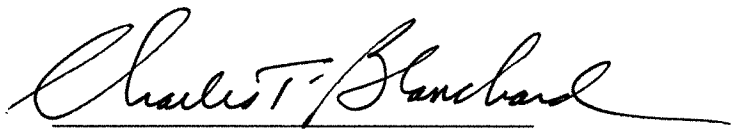
The Coalition and the Town hereby adopt and support by reference, in whole or in part, comments submitted by the Northern Middlesex Stormwater Collaborative, the Merrimack Valley Stormwater Collaborative, the Neponset Valley Stormwater Collaborative, the Massachusetts Municipal Association, and the Massachusetts Coalition for Water Resources Stewardship.

The Coalition has also been in communication with the Massachusetts Department of Environmental Protection for on the Department's comments on the 2014 Draft Massachusetts MS4 Permit. While not yet available to the public, we understand that many of the Department's comments will mirror the concerns of Coalition members about the administrative burden many provisions impose on municipalities without direct benefit on water quality. As such, we incorporate comments submitted by the Massachusetts Department of Environmental Protection by reference, in whole or in part.

This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

TOWN OF PALMER
By its Town Manager



Charles T. Blanchard

TOWN OF PAXTON
Board of Selectmen
697 Pleasant Street, Paxton, MA 01612
508-754-7638 Fax: 508-797-0966
Julia N Pingitore, Chairman,
Peter Bogren. Jr., Vice-Chair
John F. Malone, Clerk
Town Administrator: Carol L. Riches

January 6, 2015

TOWN OF PAXTON

Support for Central Massachusetts Regional Stormwater Coalition Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Paxton (the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

- The right to submit individual comments on the 2014 Draft Massachusetts MS4 Permit (and any and all revisions), in addition to these Coalition comments.
- The right to submit additional comments to any Response to Comments prepared by the USEPA after the close of the public comment period for the 2014 Draft Massachusetts MS4 Permit.
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The Coalition and the Town hereby adopt and support by reference, in whole or in part, comments submitted by the Northern Middlesex Stormwater Collaborative, the Merrimack Valley Stormwater Collaborative, the Neponset Valley Stormwater Collaborative, the Massachusetts Municipal Association, and the Massachusetts Coalition for Water Resources Stewardship.

The Coalition has also been in communication with the Massachusetts Department of Environmental Protection for on the Department's comments on the 2014 Draft Massachusetts MS4 Permit. While not yet available to the public, we understand that many of the Department's comments will mirror the concerns of Coalition members about the administrative burden many provisions impose on municipalities without direct benefit on water quality. As such, we incorporate comments submitted by the Massachusetts Department of Environmental Protection by reference, in whole or in part.

This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

TOWN OF PAXTON
By its Board of Selectmen

Name _____ Chairman

Name _____ Vice Chair

Name _____ Clerk

Dated: 1/13/2015

TOWN OF RUTLAND
MASSACHUSETTS
246 MAIN STREET
RUTLAND, MASSACHUSETTS 01543
TEL. 508-886-4100

OFFICE OF THE
SELECTMEN

TOWN OF RUTLAND

Support for Central Massachusetts Regional Stormwater Coalition Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Rutland (the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

- The right to submit individual comments on the 2014 Draft Massachusetts MS4 Permit (and any and all revisions), in addition to these Coalition comments.
- The right to submit additional comments to any Response to Comments prepared by the USEPA after the close of the public comment period for the 2014 Draft Massachusetts MS4 Permit.
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The Coalition and the Town hereby adopt and support by reference, in whole or in part, comments submitted by the Northern Middlesex Stormwater Collaborative, the Merrimack Valley Stormwater Collaborative, the Neponset Valley Stormwater Collaborative, the Massachusetts Municipal Association, and the Massachusetts Coalition for Water Resources Stewardship.

"This Institution is an equal opportunity provider. To file a complaint of discrimination write USDA, Director, Office of Civil Rights, Washington, DC 20250-9410."

The Coalition has also been in communication with the Massachusetts Department of Environmental Protection for on the Department's comments on the 2014 Draft Massachusetts MS4 Permit. While not yet available to the public, we understand that many of the Department's comments will mirror the concerns of Coalition members about the administrative burden many provisions impose on municipalities without direct benefit on water quality. As such, we incorporate comments submitted by the Massachusetts Department of Environmental Protection by reference, in whole or in part.

This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

TOWN OF RUTLAND
By its Board of Selectmen

Michael G. PANTOS
Name

Chairman

Additional Signatories:

Name

Name

Name

Name

Dated: December 8, 2015

Office of the
BOARD OF SELECTMEN

RICHARD D. CARNEY
MUNICIPAL OFFICE BUILDING

100 MAPLE AVENUE
(508) 841-8504
FAX (508) 842-0587

TOWN OF SHREWSBURY

MASSACHUSETTS 01545-5398

Support for Central Massachusetts Regional Stormwater Coalition
Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Shrewsbury (the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

- The right to submit individual comments on the 2014 Draft Massachusetts MS4 Permit (and any and all revisions), in addition to these Coalition comments.
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This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

TOWN OF SHREWSBURY
By its Board of Selectmen

James F. Kane

Moira E. Miller

Maurice M. DePalo

John I. Lebeaux

Henry J. Fitzgerald

Additional Signatories

Jeffrey Howland

Town Engineer

John Knipe

Highway Superintendent

Bradford Stone

Conservation Agent

Date: February 24, 2015

Town of Spencer
Office of the Board of Selectmen
&
Town Administrator

Board of Selectmen:
Anthony D. Pepe
Robert O. "Bo" Fritze, Jr.
Gary E. Woodbury
John F. Stevens
Chris L. Woodbury

Town Administrator:
Adam D. Gaudette
agaudette@spencerma.gov

Support for Central Massachusetts Regional Stormwater Coalition

Comments Addressing 2014 Draft Massachusetts MS4 Permit

December 10, 2014

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Spencer (the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

- The right to submit individual comments on the 2014 Draft Massachusetts MS4 Permit (and any and all revisions), in addition to these Coalition comments.
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The Coalition has also been in communication with the Massachusetts Department of Environmental Protection for on the Department's comments on the 2014 Draft Massachusetts MS4 Permit. While not yet available to the public, we understand that many of the Department's comments will mirror the concerns of Coalition members about the administrative burden many provisions impose on municipalities without direct benefit on water quality. As such, we incorporate comments submitted by the Massachusetts Department of Environmental Protection by reference, in whole or in part.

This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

TOWN OF SPENCER
By its Board of Selectmen

Robert C. Fultz

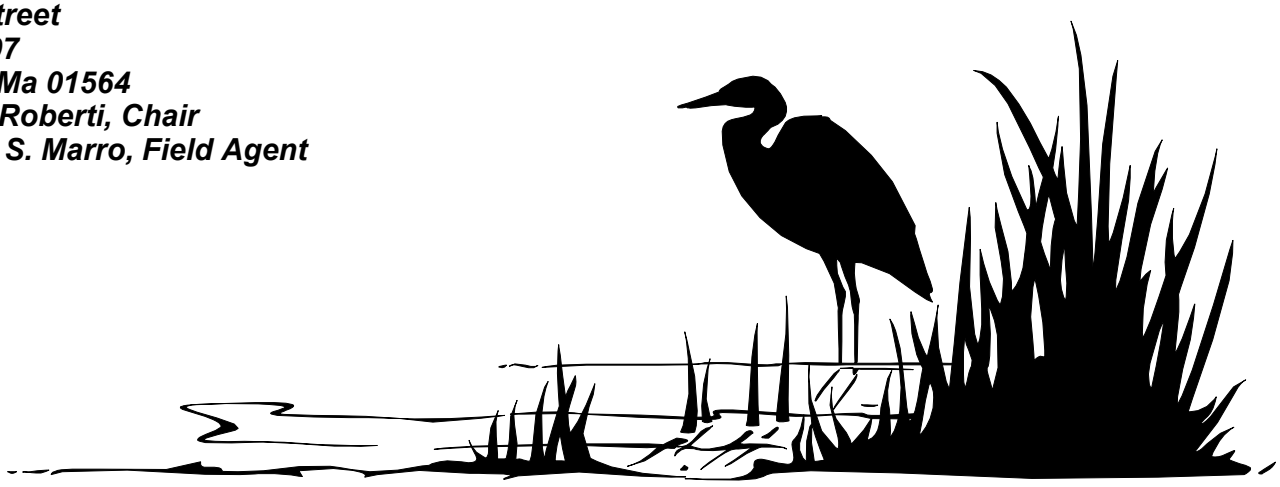
Joseph M. Bodell

Gary Woodbury

John J. Travers

Dated: December 10, 2014

Sterling Conservation Commission
1 Park Street
Room 207
Sterling Ma 01564
Barbara Roberti, Chair
Matthew S. Marro, Field Agent



February 26, 2015

TOWN OF STERLING CONSERVATION COMMISSION
Support for Central Massachusetts Regional Stormwater Coalition
Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Sterling (the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

- The right to submit individual comments on the 2014 Draft Massachusetts MS4 Permit (and any and all revisions), in addition to these Coalition comments.
- The right to submit additional comments to any Response to Comments prepared by the USEPA after the close of the public comment period for the 2014 Draft Massachusetts MS4 Permit.
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This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

Sterling Conservation Commission by it's Agent:

Sincerely,

Matthew S. Marro,
Field Agent

Cc: BOS
FILE

Town of Sturbridge

Department of Public Works
P.O. Box 182
Sturbridge, MA 01566
TOWN OF STURBRIDGE

Phone (508) 347-2516
Fax (508) 347-2517

Support for Central Massachusetts Regional Stormwater Coalition
Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Sturbridge, Mass is a member of the Coalition.

The Town hereby reserves the following rights:

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- The right to submit additional comments to any Response to Comments prepared by the USEPA after the close of the public comment period for the 2014 Draft Massachusetts MS4 Permit.
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- The right to appeal any provision of the Final Massachusetts MS4 Permit when it is issued, regardless of whether that provision has been specifically noted in these Coalition comments, in subsequent Coalition comments, or in any comments the Town submits to USEPA individually.

The Coalition and the Town hereby adopt and support by reference, in whole or in part, comments submitted by the Northern Middlesex Stormwater Collaborative, the Merrimack Valley Stormwater Collaborative, the Neponset Valley Stormwater Collaborative, the Massachusetts Municipal Association, and the Massachusetts Coalition for Water Resources Stewardship.

"The Town of Sturbridge is an Equal Opportunity Organization"

The Coalition has also been in communication with the Massachusetts Department of Environmental Protection for on the Department's comments on the 2014 Draft Massachusetts MS4 Permit. While not yet available to the public, we understand that many of the Department's comments will mirror the concerns of Coalition members about the administrative burden many provisions impose on municipalities without direct benefit on water quality. As such, we incorporate comments submitted by the Massachusetts Department of Environmental Protection by reference, in whole or in part.

This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

TOWN OF STURBRIDGE
By its DEPARTMENT OF PUBLIC WORKS

Gregory H Morse — DPW Director

Gregory H Morse — Title

Dated: FEB 26th 2015

TOWN OF UPTON, MASSACHUSETTS

BOARD OF SELECTMEN

Support for Central Massachusetts Regional Stormwater Coalition
Comments Addressing 2014 Draft Massachusetts MS4 Permit

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BOARD OF SELECTMEN
Robert J. Fleming, Chairman
Kenneth E. Picard
James A. Brochu

TOWN MANAGER
Blythe C. Robinson
One Main Street • Suite 1 • Upton, MA 01568
T: 508.529.6901 • F: 508.529.1010

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TOWN OF UPTON
By its Board of Selectmen

Name _____ Chairman

Additional Signatories

Name _____ Member

Name _____ Member

Dated: 2-24-2015

TOWN OF UXBRIDGE
BOARD OF SELECTMEN
21 South Main Street
Uxbridge, MA 01569-1851
508-278-8600 Fax 508-278-8605

Jennifer Modica, Chair
Jeffrey Shaw, Vice Chair/Clerk
Tim Rice, Selectman
Peter Baghdasarian, Selectman
Lance Anderson, Selectman

February 23, 2015

Support for Central Massachusetts Regional Stormwater Coalition
Comments Addressing 2014 Draft Massachusetts MS4 Permit

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TOWN OF UXBRIDGE
By its Board of Selectmen

Jennifer Modica

Jennifer Modica, Chair

Dated: 2/23/15

TOWN OF WARE

Town Hall, 126 Main St.
Ware, Massachusetts 01082-1386
Tel 413-967-9648 EXT. 100 Fax 413-967-9649

Support for Central Massachusetts Regional Stormwater Coalition
Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Ware (the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

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TOWN OF Ware

Stuart Beckley, Town Manager

Thomas J. Martens, P.E.
Director Department of Public Works

TOWN OF WEBSTER
MASSACHUSETTS

350 Main St. Webster, MA.01570

February 26, 2015

Newton Tedder
U.S. EPA Region 1
5 Post Office Square – Suite 100
OEP06-4
Boston, MA 02109-3912

RE: Support for Central Massachusetts Regional Stormwater Coalition Comments Addressing 2014 Draft Massachusetts MS4 Permit

Dear Mr. Tedder:

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

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Support for Central Massachusetts Regional Stormwater Coalition
Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Coalition has also been in communication with the Massachusetts Department of Environmental Protection for on the Department's comments on the 2014 Draft Massachusetts MS4 Permit. While not yet available to the public, we understand that many of the Department's comments will mirror the concerns of Coalition members about the administrative burden many provisions impose on municipalities without direct benefit on water quality. As such, we incorporate comments submitted by the Massachusetts Department of Environmental Protection by reference, in whole or in part.

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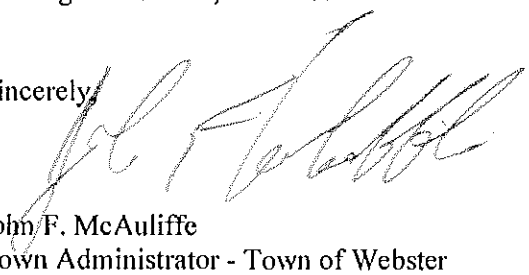
Sincerely,



John F. McAuliffe
Town Administrator - Town of Webster

Board of Selectmen
Town of West Boylston
140 WORCESTER STREET
WEST BOYLSTON, MASSACHUSETTS 01583

KEVIN M. McCORMICK, Chairman
JOHN W. HADLEY, Vice Chairman
CHRISTOPHER A. RUCHO, Clerk
MICHAEL J. KITTREDGE, JR., Selectman
SIOBHAN M. BOHNSON, Selectman

TOWN OF WEST BOYLSTON

Phone: (774) 261-4010

email: selectboard@westboylston-ma.gov

Support for Central Massachusetts Regional Stormwater Coalition
Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

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TOWN OF WEST BOYLSTON
By its Board of Selectmen

Kevin M. McCormick — Chairman

Additional Signatories

John W. Hadley — Vice Chairman

Christopher A. Rucho — Clerk

Michael J. Kittredge, Jr. — Selectman

Siobhan M. Bohnson — Selectman

Dated: 12-17-14

TOWN OF CONCORD
PUBLIC WORKS COMMISSION

133 KEYES ROAD
CONCORD, MASSACHUSETTS 01742-1601

Tel: (978) 318 -3206
Fax: (978) 287- 4762

February 25, 2015

Mr. Newton Tedder
US EPA – Region 1
5 Post Office Square – Suite 100
Boston, MA 02109-3912

Re: Comment for the 2014 Draft Massachusetts Small MS4 General Permit

Dear Mr. Tedder,

This letter is intended to provide the Town of Concord's comments for consideration by the EPA Region 1 when developing the final Massachusetts Small MS4 General Permit. The Town recognizes the importance of stormwater management and the critical role this program plays in protecting the environmental health of Massachusetts waterways and appreciates the opportunity to comment on the permit.

The Town does have serious concerns related to the financial and staff resource impacts which will be required to administer multiple sections within this Permit as well as the resulting questionable or negligible environmental gains of many of the permit requirements. To that end, the Town has developed a planning level compliance/resource estimate *(Exhibit A)* which we have attached to this comment letter for review.

The Town has focused its comments on items that we believe could easily be modified to assist communities in complying with the Permit's new conditions, while delivering real environmental benefit. The following is an outline of sections which the Town offers comments. Within each comment the Town provides recommendations in italics for improvements to that section:

- **1.2.1** - The Town remains unclear on the definition of the non-traditional MS4s. Concord has a Regional School District (with Carlisle) consisting primarily of one building with a large campus, a School Department with multiple buildings and parcels throughout Town and a Municipal Light Plant with multiple buildings and parcels throughout Town. Each District/Department has their own separate maintenance budget for the associated infrastructure on the parcels funded separately through the general fund and in some instances is a separate political body functioning on a regional basis. Additionally, the Departments include separate staff with specific maintenance responsibilities. We observe that several municipalities have similar organizational structures and would have similar ownership responsibility questions.

  We would recommend the Agency provide clarification around the definition of the non-traditional MS4. We would also recommend the EPA/DEP provide outreach to these entities, if they are

intended to be included as a non-traditional MS4, to inform them of their new responsibilities under the proposed permit. We would also highlight that if the Agency's intent is to include these entities within the proposed Permit responsibilities, they have not been given appropriate notification or an opportunity to provide comment to the Permit. EPA/DEP should also notify the municipalities what institutions within Town boundaries are required to file for separate coverage under the permit to ensure no duplication of efforts.

- **1.7.2.d/1.10.2** – The requirement for a 90 day turnaround for the Notice of Intent filing (1.7.2.d) appears to contradict the timeline for the development of the Stormwater Management Program. The example NOI included within Appendix E appears to include most of the items within the SWMP, including the planned BMPs to meet each minimum control measure. The SWMP timeline was extended to allow communities time to develop the program, funding strategies and staffing/consultant needs.

  The Town would suggest extending the NOI submittal to one year to align with the SWMP and modifying the NOI application form for use as the SWMP template. Alternatively, a less detailed NOI application limiting municipality's obligation to only requesting permit coverage would provide a similar outcome.

- **2.3.2.e,f,g** – The requirement for evaluation of the outreach program's effectiveness seems overly broad and fairly subjective. Within the informational meetings, the example cited was dog waste dumping. This appears to be an easy example to measure effectiveness. Specifically within Concord, the Town implemented a targeted dog waste disposal message. The Town evaluated the effectiveness of the messages through multiple follow up inspections of the areas where dog waste bags were discovered. However, the message was delivered 1) through letters to residents in the affected area, 2) letters to all dog license holders and 3) flyers with dog license renewals/applications. It would be difficult to metric exactly which of those methods of outreach provided the corrective action outcome.

  The Town agrees with the EPA's approach to require two messages to four separate audiences. However, incorporation of any type of metric for outreach would be purely subjective. The Town recommends that the EPA require additional messages only if the Town's analysis of a specific outfall watershed reveals a need for more outreach.

2.3.4 (General Comments) – The Town of Concord firmly believes that the General Permit's "one size fits all" approach places a disproportionate financial and administrative burden on stormwater programs for rural communities such as Concord when compared to an urban city. This is most prevalent within the IDDE section of the permit, where the prescriptive nature of the permit's requirements will require significant administration, analysis and testing to comply. The Town recognizes the targeted goal of the IDDE section is to eliminate illicit connections to the storm sewer system. However, the rural community will have a lower probability of containing illicit cross connections because less of the Town is serviced by municipal sewers. Furthermore, the rural storm sewer systems will also contain significantly more outfalls as the stormwater is typically discharged locally into nearby wetlands or waterways. Requiring communities with very different infrastructure layouts to meet the same set of standards regardless of actual illicit connection vulnerability or probability or review of the cost implications for the regulated community is shortsighted.

Concord has only 56% of the Town contained within the urbanized area and approximately 30% of the Town served by municipal sewer. However we contain three major river sections and contain over 400 outfalls. The Town completed wet-weather sampling and testing of 80+ outfalls within watersheds impaired for pathogens over the 2003 permit term. The results from wet weather testing highlighted

questions around the practicality of the testing approach proposed by the EPA to detect illicit connections. During our testing the Town found bacteria results were greatly skewed by environmental factors such as animal activity, time of year sampling and rainfall frequency. In all instances follow up testing for surfactants or ammonia/potassium ratio were found to be below illicit connection levels. This result is not surprising as the Town's drainage and sewer systems were designed to be separate. Furthermore, the Town has received very few water quality complaints throughout the 11 years of implementing the 2003 permit even though the Town contains multiple wild and scenic river segments which are actively used for recreation. All issues have been determined to be the result of some form of illegal dumping into catch basins (dog waste, car wash water, pool discharges, etc.). This is a very different problem from those issues experienced in urbanized communities and not a problem that will be solved through outfall investigation, screening and sampling.

The use of Town resources and funds to prioritize and investigate catchments and test outfalls will redirect already scarce funding with the sole purpose of providing data for an annual report with questionable tangible environmental benefit to the Town's environmental resources. The Town believes it would be more prudent for the EPA to provide municipalities with flexibility in the permit to develop a custom IDDE program to better focus community's scarce resources to programs that will provide environmental benefit. The updated permit instead should remain consistent with the 2003 permit to incentivize screening and inspection for rural communities. Testing should only be used to verify the existence of a problem. This will allow each Town to optimize the IDDE program resources to meet regional issues utilizing the experience gained over the past 11 years of the 2003 permit term.

Further comment on the specific IDDE sections of the permit are bulleted below:

- **2.3.4.4** – The Town notes that reporting of SSOs is already required through the NPDES POTW point source discharge permit for the Town's treatment plant.

  The Town recommends this section be removed from the NPDES MS4 permit to eliminate a redundant reporting requirement.

- **2.3.4.5.b** – The Town questions the benefits and logistics of physically labeling each outfall. A large number of these outfalls are flared end sections located in or near wetland areas. Labeling would require the installation of a sign and post. As noted prior, Concord has over 400 outfalls that have been located, screened and inspected. It is unclear what environmental benefit would be gained by visiting these locations again to label them.

  Concord recommends waiving this physical label requirement for communities which have completed GIS mapping with higher accuracy levels (i.e. sub-meter GPS).

- **2.3.4.6.a.i/2.3.4.7.c.i** – Concord questions the benefit of delineating catchments for all outfalls in the Town. With communities expending significant energy and resources to locate, screen and inspect the outfalls within their communities as part of the 2003 permit, this exercise appears to disregard earlier permit compliance efforts.

  Concord recommends requiring catchment delineation only for outfalls which have evidence of sewer input through olfactory/visual evidence or testing results.

- **2.3.4.7.c.ii** – The Town disagrees with the prioritization ranking considerations provided within the permit. "Past complaints", "industrial areas that are over 40yrs old", "areas where sewer are more than 40yrs old", "sewer conversion and areas with septic systems over 30yrs old" are all

overly broad arbitrary metrics, which will do little to prioritize potential areas needing follow-up investigation.

Concord recommends removing the prioritization ranking requirement within the permit and only requiring further catchment investigations and sampling/testing for outfalls which have evidence of sewer connection through olfactory/visual evidence or previous testing results.

- **2.3.4.7.c.ii/2.3.4.7.d.i** – Concord questions the use of the bacteria testing results "greater than water quality criteria" as a trigger for a problem catchment. As highlighted above, bacteria results can be greatly skewed by environmental factors like animal activity, farming activities, time of year sampling and rainfall frequency. Bacteria is also the most costly and labor intensive parameter to sample and test.

  The Town does not believe the bacteria sampling is an accurate indicator of possible sewage inflow and should be removed as a criterion. Furthermore, the permit's support "draft" document "EPA New England Bacterial Source Tracking Protocol" should also be open to public comment and peer review if municipalities are required to adopt a sampling and testing protocol consistent with the document.

- **2.3.4.7.e.i** – The Town does not believe that the System Vulnerability Factors as written provide proper metrics for prioritization. The Town highlights the 6th SVF bullet "sewer and drain crossings" as an example. Any street which has a sewer and a drainage system will have crossings. Similarly bullet 10, drainage and sewer system 40 years old, only eliminates newer subdivision construction from the program. Utilizing these overly broad parameters as triggers for wet weather sampling does little to narrow the sampling/testing requirements for municipalities in the permit.

  Concord recommends removing the SVFs trigger for catchment testing and only requiring further catchment investigations and sampling/testing for outfalls which have evidence of sewer input through olfactory/visual evidence or previous testing results.

- **2.3.4.8.a** - As a community who has been proactive in its piloting of innovative stormwater technologies, programs and pilot studies, the Town takes this opportunity to formally highlight commitments made by the EPA during the 2014 Permit's public hearings and informational meetings. It was indicated at that time that municipalities would be allowed to take credit for work completed within the 2003 MS4 Permit term toward the new requirements of the 2014 Permit. Specifically discussed were sustainable infrastructure retrofit installs, outfall investigations (mapping, screening and testing), catchment investigations, etc.

  As this comment references multiple sections within the permit, the Town suggests the EPA include similar language highlighting 2003 permit "credits" in the Stormwater Management Plan (SWMP) section of the permit.

- **2.3.4.8.a (reference 2.3.4.7)** – The Town disagrees with the requirement that previous outfall sampling and testing must meet the new requirements of 2.3.4.7. Section 2.3.4.7 includes new testing parameters that were not included within the Town's previous Administrative Order. This minor change will require municipalities to re-test significant numbers of outfalls. This requirement is also inconsistent with the Town of Concord's Administrative Order which noted that all testing performed under the Order would satisfy future MS4 permit testing requirements.

The Town recommends the removal of the reference to the Section 2.3.4.7 requirements within section 2.3.4.8a and further suggests the EPA include similar language highlighting 2003 permit "credits" in the Stormwater Management Plan (SWMP) section of the permit.

- **2.3.4.7.e.ii (by reference Appendix 'A" - Junction Manhole/Key Junction Manhole Definition)** – The definition included within Appendix A for Junction Manhole and Key Junction Manhole appear to contradict previous EPA public outreach presentations. The Town understood the EPA's presentations to highlight the mapping and screening of Junction Manholes to mean be limited to manholes where an MS4's stormwater would flow into a separately owned/operated MS4 system or to manholes where a MS4 system accepts stormwater flow from a separately owned/operated MS4 system. The definition as written appears to require the screening/testing review of Junction Manholes for drainage alignments on separate streets within the same MS4.

  Concord recommends updating the definition to clarify the intent of the term Junction Manhole and Key Junction Manhole. If the intent is to require this additional level of screening of the MS4 system, the Town believes this just be required only for catchments which have evidence of sewer connection through olfactory/visual evidence or previous testing results.

- **2.3.6.a** – The Town highlights that the new requirement to infiltrate 1" of stormwater runoff for all new and redeveloped sites, is much more stringent than MA DEP Stormwater Standards. More specifically, the permit removes certain redevelopment exceptions. This has the potential for serious compliance implications for developers with expansions of large campuses and municipalities with linear roadway reconstruction projects.

  The Town recommends the MS4 permit be revised to align with MA DEP Stormwater Standards and provide consistent redevelopment exceptions.

- **2.3.6.d** – Concord questions the environmental benefit provided by tracking and monitoring of Direct Connected Impervious Area (DCIA). While EPA has highlighted the data's use for correlating receiving water quality on a global scale, the data's use for evaluating or prioritizing stormwater treatment and/or infiltration retrofit opportunities is questionable at best.

  The Town recommends the EPA eliminate the DCIA evaluation requirement and put further emphasis on community's evaluation of infiltrative/ sustainable infrastructure retrofit opportunities, including code review, SOPs and design standards. As a community who has undertaken many SI retrofit projects, a careful design and review at much tighter scale is required.

- **2.3.7 (Appendix F-V.3)** – The Town does not agree with the requirement to include a fall street sweep. The typical sweepers owned by municipalities will find it difficult if not impossible to meet the requirement as they do not work well in heavy rain or for picking up leaves. Concord believes this work would need to be contracted with a vac-sweeper company. Additionally, the time requirement, "following leaf drop" will require all the work to be completed within a tight time window prior to snow operations which is not feasible. Lastly, if a Town puts a formal fall sweeping program in place, we can expect an increase in yard debris put in the roadway from property owners hoping to take advantage of the sweeping.

  The Town suggests the fall street sweeping be required to the "maximum extent practical" or completely eliminated from the permit due to the logistic limitations to comply with the requirement as written.

The Town of Concord appreciates the opportunity to submit comments on the Draft Massachusetts Small MS4 General Permit. If you have any questions on this letter or require any clarification on the comments, please do not hesitate to contact Town Engineer, William Renault, P.E. at (978) 318-3210 or wrenault@concordma.gov.

Respectfully Submitted,

Nick Pappas
Chairman, Town of Concord Public Works Commission

cc: The Honorable Senator Edward J. Markey, United States Senate
The Honorable Senator Elizabeth Warren, United States Senate
The Honorable Congresswoman Niki Tsongas, United States House of Representatives
Ms. Thelma Murphy - US EPA Region 1 Stormwater Chief
Town of Concord Board of Selectman
Town of Concord Public Works Commission
Mr. Christopher Whelan – Town Manager
Mr. Richard Reine, PWLF, – Director of Public Works
Mr. William Renault, P.E., Town Engineer
Mr. Christopher Olbrot, P.E., Public Works Engineer

Printed on 30% post consumer recycled paper

NPDES MS4 Preliminary Estimate

Concord Public Works

Engineering Division

Section	Activity	Res. Person	Yr1 (days)	Yr2	Yr3	Yr4	Yr5	Total Permit Work Days	Cost Est.	NOTES
	General									
1.7.2	Notice of intent/SWMP	TE	15	2	2	2	2	23	$12,420	
1.10.	SWMP	GIS	6	1	1	1	1	10	$3,000	
		PWE	5	1	1	1	1	9	$4,248	
		ADMIN	5	1	1	1	1	9	$2,448	
		ASPC	3	1	1	1	1	7	$2,464	
		PWD	2					2	$1,376	
1.9	Historic Proprties	GIS	3					3	$900	
		PWE	1					1	$472	
2.3.2	**Public Outreach**									
	Standard Messages	PWE		16		16		32	$15,104	
Appendix Fv-Assabet	Phosphorus Messages	PWE	18	3	3	8	3	35	$16,520	
Appendix Fiii - Elm Brook	Elm Brook Pet Waste Messages	PWE	1	1	1	1	1	5	$2,360	
e-g	Message Evaluation	PWE	1	1	1	1	1	5	$2,360	
2.3.3	**Public Involvment and Participation**									
	Website	ASPC	2	2	2	2	2	10	$3,520	
	PWC Briefing	TE	2	2	2	2	2	10	$5,400	
2.3.4	**IDDE**									
2.3.4.6.a.i	Map Update - Open Channels, SI, Waterbodies	GIS	5					5	$1,500	
	Catchment Delineation	GIS	30					30	$9,000	
2.3.4.7	**IDDE Plan**	PWE	5					5	$2,360	
2.3.4.7.c	Priority Catchment Ranking	GIS	2					2	$600	
2.3.4.7.d	**Outfall Screening & Testing**	PWE	1					1	$472	
	Dry Weather	*Consultant*						0	$76,125	Assume need to retest all outfalls due to new peramters (435@$175 outfalls = $76,125)
	Wet Weather	*Consultant*						0	$76,125	Assume SVFs do not eliminate wet-weather testing of outfalls. (435@$175 =$76,125)
2.3.4.7.e.i	**Catchment Investigation Procedure (SVFs)**									
	Sewer Construction - SSOs/PS/LOS/UD/Yr	W/S	15					15	$7,080	
	Sewer O&M/Status Review	W/S	20					20	$9,440	
	S/D Crossings	GIS	2					2	$600	
	Drain Yr Installed	ADMIN	10					10	$10	
	Title V Failures	BOH	5					5	$2,700	
2.3.4.7.e.ii	Title V Failures/Soil/EHGW **Key Junction DMH Investigation (DMH SVFs)**	GIS	5					5	$1,500	
	Dry Weather	*Consultant*						0	$35,000	Assume need to test 200 JM @$250 = $35,000
	Wet Weather	*Consultant*						0	$35,000	Assume need to test 200 JM as SVFs do not eleiminate JMs @$175 = $35,000
2.3.4.7.e.iii	Update IDDE Protocol	PWE	5					5	$2,360	
2.3.4.7.g	Follow Up Screening	*Consultant*						0	$4,375	Assume 25 Locations @$175 = $4,375
2.3.4.7.h	Written IDPP Plan	PWE	7					7	$3,304	
		ERC	5					5	$2,080	
		TE	2					2	$1,080	
		PWD	1					1	$688	
2.3.4.8	Reporting Goals/Milestones	TE	1	1	1	1	1	5	$2,700	
2.3.4.10	Develop Training	PWE	3	1	1	1	1	7	$3,304	
2.3.5	**Construction Site Stomwater Management**									
	Update Regulations -Controls for Debris, Litter and Sanitary Waste	TE	1					1	$540	
	Update Regulations - Written Enforcement?	TE	1					1	$540	
	Update Regulations - Construciton Operation requirements	TE	1					1	$540	
	Site Plan Review Process - Include LID/SI evaluation	TE	3					3	$1,620	
		DPLM	5					5	$2,700	

2.3.6	**Stormwater Management In New Development/Redevelopment**									
2.3.6.a.ii(a-f)	Add site contamination and environ. sensative areas standards	TE	2					2	$1,080	
2.3.6.a.iii	As-built requiements	TE	2					2	$1,080	
2.3.6.a.iii	LTOMP Funding/reporting/certification/deed	TE	2					2	$1,080	
2.3.6.b	Street and Parking Lot Standard Report (SI opportunities)	TE	5	3	15			23	$12,420	
	DPLM Regs - Parking Regs, Street Regs - Imperevious Requirments	DPLM	5	5	15			25	$13,500	
2.3.6.c	Street and Parking Lot Standard Report (Retrofits SOP)	TE				10		10	$5,400	
	DPLM Regs - Add in Sustainable Infrustructure, Water Harvesting	DPLM	5	5	5	20		35	$18,900	
	Regs - Water Harvesting Review	W/S	5	5	5	10		25	$13,500	
2.3.6.d	**DCIA**									
2.3.6.d.i	Revise Building Permit Requirements (SFH ABs with grading and water)	BD	10					10	$5,400	
		TE	10					10	$5,400	
2.3.6.d.ii	Building Permit AB Review, GIS Consultant Admin		10	10	10	10	10	50	$27,000	
	GIS Consultant to Update DCIA per subasin - AB data from dev, SFH calcs	*Consultant*							$50,000	$15,000/yr
2.3.6.d.iii-iv	Inventory Permitee Owned Properties - Priority Rank, Retrofit	GIS				20	2	22	$6,600	
		PWE				5	10	15	$7,080	
		TE				3	3	6	$3,240	
Appendix F	Regulation Update to eliminate Phosphorus	TE	2					2	$1,080	
2.3.7	**Good HouseKeeping and Pollution Prevention for Permittee Owned Operations**									
2.3.7.a.ii(a)	Parks and Open Space SOPs	HGS	10					10	$4,080	
2.3.7.a.ii(b)	SWPPP & Training - Add in other buildings	ERC	5					5	$2,080	
		GIS	2					2	$600	
		TE	2					2	$1,080	
		PWD	1					1	$688	
2.3.7.a.i.(c)	Vehicles and Equipment SOPs (incl. washwater)	HGS	5					5	$2,040	
		W/S	5					5	$2,700	
		PWD	1					1	$688	
		HWY Labor							$125,000	Fuel Station Canopy
2.3.7.a.iii.(a)	Written SOPs for Maintence of MS4	HGS	5					5	$2,040	
		TE	5					5	$2,700	
		PWD	1					1	$688	
		HWY Labor							$337,500	Annual Maintenance of LBs (26 days at $850/day labor & equip, disposal = $27,500), Detention Basins (16 Days at $1,000/day labor and equip = $16,000), Bioretention Area ($10,000/yr contracted), Jetting 2 miles of drain/yr (2 weeks @ $175/day labor & equip = $14,000)
2.3.7.a.iii.(b&d)	Written SOPs for Catch Basin Cleaning	HGS	5					5	$2,040	
		TE	3					3	$1,620	
		PWD	1					1	$688	
		HWY Labor							$152,400	Assume 50% of Town per Year - 144 days @$850/day Labor and Equip. = $122,400, Disposal @ $30,000
2.3.7.a.iii.(c&d)	Written SOPs for Street Sweeping	HGS	5					5	$2,040	
		TE	2					2	$1,080	
		PWD	1					1	$688	
		HWY Labor							$900,000	Assume 2 sweepers @ 250 hrs @$90/hr = $45,000 and 2 Trucks @50/hr -= $25,000, Labor 1000 hrs @ $40/hr) = $40,000 & Disposal cost - $75/ton = $60,000
Appendix F	Street Sweep Assabet - Fall (Appendix F) Labor Cost	HGS							$1,000,000	Assume need to contract fall sweep with vac sweeper due to leaf clogging ($200,000/year)
2.3.7.a.iii.(e&d)	Written SOPs for Winter Road Maintenance	HGS	5					5	$2,040	
		TE	2					2	$1,080	
		PWD	1					1	$688	
	Labor Cost	HWY						0	$375,000	Assume scrape prior to salt application - 4 extra hrs @ 15 storms, 10 trucks @ $80/hr, Labor @ $40/hr = $75,000
2.3.7.a.iii.(f)	Inspection and Maintenace Frequency SOP	HGS	10					10	$4,080	
		TE	2					2	$1,080	
		PWD	1					1	$688	
	Annual Inspection	HGS	10	10	10	10	10	50	$17,000	
2.3.7.a.v	Record Keeping	GIS		10	10	10	10	40	$12,000	
2.3.7.b.ii	SWPPP - Verify contents & formalize missing secitons	ERC	10	20				30	$12,480	
		TE	10	10				20	$10,800	
2.3.7.b.iii-iv	Document Inspections	ERC		2	5	5	5	17	$7,072	

4	**Program Evaluation Record Keeping & Reporting**								
4.1	Program Evaluation	TE	5	5	5	5	5	25	$13,500
		PWE	5	5	5	5	5	25	$11,800
		DPLM	5	5	5	5	5	25	$13,500
		BD	5	5	5	5	5	25	$13,500
		ERC	5	5	5	5	5	25	$10,400
		HGS	5	5	5	5	5	25	$8,500
4.4	**Annual Report**								
	Develop Report	TE	15	15	15	15	15	75	$40,500
		GIS	5	5	5	5	5	25	$7,500
		PWE	5	5	5	5	5	25	$11,800
		ADMIN	5	5	5	5	5	25	$6,800
		PWD	2	2	2	2	2	10	$6,880
		ASPC	3	2	2	2	2	11	$3,872
								Estimated Total Program Cost	$3,663,695
								Estimated Consultant/Contracted Cost =	$1,451,625
								Estimated Town Staff/Equipment Cost =	$2,212,070
								Estimated Administrative Work Days for Permit =	1,100
								Estimated In-house Labor Days for Permit =	1,720

JAMES P. McGOVERN
2ND DISTRICT, MASSACHUSETTS

COMMITTEE ON RULES

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February 27, 2015

Mr, Newton Tedder
US EPA – (OED06-4)
5 Post Office Square – Suite 100
Boston, MA 02109

RE: Comments on 2014 DRAFT Massachusetts MS4 Permit

Dear Mr. Tedder,

Thank you for the opportunity to comment on the 2014 Draft Massachusetts MS4 Permit (2014 Draft). I appreciate the opportunity to share concerns that have been conveyed to me from numerous local officials throughout my Congressional District. I must say that I share the concerns expressed by these local officials. Many of their concerns mirror those shared with the EPA during the comment period for the 2010 Draft, but are worth repeating here.

With no funding sources available through the EPA, my Towns are concerned that the 2014 Draft will impose a considerable burden on them to meet the new permit requirements within the given time constraints. None of my municipalities have sufficient funds in free cash to pay for the upgrades required by the 2014 Draft. In addition, the 2014 Draft does not have a sufficient mechanism to acknowledge existing municipal practices that have a positive effect on water quality, but are not within the purview of the draft, practices that might cost less but provide the same positive outcome as the 2014 Draft requirements.

The Towns have also raised the issue of compliance timelines as a source of trepidation. The changes required by the 2014 Draft are not short-term projects. Should a town be unable to comply with Draft requirements within the required timeframe, the fines levied against that town will result in even longer delays in completion of permit requirements and potentially additional fines.

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In addition, there is the issue of providing sufficient Town staff to ensure that upgrades are properly and effectively installed and implemented. Most of my communities do not have the resources and staff available to handle the requirements of the 2014 Draft within the given time frame.

Many communities are also distressed that the terms of this Permit will negatively impact projects within the framework of the Massachusetts Department of Transpiration's Complete Street Initiative. The 2014 Draft requirements may delay or halt work on providing safe streets for pedestrians and vehicles as provided for by the Initiative. The 2014 Permit should work in unison with programs like the Complete Streets Initiative, not against them.

I thank you for the opportunity to comment and I respectfully ask that you take these concerns into careful consideration before finalizing any MS4 permit changes.

Sincerely,

James P. McGovern
Member of Congress

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Mr. Newton Tedder
US EPA Region 1
5 Post Office Square, Suite 100
Mail Code OPE06-4
Boston, MA 02109-3912

RE: Comments on 2014 Draft Massachusetts Small MS4 General Permit

Dear Mr. Tedder,
Thank you for the opportunity to review and provide comments on the proposed 2014 Draft Massachusetts Small MS4 General Permit. We appreciate the effort and thought that has been put into the draft permit to date, and anticipate that EPA will carefully consider the concerns raised herein prior to developing final permit language. We wish to call attention to the following concerns relative to the draft permit.

1. **Considerable differences between the existing MADEP stormwater standards and the proposed MS4 permit requirements**. As you are likely aware the MADEP worked with an extensive group of stakeholders to refine a set of stormwater standards and accompanying stormwater management manuals that are routinely used by the engineering community in the Commonwealth of Massachusetts. While these standards are only directly applicable to those sites discharging to wetlands within the commonwealth, for the sake of consistency many practitioners rely on them to guide stormwater management decisions for the majority of development projects in the Commonwealth. We are concerned that implementing a MS4 permit that effectively established a set of standards that differ substantially from the existing MADEP stormwater standards will result in widespread confusion and frustration among stormwater professionals. This opinion was also expressed by several speakers at the recent public hearing held in Leominster on November 19, 2014. For this reason we ask that EPA work with MADEP to better align the proposed MS4 permit requirements with the MADEP stormwater standards. We feel the MADEP standards represent a sound foundation for achieving stormwater management goals in the Commonwealth.

2. **Failure to differentiate standards for post construction stormwater controls on new development and redevelopment sites.** We recognize that existing impervious areas serve as a major source of polluted stormwater runoff and that redevelopment efforts represent an ideal opportunity to mitigate those impacts. However, redevelopment projects often face numerous site constraints not inherent to new development projects, so achieving the same level of post construction stormwater control expected of a new development site is often considerably more expensive or entirely unachievable as a result. We believe that redevelopment projects should be required to install post construction stormwater controls, but the permit should recognize the unique constraints redevelopment sites often face and incorporate more flexible post construction stormwater requirements in order to encourage the redevelopment of existing impervious areas.

3. **Failure to define clear performance criteria for flow through stormwater treatment practices**. The draft permit currently contains language stating that in instances when the first 1 inch of runoff from all impervious surfaces on the site can't be retained then it may be treated using a combination of BMPs capable of providing an equivalent or greater level of pollutant load reduction to that achieved by biofiltration systems. Additional language is provided indicating that the level of pollutant removal provided by any proposed BMP shall be calculated using EPA Region 1's BMP Performance Extrapolation Tool. This prescriptive standard is highly inadequate for several reasons. First, it is widely documented that the performance of biofiltration systems is highly variable and dependent on the biofiltration media blend, among other variables. A growing body of research including research done by the Washington

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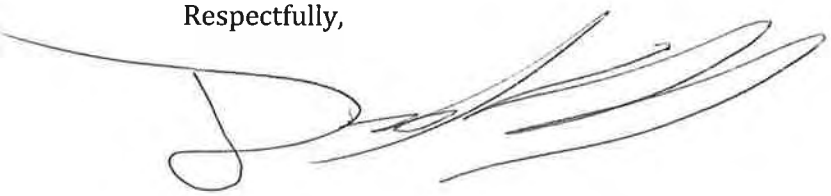
State Department of Ecology and the University of New Hampshire Stormwater Center demonstrates that biofiltration systems can actually serve as pollutant sources depending on the media specification. This is particular true for nutrients, which are a pollutant of concern in many watersheds in Massachusetts. To ensure the performance of biofiltration cells is optimized a well thought out design spec is necessary and should be provided in a comprehensive stormwater management manual. Second, it is our understanding that the EPA Region 1 BMP Performance Extrapolation Tool is only able to model a small subset of stormwater BMPs, so mandating its use to comply with this standard drastically limits the number of BMP options available. This will be particularly problematic in urbanized areas where site constraints are common. Additionally, there is not a clear path or process identified for including/adding additional BMPs to the EPA Region 1 BMP Performance Extrapolation Tool which will serve to hamper further BMP innovations.

We feel that the development and inclusion of a performance based BMP standard in the permit language is the appropriate path forward. Instead of mandating that BMPs perform equivalent to or better than biofiltration cells, the specific level of pollutant removal that is consistently achieved by biofiltration cells should be identified. It is well known that the performance of all BMPs varies widely, so these pollutant load reductions should reflect what is common and not the high end of the expected performance range. Any and all BMPs capable of achieving an equivalent level of pollutant load reduction should be acceptable for use in meeting the standard as long as there is credible long term field data supporting pollutant load reduction claims.

We trust that you will careful consider and address the concerns raised herein prior to finalizing the draft permit language. We would appreciate being notified of what steps are being taken to address these issues. Should you require any additional information relative to our comments I encourage you to contact me at your convenience.

Respectfully,



Derek M. Berg
Regulatory Manager- Stormwater

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Newton Tedder
US EPA, Region 1
5 Post Office Square, Suite 100
Mail Code: OEP06-4
Boston, MA 02109-3912

February 18, 2015

Dear Mr. Tedder:

Thank you for this opportunity to comment on EPA's Draft General Permit for Small MS4s in Massachusetts.

The Charles River Conservancy is a 501(c)3 non-profit that works to make the parklands along the Charles River more active, attractive, and accessible for all, from the Watertown Dam to the Boston Harbor. The CRC was founded in 2000, and has over 30,000 supporters and volunteers in the Greater Boston area; every year some 2,000 landscape volunteers work with the Conservancy to help maintain and improve the parklands around the urban Charles. One of the Conservancy's most prominent projects is the construction of the Lynch Family Skatepark underneath the Zakim Bridge ramps, on a former brownfield site in East Cambridge.

Since its founding, the Conservancy has advocated for the return of swimming to the Charles River as a part of the Swimmable Charles Initiative. In collaboration with the Department of Conservation and Recreation, we have successfully hosted community swims every year since 2013, drawing over 300 swimmers to the Charles. The Conservancy's Swimmable Charles Initiative would not be possible without the dedication of state and community partners to clean the waters of the Charles River. The 2014 MS4 permit presents an opportunity for the state to uphold this dedication and to continue improving the water quality in the Charles and in other municipal waterways.

Polluted stormwater is the most serious water pollution problem in Massachusetts today. EPA Region 1 has found that stormwater causes or contributes to at least 55% of the violations of water quality standards in the state's rivers, streams, and lakes. Climate change presents an additional, important reason to improve stormwater management. Most scientists expect the recent cycles of flooding and drought to become more pronounced, and

Massachusetts communities need to maintain or upgrade their aging infrastructures, to safeguard both public safety and the environment into the future. **This permit is an important step in promoting these urgently-needed changes, and we strongly support its promulgation.**

The 2014 permit represents a significant improvement over the 2003 permit, and is likely to be much more effective in reducing pollution, flooding and erosion caused by stormwater in urbanized areas.

- The permit incorporates **water-quality requirements** that directly address the pollutants that are actually causing specific Water Quality Standard violations in each town.

- The permit provides **more specific requirements and deadlines** in many cases, which should result in better compliance than was achieved under 2003 permit.

- The permit gives towns **adequate time and substantial flexibility** in choosing approaches to compliance that are most appropriate for local conditions. In response to comments on the 2010 proposed permit, EPA eliminated some requirements that were believed to be overly prescriptive.

- **Permit requirements for greater public access and opportunities to comment** on towns' stormwater management programs will increase public support for these programs, which is essential if towns are to raise the resources necessary to deal with polluted stormwater. Greater public scrutiny will also encourage more effective plans and more consistent implementation.

- **The post-construction requirements for new development and redevelopment will prevent future projects from continuing the poor stormwater management practices of the past.** EPA has chosen a balanced and effective strategy, setting a high standard for infiltration of stormwater (the most cost-effective way of removing pollutants from stormwater), providing a safety valve where site conditions make meeting that standard infeasible.

In short, the permit requirements ask municipalities to do better monitoring and planning, to improve implementation, to raise public awareness of stormwater issues, and to design and maintain better stormwater management measures. If successful, the permit **will result in major improvements in the management of urban stormwater in Massachusetts, and we will see the results in cleaner, healthier, rivers, streams, lakes, bonds, and coastal waters**.

We also note that good planning **can help towns reduce compliance costs and fund the required investments in stormwater programs and infrastructure**. Towns can take advantage of help and support from EPA, MassDEP, watershed groups and regional planning agencies; work regionally (including through storm water consortiums) to achieve economies of scale, develop and fund stormwater utilities, and ensure that private entities assume their share of the responsibility for stormwater management.

Finally, while we strongly endorse the overall approach and requirements of this permit, we **have identified some areas where improvements are needed:**

- **The stormwater bylaw requirements should apply to projects as small as a quarter or half an acre.** Most urbanized towns, at least in the Boston area, have very few large development and redevelopment projects, and projects under an acre would not be required to employ *any* stormwater management measures unless they are located in wetland resource areas. This will make it exceedingly difficult for many towns to comply with the proposed prohibition against new and increased stormwater discharges from MS4s.

- In addition to conducting an annual evaluation of BMP compliance and effectiveness, **permittees should be required to take corrective action** where the evaluation shows that goals and objectives are not being met. An effective iterative approach to improving stormwater management requires that problems be addressed, and not simply identified.

- **MS4s discharging to waters impaired for bacteria or pathogens should be subject to additional requirements**. This includes requiring new development and redevelopment projects and retrofits on town-owned property to implement BMPs that are most effective at reducing bacteria where the waters they discharge to (via an MS4) do not meet bacteria Water Quality Standards. These requirements are consistent with the proposed requirements for other stormwater pollutants.

- **The new requirements proposed for projects discharging to water impaired for chloride should apply to all MS4s.** While relatively few water bodies have been assessed for chloride, evidence suggests that this is a significant problem in most, if not all, urbanized areas.

We appreciate the careful work EPA has done to improve on the 2003 permit and the 2010 proposals, based on experience with the 2003 permit and comments on the 2010 proposals. However, the process has taken a very long time. We **strongly support prompt issuance of the final permit**, to end a long period of drift and uncertainty associated with delay in issuing this permit. We urge EPA to work quickly to respond to comments and complete a final permit at the earliest possible date

Thank you for considering our comments on this very important permit.

Sincerely,

Renata von Tscharner
President

CC:
US EPA Region 1 Environmental Engineer Tom Faber
US EPA Region 1 Attorney Bill Walsh-Rogalski

State Senator Will Brownsberger
State Senator Sonia Chang-Diaz
State Senator Cynthia Creem
State Senator Sal DiDomenico
State Senator Patricia Jehlen
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State Representative Byron Rushing
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DCR Commissioner Jack Murray
DCR Director of External Affairs and Partnerships Conrad Crawford
DCR Aquatics Director John Dwinell

City of Boston Chief of Environment, Energy and Open Space Austin Blackmon

Cambridge City Councilor Dennis Carlone

Massachusetts Rivers Alliance Executive Director Julia Blatt
Charles River Watershed Association Director of Projects Kate Bowditch
MassDPH Senior Environmental Analyst Michael Celona
Blue Wave Capital LLC Managing Partner John DeVillars
MassDEP Deputy Assistant Commissioner of the Bureau of Resource Protection Ann Lowery
Harvard School of Public Health Lecturer Dr. James Shine

Charles River Conservancy Board Member Jennifer Gilbert
Charles River Conservancy Advisory Board Member Catherine Donaher
Charles River Swimming Club President Frans Lawaetz

CitizenLetter

An urgent message from a concerned citizen.

11/09/2014

3422001655 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

Over half the pollution in our lakes, ponds, rivers, wetlands and coastal waters is runoff from roads, parking lots and other urban surfaces. It is critical a new permit is finalized to govern municipal storm-sewer systems that would significantly reduce runoff pollution.

I'm writing to urge you to ensure that the final stormwater permit has the strongest possible protections to make Massachusetts waters cleaner.

It was a big step forward when in 2003, your agency required that municipalities obtain stormwater-discharge permits and better manage their runoff. But the rules dictated by the 2003 permits need to be updated. A new permit needs to be finalized that will better protect our state waters.

Prior efforts by EPA to update the permits have failed, so the 2003 program, which was to have expired in 2008, still governs runoff. This time, EPA must update the permitting program and take steps to significantly reduce runoff pollution. Massachusetts can do much better today than what was possible in 2003.

Managing runoff is necessary to protect the quality of our water bodies, aquatic habitats and drinking water sources. I urge you to ensure that the final version of the new stormwater permit has the strongest possible regulations to ensure water quality.

Please let me know how you intend to address this issue.

Sincerely,

Douglas Macdonald
PO BOX 910
SHEFFIELD, MA 01257-0910

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CREDO

CitizenLetter
An urgent message from a concerned citizen.

11/09/2014

342201656 PRESORT <>

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5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

Eliza Hewat
7 WATER ST
HOUSATONIC, MA 01236-9761

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CitizenLetter

An urgent message from a concerned citizen.

11/09/2014

3422001657 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Mark Mcleod
233 BAY RD
HADLEY, MA 01035-9780

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An urgent message from a concerned citizen.

11/08/2014

3290002487 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Suzanne Towne
255 HIGH STREET HL
WINDSOR, MA 01270-9601

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Sincerely,

Shirley Mccready
160 MAPLE ST APT D
SPRINGFIELD, MA 01105-2641

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Sincerely,

Mary Leue
PO BOX 488
ASHFIELD, MA 01330-0488

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Sincerely,

Janet Bowers
19 RIVER RD
GILL, MA 01354-9723

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Sincerely,

Gary Gogel
93 STRATHMORE RD APT 11
BRIGHTON, MA 02135-7115

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Sincerely,

Charlotte Rose
40 BERKELEY ST
BOSTON, MA 02116-6316

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Sincerely,

Charlene Brotman
22 HOWARD ST
NEWTON, MA 02458-1823

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Sincerely,

Alison Conant
68 BROOKSIDE AVE
NEWTONVILLE, MA 02460-1530

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An urgent message from a concerned citizen.

11/09/2014

3420000325 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
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Boston, MA 02109-3912

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Sincerely,

Timothy Havel
306 COMMONWEALTH AVE APT 5
BOSTON, MA 02115-2407

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Sincerely,

Steven Lowen
43 WILDWOOD DR
BEDFORD, MA 01730-1139

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Sincerely,

Pamela Frothingham
60 HILLCREST ACRES # B
WESTPORT, MA 02790-1403

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5 Post Office Square, Suite 100
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Daniel Biegner
43 HANNUM BROOK DR
EASTHAMPTON, MA 01027-9725

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An urgent message from a concerned citizen.

11/08/2014

3288001854 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Thomas Weiner
11 LINDEN ST
NORTHAMPTON, MA 01060-3207

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An urgent message from a concerned citizen.

11/08/2014

3288001853 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
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Boston, MA 02109-3912

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Sincerely,

Richard Siewert
399 CEDAR ST
CHATHAM, MA 02633-2116

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Sincerely,

Rebecca Arnoldi
89 NAPLES RD
BROOKLINE, MA 02446-5769

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Sincerely,

Margot Douaihy
113 MARKET ST # 1
NORTHAMPTON, MA 01060-3211

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Boston, MA 02109-3912

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Sincerely,

Lisa Russell
43 HIGHLAND ROCK DR
STOUGHTON, MA 02072-3866

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US EPA - Region 1
5 Post Office Square, Suite 100
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Boston, MA 02109-3912

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Managing runoff is necessary to protect the quality of our water bodies, aquatic habitats and drinking water sources. I urge you to ensure that the final version of the new stormwater permit has the strongest possible regulations to ensure water quality.

Please let me know how you intend to address this issue.

Sincerely,

James Babson
12 BURNETT AVE
SOUTH HADLEY, MA 01075-1512

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CitizenLetter

An urgent message from a concerned citizen.

11/08/2014

3288001848 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Sincerely,

David Schreiber
301 SUMMER ST
ARLINGTON, MA 02474-2819

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5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

David Parks
34 GLASSWORKS RD
LANESBORO, MA 01224-9781

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11/08/2014

3288001846 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Daria Hemmings
361 RICHARDSON AVE SIDE DOOR
ATTLEBORO, MA 02703-1223

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CitizenLetter

An urgent message from a concerned citizen.

11/08/2014

3288001845 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Christina Knapp
15 SOUTHBOURNE RD
JAMAICA PLAIN, MA 02130-4267

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An urgent message from a concerned citizen.

11/08/2014

3288001844 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Alexander Brown
PO BOX 341
HOPKINTON, MA 01748-0341

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CitizenLetter

An urgent message from a concerned citizen.

11/09/2014

3422001658 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Sarah Lombard
229 KNIGHT RD
NEW MARLBOROUGH, MA 01230-1490

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CitizenLetter

An urgent message from a concerned citizen.

11/10/2014

8851000045 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Lois Tow
10 FAXON AVE APT 816
QUINCY, MA 02169-4687

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An urgent message from a concerned citizen.

11/19/2014

7148000055 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Sincerely,

Paul Peckham
6 PERRY DR
FOXBORO, MA 02035-1069

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An urgent message from a concerned citizen.

11/19/2014

7148000037 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Karin Hemmingsen
361 RICHARDSON AVE
ATTLEBORO, MA 02703-1223

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An urgent message from a concerned citizen.

11/16/2014

9861001677 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Mary Raczko
132 AUBURN ST
MEDFORD, MA 02155-3749

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An urgent message from a concerned citizen.

11/16/2014

9863002421 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Edith Fuller
140 CORTLAND CIR
LEOMINSTER, MA 01453-4580

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An urgent message from a concerned citizen.

11/16/2014

9863002422 PRESORT <>

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5 Post Office Square, Suite 100
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Sincerely,

Kenneth Cheek
PO BOX 557
NORTH EASTHAM, MA 02651-0557

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An urgent message from a concerned citizen.

11/17/2014

01510000050 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Diane Cummings
12 NIRA AVE
JAMAICA PLAIN, MA 02130-1107

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An urgent message from a concerned citizen.

11/17/2014

0151000131 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

John Nelson
138 PLEASANT ST
PLAINFIELD, MA 01070-9781

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An urgent message from a concerned citizen.

11/17/2014

0151000189 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Paulette Loomis
100 DR JULIUS KELLEY LN APT 155
POCASSET, MA 02559-2134

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11/17/2014

0151000187 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Paul Rosa
266 CENTER ST
GROVELAND, MA 01834-1713

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An urgent message from a concerned citizen.

11/17/2014

0151000237 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Steve Swingle
739 WEST RD
NEW BRAINTREE, MA 01531-1614

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An urgent message from a concerned citizen.

11/17/2014

01497000014 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Anna Shenk
77 WALNUT ST
SOMERVILLE, MA 02143-1935

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An urgent message from a concerned citizen.

11/17/2014

0149000006 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Managing runoff is necessary to protect the quality of our water bodies, aquatic habitats and drinking water sources. I urge you to ensure that the final version of the new stormwater permit has the strongest possible regulations to ensure water quality.

Please let me know how you intend to address this issue.

Sincerely,

Allan Rodgers
5 MCCALL RD
WINCHESTER, MA 01890-3711

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CitizenLetter

An urgent message from a concerned citizen.

11/17/2014

0149000075 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

James Koger
444 FRANKLIN ST
CAMBRIDGE, MA 02139-3114

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CitizenLetter

An urgent message from a concerned citizen.

11/17/2014

0149000057 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Doug Hodgkins
30 GREAT WOODS RD
SAUGUS, MA 01906-1120

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CitizenLetter

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11/17/2014

0149000039 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Claude Austin
57 FRANCIS ST
NORTH ADAMS, MA 01247-3823

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An urgent message from a concerned citizen.

11/16/2014

9863002423 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Noreen Troccoli
48 MORSE AVE
DEDHAM, MA 02026-3112

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An urgent message from a concerned citizen.

11/16/2014

9863002424 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Thomas Picton
9 CRESCENT AVE
BEDFORD, MA 01730-2201

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An urgent message from a concerned citizen.

11/17/2014

01149000105 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Kate Matthews
11 ROSEWOOD DR
STOUGHTON, MA 02072-4921

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An urgent message from a concerned citizen.

11/17/2014

0149000134 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

myra macleod
779 PLEASANT ST
WORCESTER, MA 01602-1927

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11/17/2014

0149000127 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Mary Devine
28 VILLAGE ST
MARBLEHEAD, MA 01945-2249

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An urgent message from a concerned citizen.

11/20/2014

7580000015 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Christine Carlsen
1000 CENTRE ST
JAMAICA PLAIN, MA 02130-3048

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An urgent message from a concerned citizen.

11/20/2014

7580000009 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Catharine May
1 ATKINSON TER
MELROSE, MA 02176-4314

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An urgent message from a concerned citizen.

11/23/2014

1357000041 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Henry Linschitz
35 RIVERSIDE DR
WALTHAM, MA 02453-2409

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An urgent message from a concerned citizen.

11/20/2014

7582000099 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Robert Petersen
975 MEMORIAL DR
CAMBRIDGE, MA 02138-5753

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An urgent message from a concerned citizen.

11/23/2014

8334001649 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Ethan Scarl
67 QUAIL RUN
TEWKSBURY, MA 01876-1919

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11/23/2014

8334001650 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Jean Berman
23 PROCTOR CIR
PEABODY, MA 01960-2819

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An urgent message from a concerned citizen.

11/23/2014

83340016S2 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Linda Veiga
8 TIMOTHY LN
PLYMOUTH, MA 02360-2053

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An urgent message from a concerned citizen.

11/23/2014

83340016S1 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Joshua Rachlin
276 MASSACHUSETTS AVE APT 504
ARLINGTON, MA 02474-8340

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An urgent message from a concerned citizen.

11/23/2014

8334001653 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Ruthbetty Shippee
3 WOOD ST
PLYMOUTH, MA 02360-2953

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An urgent message from a concerned citizen.

11/23/2014

1357000101 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Penelope Jencks
175 PARKER ST
NEWTON, MA 02459-2549

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An urgent message from a concerned citizen.

11/23/2014

13570000114 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Managing runoff is necessary to protect the quality of our water bodies, aquatic habitats and drinking water sources. I urge you to ensure that the final version of the new stormwater permit has the strongest possible regulations to ensure water quality.

Please let me know how you intend to address this issue.

Sincerely,

Sarah Metcalf
93 BANCROFT RD
NORTHAMPTON, MA 01060-2108

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CitizenLetter

An urgent message from a concerned citizen.

11/23/2014

1355000001 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

Over half the pollution in our lakes, ponds, rivers, wetlands and coastal waters is runoff from roads, parking lots and other urban surfaces. It is critical a new permit is finalized to govern municipal storm-sewer systems that would significantly reduce runoff pollution.

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Please let me know how you intend to address this issue.

Sincerely,

Aaron Vega
295 HIGH ST # 215
HOLYOKE, MA 01040-6521

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CitizenLetter

An urgent message from a concerned citizen.

11/22/2014

81980000044 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

Over half the pollution in our lakes, ponds, rivers, wetlands and coastal waters is runoff from roads, parking lots and other urban surfaces. It is critical a new permit is finalized to govern municipal storm-sewer systems that would significantly reduce runoff pollution.

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Please let me know how you intend to address this issue.

Sincerely,

Molly Martone
189 EDGARTOWN RD
VINEYARD HAVEN, MA 02568-5602

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CitizenLetter

An urgent message from a concerned citizen.

11/22/2014

81980000032 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

John Terry
117 MAIN ST
WEST NEWBURY, MA 01985-1802

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CitizenLetter

An urgent message from a concerned citizen.

11/23/2014

1357000039 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Sincerely,

Henrietta Light
22 GRENVILLE RD
WATERTOWN, MA 02472-4918

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CitizenLetter

An urgent message from a concerned citizen.

11/23/2014

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Dw Wiegand
28 PROSPECT ST
TOPSFIELD, MA 01983-1716

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CitizenLetter

An urgent message from a concerned citizen.

11/23/2014

1335002300 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

Ron Goldberg
PO BOX 294
TYRINGHAM, MA 01264-0294

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An urgent message from a concerned citizen.

11/23/2014

1335002299 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Emilie Woodward
46 EVERGREEN RD APT 216
LEEDS, MA 01053-9761

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An urgent message from a concerned citizen.

11/23/2014

1335002298 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Emilie Welles
1 WALL ST
BURLINGTON, MA 01803-4769

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11/23/2014

1335002297 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Diane Simpson
65 CORNWALL ST UNIT 205
JAMAICA PLAIN, MA 02130-2697

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An urgent message from a concerned citizen.

11/23/2014

1335002296 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Christine Farrell-Riley
20 CANTON RD
QUINCY, MA 02171-3013

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11/23/2014

1335002295 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Babette Loring
PO BOX 218
PRIDES CROSSING, MA 01965-0218

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An urgent message from a concerned citizen.

11/20/2014

7582000074 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Sincerely,

M Elizabeth Cinquino
100 MORTON ST APT 53
JAMAICA PLAIN, MA 02130-3754

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An urgent message from a concerned citizen.

11/24/2014

1601000086 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Sincerely,

Paul Caswell
92 S MEADOW RD
CLINTON, MA 01510-4300

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CitizenLetter

An urgent message from a concerned citizen.

11/24/2014

8930000024 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Christina Law
PO BOX 97
NANTUCKET, MA 02554-0097

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CitizenLetter

An urgent message from a concerned citizen.

11/24/2014

8930000017 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

C L Messerschmitt
53 BRUNSWICK ST
PITTSFIELD, MA 01201-6405

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An urgent message from a concerned citizen.

11/24/2014

8930000008 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Barbara Brandt
69 DOVER ST
SOMERVILLE, MA 02144-2810

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An urgent message from a concerned citizen.

11/24/2014

1601000073 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Maria Roberts
11 SOUTH CRESCENT CIRCUIT
BRIGHTON, MA 02135-3026

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An urgent message from a concerned citizen.

11/24/2014

1601000032 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Elaine Bowditch
235 WALKER ST APT 252
LENOX, MA 01240-2749

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An urgent message from a concerned citizen.

11/26/2014

2121000050 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Melissa Warren
289 FULTON ST
MEDFORD, MA 02155-1705

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CitizenLetter

An urgent message from a concerned citizen.

11/26/2014

2123000059 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

Janice Thalin
25 PEARL ST
BRIDGEWATER, MA 02324-1626

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CitizenLetter

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11/26/2014

2123000129 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Terry Murphy
107 GORE ST APT 7
CAMBRIDGE, MA 02141-1284

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11/26/2014

2121000069 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
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Boston, MA 02109-3912

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Sincerely,

William Cotten
30 UNIVERSITY RD
BROOKLINE, MA 02445-4533

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An urgent message from a concerned citizen.

12/08/2014

4325000181 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Michele Meagher
131 FRANKLIN ST
ARLINGTON, MA 02474-3227

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12/08/2014

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US EPA - Region 1
5 Post Office Square, Suite 100
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Boston, MA 02109-3912

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Sincerely,

John Gauley
16 HULL ST
HINGHAM, MA 02043-1419

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An urgent message from a concerned citizen.

12/08/2014

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

William Cooper
61 PARK ST APT 10B
BROOKLINE, MA 02446-6334

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Sincerely,

Walter James Hall
22 SHORE RD
WALTHAM, MA 02451-3215

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12/08/2014

4327000408 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Tobias Yarmolinsky
9 UNION ST
CHARLESTOWN, MA 02129-3505

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12/08/2014

4327000390 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Susan Dunham
PO BOX 423
WORTHINGTON, MA 01098-0423

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An urgent message from a concerned citizen.

12/08/2014

4327000232 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Kathleen Amato
24 SUN VALLEY RD
HOLYOKE, MA 01040-9620

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An urgent message from a concerned citizen.

12/08/2014

4327000353 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Roland Small
1849 DUBLIN RD
RICHMOND, MA 01254-5067

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12/08/2014

4327000345 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Robert Mcdonough
91 WEST CEDAR ST # B
BOSTON, MA 02114-3368

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5 Post Office Square, Suite 100
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Sincerely,

Richard Hyland
263 BATCHELDER RD
ATHOL, MA 01331-9366

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5 Post Office Square, Suite 100
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Boston, MA 02109-3912

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Sincerely,

Phyllis Menken
9 UNION ST
CHARLESTOWN, MA 02129-3505

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An urgent message from a concerned citizen.

12/08/2014

4327000265 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Lydia Vickers
45 CHERRY ST
CAMBRIDGE, MA 02139-3533

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An urgent message from a concerned citizen.

12/08/2014

4327000006 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Allan Rodgers
5 MCCALL RD
WINCHESTER, MA 01890-3711

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12/08/2014

4327000047 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Bruce Glover
435 OLD COLONY AVE APT 384
BOSTON, MA 02127-3819

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12/08/2014

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Erin Joyce
52 DYER AVE
MILTON, MA 02186-1512

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CitizenLetter

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12/08/2014

4325000236 PRESORT <>

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US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Managing runoff is necessary to protect the quality of our water bodies, aquatic habitats and drinking water sources. I urge you to ensure that the final version of the new stormwater permit has the strongest possible regulations to ensure water quality.

Please let me know how you intend to address this issue.

Sincerely,

Sarah Bayer
39 PRINCE ST # 1
CAMBRIDGE, MA 02139-4413

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CitizenLetter

An urgent message from a concerned citizen.

12/08/2014

4325000231 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

Over half the pollution in our lakes, ponds, rivers, wetlands and coastal waters is runoff from roads, parking lots and other urban surfaces. It is critical a new permit is finalized to govern municipal storm-sewer systems that would significantly reduce runoff pollution.

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Please let me know how you intend to address this issue.

Sincerely,

Ruth Potwin
463 DOUGLAS RD
LOWELL, MA 01852-4313

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CitizenLetter

An urgent message from a concerned citizen.

12/08/2014

4325000223 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Rita Abraham
15 F ST
HULL, MA 02045-1804

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CitizenLetter

An urgent message from a concerned citizen.

12/08/2014

4325000202 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Paul Shanahan
PO BOX 853
NORTHBOROUGH, MA 01532-0853

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CitizenLetter

An urgent message from a concerned citizen.

12/12/2014

5492000007 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Elaine Savignano
67 FLORENCE ST
HUDSON, MA 01749-2036

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CitizenLetter

An urgent message from a concerned citizen.

12/11/2014

5178000005 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Adele Rustino
61 LINDSAY POND RD
CONCORD, MA 01742-5217

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CitizenLetter

An urgent message from a concerned citizen.

12/04/2014

2612000021 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

Chobee Hoy
37 OSBORNE RD
BROOKLINE, MA 02446-6713

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CitizenLetter
An urgent message from a concerned citizen.

12/09/2014

4533000035 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

Sophie Glasser
10 VILLAGE LN
BERLIN, MA 01503-1709

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An urgent message from a concerned citizen.

12/12/2014

5494000023 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Sincerely,

Joan Toussaint
11 APPLE RDG UNIT 3
MAYNARD, MA 01754-2721

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An urgent message from a concerned citizen.

12/11/2014

5176000020 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Carol Messerschmitt
53 BRUNSWICK ST
PITTSFIELD, MA 01201-6405

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12/11/2014

5176000066 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Robert Pertersen
975 MEMORIAL DR
CAMBRIDGE, MA 02138-5753

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An urgent message from a concerned citizen.

12/11/2014

5176000084 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Whiston Glasby
724 WATER ST
FRAMINGHAM, MA 01701-3291

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An urgent message from a concerned citizen.

12/11/2014

5178000054 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Jo Valens
185 CASTLE HILL AVE
GT BARRINGTON, MA 01230-1052

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An urgent message from a concerned citizen.

12/11/2014

5178000073 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Kathryn Wadleigh
106 SCHOOL ST APT 3
GREENFIELD, MA 01301-2486

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An urgent message from a concerned citizen.

12/11/2014

5178000101 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Rebecca Knapp
291 BALL HILL RD
PRINCETON, MA 01541-1707

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CitizenLetter

An urgent message from a concerned citizen.

11/28/2014

0322000131 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Sincerely,

Valerie Carlson
188 ALBATROSS RD
QUINCY, MA 02169-2656

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CitizenLetter

An urgent message from a concerned citizen.

11/28/2014

0324000083 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Holly Edwards
213 COLE AVE FL 1
WILLIAMSTOWN, MA 01267-2501

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An urgent message from a concerned citizen.

11/28/2014

0322000101 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Richard Sens
19 CHAUNCY ST APT 2B
CAMBRIDGE, MA 02138-2550

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An urgent message from a concerned citizen.

11/28/2014

0324000228 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Robert Comer
106 RIVERDALE RD
CONCORD, MA 01742-3454

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CitizenLetter
An urgent message from a concerned citizen.

11/28/2014

0324000240 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Managing runoff is necessary to protect the quality of our water bodies, aquatic habitats and drinking water sources. I urge you to ensure that the final version of the new stormwater permit has the strongest possible regulations to ensure water quality.

Please let me know how you intend to address this issue.

Sincerely,

Seth Kellogg
PO BOX 1162
SOUTHWICK, MA 01077-1162

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CitizenLetter

An urgent message from a concerned citizen.

11/28/2014

0324000124 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

Over half the pollution in our lakes, ponds, rivers, wetlands and coastal waters is runoff from roads, parking lots and other urban surfaces. It is critical a new permit is finalized to govern municipal storm-sewer systems that would significantly reduce runoff pollution.

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Please let me know how you intend to address this issue.

Sincerely,

John Travers
PO BOX 76
READVILLE, MA 02137-0076

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CitizenLetter

An urgent message from a concerned citizen.

11/30/2014

0718000065 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

Over half the pollution in our lakes, ponds, rivers, wetlands and coastal waters is runoff from roads, parking lots and other urban surfaces. It is critical a new permit is finalized to govern municipal storm-sewer systems that would significantly reduce runoff pollution.

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Please let me know how you intend to address this issue.

Sincerely,

William Eger
174 SHELTERS RD
GROTON, MA 01450-2218

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CitizenLetter

An urgent message from a concerned citizen.

11/28/2014

0324000019 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Carlotta Hayes
79 MORNINGSIDE PATH
EAST WEYMOUTH, MA 02189-2615

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CitizenLetter

An urgent message from a concerned citizen.

11/28/2014

0322000075 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

Mark Hodgson
235 WOBURN ST
MEDFORD, MA 02155-1541

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CitizenLetter

An urgent message from a concerned citizen.

11/28/2014

0322000018 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

David Marshall
251 HEATH ST # 34
JAMAICA PLAIN, MA 02130-1171

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CitizenLetter

An urgent message from a concerned citizen.

11/28/2014

0322000020 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

David Spanagel
PO BOX 70
LANCASTER, MA 01523-0070

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CitizenLetter

An urgent message from a concerned citizen.

12/01/2014

1250000041 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

John Firmin
135 BOSTON AVE
SOMERVILLE, MA 02144-2218

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An urgent message from a concerned citizen.

12/01/2014

1250000022 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

Elizabeth Brown
80 EASTLAND RD
JAMAICA PLAIN, MA 02130-4625

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CitizenLetter

An urgent message from a concerned citizen.

12/01/2014

1250000001 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Sincerely,

Anne Nyman
48 BOYNTON RD
S DEERFIELD, MA 01373-9781

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CitizenLetter

An urgent message from a concerned citizen.

12/01/2014

1252000107 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Sincerely,

Leo O'Keefe
5 BALDWIN HILL RD
PHILLIPSTON, MA 01331-9783

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CitizenLetter

An urgent message from a concerned citizen.

12/01/2014

1252000059 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

Helen Randolph
4 SEEKONK CROSS RD
GT BARRINGTON, MA 01230-1564

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An urgent message from a concerned citizen.

12/01/2014

1252000039 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Sincerely,

Dana Moser
39 CHESTNUT AVE
JAMAICA PLAIN, MA 02130-1901

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CitizenLetter

An urgent message from a concerned citizen.

12/01/2014

1252000150 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Preston Browning
PO BOX 2006
ASHFIELD, MA 01330-2006

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CitizenLetter

An urgent message from a concerned citizen.

11/23/2014

1355000010 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Anne Shumway
57 FENNO ST
CAMBRIDGE, MA 02138-6717

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CitizenLetter

An urgent message from a concerned citizen.

12/05/2014

3128000251 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

Peter Valentine
37 BROOKLINE ST
CAMBRIDGE, MA 02139-4141

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CitizenLetter

An urgent message from a concerned citizen.

12/05/2014

3128000163 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

John Macdougall
175 RICHDALE AVE APT 209
CAMBRIDGE, MA 02140-3354

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An urgent message from a concerned citizen.

12/05/2014

3126000021 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

Carl Saviano Md
270 CRESCENT ST
NORTHAMPTON, MA 01060-2145

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CitizenLetter

An urgent message from a concerned citizen.

12/05/2014

3128000236 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

Morris Terry
1084 HARTSVILLE NEW MARLBORO RD
NEW MARLBOROUGH, MA 01230-2067

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CitizenLetter

An urgent message from a concerned citizen.

12/02/2014

1722000013 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Managing runoff is necessary to protect the quality of our water bodies, aquatic habitats and drinking water sources. I urge you to ensure that the final version of the new stormwater permit has the strongest possible regulations to ensure water quality.

Please let me know how you intend to address this issue.

Sincerely,

Claire Bateman
152 ASHFIELD RD
WILLIAMSBURG, MA 01096-9616

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CitizenLetter

An urgent message from a concerned citizen.

12/02/2014

1720000030 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

Over half the pollution in our lakes, ponds, rivers, wetlands and coastal waters is runoff from roads, parking lots and other urban surfaces. It is critical a new permit is finalized to govern municipal storm-sewer systems that would significantly reduce runoff pollution.

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Please let me know how you intend to address this issue.

Sincerely,

Rebecca Strauss
92 RIVERVIEW AVE
WALTHAM, MA 02453-3820

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CitizenLetter
An urgent message from a concerned citizen.

12/05/2014

3128000208 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

Margot Trout
216 HILLSDALE RD
GT BARRINGTON, MA 01230-9727

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An urgent message from a concerned citizen.

12/02/2014

1722000029 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Gary Potwin
463 DOUGLAS RD
LOWELL, MA 01852-4313

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An urgent message from a concerned citizen.

12/09/2014

4533000022 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

Julie Walsh
19 WILLOW ST
WALTHAM, MA 02453-6832

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CitizenLetter
An urgent message from a concerned citizen.

12/09/2014

4533000006 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Carla Becker
113 E PLUMTREE RD
SUNDERLAND, MA 01375-9480

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An urgent message from a concerned citizen.

12/09/2014

430&000009 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Shirley Winer
139 KINNEBROOK RD
HUNTINGTON, MA 01050-9650

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An urgent message from a concerned citizen.

12/09/2014

4308000033 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

CORNELIA VAN DER ZIEL
100 WOLCOTT RD
CHESTNUT HILL, MA 02467-3109

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12/10/2014

4678000031 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Sincerely,

Karl Smith
277 PARKER HILL AVE
BOSTON, MA 02120-3310

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12/09/2014

430A000078 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Patricia Burkhart
33 WYMAN TER APT 2
ARLINGTON, MA 02474-6705

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An urgent message from a concerned citizen.

12/15/2014

5771000235 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Richard Legault
2620 WILLIAMS ST
DIGHTON, MA 02715-1310

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12/15/2014

5771000007 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Allan Moniz
14 LUDLAM ST
FALMOUTH, MA 02540-2709

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12/14/2014

5778000070 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Brenda Steinberg
63 WASHINGTON AVE
CAMBRIDGE, MA 02140-2716

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An urgent message from a concerned citizen.

12/15/2014

5769000026 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Connie Turner
190 NEILSON RD
NEW SALEM, MA 01355-9520

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12/15/2014

5771000191 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Marie-Dolores Solano
172 AUBURN ST APT 3
CAMBRIDGE, MA 02139-3950

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CitizenLetter
An urgent message from a concerned citizen.

12/17/2014

7116000010 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Jon Ball
370 AMORY ST
JAMAICA PLAIN, MA 02130-2606

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An urgent message from a concerned citizen.

12/15/2014

5771000273 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

Suzanne Allen
21 SPRING RD
NEEDHAM, MA 02494-1616

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An urgent message from a concerned citizen.

12/16/2014

6656000012 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Please let me know how you intend to address this issue.

Sincerely,

David&Sandra Lyons
4 CAROLINA PL
JAMAICA PLAIN, MA 02130-3211

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An urgent message from a concerned citizen.

12/18/2014

6535000109 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

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Please let me know how you intend to address this issue.

Sincerely,

Lynn Kline
467 HILL RD
PO BOX 74
ASHFIELD, MA 01330-9759

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An urgent message from a concerned citizen.

12/19/2014

6797000040 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Managing runoff is necessary to protect the quality of our water bodies, aquatic habitats and drinking water sources. I urge you to ensure that the final version of the new stormwater permit has the strongest possible regulations to ensure water quality.

Please let me know how you intend to address this issue.

Sincerely,

Linda Cohen
PO BOX 661
WEST TISBURY, MA 02575-0661

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CitizenLetter

An urgent message from a concerned citizen.

12/19/2014

L797000022 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

Over half the pollution in our lakes, ponds, rivers, wetlands and coastal waters is runoff from roads, parking lots and other urban surfaces. It is critical a new permit is finalized to govern municipal storm-sewer systems that would significantly reduce runoff pollution.

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Sincerely,

F Peter Duffy
70 GOLDEN HILLS RD
SAUGUS, MA 01906-4003

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12/22/2014

8590000032 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Dinah Starr
135 BOSTON AVE
SOMERVILLE, MA 02144-2218

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An urgent message from a concerned citizen.

01/02/2015

9037000065 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

William Twombly
75 MARION RD
WATERTOWN, MA 02472-4734

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01/04/2015

9195000058 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Dawn Ramage
22 JOHNSTON WAY # 4
STOW, MA 01775-2102

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An urgent message from a concerned citizen.

12/23/2014

7465000044 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
Mail Code - OEP06-4
Boston, MA 02109-3912

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Sincerely,

Joseph Bolles
289 FULTON ST
MEDFORD, MA 02155-1705

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12/23/2014

7465000080 PRESORT <>

Newton Tedder
US EPA - Region 1
5 Post Office Square, Suite 100
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Boston, MA 02109-3912

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Sincerely,

Susan Rice
82 BROOKINGS ST
MEDFORD, MA 02155-5407

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CONNECTICUT RIVER WATERSHED COUNCIL
The River Connects Us
15 Bank Row, Greenfield, MA 01301 crwc@ctriver.org www.ctriver.org

February 27, 2015

Newton Tedder
U.S. EPA – Region 1
5 Post Office Square, Suite 100 (OEP06-4)
Boston MA 02109-3912
Tedder.newton@epa.gov

Re: Comments on Draft Massachusetts Small MS4 Permit

Dear Mr. Tedder,

The Connecticut River Watershed Council (CRWC) has reviewed the draft Small Municipal Separate Storm Sewer System (MS4) National Discharge Elimination System (NPDES) permit for Massachusetts. CRWC is a nonprofit citizen group established in 1952 to advocate for the protection, restoration, and sustainable use of the Connecticut River and its four-state watershed. The Connecticut River, an American Heritage River and the only National Blueway, is a regional resource that merits the highest level of protection. Despite this, the Connecticut River is water quality-impaired along its entire length in Massachusetts. As part of our work, we conduct weekly bacteria testing at several recreational sites in the river during the summer and early fall, and our results are posted online at www.connecticutriver.us. We have also conducted dry weather bacteria source tracking in several communities, and a multi-state one-day nutrient monitoring project in 2014.

A portion of our watershed in Massachusetts is considered urbanized under the current and draft MS4 permit. We are strongly supportive of EPA's efforts to improve stormwater management, and we urge EPA to finalize this permit. It has been five years since we reviewed and commented on the original draft of this updated MS4 permit, and it is time to finalize it.

CRWC is a member of the Massachusetts Rivers Alliance, and we endorse the detailed comment letter they submitted. We offer the following brief additional comments.

In our section of the Commonwealth, we have not a single TMDL drafted or finalized for any impaired river segment, of which there are many. Therefore, we are glad that there are requirements for discharges to impaired rivers without a TMDL. We very much endorse the comments of the Charles River Watershed Association (see bottom of page 6 in their letter), who suggest clarifying language be added that as new TMDLs are approved, the municipalities covered by them will be subject to Appendix F requirements.

We thoroughly endorse the comments submitted by several organizations calling for additional requirements to reduce widespread chloride pollution. We believe that the main reason there aren't more water bodies listed as impaired for chloride is the lack of chloride monitoring. We think some of the work from the New Hampshire Road Salt Reduction Initiative (http://des.nh.gov/organization/divisions/water/wmb/was/salt-reduction-initiative/index.htm) could be helpful for chloride management in Massachusetts.

Several rivers within MS4s in our watershed are impaired due to total suspended solids (TSS) or turbidity. We assume these impairments fall under section 2.2.2(e) “Discharges to water quality limited waterbodies where oil and grease (hydrocarbons), solids, or metals is the cause of impairment.” While we endorse more frequent street sweeping recommended in Appendix H, we think that there should be additional requirements beyond that. We would recommend that Section 2.3.5, Construction Site Stormwater Runoff Control, apply to construction projects less than an acre in watersheds impaired for TSS or turbidity.

Three cities in our watershed still have significant combined sewer overflow (CSO) systems that contribute to impairments in the Connecticut River. It is our understanding that the portions of Springfield, Chicopee, and Holyoke with combined systems are not subject to the MS4 requirements. It strikes us that because these cities have chosen to install satellite (pathogen) treatment facilities for their largest CSO outfalls, this allows them to continue to operate outside of other MS4 requirements, such as nutrient reduction for the Long Island Sound TMDL or BMPs for the TSS impairment. In these cases, implementation of the MS4 permit may not lead to as many water quality improvements as we would wish.

Thank you for an opportunity to comment on this draft MS4 permit.

Sincerely,

Andrea F. Donlon
River Steward

cc: Fred Civian, MassDEP

CRWA
Saving the Charles River since 1965

February 26, 2015

Newton Tedder
US EPA—Region 1
5 Post Office Square—Suite 100
Mail Code—OEP06-4
Boston, MA 02109-3912
tedder.newton@epa.gov

Re: Draft Massachusetts MS4 Permit

Dear Mr. Tedder:

Charles River Watershed Association (CRWA) has reviewed the draft Small Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) general permit for Massachusetts (draft permit). CRWA, a research and advocacy organization formed in 1965, works extensively on stormwater pollution issues, and we have conducted research and modeling on phosphorus pollution in the Charles River; undertaken wet weather end-of-pipe and receiving water monitoring programs; and designed and constructed stormwater improvement projects. We work in partnership with agencies, municipalities and organizations across Massachusetts.

We are strongly supportive of EPA's efforts to improve stormwater management in the Commonwealth and urge the agency to finalize the permit (with the modifications discussed below) as expeditiously as possible. We join in the comments of the Massachusetts Rivers Alliance on the draft permit and submit the following additional comments.

General

The draft permit reflects EPA's significant commitment to the progress that has been made over the past decade in the science and regulation of stormwater management. Stormwater is a major source of pollution impacting the health of the Charles River today and preventing it from achieving water quality standards. It has been amply demonstrated through research, demonstration projects and several successful stormwater programs that stormwater pollution can be significantly reduced, resulting in measurable improvements in receiving water quality, habitat restoration, and improved hydrologic function. The draft permit reflects this and it is an important regulatory tool that when paired with additional stormwater regulatory programs and permits, will provide meaningful protections for surface waters.

The Stormwater Phase II program was intended to be an iterative program; understandably, the 2003 MS4 general permit no longer reflects current best practice for municipal stormwater management and

does not result in achievement of water quality standards.[1] We believe the new permit will drive LID and green infrastructure—critical, timely approaches that will also help to reduce flooding through onsite stormwater retention. The permit will also facilitate compliance with "The Draft MEPA Climate Change Adaptation and Resiliency Policy" now being developed and vice-versa.

This permit provides permittees with clear guidance and support for their stormwater management programs. In particular, we note the highly detailed technical analyses undertaken by Region 1 staff and their consultants to understand and share with permittees and the public the physical, technical and fiscal implications of the new permit. We believe the tools and guidance documentation EPA has provided to assist municipalities in developing sound, fiscally responsible programs will be of tremendous benefit.

By providing standardized methodologies for permittees to estimate current loads, and the reductions they can achieve using a variety of measures, EPA has also created a fair and level playing field, and reduced the burden on permittees to develop their own methodologies.

Appendix F: Requirements for Discharges to Impaired Waters with TMDLs and Attachments

CRWA is strongly supportive of the development of the detailed appendix and attachments to assist in the development of phosphorus control programs (PCPs) to achieve phosphorus reductions consistent with wasteload allocations (WLAs) in TMDLs.

Timelines and Milestones

There has been significant discussion, review and public input to EPA about its proposed MS4 program updates over the past five years. This draft permit, which follows the New Hampshire draft MS4 permit (2013) and the draft General Permit for Massachusetts North Coastal Watersheds (2010) does not come as a surprise to covered municipalities. Small MS4 permittees have had ample opportunity to develop stormwater management programs over the past decade and have also had many years to prepare for the more stringent requirements that are necessary to meet the objectives of the Clean Water Act. Given this, and the pressing need for immediate action to control nutrient-polluted runoff in the Charles, the Phosphorus Control Plan (PCP) timelines in the draft permit in Appendix F should be shortened considerably. Twenty years—well beyond the life of this permit—to complete implementation of the PCP Plan in the Charles River Watershed is unwarranted, not environmentally protective, and in our opinion, not legal. We note that under the permit as currently drafted, only 25% of the necessary phosphorus load reduction in the Charles watershed is required to be achieved in the next decade;[2] the draft permit is back-end loaded with 50% of the total phosphorus reduction not required until years 15 to 20 of the permit.

Allowing five years from permit effectiveness[3] for creating the PCP Phase 1 Plan is far too long. Municipalities will not even be required to have completed ***creation of the Phase I Plan*** until this

[1] The Massachusetts Stormwater Standards will also need to be updated to reflect the draft permit conditions and current stormwater management practices and science.

[2] The first phosphorus reduction milestone is not until 8 years after the permit effective date.

[3] EPA intends to make the new MS4 general permit effective six months after it is finalized.

five-year permit has expired! CRWA strongly believes that two years from permit effectiveness is reasonable for creating the PCP Phase 1 plan with full implementation of the Phase 1 Plan and development of the Phase 2 Plan by permit expiration, or within 5 years. We believe it is feasible for municipalities in the Charles to implement programs and practices to achieve at least half of their total phosphorus load reduction (Phase 2) requirements within seven years of the permit's effective date, and to create the Phase 3 Plan, with Phase 3 Plan implementation completed by year 10. We urge EPA to adopt these shorter, reasonable timeframes.

The milestones are especially important given the poor performance of some municipalities and non-traditional MS4s under the 2003 MS4 permit. While Appendix F does contain milestones which will help to ensure that municipalities are making progress in creating and implementing the PCP, the timeframes for the milestones are so long, we think they may well stall momentum, rather than build it.

Moreover, some of the planning in the milestones would benefit from being done simultaneously. For instance, there is no reason to give permittees five years to provide a description of planned nonstructural controls, let alone another year to implement these types of controls. The enhanced non-structural BMPs (Attachment 2 to Appendix F) can and certainly should be implemented within the first two years of the permit. Similarly, the legal analysis, funding source assessment, and definition of phosphorus baseline/reduction/allowable load[4] should take place at the same time. We think a funding source assessment (year 3, item 1-2) makes little sense until the PCP scope is defined (year 4, Item 1-3) and should be switched.

Annual Reporting

Reporting on progress and compliance with PCP milestones should be required in each annual report, rather than beginning six years after the permit effective date. As we read Appendix F in conjunction with Part 4.4,[5] PCP development progress would be virtually unmonitored for the first six years of the permit. Our concern is that until there is an actual reporting deadline, little progress may actually be made in some communities. Either Appendix F or Part 4.4. should be modified to require reporting on PCP progress, planning, implementation and the milestones in each annual report.[6] Appendix F should also be modified to require, rather than "to encourage," on line posting of each Phase of the PCP. Since permitees are required to make the Phases of the PCP available for public comment during development, it makes sense to post the PCP Phases on line.

---

[4] EPA provides Tables F-2 and F-3 to enable permittees to determine their Phosphorus Baseline Load, Reduction Requirement and Allowable Load, depending on whether the permittee opts to implement the PCP in all areas within its jurisdiction or in the regulated MS4 area only.

[5] Section 4.4b.iii prescribing the contents of annual reports provides only that discharges subject to TMDL related requirements must identify specific BMPs used to address the pollutant and an assessment of effectiveness in controlling the pollutant "and any deliverables required by Appendix F."

[6] While Appendix F requires that performance evaluations be included in each permittee's annual report, those evaluations do not begin until 6 and 7 years (Phase 1) after permit effective date, and then in years 11 and 12 (Phase 2) , and 16 and 17 (Phase 3) thereafter.

We commend EPA for providing a methodology for calculating phosphorus load increases due to development and phosphorus load export rates. We also agree that to receive credit, conversion of impervious surfaces must be restored to provide hydrologic functioning.

IDDE "Credit"

A serious problem in the draft methodology, however, is the phosphorus reduction from IDDE subtracted to determine the stormwater-only phosphorus load reduction requirement for each municipality. This reduction, in effect a "credit" granted to permittees for IDDE, is inconsistent with the methodology used to estimate the existing phosphorus load, and does not appear to be consistent with the way WLAs were calculated in phosphorus TMDLs. We strongly urge EPA to eliminate this illicit phosphorus load default value.

Watershed models, TMDLs and watershed assessments by the nature of their scale and design, use well-established methodologies for estimating typical or average stormwater pollution loads and apply these rates across a broad area based on land use types, topography, soils and other statistically relevant factors. Even models that use more detailed hydrologic routing, rainfall data, and dynamic in-stream processes rely on some averaged or typical measured concentrations which are applied across a modeled area. Discharges from Illicit connections are sporadic, geographically isolated, and difficult to separate out from other sources of stormwater pollution in a modeled condition. They are not generally included in such models except as they may influence the overall average concentration of a pollutant in stormwater. Furthermore, TMDLs do not include a WLA for illicit discharges because they are not allowed under the permit and thus cannot have a maximum daily load allowance.[7]

Since these illicit discharges have not been explicitly included in estimating existing loads, it is not appropriate to give them credit when estimating reductions. Furthermore, from a practical perspective, CRWA has demonstrated with sampling and modeling that stormwater loads – even those with no apparent illegal connections whatsoever – can still cause significant violations of water quality standards in receiving waters. Clearly, the MS4 general permit is intended to focus on a permittee's stormwater management, and its phosphorus reduction credits should reflect improvements in stormwater control and treatment, not basic, required corrections of failing sewage infrastructure.

Notably, as the map attached to our comments shows, Dover, Holliston, Mendon, Norfolk, Sherborn, Wayland, Weston and Wrentham are entirely on septic; and Bellingham and Millis have little sewage infrastructure. Yet the default phosphorus load reduction for IDDE work in Table 15 is applied to each of them. This is erroneous.

CRWA believes that in the case of a general permit, where highly detailed site specific data is not being used to establish permit requirements, this is inappropriate. At a minimum, the reduction should be limited to no more than five percent and then only applicable in those communities with the potential to have a high number of illicit connections/discharges.

[7] Nor does EPA explain the basis for its determination that an estimated 10% of the calculated phosphorus load from the commercial, industrial and all residential land use groups is due to illicit sanitary discharges to the Charles, or its statement that the "illicit phosphorus load estimate is based on considering the magnitude of illicit loads that have already been identified and eliminated from communities with the CRW." Fact Sheet Attachment 1 at 21.

Attachment 2

CRWA applauds EPA for developing calculation methods and tools that are sufficiently robust to provide a high level of confidence they will achieve required control levels, and yet are simple enough to be of great assistance to permittees, providing clarity, certainty and cost-savings.

It is not clear to CRWA whether the export load rates for pervious soils in Table 2-1 should be broken out by soil type. Those for hydrologic soil group D (DevPERV HSG D) which will be the default soil group used in many instances because there is not sufficient site specific data, seem very high. We think it is more appropriate to use an average load rate, or at least to use HSG C if there is no information available.

A proper bar is set in the draft permit to receive credit for no application of fertilizers containing phosphorus: "the application of any fertilizers that contain phosphorus at any time during the reporting year within the permittee's regulated area shall preclude the permittee from earning this credit for the reporting year." While the MA Department of Agricultural Resources is promulgating phosphorus fertilizer regulations, the act authorizing the regulations, G.L. c. 128, § 65A, is not, as EPA characterizes it, a "Massachusetts phosphorus fertilizer ban." Rather, this statute addresses signage in stores to discourage its use, but does not ban its sale and specifically allows application "where a soil test indicates that additional phosphorus is needed for growth of that lawn or non-agricultural turf "and in "establishing a new lawn or new non-agricultural turf area. " We question the default values in Table 2-5, which seem high—but just as importantly, we do not think communities will be able to certify accurately that phosphorus fertilizer is not being used in the MS4 regulated area.

Attachment 3

CRWA believes the resources EPA has put into developing methodologies and calculation tools for estimating the phosphorus removal of structural BMPs serve as an outstanding resource for permittees and the public. Over time, as more data becomes available, and more practices are evaluated specifically for phosphorus reduction, EPA may wish to change the credits allowed. We suggest that language be added at the beginning of Attachment 3 that calculations should be based on the most up to date versions of the Tables and Charts, which may be modified, and also direct permittees to a website where such updates will be made available.

We also encourage EPA to continue to evaluate structural practices' effectiveness over time, as well as their effectiveness at removing different types of phosphorus and phosphorus in different states of availability. As new research emerges, the methodologies and calculation tools should be modified accordingly.

<u>Appendix H Requirements Related to Discharges to Certain Water Quality Limited Waterbodies</u>

Few segments are listed for chloride impairment yet many water bodies are in fact "water quality limited" due to chloride. Rather than limit the requirement of a Salt Reduction Plan with additional or enhanced BMPs to 303(d) and 305(b) listed waters, we recommend that EPA include this under good housekeeping and pollution prevention measures in Part 2.3.7 of the permit and also be incorporated as requirements in post-construction bylaws.

Additional Comments on the Draft Permit

1.10 Stormwater Management Program (SWMP)

We suggest Part 1.10c. be modified to read "The permitee shall maintain an adequate funding source . . . " (emphasis added). "Encouraging" adequate funding for the program is not an appropriate permit condition and we are troubled that it provides the appearance of a potential loophole for permit compliance. If the permit cannot be modified to *require* adequate funding, this section should be removed. The development of a compliant program is a requirement of the permit and failure to identify sources of funding cannot be used as an excuse not to do so.

1.10.1.b. Stormwater Management Program Availability

We strongly support the requirement to make the SWMP available on line. Any permittee unable to post its SWMP on line should be required to explain why it cannot do so, and provide a reasonable alternative repository of free copies. We propose the same for Annual Reports (Section 4.4) which will provide transparency and allow residents to track permit compliance progress.

1.10.2 Contents of Stormwater Management Program

This section should contain language requiring the permittee to use (or at a minimum demonstrate that they have considered using and reasons for rejecting) Low Impact Development (LID) and Green Infrastructure (GI) techniques as part of their program to comply with Parts 2.0, 2.1 and 2.2, as has been required to demonstrate compliance in Part 2.3.5c.v. If permittees do not use LID or GI techniques as part of their program to comply with water quality based effluent limitations (Part 2.1) and discharge to impaired waters (Part 2.2), they should discuss why they have been determined not to be feasible. Current best practices in stormwater management in urbanized areas clearly include the use of LID and GI, and many EPA-approved programs including CSO Control Plans, Settlement Agreements and Consent Decrees require LID and GI practices. See, also,
http://water.epa.gov/infrastructure/greeninfrastructure/gi_regulatory.cfm
The LID and GI requirements should also be specified in Parts 2.2.1.g. and 2.2.2.a.

2.1.1 Requirement to Meet Water Quality Standards

The last sentence of both 2.1.1.b. and 2.1.1.c. and the first sentence of 2.2.2d. should be eliminated. While EPA would certainly exercise enforcement discretion if a permitee is complying with all "applicable requirements and BMP implementation schedules" in Appendices F and H, it is very important that this not serve as a shield to avoid eliminating expeditiously those conditions causing or contributing to an exceedance of water quality standards when the plan turns out to be inadequate or there is a newly discovered discharge.

Section 2.2 Discharges to Certain Impaired Waters

CRWA appreciates the listing of municipalities with discharges subject to TMDLs or to certain water quality limited waters. However, in Part 2.2.1 we suggest clarifying language be added that as new TMDLs are approved, the municipalities covered by them will be subject to Appendix F requirements and that the SWMP shall be modified to comply with new WLAs or new requirements. Pursuant to 2.2.2, a water quality limited water body (not meeting applicable water quality standards) does not have to be listed in categories 5 or 4b on the 303(d) or 305(b) lists to be subject to Appendix H requirements. We understand that a permittee not listed in these sections is subject to Appendix H requirements once it becomes

"aware" that it is discharging to an impaired waterway or tributary, we are concerned about the latitude this may provide permitees.

2.3.2 Public Education and Outreach

It is not clear what EPA means by requiring the permittee to "at a minimum consider" the topics in Part 2.3.2.d.i-iv when developing its outreach/education program. These are basic topics that will be relevant to almost all MS4 communities. Accordingly, we recommend changing the word "consider" to "include." The requirement of two messages to each audience in Part 2.3.2.b. over the permit term (8 messages total) is a very low bar. In order to comply with the objective of this section to "increase knowledge and change behavior of the public so that pollutants in stormwater are reduced," permittees should be required to distribute educational materials to each sector at a minimum of once per year during the permit term.[8] Given opportunities to collaborate with other MS4s, MS4 consortiums, and watershed associations, we think this is reasonable.

2.3.3. Public Involvement and Participation

This is a very important requirement that will result in an effective stormwater management program and public support for it. In addition to public participation in review and implementation of the SWMP, the permit should require public participation the self evaluation component.

2.3.4 Illicit Discharge Detection and Elimination (IDDE) Program

CRWA strongly supports the revised methodology and detailed approach to the IDDE program in the draft permit. Illicit discharges remain a persistent problem, and an aggressive, standardized approach to detection and elimination is necessary to achieve water quality standards and reduce the impacts of storm drains and sanitary sewer systems on receiving waters. The written IDDE program (Part 2.3.4.7.) should be required to be posted and updated on the MS4's website.

2.3.4.4 Sanitary Sewer Overflows

CRWA suggests the language and requirements in this section be strengthened, with a particular focus on locations where repeated SSOs are identified. In spite of the permit specifications that SSOs are unlawful, the primary requirements of this section remain focused on inventorying and reporting SSOs. The requirement to eliminate an SSO as "expeditiously as possible," while good, seems somewhat subjective and remediation requirements should be spelled out in this section. In practice, many municipalities have ongoing and recurring SSOs, which they are not moving "expeditiously" to eliminate, nor are they aggressively taking interim mitigation measures to minimize the discharge of pollutants unless EPA begins enforcement proceedings. As the permit does in other parts, we suggest that specific required remedial measures for areas with recurring SSOs be spelled out in this section. A requirement to notify the local watershed association orally and in writing at the same times specified for the permitee to notify EPA and DEP should be a permit requirement.

2.3.4.6 Revised Mapping

As the permit recognizes, mapping was required to be completed during the 2003 MS4 permit term. Mapping is a basic first step in MS4 stormwater management and permit compliance. While 2.3.4.6.c. requires permittees to report on progress toward completing the revised mapping in each annual report,

[8] This provision is also important since the permit could well be administratively continued for a number of years as has been the case with the 2003 MS4 general permit.

because only one annual report should occur before mapping is completed and the second annual report is filed, we recommend this language be modified to: "The permittee shall report on progress toward the completion of the map required by this permit in its first annual report and shall report on its completion in its second annual report. If not completed within two years, the permittee shall provide the reasons therefore and the expected date of completion in each annual report."

2.3.4.8 IDDE Program Implementation and Milestones

A date for completion of elimination of illicit connections identified as a result of the Catchment Investigation Procedure (Part 2.3.4.8c.iii) should be a permit condition. As discussed above, we suggest this section also be strengthened to include specific measures that should be taken to remediate SSOs.

2.3.6 Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management)

We believe the one acre threshold is too large, especially in urbanized areas where most redevelopment projects are smaller than 1 acre. We urge EPA to adopt a 0.5 acre threshold which is more appropriate to achieve the program goals. At an absolute minimum, EPA should modify Part 2.3.6.a. to make it clear that permittees can regulate new development or redevelopment projects less than one acre. Perhaps this was EPA's intent in the phrase "at a minimum" at the end of the first sentence of 2.3.6.a., however, we think this could and should be stated more clearly especially given the language in Part 2.3.6.a.i. which provides that the permittee's program must include projects less than one acre if part of a larger common plan of development or redevelopment which disturbs one or more acre since permittees may believe that this is the only situation in which they are authorized to go below the one acre threshold.

We strongly support the requirement for an ordinance "at least as stringent as" retention of 1.0 inch of runoff from all impervious surfaces on the site. The 1.0 inch onsite retention standard is already required by Boston Water and Sewer Commission, the Town of Franklin, and other municipalities, and by all reports has been working well. While we have heard that some commentators would like EPA to limit the application of this requirement to only that portion of the site which is actually "redeveloped," or altered, this would be a departure from the definition of redevelopment under Massachusetts Stormwater Standards[9] and common understanding and application by municipalities of the applicability of the retention requirement to the entire property.

Most importantly, redevelopment provides the opportunity to redesign stormwater on the entire site, and is absolutely critical to an MS4's effective stormwater management since much of the development in the urban and suburban areas is in fact redevelopment. One inch retention site wide is also essential to enabling MS4s to meet the phosphorus reduction requirements in the two Charles watershed nutrient TMDLs. Lastly, application to all impervious surfaces on the site is quite important as communities grapple with extreme storm events and flooding impacts in the face of climate change.

In Part 2.3.6.a.ii.(a) permittees should not be given a choice between retaining on site the first inch of runoff from all impervious surfaces (2.3.6.a.ii.(a)1.) or providing the level of pollutant removal equal or greater than the level of removal provided through the use of biofiltration on the first inch of runoff from all impervious surfaces (2.3.6.a.ii.(a)2.). Parts 2.3.6.a.ii.(a)1. and 2. do not provide the same level of

[9] See, *Massachusetts Stormwater Handbook*, Volume I, ch. 1, p. 20-21 (Standard 7, redevelopment definition).

protection/benefit. Instead, 1.0 inch retention should be required where technically feasible. We recommend that the word "either" in (2.3.6.a.ii.(a) be stricken and the words "where not technically feasible" added after "OR" at the end of Part 2.3.6.a.ii.(a)1.[10]

CRWA also believes that the permit should allow for offsite compliance options in MS4s subject to nutrient TMDLs when compliance with Part 2.3.6.a.ii.(a)1. is not technically feasible. CRWA believes that off-site TMDL compliance is legally required when full onsite compliance is not feasible due to high groundwater, poor soils, the lack of available space or existing utilities, or other site constraints. Projects should have the option to either perform BMPs offsite, or to participate in an EPA-approved phosphorus reduction trading program, purchasing phosphorus reduction credits to partially meet their onsite stormwater management obligations. [11]

We believe that a trading program is a useful tool[12] that would provide an alternative stormwater management option for developers and property owners subject to regulation by MS4s. Trading would facilitate permit compliance and the achievement of nutrient TMDL limits,[13] reduce the costs of compliance, foster efficiency in meeting water quality standards at lower cost, and create incentives for voluntary reductions. *Water Quality Trading Policy* (EPA 2003). As EPA recognizes, "[m]arket-based approaches can also create economic incentives for innovation, emerging technology, voluntary pollution reductions and greater efficiency in improving the quality of the nation's waters." *Id*.

Trading could also provide incentives to promote stormwater infiltration across broader geographic areas helping to further reduce total stormwater loads while beginning to replicate more natural groundwater hydrology. We encourage EPA to modify the draft permit to authorize offsite mitigation and trading for nutrient TMDL compliance and to include this in the accompanying Fact Sheet. We suggest that a subsection 3. be added to Part 2.3.6.a.ii.(a) authorizing offsite mitigation and participation in an EPA-approved trading program when full nutrient TMDL compliance cannot be achieved on site.

The rules for trading will need to be established by the regulators and there are a number of options for how to structure and implement the trading program. However, the permit should authorize trading in the first instance. While EPA should take the lead in establishing basic trading parameters, we think MassDEP could and should play a key role in nutrient reduction trading program implementation.

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[10] We note that although EPA explains in the Fact Sheet at p. 89 that developers can meet the retention/treatment standard by either retaining the first inch of runoff from all impervious site areas or by "retaining on site the maximum amount of runoff feasible and providing treatment of the remainder of the runoff that cannot be retained on site due to site constraints," we do not believe this is what Part 2.3.6.a.ii.(a)2 actually says.

[11] Onsite TMDL compliance to the extent feasible should still be required before the purchase of stormwater reduction credits could be used to fully satisfy the onsite requirements. Sites able to go beyond compliance, or unregulated properties, could generate stormwater reduction credits for purchase by those properties unable to meet onsite requirements.

[12] CRWA's Blue Cities Exchange (BCE) is an online program developed for three upper watershed towns that enables regulated entities to log on, identify cost-effective BMPs using the EPA BMP phosphorus removal curves and cost estimates developed by CRWA staff based on experience installing BMPs and with input and peer review by consulting engineers. Once trading rules are established BCE would facilitate trades.

BMPs that promote infiltration should not be prohibited at every industrial site or site with documented soil contamination. Infiltration BMPs may be appropriate on a portion of an industrial site or with some types of soil contamination. We suggest that EPA qualify Part 2.3.6.ii(b) by adding the words "unless appropriate," or something similar. The phrase "documented soil contamination" seems both vague and overly broad and we think EPA could be more specific.

2.3.7 Good Housekeeping and Pollution Prevention for Permitee-Owned Operations

2.3.7.a.ii.(a) should include an evaluation of areas where there is existing or potential erosion, and the development of a remediation plan. Soil erosion is significant in many parks and open spaces, and often represents a highly effective and inexpensive opportunity for municipalities to reduce stormwater pollution, and phosphorus loading in particular.

2.3.7.1.a.3.(c): Once a year street sweeping operations are entirely inadequate. An absolute minimum of twice per year sweeping should be required for good housekeeping. We agree municipalities should prioritize areas of town where more frequent street sweeping is needed.

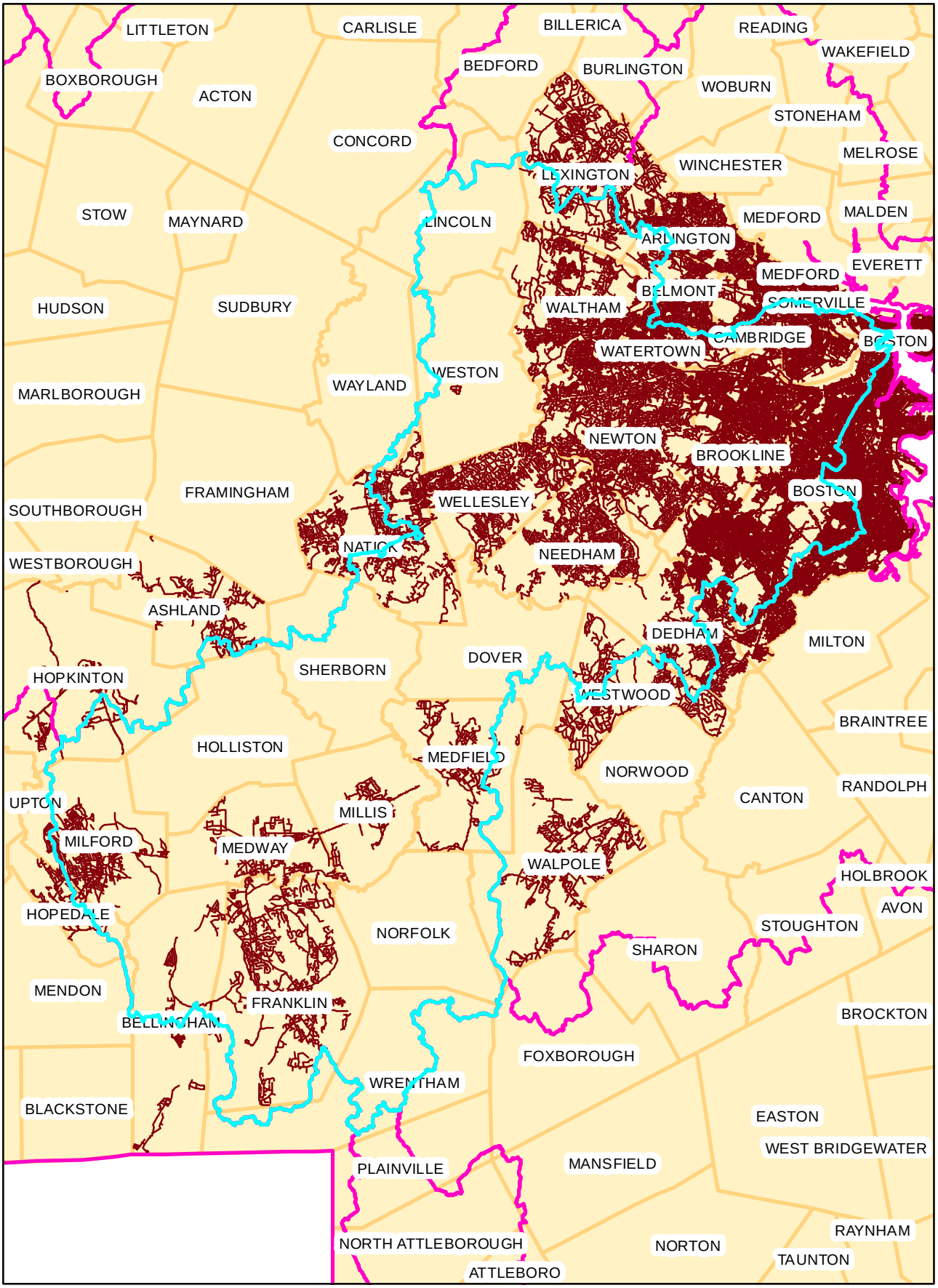
In conclusion, CRWA strongly supports the draft permit overall, and we encourage EPA to move forward expeditiously to finalize and effectuate this permit. Please do not hesitate to contact me should you have questions.

Sincerely,

Margaret Van Deusen

Margaret Van Deusen
Deputy Director and General Counsel

cc: Thelma Murphy , EPA
Mark Voorhees, EPA
Bethany Card, MassDEP
Fred Civian, MassDEP



SEWAGE INFRASTRUCTURE IN THE CHARLES RIVER WATERSHED

PIONEER VALLEY PLANNING COMMISSION
50 YEARS 1962-2012
Timothy W. Brennan, Executive Director

December 23, 2014

Mr. Newton Tedder
US EPA – Region 1
5 Post Office Square, Suite 100
OEP06-4
Boston, MA 02109-3912

Re: Comments on Draft NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts

Dear Mr. Tedder:

I write to you about the Draft Massachusetts Small MS4 permit on behalf of the Connecticut River Stormwater Committee, a coalition of 13 stormwater-regulated cities and towns here in the Pioneer Valley. Stormwater Committee member cities and towns in the region have met or exceeded requirements under the 2003 permit and have expended significant municipal resources in doing so. Committee members appreciate EPA's efforts to further advance water quality improvements through the forthcoming MS4 permit, but have several important recommendations. These are listed here in priority order:

1. **Reduce costs of compliance for this proposed permit by delaying certain requirements until the next permit or provide a more realistic plan for municipal investment by extending the timeline for meeting proposed permit requirements to 10 years, rather than 5 years.** The current requirements as drafted represent a huge and very sudden leap in investment of municipal resources. EPA's reported estimate to meet the 6 minimum control measures, not including water quality-based requirements, ranges from $78,000 to $829,000 per year. For many local municipalities, this represents a doubling or quadrupling of current budgets at a time when they are seeing significant increases in other costs and income from all sources is shrinking. Years 1 through 3 of the permit in particular present an extreme jump in expectations of existing stormwater programs. There are important ways that EPA could help to make sure that municipalities have requirements that are more achievable. These include:

   Delay certain requirements to a subsequent permit. Within the current draft permit, there are certain requirements--such as impervious cover tracking, and many of the water quality requirements, including Lake Phosphorous Control Plans, nitrogen and phosphorous source reduction reports, BMP nitrogen and phosphorous tracking--that would be far more effective if delayed to a next permit when there are better methodologies and tools available to municipalities. (See comment #3 below on impervious cover tracking.)

or

Extend the timeline for meeting permit requirements to 10 years rather than 5 years. EPA already has a 10-year time frame built into the 5 year permit for catchment investigation procedure, etc. Why not extend this same timeline to other activities within the permit to provide a more reasonable rate of increased investment? The Connecticut River is in far better ecological condition today, but it took more than 20 years to reach this point.

2. **Provide flexibility for management of the first one inch of runoff on redeveloped sites (Section 2.3.6.a.ii).** While management of the first one inch of runoff from all impervious surfaces or providing equivalent pollutant removal is an important objective, we are concerned that there will be unintended consequences if there is not some flexibility. Unintended consequences could include increased development of "green fields" and an inability to properly maintain roadways. The following two ideas would help provide flexibility and help avoid these consequences:

   Allow permittees to provide for off-site stormwater compliance, including off-site mitigation in the same watershed or "payment in lieu of" to help cover the cost of implementing runoff reduction projects elsewhere in the watershed. Smart growth practices generally encourage infill redevelopment, but the permit requirement as written could produce disincentives to this. Where sites are already highly impervious and existing site conditions--including the need to work around existing infrastructure--translate to greater complexity, the costs can be far greater to retrofit than to build new development elsewhere. Tom Schueler, Director of the Chesapeake Stormwater Network, notes in a 2011 study, "The cost to construct LID practices at high intensity redevelopment projects (85% or more of impervious cover) can be 4 times more expensive than installing them at low density new development projects (25% of impervious cover or less)." This translates to around $191,000 per impervious acre for the high-intensity scenario as compared to $46,600 per impervious acre for the suburban greenfield site. (*Technical Bulletin No. 5: Stormwater Design for High Intensity Redevelopment Projects in the Chesapeake Bay Watershed*, Chesapeake Stormwater Network, May 2011, p. 12.)

   The Center for Watershed Protection recently developed a guidance document for West Virginia on off-site stormwater compliance that could provide a useful framework for Massachusetts permittees. See: http://www.cwp.org/guidance-for-developing-an-off-site-stormwater-compliance-program-in-west-virginia

   Articulate that the one-inch control standard applies only to roadway projects where there is full-depth reconstruction. The requirement as written implies that to proceed with a roadway maintenance project, permittees would need to redesign and reconstruct roadways and related stormwater management systems. We are concerned that this would cripple municipalities in the ability to maintain roads. Rather than

disincentivize roadway maintenance, this section ought to exempt all maintenance activities, including overlays, mill and overlays, and full-depth reclamation, and apply only to full-depth reconstruction projects. Where appropriate, municipalities could have the option to eliminate curbing so as to allow roadway drainage to flow into right of way areas for infiltration.

3. **Rethink the impervious cover tracking requirement and provide an initial baseline of impervious cover that is connected to water quality objectives in the next permit (Section 2.3.6.d).** Given the permit's current framework, impervious cover tracking does not seem to provide meaningful connection to water quality. As you may know, the concept of percentage imperviousness and its relationship to water quality arose from studies specific to 1st and 3rd order systems. (*Impacts of Impervious Cover on Aquatic Systems*, Center for Watershed Protection, March 2003, p. 2.) Most of the urbanized areas in the Pioneer Valley lie within 4th, 5th, and 6th order systems. (*Gazetteer of Hydrologic Characteristics of Streams in Massachusetts: Connecticut River Basin*, USGS, 1984.) Furthermore, it appears that the subwatershed delineations and calculations of impervious cover developed by EPA for use as a baseline by municipalities are drawn from elevation data and not actual drainage infrastructure catchments. As such, impervious cover changes recorded by a permittee will not provide a true understanding of water quality improvements due to impervious reductions. If impervious cover is to remain a measure for larger stream systems within the MS4 regulatory framework, it ought to be put to more effective use and delayed to when EPA can provide baseline information that integrates topographic information with actual drainage infrastructure catchments (to be developed by MS4s under Section 2.3.4.6 of the draft permit).

4. **Allow municipalities to combine education and outreach messaging under water quality standards requirements (Section 2.1.1, and Appendixes F and H).** Where a municipality is responding to requirements for multiple impairments or TMDLs within its jurisdiction, a municipality should have the option to combine messaging for maximum effectiveness provided they address the topics related to the impairment or TMDL. For example, a few municipalities within the Pioneer Valley region must meet requirements under the Nitrogen TMDL for Long Island Sound, a local Phosphorous TMDL, and water bodies impaired for bacteria. Rather than generate an avalanche of messages related to each of these pollutants, a municipality should be able to disseminate seasonally appropriate messaging to address nutrients in spring and fall and bacteria in summer. Combined with the basic education and outreach requirements required under 2.3.2, that would mean the total minimum required education and outreach messages would be 23 during the 5-year permit term. This seems more than adequate.

5. **Ensure that TMDL or impaired water quality requirements are tied to stormflows from MS4 areas (Sections 2.2.1 and 2.2.2).** In at least 2 locations in the Pioneer Valley, the draft permit ties regulated MS4 areas to upstream TMDL waters or impaired waters. If the urbanized areas are not contributing to water quality issues in a particular location, municipalities should be able to flag these locations for EPA and be removed from lists that

appear under Sections 2.2.1 and 2.2.2. Additional language in this section regarding location of the MS4 area relative to impacted waters would also be helpful.

6. **Remove the requirement to label all MS4 outfall pipes (Section 2.3.4.5).** If the purpose of the MS4 outfall signs is to be able to find the outfall for sampling, municipalities can better do this through the use of GPS information. We are concerned that the cost of installing signs and then making replacements when they are vandalized is not the best use of municipal resources in serving water quality objectives.

Thank you very much for your consideration of our comments. If you have any questions, please do not hesitate to contact Patty Gambarini, who facilitates the Connecticut River Stormwater Committee for PVPC.

Sincerely,

Timothy W. Brennan
Executive Director

cc Fred Civian and Kurt Boisjolie, MassDEP
Tracy DeMaio and Michelle Chase, Town of Agawam
Joe Kietner, Tom Hamel, and Jeff Neece, City of Chicopee
Jim Gracia and Joe Pipczynski,City of Easthampton
Dave Desrosiers, Town of Granby
Matt Sokop and William Fuqua, City of Holyoke
Yem Lip, Chris Reed, and Mike Wrabel, Town of Longmeadow
JT Gaucher and Jim Goodreau, Town of Ludlow
Doug McDonald and Jim Laurila, City of Northampton
Jim Reidy and Melissa Labonte, Town of South Hadley
Dick Grannells and Dennis Clark, Town of Southwick
Kevin Chaffee and Phil Dromey, City of Springfield
James Lyons, Town of West Springfield
Casey Berube, Woody Darling, and Dave Billips, City of Westfield

PIONEER VALLEY PLANNING COMMISSION
50 YEARS
1962-2012
Timothy W. Brennan, Executive Director

February 25, 2015

Mr. Newton Tedder
US EPA – Region 1
5 Post Office Square, Suite 100
OEP06-4
Boston, MA 02109-3912

Re: Additional Comments on Draft NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts

Dear Mr. Tedder:

Given the extension of the comment period to February 27th, the Connecticut River Stormwater Committee, facilitated by the Pioneer Valley Planning Commission, would like to submit two additional comments on the Draft Massachusetts Small MS4 permit.

It used to be that the federal government more actively supported communities in meeting goals for clean water. Given the significant costs that are projected for complying with the MS4 permit requirements, EPA should find ways to provide more substantive help to communities. Just two examples: 1. Water Quality Act Section 319 funding, which has provided some important stormwater management improvement grants in the past, can no longer be used for work in MS4 regulated areas. Since this is at least one source of funding that could help communities meet stormwater requirements, EPA ought to change language to enable grants to MS4 areas. 2. In addition, the MS4 permit mentions the use of test kits for sampling and analysis, but few municipal officials have had training on this. EPA recently offered free training and test kits to NGOs in Massachusetts, but EPA ought to consider extending this same opportunity to municipalities.

More generally, the Connecticut River Stormwater Committee would like to note the importance of collecting some good baseline data from major surface water systems before the final MS4 permit is issued. Given the enormity of the investments being required of communities, there should be a way of showing actual gains in improved water quality after the permit term of 5 years. What will success be measured against? We understand that data on the Connecticut River, for example, is somewhat limited. While the Pioneer Valley Planning Commission has been sampling shoreline recreational access sites for the past 7 years, the study has been limited to E. coli. A good baseline study that examines Total Suspended Solids as well as nutrients and E. coli along transects of the river seems to be missing. If indeed this

data does exist from another source, it would be great to share it with communities now so that everyone has a common baseline for measuring success of their stormwater programs.

Thank you very much for your consideration of our additional comments. If you have any questions, please do not hesitate to contact Patty Gambarini, who facilitates the Connecticut River Stormwater Committee for PVPC.

Sincerely,

Timothy W. Brennan
Executive Director

cc Fred Civian and Kurt Boisjolie, MassDEP
Tracy DeMaio and Michelle Chase, Town of Agawam
Joe Kietner, Tom Hamel, and Jeff Neece, City of Chicopee
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Kevin Chaffee and Phil Dromey, City of Springfield
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TOWN OF DALTON

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December 22, 2014

Newton Tedder
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Boston, MA 02109

RE: Draft Massachusetts Small MS4 General Permit

Dear Mr. Tedder:

The Town of Dalton Stormwater Management Commission (SWMC) respectfully submits these comments on the draft Massachusetts Small MS4 General Permit. The Town of Dalton has an excellent track record of compliance with the prior permit and takes its role as a steward of the environment extremely seriously. The SMWC applauds the efforts of the EPA to clean up the waters of the Commonwealth, but has serious concerns with regard to the schedule and associated costs to comply with the permit. These draft regulations represent a major effort by many environmental and regulatory professionals and provide an excellent program that when implemented should result in improvements to the nation's streams, ponds and lakes. Although the SWMC agrees with the intent of the draft permit, the result is an added burden to communities that are already struggling to provide necessary services.

As a regulated small MS4, the Town of Dalton is directly affected by this General Permit and encourages EPA to develop an appropriate program that will address stormwater and water quality concerns while balancing local needs and economic considerations. It is a mandate to municipalities without state or federal funding subsidies, which leaves the burden to comply entirely on the shoulders of the regulated communities. In these troubling economic times, many municipalities have been faced with potential cuts to vital services. For this reason, it is a very difficult time to meet the addition mandates required by the draft General Permit.

To make this program successful, municipalities need funding from the state and federal governments similar to the programs where funding was available to build wastewater treatment facilities when the Federal Water Pollution Control laws surfaced in the 1970s. Nonpoint source pollutant and nutrient discharges into receiving streams is a national issue and funds to implement mandated programs to improve water quality should come from a national source. The requirements of the draft regulations require professional engineering and administrative services which cannot be met solely by

municipal employees and cannot be complied with through the volunteer members of local commissions or interested and concerned citizens.

In addition to the issue of cost, the SMWC is concerned with the schedule for compliance with the general permit. Logistically, the schedule simply involves too much, too soon, within the same timeframe for a municipality the size of Dalton to comply. Many of the requirements require additional staff or the assistance of subcontractors to perform the necessary work. Even if adequate funding was available, budget appropriations and the addition of new staff and/or procurement for subcontractual services require long lead times to comply with bidding and hiring laws. It is understood and appreciated that revisions were made from the 2011 Draft Permit that allow additional time before the permit goes into effect and before the written Stormwater Management Program is due. However, the timing for municipal budgeting only works if the permit is published no later than December and, preferably, goes into effect the next fiscal year (July 1st). Any other schedule requires municipalities to prepare budgets based on the speculations formed from the draft permit and/or simply misses the small window between December and March to prepare budgets and prepare warrant articles for Annual Town Meeting. Other examples of how the schedule involves too much, too soon and within the same timeframe include, but are not limited to, the following:

- Sixty (60) days from the effective date of the permit is not enough time to develop an inventory of all sanitary sewer overflows.
- Two (2) years to gather and map the enormous quantity of data required is a very short time frame and the logistics of developing a project of that magnitude in 2 years would be difficult and very expensive.
- Data collection for individual catch basin inspection and maintenance is very time-consuming and costly.
- Treating and retaining the first 1" of rainfall on all road projects 1 acre or greater is not feasible financially or practically (due to availability of land). This requirement should not be applied to *all* projects including maintenance. As written, Towns like Dalton will have no choice but to forego maintenance so as to not be in violation of this permit.

Lastly, a streamlined approach could be employed with regard to certain components of the draft permit rather than duplicating efforts and expense in multiple communities. The "paper burden" of the permit is staggering; the Notice of Intent (NOI), Stormwater Management Program (SWMP), Illicit Discharge Detection and Elimination Program (IDDE), Stormwater Pollution Prevention Plan (SWPPP), in addition to reporting requirements. Having streamlined, generic, preformatted templates generated by one agency instead of the many individual communities working independently would standardize and expedite the permit process. Many of the data collection tasks relate to regional or state-wide efforts, such as water quality classifications, identified impairments and endangered species habitats. This data should be made available to all regulated communities rather than imposing a highly redundant effort on individual communities.

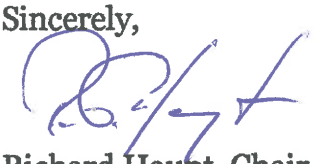
Additional examples of ways in which to ease the burden of permit requirements are as follows:

- Provide flow charts or other graphs to guide laypeople through the permit process;
- Provide technical assistance help, via phone or web based;
- Provide models or examples of the required plans, procedures, etc;

- Provide guidance regarding acceptable methodologies - for example, methods used to evaluate the effectiveness of educational messages and overall education as well as to demonstrate that a defined goal has been achieved.
- Provide preformatted GIS resources to support NOI submission: endangered species, historic properties, impaired water bodies, etc.;
- Provide streamlined forms and online submission for Stormwater Management Plan, reporting, etc.;
- Provide training resources and available classes to meet the training requirements for in-house personnel– live classes, webinar training programs, or pre-recorded video;

The SWMC is dedicated to improving the quality of stormwater runoff and only seek to ensure that the permit requirements are efficient and cost effective. It appears that the proposed program will have many issues with regard to compliance and that many of the towns and cities in Massachusetts will not be able to fully comply by the end of the five year permit period unless this program has some subsidies provided for it on the state and federal levels. In the absence of or in addition to subsidies, modifying the schedule may ease the burden and increase the level of compliance. We respectfully request that the EPA give more consideration to the financial implications and schedule of the draft permit.

Sincerely,



Richard Haupt, Chair
Stormwater Management Commission

TOWN OF DANVERS

Steve Bartha, Town Manager

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February 27, 2015

Mr. Nelson Tedder
USEPA Region 1
5 Post Office Square
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Boston, MA 02109-3912

Re: NPDES-Phase II Stormwater
Massachusetts Small MS4 Draft General Permit

Dear Mr. Tedder:

The Town of Danvers is in receipt of a copy of the revised draft General Permit under the Clean Water Act – NPPES Phase II stormwater Program. While it is generally accepted to achieve improved water quality, the revised draft permit continues to be overly prescriptive, burdensome, costly, and in many instances unachievable without staff augmentation and substantial Operations, Maintenance and Capital Expenditures.

For example, the Town will now be required to inventory and map all *private* stormwater and BMP Systems. This requirement is costly to complete. The cost to hire surveyors, gain access to the property (Legal Right of Access), analyze the system, and, ultimately, generate maps (GIS) is a significant burden to the Town, estimated at up to $30,000 for a single large commercial site.

In addition to the private properties, the State (MassDOT) highway storm drainage systems within Routes 95, 1, 128, and 114 are not currently mapped within the Town's GIS, as MassDOT will receive their own individual NPDES Permit. The Town will incur the cost to incorporate all MassDOT drainage systems into the Danvers GIS, as these systems are interconnected to the Town's drainage system and brooks. The requirement to identify the directly-connected impervious areas (DCIA) is burdensome, costly and a major change in the permit process.

Wet weather sampling of outfalls is another time consuming, labor intensive, and costly venture, which can only be achieved IF the rainfall event meets the minimum storm criteria. Many "false" alarms and unnecessary testing will be conducted with minimal beneficial results. Dry weather sampling has proven to be more effective in Danvers as there are no existing CSO or SSO facilities.

Furthermore, the requirement to inspect all junction manholes town-wide is an enormous undertaking, which appears to contradict the core principles of dry weather screening. For example, if the end of the line (outfall) screening results indicate no harmful pollutant flows reaching the receiving waters, then what beneficial data would be obtained by inspecting junction manholes not associated with known problems? The indiscriminate inspection of junction manholes would cost several hundred dollars per location, whereby these same dollars would be more effectively used in other parts of the program.

The following comments highlight these issues as they pertain to specific permit requirements.

GENERAL COMMENTS

NOI Form: The amount of detailed information required to complete the new electronic NOI Form is extensive and includes information that, in the previous permit cycle, was provided in the Stormwater Management Plan (SWMP). Having a detailed understanding of all proposed BMPs that will be used to meet the six minimum measures, as well as those to be used to meet the water quality based effluent limitations, within 90 days is impractical.

Timeline: First Year Requirements: The number of major activities and related plans that need to be completed in the first year of Permit is impractical. Our review of the permit indicates that there are more than ten major plans or action items need to be competed in first year after issuance of final permit, or sooner, including:

- NOI preparation
- SWMP preparation
- Inventory of municipally-owned parks, buildings, facilities and equipment
- O&M plans for municipal facilities
- Inventory of the Town's infrastructure requiring rehabilitation and /or repair
- Sanitary Sewer Overflow (SSO) inventory
- Outfall/interconnection inventory (including condition assessment)
- Phosphorus Control Plan (PCP)
- Updated Illicit Discharge Detection and Elimination (IDDE) Plan
- Storm Water Pollution Prevention plans (SWPPPs) for relevant municipal facilities
- Updated written protocols for erosion control inspections and infrastructure maintenance.

Comment: We suggest that the time frame to complete these activities, especially the O&M Plans, outfall/interconnection inventory and condition assessment, PCP, and SWPPP preparation be extended to at least two years from the effective date.

Pollutant Load Calculations - Appendix F and Appendix H: There is a significant amount of work associated with the complex calculations, tracking, accounting, and data analysis required to remediate impaired bodies of water. It will be difficult for Danvers to prepare all this information and complete the data management relative to pollutant load reductions and credits without a consultant or full time staff member.

Comment: EPA should provide significant support to municipalities if they are expected to prepare this information on their own. Training sessions and outreach assistance is recommended, as this type of work is not typical for a municipal engineering department and often would require the use of an outside consultant at a significant cost.

SECTION SPECIFIC COMMENTS

Section 1.9.1 - Documentation Regarding Endangered Species: Before submitting an NOI for coverage, applicants must determine whether they meet the Endangered Species Act (ESA) eligibility criteria for following the steps in Appendix C of the permit.

two permit cycles or allow up to 10 years to complete this section's requirements. We further recommend EPA place more emphasis on the Maximum Extent Practicable than a specific limit.

Section 2.3.4.5/6 Outfall Inventory and System Mapping: These sections requires the outfall and interconnection inventory to be completed within the first year and system mapping to be completed within two years of the effective date of the permit.

Comment: This time frame is very short for the undertaking. While many towns have mapped the outfalls, developing a plan for mapping entire stormwater systems in a programmatic and efficient way is important. The Town will need to plan for this capital expense and budget for it. The time frame should be expanded to match the TMDL and Impaired Waters control plans, thus using limited resources most effectively. Allow staggered mapping by higher priority impacts across the Town.

Section 2.3.4.7.iii - Priority Ranking: This section states that the initial illicit discharge potential assessment and priority ranking based on existing information shall be completed within one year from the effective date of the permit for every individual outfall system.

Comment: Since the drainage mapping will not be complete until two years after the permit effective date, and since much of the ranking is based on this information, we suggest that a two-and-a-half or three-year time frame be given to align with the mapping schedule, instead of asking the town to develop the ranking once based on current information and then updating it based on the more detailed information one year later. Furthermore, the Town of Danvers has over 300 individual drainage outfalls, some with as little as three structures connected to an outfall. Ranking individual systems for priority would result in arbitrary assignment of ranks for the vast number of small and nearly identical systems. This data would not be an effective planning tool. Prioritizing sub-watersheds based on receiving water delineations would be a more practical approach and a more meaningful planning tool.

Section 2.3.4.7.d.iv - Written Illicit Discharge Detection and Elimination Program: This section states that "The permit does not require a minimum rainfall event prior to wet weather screening. However, the purpose of wet weather screening and sampling under the IDDE program is to identify illicit discharges that may activate or become evident during wet weather."

Comment: Wet weather sampling can be extremely costly and difficult to implement, especially given the 4 month specified sampling period. Unless there is clear evidence of a wet weather contamination threat, wet weather sampling should not be mandated. Bacteria levels in stormwater are highly variable and individual sampling events easily show spikes which could falsely be interpreted as an illicit point source. These results could be extremely costly to pursue, often with little results to show for the effort. It is requested that EPA provide data on past wet weather sampling results, compare those results to dry weather sampling event for the same outfall sources, and provide data showing the number of illicit sources identified through wet weather that were not detected during dry weather. EPA should also provide information regarding the costs of both the wet weather and dry weather sampling events, and whether or not the wet weather events yielded conclusive sources of any additional illicit flows found during wet weather events.

Section 2.3.4.7.e.ii - Catchment Investigation Procedure: This section describes the manhole inspection methodology.

Comment: Is EPA confident that Fish and Wildlife will have the resources to respond in a timely manner to the many communities that will need this review as part of developing their NOI? Is it reasonable to think that communities can meet this requirement within the 90 day NOI time period?

Section 1.9.2. - Documentation Regarding Historic Properties: It is unclear what documentation will be needed to demonstrate no impact to historic properties. The screening procedure outlined in Appendix D suggests that any subsurface excavation activity related to the stormwater program, which is highly likely as part of any future repair, upgrade or replacement of stormwater infrastructure, will require consultation with State Historic Properties Office (SHPO – Massachusetts Historical Commission) to certify that there will be no impact to historic properties and the documentation of this consultation/certification must be included in the NOI and the SWMP in order to be eligible for permit coverage.

Comment: The SHPO certification requirement regarding subsurface excavation activity imposes two major problems: 1) the extent of possible future repairs and related excavation activity will not be fully understood at the time of NOI submittal, and 2) to obtain SHPO certification for each potential excavation activity will result in extensive added coordination time, cost and project delays if field investigations are required to obtain this certification. Also, is EPA confident that SHPO will have the resources to respond in a timely manner to the many communities that will need this review as part of developing their NOI?

Section 2.1.2.b Prohibition for Increased Discharges to Impaired Waters: This section states that there shall be no net increase in discharges from the MS4 to impaired waters listed in Categories 5 or 4B on most recent Massachusetts Report of Integrated Waters unless the permittee demonstrates there is no net increase in loading for the specific impairment and provides documentation in the SWMP. This requirement is inconsistent with the language in Appendix F Sections IV and V which states that stormwater management for the new redevelopment shall be required to optimize pollutant removal for the pollutant of concern but not necessarily prohibit any additional increase.

Comment: In the absence of a TMDL, we feel that there is not sufficient basis for requiring no net increases and places and unnecessary burden on the MS4.

Section 2.2.1 - Discharges to Impaired Water Bodies with an Approved TMDL: Table F-1 and F-2 of Appendix F indicate that various towns would have phosphorus reductions targets as high as 50% or more.

Comment: Given that the reported phosphorus removal efficiencies are generally in range of 40 and 65 percent for structural stormwater BMPs and much lower for non-structural measures, this would essentially mean that nearly all, or a large majority of existing IC area, would need to be treated with structural BMPs . This is not only impractical, given the wide range of site constraints that will be encountered in implementing stormwater retrofit BMPs, but in many cases will require land acquisition (in some cases eminent domain) at a significant cost. We suggest that EPA provide guidance for municipalities to realistically meet the targets including increased credits for non-structural measures if they are considered truly worthy actions.

Section 2.3 - Requirements to Reduce Pollutants to the Maximum Extent Practicable (MEP):

Comment: Completing the multitude of requirements included in this section in a 5-year permit cycle is not realistic. We suggest that the number of requirements be reduced substantially and be spread over

Comment: We feel that it is an excessive amount of work to investigate every junction manhole if there is no dry weather flow or indication of any illicit discharges at an outfall location. Investigating upstream reaches requires work within roadways, sidewalks, private property and will require police details and substantial field work. Time and money may be better spent on training municipal staff and contractors during their regular field work and maintenance, as well as the focused educational materials regarding what is an illicit connection for the resident/businesses/property owners. We request that EPA provide data showing that investigating upstream drainage systems, when there is no evidence of illicit connections at the outfalls, results in the identification of illicit connections worthy of the associated costs.

Section 2.3.4.7.g - Follow-up Screening: This section requires follow up screening (dry weather with additional wet weather where performed previously) once every five years after the initial review.

Comment: We request EPA provide evidence that spending this ongoing expense will have a significant water quality impact.

Section 2.3.6(d) – Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management): This section states "All BMPs installed as part of the site's stormwater management system shall be constructed in accordance with Massachusetts Stormwater Handbook Volume 2, Chapter 2."

Comment: The Massachusetts Stormwater Handbook is outdated for many of the changing BMP design features. Some BMPs, such as permeable pavements, are not even included in the Handbook. Other states, such as Rhode Island and the Chesapeake Bay area states, are developing more updated design handbooks in response to TMDLs and stormwater requirements. In addition, limiting designers to the Massachusetts Stormwater Handbook will discourage those designers from installing BMPs that do not meet the standards but still provide treatment (as indicated by the EAP pollutant treatment curves). The wording should be changed to reference the MA Stormwater Handbook, as well as EPA, and other state manuals with recent updates that provide good BMP design guidelines.

Section 2.3.6.d.: This section requires permittees to track directly connected impervious area and disconnected impervious areas each year.

Comment: Requiring a municipality to have an accurate database of the impervious cover, broken down by what is directly connected or disconnected, is an onerous requirement without an explanation of the use of benefit of such detailed data. Statewide and/or regional impervious cover data layers provide a much more cost effective estimate of impervious cover for the purpose of planning, understanding trends, and identifying hot spots. Annual changes in impervious cover are insignificant system-wide.

Section 2.3.7.a/b - Operations and Maintenance (O&M) Programs and Stormwater Pollution Prevention Plan (SWPPP): This section requires written O&M procedures for the municipal facilities that have specific activities listed within the first year and SWPPPs within the first two years.

Comment: This requirement includes collecting, organizing, and updating information on each facility and will be difficult to effectively complete within two years, in addition to the other first-year tasks. We suggest extending the time for completion of these documents to three years.

Appendix H Attachment 1 - Street Sweeping and Catch Basin Cleaning Credits: The credits included in the permit are based on information from Center for Watershed Protection Street Sweeping program in the Chesapeake Basin, dated 2008.

Comment: The credits provided for street sweeping are extremely low and there is no mention in the permit of the extensive benefits of street sweeping for removing extensive amounts of debris and sediment in addition to actual pollutant loads. The credits do not provide incentives to utilize this source control method that not only removes contaminants and trash, but also contributes to the long-term longevity of the BMPs that are listed as most valuable for phosphorus removal: infiltration BMPs. We recommend that this be researched further, including the region-specific USGS street sweeping study completed recently in Cambridge Massachusetts, to identify the appropriate value of credits. If, in fact, the water quality benefit is shown to have such an insignificant impact, then these costly practices should not be required.

Appendix F Section 2 Reporting: The equation used to calculate yearly phosphorus loads requires the permittee to estimate the amount of development that has occurred since 2005.

Comment: It is unreasonable to expect a Town to perform this estimate. We suggest that TMDL standards apply to today's levels of development or that EPA update Tables F1 and F2 to reflect conditions at the date of the final permit.

Appendix F Attachment 1 and 2: The loading rate Table 2-1 indicates in a footnote to assume Hydrologic Soil Group (HSG) D soils (if soils are unknown) to estimate previous loading rates. Attachment 1 text on page 1 says to assume HSG C/D.

Comment: Please clarify. We suggest to assume C soils or use the surrounding soil types as an indicator. HSG D and C/D are too conservative for our region. We suggest only including this table in one location to avoid confusion.

Appendix F Attachment 3 Semi - Structural/Non-structural BMP Performance Credits: The section states that the cumulative runoff reduction is being used to estimate the cumulative phosphorus load reduction credit for the semi structural/non-structural BMPs, which have an infiltration benefit by disconnecting IA and providing soil amendments to increase permeability.

Comment: The infiltration BMP curves show that phosphorus reductions are greater than runoff volume reductions. Therefore, it is conservative to use runoff volume as a direct surrogate, when in fact phosphorus reductions are likely higher. We suggest an additional phosphorus treatment factor in addition to the runoff reduction alone.

Appendix F Attachment 3 Table 3-18: The porous pavement BMP performance table gives credits based on the depth of filter course.

Comment: We would expect that the credit would be dependent on the relative watershed size to filter course depth. Please clarify.

We support and incorporate into this comment letter the correspondence dated February 24, 2015 from the Massachusetts Coalition for Water Resource Stewardship and Tighe & Bond, Inc.

Thank you for the opportunity to comment on the revised, draft MS4 permit for Massachusetts. The Town urges the EPA to consider modifications to this draft permit to make the Massachusetts Phase II Stormwater Final Permit more sustainable and affordable to the "maximum extent practicable," for the cities and towns of the Commonwealth.

Sincerely,

Steve Bartha
Town Manager

cc: David B. Lane, Director of Public Works
Robert E. Lee, Jr., PE, Director of Operations
Richard P. Rodgers, PE, Town Engineer
Mike Nelson, PE, Civil Engineer
Kerri Brennan, Program Engineer
Renee A. Hunter, Civil Engineer
file

dcr
Massachusetts

February 19, 2015

United States Environmental Protection Agency – Region 1
Attn: Newton Tedder
Mail Code: OEP06-4
Boston, MA 02109-3912
Subject: Comments on the Draft Massachusetts North Coastal Small MS4 General Permit

Dear Mr. Tedder:

The Massachusetts Department of Conservation and Recreation, Division of Water Supply Management, Office of Watershed Management (DCR-OWM) has reviewed the Draft Massachusetts Small MS4 General Permit for stormwater management. We would like to offer the following comments for your consideration for finalizing the permit.

DCR-OWM is responsible for protection of the watersheds that provide drinking water for 2.5 million users of the MWRA system. Our staff works with watershed communities, businesses and residents to manage all potential water quality threats to the drinking water reservoirs. As stormwater is a major conveyance of pollutants, the measures outlined in the permit provide a framework and guidance for managing stormwater. We have found that the watershed communities and, in particular the DPWs who are primarily responsible for the measures outlined in the draft permits, are concerned about impact of stormwater and want to be good stewards of the water resources in their communities. However, the communities are financially stretched and the new requirements of the draft permit are financially prohibitive.

DCR-OWM has worked with the communities in the past and will work with them in the future to help implement stormwater mitigation measures. The current permit is very "prescriptive" in detailing steps that must be taken. We feel that EPA should allow individual permittees, at least for those in our watershed, an option to modify the specific tasks to be more useful in the particular watershed. Two examples of changes that we thing could be made in our watersheds are found in section **2.3.4 Illicit Discharge Detection and Elimination (IDDE) Program:**

2.3.4.7.c Written Illicit Discharge Detection and Elimination Program – Assessment and Priority Ranking

The requirement to assess and prioritize catchments appears misguided, especially for communities in the Wachusett Reservoir watershed. All streams in the watershed are tributary to a drinking water supply and therefore all are equally important, but even if not it seems impractical to devote a year towards developing a methodology and then

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Karyn E. Polito
Lt. Governor

Matthew A. Beaton, Secretary, Executive Office of Energy & Environmental Affairs

John P. Murray, Commissioner
Department of Conservation & Recreation

using it to rank and prioritize catchments when the time might be better spent actually implementing detection protocols and finding problems. The goal here is being overlooked and too much emphasis placed on documenting each detail of the decision-making process. Simplification makes more sense, especially in a watershed with a very low likelihood of illicit discharges.

2.3.4.7.d Written Illicit Discharge Detection and Elimination Program – Outfall Screening and Sampling

Wet weather sampling is difficult to coordinate, and sample collection and analysis will be expensive. Collection of a few wet weather samples at each outfall during the five year permit period will provide limited information. In-stream monitoring downstream of outfalls is more practical and in many cases data already exist or are being collected regularly by others. The DCR-OWM has monitored temperature, bacteria, and conductivity weekly for many years and has monthly nutrient data from a number of tributaries. DCR-OWM believes that existing data and ongoing tributary sampling efforts are sufficient to help locate illicit discharges and will continue to work with local communities to support their efforts.

In addition, we offer the following comments on section **2.3.6 Post Construction Stormwater Management (New Development/Redevelopment)**

2.3.6.a.ii.(a) Retain the first one (1) inch of runoff from all impervious surfaces on site.

As long as there are differences between EPA stormwater requirements and DEP stormwater standards, there will be difficulties obtaining compliance. There should be agreement so that EPA and DEP are asking for the same thing.

2.3.6.d. Directly Connected Impervious Area

The methodology used for initial estimates of impervious surfaces and directly connected impervious surfaces is based on outdated land use and therefore includes error. Annual changes will be small and likely fall within the margin of error, so labor intensive efforts to determine annual change seems impractical and unnecessary. .

Thank you for the opportunity to comment on the draft permit. If you have specific questions on our comments, please contact Patricia Austin, P.E., Director of Environmental Quality, Wachusett Watershed at 508-792-7423 x204.

Sincerely,

Jonathan Yeo
Division Director

CC: Frederick.Civian, Mass DEP
Boylston DPW
West Boylston DPW
Sterling DPW
Rutland DPW
Paxton DPW
Holden DPW

Town of Dedham

2014 DRAFT MS4 COMMENTS

S**ECTION 1.9 – SPECIAL ELIGIBILITY DETERMINATIONS**

1. *Comment:* Part 1.9.1 requires that each small MS4 certify eligibility regarding the Endangered Species Act, as per the steps outlined in Appendix C.

   Recommendation: Requiring communities where none of the 20 listed species are present to document this through an additional Federal permit process seems excessive. The Massachusetts Natural Heritage and Endangered Species Program provides specific mapping information on all of the state and federally listed species. Inclusion of documentation from NHESP that no listed species exist within the municipal boundaries should be sufficient to determine eligibility for the permit.

SECTION 2.1 – WATER QUALITY BASED EFFLUENT LIMITATIONS

1. *Comment:* Part 2.1.1.b requires compliance with Appendix F schedules and requirements. The concern with this requirement is that it does not take into consideration the process by which local by-laws are created and/or modified in Massachusetts. This issue also pertains to proposed funding sources, which include stormwater utilities.

   Recommendation: The appendix should be revised to take into consideration the possibility that a community's governing body (Town Meeting members in the case of Dedham) may not approve by-law revisions or the creation of funding sources for the work required as part of the small MS4 permit. Funding for the requirements of the proposed permit is a considerable obstacle to compliance for Dedham.

SECTION 2.3.2 – PUBLIC EDUCATION

1. *Comment:* Part 2.3.2g requires the permittee to document in each annual report the measures/methods used to assess the effectiveness of the messages, and the method/measures used to assess the overall effectiveness of the education program. Changes in behavior can be difficult to document and measure unless there is an incident of infraction on one of the specific audiences mentioned in the permit and a corrective measure resulting from the education and outreach program which could then be measured.

   Recommendation: The term and acceptable methods for demonstrating effectiveness need to be more clearly defined. Not all education and outreach initiatives have a measurable result that can assess the effectiveness of the message. We can track how many flyers were distributed, letters sent out, press releases put in the papers, events tabled or students addressed during presentations, but changes in behavior as a result of the campaign are difficult to track.

SECTION 2.3.4 - IDDE PROGRAM

1. *Comment:* Part 2.3.4.5.c states that as part of the data collected for the outfall inventory, that the receiving waterbody be identified along with a spatial location consisting of a latitude and longitude.

   Recommendation: Not all receiving waterbodies have a name associated with them. This information should be supplied if available only. Most communities that utilize GIS have their data in the MA State Plane Coordinate System (NAD83). It would be easier for these communities to utilize a northing and easting coordinate system for their outfall spatial location identification. Using the NAD83 coordinate system should be an option for the spatial location requirement.

2. *Comment:* Part 2.3.4.6.a.i states the required information on the system mapping. What is of concern for the Town is the requirement to identify all waterbodies by name.

   Recommendation: Not all receiving waterbodies have a name associated with them. This information should only be supplied if available. It would be a waste of resources to take the time to perform research on waterbody names, where the end result could still determine that there is no name. If a water body is within an identified impairment, then listing the impairment seems more important than the actual name.

3. *Comment:* There are several instances in this section where it states that catchments indicate sewer input if sampling results have ammonia ≥ 0.5 mg/l, surfactants ≥ 0.25 mg/l and bacteria levels greater than the water quality criteria applicable to the receiving water; or ammonia ≥ 0.5 mg/l, surfactants ≥ 0.25 mg/l, and detectable levels of chlorine.

   Recommendation: It is unclear whether one or all three of the indicators have to exceed the acceptable levels to be classified as a High Priority Catchment. The way that I interpret the statement is that all 3 indicators have to exceed acceptable levels to be classified as a High Priority Catchment, otherwise it would be classified as a Low Priority Catchment. This should be clarified. It makes sense that all 3 indicators would have to exceed allowable levels.

4. *Comment:* The Town understands the concept behind the dry weather outfall/interconnections and catchment investigations, but believes it could be streamlined to remove potential redundancies in investigations, hence wasting municipal resources and money.

   Recommendation: During dry weather investigations if no flow is observed and also no indication of sewer inputs are observed, the municipality should be provided the opportunity to sand bag the outfall or first upstream drainage structure for the next 48 hours when there are no significant rain events forecasted. That 48 hours should provide ample time for any illicit sources to show up in the sand bagged location for sampling. If there is still no flow or stormwater present, then there should be no requirement of catchment investigation. If flow or stormwater is present, then sampling should take place. If no indicators of sewer input are present from sampling then again, no catchment investigation is needed. If indicators for sewer input are present as determined from sampling, then catchment investigation as described in the permit shall be followed.

5. *Comment:* Thresholds for all impaired waterbodies with approved TMDLs should be shown in the permit or in an appendix. All information required for correct sampling protocol should be provided to lessen confusion.

6. *Comment:* The goals and milestones established for the IDDE section appear to be extremely stringent. It appears that the EPA is trying to right all the wrongs created over many decades within a window of approximately 5 years. The Town can appreciate the intent behind the advantageous goals and milestones, but does not believe that the resources, both staff and funding, were really considered as part of this strategy. Most communities may be able to handle these goals and milestones without the need for significant assistance from consultants or from establishing utilities that take more money from the taxpayers if the goals and milestones were extended to allow for more time. It should not be expected for municipalities to correct all of the past issues in just 5 years.

   Recommendation: The following modifications to the goals and milestones as stated in Section 2.3.4.8 should be considered:

   - Complete dry weather screening and sampling (where flowing) of every MS4 outfall starting from the effective date and ending at the end of year 3.

- Begin catchment investigations in every problem and high priority catchment of the MS4 starting in year 3 and completed by the end of year 11.
- Begin catchment investigations in every low priority catchment of the MS4 starting in year 11 and completed by the end of year 15.

7. *Comment:* Sanitary sewer overflows are already prohibited and regulated at the Federal and State level under existing governing wastewater facilities. This will most likely create duplicative and potentially conflicting requirements for compliance.

   Recommendation: The MS4 permit should only discuss that SSOs could result in illicit discharges to the MS4 and should be investigated, documented and eliminated as part of the IDDE program.

8. *Comment:* There is a need for clarity in Section 2.3.4.5 as it pertains to the outfall/interconnection inventory. It does not specify whether inventories completed as part of the municipalities' MS4-2003 permit would be accepted should they meet the requirements as set forth in this Section of the new permit.

   Recommendation: Municipalities should be allowed to use data collected for outfall/interconnection inventory conducted as part of the MS4-2003 permit should it meet the requirements of Section 2.3.4.5.

9. *Comment:* There appears to be a disconnect in the requirements for initial illicit discharge potential assessment and priority ranking and the system mapping. According to Section 2.3.4.7.c.iii, the initial illicit discharge potential assessment and priority ranking must be completed within 1 year of the effective date and according to Section 2.3.4.6, system mapping shall be completed within 2 years of the effective date.

   Recommendation: The MS4-2003 permit only included MS4 outfalls as part of the mapping requirement and therefore the mapping will not have sufficient information to complete the assessment/ranking requirement. The required catchment assessment and ranking needs to be consistent with the system mapping requirement and have a completion date of 2 years from the effective date of the permit.

10. *Comment:* The timeframe restriction (March to June) associated with the requirements set forth in Section 2.3.4.7.d.iv as it pertains to wet-weather sampling during times of high groundwater levels does not make sense for IDDE. For example, if the System Vulnerability Factors (SVFs) indicate structural defects and exfiltration potential, then high groundwater would most likely hinder the investigation.

    Recommendation: The timeframe restriction should be revised to state that wet weather sampling be performed during conditions appropriate for the identified SVFs for each catchment area. This section should also contain examples similar to the one described above to assist the MS4 in making a proper decision about when to sample.

11. *Comment:* The requirements in Section 2.3.4.7.d.iv related to wet weather sampling are unclear. Inspections must be performed during wet weather, defined as sufficient intensity to produce discharge. It is not clear whether a discharge must be observed at every outfall to achieve compliance. Does the Town have to return to an outfall/interconnection repeatedly until a discharge is actually observed, even if substantial rainfall events have occurred? This could lead to a waste in resources (mobilizing staff, equipment, laboratory services) and seems unnecessary.

    Recommendation: This section should be revised to provide specific minimum storm event parameters for both time and rainfall amount so the municipality can make reasonable determinations as whether to conduct any screening and sampling. This minimum storm event should be one that will be sufficient to anticipate discharges at all outfalls/interconnections. It should also be stated that if a discharge is not observed at an outfall/interconnection during this minimum storm event, then sampling will not be required and the requirements for wet weather screening and samplings shall be considered satisfied.

12. *Comment:* The level of accuracy for each required sampling parameter is not provided in Sections 2.3.4.7.d.v & 2.3.4.7.d.vi.

    Recommendation: The permit must be revised to clarify the required level of accuracy for analyses.

13. *Comment:* Section 2.3.4.7.e lists one of the SVFs as "Any sanitary sewer and stormdrain infrastructure greater than 40 years old in medium and densely developed areas". This statement is too generalized since a majority of the MS4s have infrastructure greater than 40 years and are also mostly comprised of medium and densely developed areas.

    Recommendation: This SVF should be completely removed from the permit or at the very least only used for a community that has not recently (within 10 years) began a program to inspect/investigate their sewer infrastructure. Communities that have spent a lot of time and money investigating their sanitary systems should not have to be penalized by this generalization. This generalization will categorize many catchments as being high priority, hence wasting time and money on catchment investigations by requiring MS4s to complete all the investigations of high priority catchments within 5 years. There is already a more concise SVF to adequately aid MS4s in the ranking of catchments which relates to the intent of the SVF mentioned above which states " Sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure, directly piped connections between stormdrain and sanitary sewer infrastructure, or other vulnerability factors identified through I/I Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations."

SECTION 2.3.5 – CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

1. *Comment:* Part 2.3.5.c .iii requires that the small MS4 include requirements that applicable construction site operators implement a sediment and erosion control program that include appropriate BMPS. The concern is that this requirement is a duplication of those already in effect as part of the Massachusetts Stormwater Handbook.

   Recommendation: That this duplication in state and local requirements be eliminated, leaving the Massachusetts state requirements in place to regulate sedimentation and erosion control me asures. This will effectively duplicate existing state regulations.

SECTION 2.3.6 – MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT (POST CONSTRUCTION STORMWATER MANAGEMENT)

1. *Comment:* Section 2.3.6.a refers to the development and redevelopment of "sites". The word "site" is subjective in nature and is not clearly defined.

   Recommendation: A clear definition of a "site" should be implemented into the permit. A proper and thorough review of this section cannot be made until this definition is clarified. If a "site" is too include roadway projects undertaken by the MS4, then it should exclude road work associated with rehabilitation projects (i.e. reclamation, mill & overlay, overlay) where the existing roadway is not to be widened.

2. *Comment:* Part 2.3.6.a.iii. requires that an as-built plan be provided no later than one year after the completion of a construction project. Again, this requirement duplicates requirements already in place as part of the Massachusetts Stormwater Handbook.

   Recommendation: That this requirement be eliminated as it duplicates the existing state requirement.

3. *Comment:* Part 2.3.6.b & c requires the development of two reports assessing the status of existing local regulations. The Town's concern is the amount of staff time required to prepare reports rather than spending that time on modifications to the current regulations to bring them into conformance with the new permit. The local planning board would ultimately need to hire a consultant, which would be a financial strain on the budget to create new guidelines.

   The Town appreciates LID strategies, but sees a conflict between these DRAFT guidelines and MassDOT's Complete Streets Standards and Site Design Standards. Under the Complete Streets program roadways are evaluated for bike lanes and pedestrian sidewalks. Narrowing of streets to reduce impervious surface limits the ability for communities to make transportation improvements that would improve the safety of cyclists and pedestrians.

   Recommendation: The Town is aware that the local regulations regarding street design and parking lots result in an excess of impervious surface and are an obstacle to Low Impact Development Best Management Practices. However, we see conflicting interests with MassDOT's Complete Streets Standards and Site Design Standards, as well as, New Fire Protection Standards that are going into effect January 2015 and the DRAFT Guidelines. A conversation between agencies regarding this conflict is suggested. In regards to the creation of two reports assessing the status of existing regulations we believe the Town's staff time would be better spent crafting revisions to existing regulations that reduce the amount of impervious surfaces and that encourage LID and appropriate BMPs and that could be promulgated through the Town Meeting process.

Comment: Part 2.3.6.d requires tracking of the changes in town-wide totals of impervious surfaces that are directly connected to MS4 discharges by sub-basin. The Town's concern again is the amount of staff time that must be devoted to the collection of this information, without a specific means of funding. The Dedham Conservation Agent, who would be directly involved in this reporting requirement, works twenty hours per week and has numerous statutory requirements to meet. This reporting requirement is onerous without a source of funding, which is problematic given the Town Meeting form of government, as mentioned above.

Recommendation: That this reporting requirement be reduced or that the time frame be extended so that it could be accomplished within the limitations of the budget for the Conservation Agent.

4. *Comment:* Section 2.3.6.d states that permittees shall tabulate its estimates of impervious area (IA) and directly connected impervious areas (DCIA) by the sub-basin as delineated pursuant to Part 2.3.4.6.a.i. Part 2.3.4.6.a.i does not make mention of sub-basins.

   Recommendation: If the intent was to have sub-basins mean catchment, then the permit should be revised accordingly. If not, a clear definition of a sub-basin should be provided.

SECTION 2.3.7 – GOOD HOUSE KEEPING AND POLLUTION PREVENTION

1. *Comment:* Section 2.3.7.a.iii requires the permittee to establish and implement procedures for sweeping, winter road maintenance and storm drain systems. Establishing written procedures for these items is wasteful on resources. These procedures will most likely end up in a recycling bin, file cabinet or on a shelf collecting dust. The time should be spend actual sweeping and cleaning catch basins rather than writing procedures. Actions are worth much more than useless written procedures when it comes to improved water quality.

   Recommendation: The establishment of procedures for these items should be removed from the permit. Again, actions speak better than words and by having the permittee required to report on what was actually

accomplished in a given year (i.e. lanes miles of roadway swept, catch basins cleaned, volume of sweepings collected) is far more important.

2. *Comment:* Section 2.3.7.a.iii.(b) requires the permittee to investigate the contributing drainage area for sources of excessive sediment loading whenever a catch basin sump is more than 50% full during two consecutive cleanings. Most communities in the Commonwealth have stormwater infrastructure that was constructed before stormwater standards were implemented. Therefore, many communities will likely have nontraditional sumps (less than 4 feet) that could even be as deep as a few inches. By having limited depths sumps on older catch basins means that a catch basin could easily accrue more than 50% of the sump depth in debris causing unwarranted investigations.

   Recommendation: This section should be revised so that only existing catch basins that have a minimum sump depth of 3 feet be required to conduct an investigation whenever a catch basin sump is more than 50% full during two consecutive cleanings.

APPENDIX H

1. *Comment:* Sections I.2, II.2, III.4, IV.5 & V.5 states that if a permittee wants to demonstrate that its discharge does not contain a certain impairment for which it has been identified, then at least 30 flow-weighted samples over a 2-3 year period from each stormwater outfall discharging to an impaired water must be collected from a variety of storm sizes to characterize a discharge properly.

   Recommendation: All of these sections of the permit should be revised to require sampling of outfalls during not more than 10 rainfall events. The EPA should simply provide a list or table of required rainfall events under which outfalls shall be sampled.

DEPARTMENT OF THE NAVY
COMMANDER
NAVY REGION MID-ATLANTIC
1510 GILBERT ST.
NORFOLK, VA 23511-2737

IN REPLY REFER TO:
5090
EVN40/09/RE491

DEC 19 2014

Mr. Newton Tedder
U.S. Environmental Protection Agency, Region I
Mail Code OPE06-4
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Dear Mr. Tedder:

SUBJECT: DEPARTMENT OF DEFENSE (DOD) COMMENTS ON THE NOTICE OF AVAILABILITY OF A DRAFT GENERAL PERMIT FOR STORMWATER DISCHARGES FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4s) IN MASSACHUSETTS

As the Department of Defense (DoD) Regional Environmental Coordinator (REC) for U.S. Environmental Protection Agency (EPA) Region I and on behalf of the military services, the Commander, Navy Region Mid-Atlantic is responsible for coordinating responses to environmental policies and regulatory matters of interest. We appreciate the opportunity to provide comments for your consideration on the reissuance of the subject permit. Our comments are attached.

If you have any questions, the technical point contact for this matter is Mr. William Bullard, Senior Water Program Manager, at (757) 341-0429 or william.bullard1@navy.mil; or Commander Mark P. Nevitt, JAGC, USN, at (757) 322-2938 or E-Mail mark.nevitt@navy.mil.

Sincerely,

SEAN S. HEANEY
Director for Regional
Environmental Coordination
By direction of the Commander

Enclosure

Copy to: U.S. Air Force REC, Regions I, III (Mr. Ron Joyner)
U.S. Air Force REC, Water (Mr. John Gordon)

DOD COMMENTS ON THE NOTICE OF AVAILABILITY OF A DRAFT GENERAL PERMIT FOR STORMWATER DISCHARGES FROM SMALL MS4s IN MASSACHUSETTS

Part 2.3.6. Stormwater Management in New Development and Redevelopment

Comments on Part 2.3.6.a.ii.(a). The draft permit requires that all stormwater management systems on new and re-developed sites be designed to retain the first inch of runoff from all impervious area, or meet an optional standard to retain a portion of the first inch and treat the remainder. The Fact Sheet, however, explains that it is not intended to require the capacity to retain or treat the runoff from every storm that produces one inch of runoff from impervious area under all circumstances, as that would substantially increase the design volume of the system and significantly increase the cost of implementation. Fact Sheet page 88. Instead, this is a "quantifiable target for program implementation." Fact Sheet page 88.

The flexibility explained in the Fact Sheet is not reflected in the proposed permit terms of Part 2.3.6.a.ii.(a). This flexibility should be captured in the permit terms in order to be consistent with EPA small MS4 regulations at 40 C.F.R. § 122.34 ("attempt to maintain pre-development runoff conditions") and the Clean Water Act's mandate to "require controls to reduce the discharge of pollutants to the maximum extent practicable." 33 U.S.C. § 1342(p)(B)(iii).

With respect to the retention/treatment standard, Part 2.3.6.a.ii.(a)2 states that the on-site runoff retention practices be implemented "where technically feasible." The Fact Sheet, however, states there is enough flexibility in the retention/treatment standard to allow retaining on site the maximum amount of runoff "feasible" and providing treatment for the remainder. Fact Sheet page 89. Use of the term "feasible" is more closely aligned with the Clean Water Act statutory language of "maximum extent practicable" and includes cost considerations, unlike "technically feasible." Using "feasible" in place of "technically feasible" will avoid confusion with using a new term, and is consistent with the permit's already existing "maximum extent practicable" standard set forth in Section 2.3 of the permit.

Recommendation on Part 2.3.6.a.ii.(a): Add "the maximum extent practicable" to state, "Stormwater management systems on new and re-developed sites shall be designed to the maximum extent practicable . . ."

Recommendation on Part 2.3.6.a.ii.(a)(2): Delete "technically" to align the permit with the Fact Sheet to read, "[t]his standard shall be met through a combination of practices designed to retain runoff on site….where feasible . . ."

Comment on Part 2.3.6.a.ii.(d). This section of the draft permit requires that "All BMPs installed as part of the site's stormwater management system shall be constructed in accordance with The Massachusetts Stormwater Handbook Volume 2 Chapter 2." The Stormwater Handbook provides guidance for compliance with the Massachusetts Stormwater Management Standards. However, these standards are only implemented through the Wetlands Protection Act Regulations and the Section 401 Water Quality Certifications Regulation. Hence, they apply to the specific activities and locations they cover. The draft permit is, therefore, requiring compliance with the standards/handbook beyond what is authorized in current regulation.

In addition, the Fact Sheet is clear that the "Draft Permit does not mandate the use of a particular technology to retain the first inch of runoff on-site, which provides maximum flexibility . . . to use the vast array of Low Impact Development (LID) and green infrastructure techniques during site design to meet the standard in the most economical way possible." Fact Sheet page 88. The Massachusetts Stormwater Handbook briefly speaks to the potential to use alternative technologies not listed in the Tables, but there is insufficient information provided on the process to submit an alternative technology for review and approval. Moreover, the potential to consider alternative technologies is absent from the permit itself. In addition, while structural BMPs should consider Volume 2, Chapter 2 of the Massachusetts Stormwater Handbook, structural BMPs may not be the most appropriate BMP for the site.

Recommendation on Part 2.3.6.a.ii.(d): Add "structural" prior to BMP. Insert "consider" and delete "be constructed in accordance with" to read: "[a]ll structural BMPs installed as part of the site's stormwater management system shall consider The Massachusetts Stormwater Handbook Volume 2 Chapter 2." Add "alternative structural BMPs not currently listed in the handbook can be submitted for review and approval."

Comment on Part 2.3.6.d.iii: This section requires the permittee to complete an inventory and priority ranking of permit-owned property and existing infrastructure that could potentially be modified or retrofitted with BMPs to reduce the frequency, volume, and pollutant loads of stormwater discharges. This section would thus appear to extend beyond "stormwater management in new development and redevelopment" sites. Practicality, feasibility, and cost are not listed as considerations the permittee must use in developing the priority ranking. However, the Fact Sheet on page 91 recognizes that properties can be retrofitted "where it is practicable" and states the Draft Permit requires evaluating the "feasibility of reducing the [Directly Connected Impervious Area] on permittee-owned properties," which would involve feasibility and cost.

Recommendation on 2.3.6.d.iii: Add "The permittee should also consider factors such as practicality, feasibility and cost."

Part 5.1.1 Public Education. "For the purpose of this permit, the audiences for a Non-traditional MS4 include the employees, clients and customers (including students at education MS4s) or visitors to the property, and any contractors working at the facility where the MS4 is located... The permittee shall document the educational topics for each target audience in the SWMP and annual reports."

Comment: This permitting provision only applies to non-traditional MS4s to include "properties owned and operated by the United States." In Part 2.3.2.b. the audiences for the public education program of traditional MS4s only includes people who live or work in that MS4 community. It does not include visitors or others with a temporary connection to the MS4. We appreciate the flexibility provided in tailoring the educational topics.

Recommendation: Revise the language to be more consistent with the audiences for MS4s to read (added words italicized): "For the purposes of this permit, the audience of non-traditional MS4s includes the employees, customers, tenants, and long-term contractors working at the facility where the MS4 is located."

Part 5.1.3 Assessment of Regulations. "Non-traditional MS4s do not need to meet the requirements of Part 2.3.6.c. Non-traditional MS4s shall instead evaluate opportunities to manage and reduce stormwater discharges by including green infrastructure practices in new development and redevelopment at

their facilities. Non-traditional MS4s shall evaluate opportunities to manage and reduce stormwater discharges by reducing the amount of impervious cover due to parking areas and walkways and create an implementation plan and schedule for implementation of practices to reduce impervious area. The permittee shall complete the implementation plan on the schedule the permittee creates as part of the plan.

Comment: Part 2.3.6.c only requires traditional MS4s to assess existing local regulations and report on the feasibility of making certain green infrastructure practices allowable. This Part does not specifically address retrofitting at all. Part 2.3.6.d which applies to all permittees discusses evaluating the potential for retrofits but only requires an inventory and priority ranking. The requirement to submit a retrofit implementation plan and schedule and to implement same is a higher substantive requirement for non-traditional MS4s, including DoD.

Recommendation: Exclude non-traditional MS4s from the requirements of 2.3.6.c and 2.3.6.d. Alternatively, retain only the first two sentences in 5.1.3 or align the requirements of non-traditional MS4s with the requirements of traditional MS4s to ensure equitable and fair treatment across all regulated entities

Fact Sheet, Page 96: This portion of the Fact Sheet states that Federal MS4 permittees should consider the standards in Part 5.2 of the Draft Permit as a minimum requirement and should adopt post construction stormwater standards that fulfil the requirements of §438 of the Energy Independence and Security Act (EISA) as well as Part 5.2 of the Draft Permit.

Comment/Recommendation:
While not part of the permit, please note that the requirements under EISA § 438 are not related to the "control and abatement of water pollution" obligation for federal facilities set forth in the Federal Facilities Pollution Control provision of the Clean Water Act (33 U.S.C. § 1323(a)). DoD is already implementing the provisions of EISA § 438, consistent with EPA's EISA § 438 technical guidance, using Low-Impact Development techniques in accordance with DoD policy

February 26, 2015

Newton Tedder
US EPA – Region 1
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Boston, MA 02109-3912

Subject: EPA's Request for Comments Regarding draft Small Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) general permit for Massachusetts

Dear Reviewer,

This letter constitutes comments from the Town of Dracut, Massachusetts Stormwater Coordinator in response to EPA's request for comments on proposed changes to the NPDES MS4 Stormwater Permit Program. Dracut is committed to partner in protecting and maintaining water quality by improving our Stormwater System to reduce potential impacts. Given our limited revenue opportunities and stagnant or declining state funding sources, Dracut must ensure that public funds are used as efficiently and effectively as possible. Therefore we respectfully request that proposed changes in Stormwater regulations contain requirements that are flexible, directly aimed at improving water quality, based on proven science and has regard for persistent budgetary pressures.

We are particularly concerned with language in section 2.1.1 subsection (a) of the General Permit – *Requirement to Meet Water Quality Standards.* The section states "The permittee shall reduce the discharge of pollutants such that the discharges from the MS4 do not cause or contribute to an exceedance of water quality standards." Local Governments in the vast majority of cases, do not contribute or produce pollutants referenced in this section since they are held to a "higher standard" with regard to procurement and use of hazardous materials than its residents or businesses. It appears from our standpoint that many of the referenced pollutants emanate from processes that our municipality has little or no control over. It strikes me as unrealistic to require actions at the local level to clean up pollutants that can be more efficiently and effectively addressed at the State and Federal level that addresses source reduction.

A common recurring issue in this permit as well as the 2003 permit is funding. At the risk of being repetitive, this issue is persistent in our municipality and adjacent municipalities. We understand the current climate of funding opportunity and understand that it affects all governmental agencies including EPA. However, what is particularly frustrating is that the Federal Government is silent with regard to providing local agencies with legislative authority to establish entities that would bring about revenue to achieve the goals established by the EPA. Officials such as myself are burdened with compliance tasks and threat of fines for noncompliance while competing for funds required for other municipal departments tasked with Education, Public Safety, Public Health and Administration without any assistance from the Federal Agencies that promulgated the rules in the first place. It is extremely difficult to present the concept of a utility to pay for Stormwater expenses to a community that has become accustomed to not paying for it and views Stormwater as less of a priority than Public Safety or Education.

There are several aspects of the permit that appear to utilize a "one size fits all" approach which can be inefficient. The requirement of wet weather sampling for all outfalls that have at least one vulnerability factor, as specified in the IDDE section of the Draft Permit is a good example of this. Wet weather sampling will require extensive effort and increased funding with little assurance of any appreciable environmental benefit. The Permit should allow municipalities to develop a more targeted approach; identifying areas to sample that exhibit the highest likelihood of illicit connections based on local and inherent knowledge of their system. Based on results from the foregoing, municipalities could assess other areas to be sampled, avoiding diminishing returns. Basing the need for wet-weather sampling on the potential presence of one vulnerability factor would likely require any developed area regardless of density to be sampled. Many areas of Dracut could be categorized as having one vulnerability factor while possessing a low potential for contaminated wet-weather discharge. Many of our DPW personnel have the historical knowledge to readily identify problem areas and would be much more effective utilizing that approach as opposed to sampling every area. The comprehensive nature of field inspection, sampling, written plan development and reporting requirements are daunting. Transportation engineering reveals that a corridor with numerous regulatory signage and controls leads to confusion and resentment while a simpler and targeted approach yields more compliance and respect. A Stormwater permit that is rife with requirements may have a similar effect.

The permit should provide for more opportunities to develop a more phased or targeted approach which continually assess benefits while evaluating methods and funding based on site specific data. Also in reviewing the permit, the regulations appear to be "all stick and no carrot"; there should be incentives for compliance and not just fines and penalties for noncompliance.

In closing I would like to offer the following recommendations:

- Additional regulation of industry and commercial agencies with regard to Stormwater discharge at the Federal level to lessen the burden on local communities. Local communities can be a partner is this effort, however Federal agencies possess enhanced powers of enforcement.

- Regulations at the Federal level that empower local agencies to establish funding mechanisms. Perhaps a Federal tax tied to impervious area. Such action will shift resentment away from local officials trying to comply with federal regulations with minimal available local resources.

Sincerely,

Glen Edwards

Glen Edwards
Dracut Stormwater Coordinator
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February 25, 2015

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Boston, Massachusetts, 02109-3912

Via E-mail: Tedder.Newton@epa.gov

RE: Draft NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts – Public Comment Letter

Dear Mr. Tedder:

This letter is submitted to you in accordance with public comment procedures related to the proposed NPDES General Permit referenced above. We wish to add our voice to the numerous others who have put forth comments in the state of Massachusetts. The concerns enumerated below constitute "reasonably ascertainable issues" developed on the basis of review of the draft General Permit, supporting documentation provided by EPA (including fact sheets, appendices, technical guidance and reports), and practical experience implementing the program over the preceding eleven (11) years of the existing permit term. These are significant issues that warrant response by EPA and consideration for modifications in the final General Permit. The initial comments refer to conditions associated with "Requirements to Reduce Pollutants to the Maximum Extent Practicable" (the six Minimum Control Measures [MCM]); the latter comments refer to conditions related to "Water Quality Based Effluent Limitations (WQBELs)." General comments follow thereafter.

Comments

Minimum Control Measures / Maximum Extent Practicable Requirements

1. **MCM 1 – Public Education and Outreach**: Although not explicitly required under the permit, EPA has repeatedly suggested that introducing stormwater quality-related topics in school curricula would be an appropriate and cost-effective means of achieving MCM-1 objectives. Experience has demonstrated that statutory subject requirements within most school systems makes it very difficult to introduce non-mandatory (or non-MCAS related) material. Cost estimates related to achieving the minimum requirements of this MCM appear to be under-representing the broad audience targets and should not assume school programs as the basis for cost estimates.

2. **MCM 3 - IDDE Investigations**: Level of effort to achieve all of the elements of the Illicit Discharge Detection and Elimination (IDDE) Program is significantly higher than currently experienced and not significantly reduced from previous drafts despite prior concerns expressed in this regard. Several specific issues include:
    a. **Catchment Prioritization:** We recognize the value of categorizing and ranking/prioritizing catchments as a means of identifying more likely pollutant sources early in the program. Protocols for ranking catchments (and continually re-evaluating rankings) require significant knowledge about storm drain and sanitary sewer system condition and characteristics, which are elements drawn from mapping and investigations that are executed after the initial prioritization is completed at the end of year 1. The methods described in the permit provide some latitude based on "existing knowledge," however, it is important that absence of specific information regarding a catchment does not default to "High" categorization or prioritization within a category. We are concerned that "unknown" conditions related to screening factors may result in a disproportionate number of catchments being categorized as Problem or High, which in turn places these catchments on a faster-tracked investigation schedule with implications for labor and costs for communities. *Proposed Modification*: Ranking and prioritization factors are highly specific, and cover a broad spectrum of infrastructure condition, land use, laboratory analytical results and development age/characteristics. We suggest simplifying the procedure and allowing communities to categorize catchments as either "excluded" or "problem" as defined in the permit, with all other catchments falling into "other" to be investigated on a prioritized basis developed through local operator knowledge. Investigations can be performed within the 10-year timeframe currently established in the permit, with documentation on investigation results provided in annual reports. For those communities that have already undertaken a prioritization exercise on the basis of guidance provided in the 2010 Draft Permit, that ranking ought to be allowed as the basis for execution of the plan.
    b. **Wet Weather Monitoring:** The Fact Sheet accompanying the general permit indicates that the revised wet weather monitoring requirements were modified to reduce the number of outfalls that would require labor intensive sampling/monitoring. However, the twelve (12) specified "System Vulnerability Factors" provided as the basis for inclusion in a wet weather monitoring program encompass a broad swath of infrastructure system characteristics and the "one or more" threshold trigger for categorizing a catchment as a wet weather monitoring candidate will capture the vast majority of outfalls in many if not most communities. This fails to provide the relief communities requested during the 2010 Draft General Permit comment period, and which the fact sheet accompanying the 2014 Draft General Permit implies has been provided. *Proposed Modification*: Wet weather screening of catchments should be conducted on the basis of observed conditions during physical investigation of catchments rather than the system vulnerability factors presented in the permit. Actual conditions as the trigger for further investigation will mitigate the low threshold ("one or more") and the breadth of the factors that, as proposed, will result in a disproportionate number of outfalls requiring wet weather screening.

c. **Catchment Investigation Procedure:** The storm drain network investigation as proposed, including the physical inspection of all key junction manholes irrespective of evidence of dry weather flow or other illicit connections at the point of outfall discharge, is new, excessive, and will fail to provide environmental benefit for the additional labor and expense required. *Proposed Modification*: Allow local MS4 operators to implement a manhole inspection methodology appropriate to the complexity of their system, to be documented in their IDDE plan, with results reported annually as required in the current permit.

d. **Catchment Investigative Procedure (2):** : EPA states, "This review shall be used to identify areas within the catchment with higher potential for illicit connections and System Vulnerability Factors that indicate a risk of sanitary or septic system inputs to the MS4 under wet weather conditions." Septic systems are not designed to remove nutrients and may discharge nutrients to an MS4 through groundwater. Septic systems can comply with MA Title 5 (310 CMR 15.00) and still discharge nutrients. Are septic systems considered an illicit connection if they discharge nitrogen and phosphorus to groundwater? Do the Clean Water Act and this MS4 permit override MA Title 5 and therefore limit septic systems from discharging any amount of nitrogen or phosphorus indirectly to an MS4, even though they do not violate the state's Title 5 permitting program? *Proposed Modification*: EPA should set a concentration limit, consistent with other regulations,that may trigger mitigation action under this permit's regulations.

3. **MCM 3 - IDDE Mapping:** New mapping requirements relating to sewer infrastructure under the IDDE MCM are a significant concern, as they not only require mapping of all storm drain components, but now must include sanitary sewer infrastructure "where available" and knowledge of asset conditions relative to both storm and sewer systems in order to implement procedures related to prioritization and execution of catchment investigations on the basis of the System Vulnerability Factors. This level of asset inventory, condition assessment, mapping and documentation represents an effort that could take much longer than the two (2) year deadline in the permit. Based on the dynamic and cumulative documentation relative to investigations and program progress, it is also clear that communities are virtually required to develop this mapping and condition assessment as part of a GIS database. For communities that have not begun or are in early stages of GIS development, two years is certainly an inadequate amount of time. The "where available" language relative to sewer mapping (Section 2.3.4.6 (a) (ii)) is itself problematic because it is not clear to what extent the MS4 operator, who may be different than the sanitary sewer system operator, is required to obtain, develop or update sanitary sewer mapping elements that could influence catchment prioritization or wet weather screening obligations through the course of the permit term. *Proposed Modification*: Extend deadlines for storm system mapping requirements to Years 4 or 5 and make all sanitary sewer mapping voluntary or "recommended" rather than required.

4. **MCM 3 - Sanitary Sewer Overflows**: The inclusion of sanitary sewer infrastructure management or monitoring (such as reflected in Section 2.3.4.4 – Sanitary Sewer Overflows) as a component of MS4 permit compliance is a redundant requirement since communities that operate sanitary sewer systems are already regulated in this regard under existing wastewater NPDES permits. The manner in which the condition is incorporated into the MS4 permit potentially subjects communities to multiple penalties

under separate permit programs in the event of an SSO excursion. *Proposed Modification*: Elimination of this requirement.

5. **Affordability; Estimated Program Cost Increases**: EPA directs MS4 owners to the 2011 "*Sustainable Stormwater Funding Evaluation*" Final Report for reference regarding anticipated program cost increases (administrative, operating and capital) under a variety of scenarios. This document, and subsequent evaluations conducted for Upper Charles River watershed communities indicates that program administrative/operational costs alone will range from double to quadruple existing expenditures. More recent updates to these figures for the communities that were the subject of EPA's detailed analysis indicate that, if anything, these estimates are under-representing the magnitude of cost increases. Capital costs to comply with the TMDL requirements embedded in the permit are estimated in the tens of millions of dollars. The enormous gains in water quality under the Clean Water Act in the first two decades after passage were achieved through a locally affordable program aimed at primarily wastewater-related point source discharges, and underwritten by state and federal funding equivalent in many cases to 90% of the program capital cost. Stormwater-related pollutant contributions to receiving water bodies are much more difficult to control and will achieve an incremental water quality improvement compared to the wastewater discharges that were the target of initial infrastructure investments. It is inconceivable that the estimated costs of this MS4 program can be affordably sustained by a limited number of property owners within communities subject to the most stringent pollutant reductions. Water quality improvements have local, state and national benefits. A program that EPA and other environmental organizations (regulatory, advocacy/non-profit or commercial) recognize as this important should have some kind of legislative or Congressional support that provides adequate funding to promote programs that can achieve water quality improvements in a more equitable and financially sustainable manner.
6. **Regional or Alternative Implementation Opportunities**: Many of the sustainable funding alternatives explored in the 2011 "*Sustainable Stormwater Funding Evaluation*" Final Report refer to opportunities for working with designated dischargers (DD) in some capacity. The Residual Designation Authority (RDA) Draft Permit has not progressed in some time, and there is little information available as to the likelihood of this permit ever becoming final. In addition, under current conditions, it applies to a very small number of communities (Bellingham, Franklin and Milford). Private properties are a major contributor of pollutants to MS4 discharges, however, this RDA mechanism is an unwieldy approach to incorporating private activity into pollutant control. Without passage, however, private property owners have no incentive to collaborate with local authorities regarding operation of sites that were designed and constructed in accordance with local stormwater regulations in place at the time of development. It is unrealistic to include any of the funding scenarios that include cooperation or collaboration with a group of designated dischargers that do not exist today, are unlikely to be designated in the near future, and are unlikely to voluntarily engage in a complex and costly program without measurable benefit to them directly.
7. **Affordability; Integrated Planning (IP):** The water quality protection objectives of the NPDES stormwater and wastewater programs are recognized and supported by the regulated community. However, inclusion of an increasing number of the sanitary sewer management elements into the MS4 permit program suggests that EPA is migrating towards an integrated planning model as presented in

your "Integrated Municipal Stormwater and Wastewater Planning Approach Framework." As provided for in the conditions of this draft permit, however, the effect is to import compliance conditions suitable for wastewater management programs while failing to provide permit relief or incentives to the regulated community for employing an integrated management approach to community water resource assets, including stormwater management infrastructure. The result is the equivalent of "double jeopardy" under dual permits without schedule, affordability or reporting relief. *Proposed Modification*: EPA should integrate an affordability assessment component into the Permit that will allow communities to determine the extent to which they and their constituents can afford to implement Clean Water Act requirements associated with both storm and sanitary sewer permit obligations, including operational and capital costs. If EPA is committed to the IP approach, general permits such as this should be explicitly incorporating elements of the framework on an iterative basis (i.e. every term renewal moving closer to the ideal). Ultimately, a model of risk-based decision making relative to infrastructure investments can recognize greater water quality benefit for the dollars spent without the current regulatory liability associated with multiple permits addressing water quality through different program frameworks.

8. **Definitions – Redevelopment**: The term "redevelopment" is nowhere defined in the permit or appendices. Given that EPA is requiring "redevelopment" projects to meet the new development design guidelines for stormwater management (and particularly in reference to the one-inch retention/treatment provision), it is important to know what constitutes redevelopment versus rehabilitation, restoration, maintenance or repair projects. This is particularly of concern as it relates to transportation-related projects such as pavement programs (full depth reconstruction, pavement overlays, chipping, etc.), and the possibility that routine maintenance could trigger requirements for significant drainage improvements that would not otherwise be appropriate or necessary for operational purposes. *Proposed Modification*: Define redevelopment to exclude roadway projects that do not add significant new paved acreage.
9. **MCM 5 – Roadway Projects:** The revised Stormwater Management in New Development and Redevelopment MCM presents several challenges. Primary among these is the requirement to retain the first inch of runoff (or treat the equivalent pollutant load) from all impervious areas on site. This requirement will pose a significant challenge as it relates to roadway projects (either new or redeveloped) and will contribute to significant escalation of costs associated with drainage and/or treatment from roadways. *Proposed Modification*: Include an exemption or waiver from this permit condition for roadway projects.
10. **MCM 5 - BMP Sizing:** Language in this permit provision states that "all impervious area" is subject to the capture, infiltration or treatment requirements and specifically that flow volumes [for retention or treatment] are calculated based on "multiplying the area of impervious area on site by one inch." We seek clarification that BMPs on site need not be sized to reduce "calculated" pollutant loads that theoretically are contained in flow from disconnected impervious area on-site that is not otherwise directed to the MS4.
11. **MCM 5 – EPA and DEP Consistency:** With the encouragement of the Massachusetts Department of Environmental Protection (MassDEP) and EPA, many communities have adopted the Massachusetts Stormwater Management Standards either directly or by reference into existing municipal design

standards and by-laws. This permit represents a divergence from the MassDEP stormwater standards and complicates compliance for regulated entities. We request EPA and MassDEP develop a consistent set of development standards that ensures that exemptions or waivers provided under federal NPDES permits will ensure similar treatment under MassDEP surface water discharge regulations.

12. **MCM 5 - 1-inch Standard:** EPA has stipulated that the one-inch retention/treatment standard applies to both new and re-development projects. As noted above, this is not consistent with the MassDEP stormwater management standards and creates further confusion relative to application of development standards. See our comment above regarding joint approach.
13. **MCM 5 – Street Design Guidelines:** At Section 2.3.6 (b),the MCM requires development of a report assessing current street design and parking lot guidelines that affect creation of impervious cover to be due within three (3) years of the permit effective date. The intent is to identify opportunities to support low impact design options to be incorporated into local regulation and standards. Under "smartgrowth" principles with comparable environmental impact mitigation interests, the federal government, state and local agencies have promoted a "complete streets" approach to invite multi-modal use of roadways that frequently results in greater impervious area. Given the sometimes contradictory nature of these programs, the regulated community would like assurances that the federal and state government are collaborating to provide adequate guidance that achieves prioritized environmental objectives without potential penalty (either in terms of punitive fines or loss of grant/loan funding, etc.) to the regulated community. *Proposed Modification:* We propose modification of the permit term within this section to provide greater latitude to MS4 owners regarding implementation of recommendations resulting from the report. Where there are competing interests relative to "environmental street design" the MS4 owner should be allowed to make local decisions that are in its best interest.
14. **MCM 6 – Good Housekeeping Affordability Assumptions:** The Good Housekeeping MCM as proposed will be extremely expensive for most communities to implement. The accompanying permit fact sheet states that while this is the most costly program area for most communities, these are existing functions (e.g. catch basin cleaning and street sweeping) and the costs associated with compliance under the permit will be incremental, or less, such that "these costs are likely not above and beyond what the permittee likely spends on maintenance of permittee owned property currently." The cost estimate provided fails to appreciate that most communities do not currently collect the data, analyze findings, document and report activities in the manner now required under this permit. For communities that contract these services to outside vendors, procurement of new contracts to include documentation required will undoubtedly impact bids by increasing costs significantly. It is expected that data collection from catch basin sump cleaning efforts will almost double the time per catch basin required. It is reasonable to anticipate, therefore that catch basin cleaning costs will double, regardless of whether the activity is out-sourced or done in house. Program affordability, particularly in light of requirements under Water Quality-Based Effluent Limits (WQBEL's), continues to diminish and timeframes within the permit further compromise a community's ability to meet permit requirements under the MCM's as presented in this draft permit. *Proposed Modification:* Again, we request that EPA include an affordability component into the MS4 Permit, comparable to that provided under CSO Long Term Control Plan programs.

Water Quality Based Effluent Limitations (WQBELs)

15. **Source Reports and controls**: With this MS4 draft some Municipalities are required to submit source reports for certain WQBELs. The cost of producing the reports and the control measures are high when coupled with the other requirements of the NPDES permits. Program affordability is again called into question. Furthermore, the program is experimental and the likely effectiveness of it is unknown.
16. **Sampling:** Communities can perform a sampling plan to show that specific outfalls are not contributing nutrients or bacteria, but the sampling protocol outlined in the draft permit is onerous and could be difficult or impossible to complete depending on precipitation events. *Proposed Modification:* Allow grab samples, and reduce the number of samples required.
17. **New Discharger Definition:** Based on the accompanying fact sheet, the definition of "new discharger" within the permit does not include expansion of an MS4's existing system within its jurisdiction. The distinction is important since increased discharges can be covered under the General Permit, but new discharges must be covered under a separate individual permit. Please confirm that the term "adjacent" or "adjacency" within the context of this definition includes any new drainage element, including an outfall, within an MS4's jurisdiction but not otherwise connected to any other component of the MS4. For instance, the town may accept a private road that includes a "self-contained" drainage system (e.g. a series of connected catch basins discharging to a discrete outfall none of which is connected to or "adjacent to" existing drainage infrastructure) without triggering a requirement to cover that segregated outfall through a separate individual permit. Public management of the streets will generally lead to better pollutant management and on that basis the permit should not dis-incentivize acceptance of private roads.
18. **Phosphorus Load Export Rates – Appropriate Use:** Regarding Appendix F and attachments, the Phosphorus Load Export Rates (PLERs) are general and approximate at best. The composite PLERs are good for screening / planning purposes or comparative purposes. They are not accurate for determining hard design of control measures. For example, they can be used to evaluate whether a proposed change in land use is expected to increase or decrease pollutant loads. But to use a PLER to conclude that the loading rate is actually X lbs/yr, or will change from Y lbs/yr to Z lbs/yr with land use or other changes, is not a recommended technical practice. Loading rates are ordinal rather than cardinal, i.e., they can tell you if one is higher than another, but not exactly how much higher one is than another. It appears that EPA assumes that over the entire Commonwealth of Massachusetts, using PLERs will represent the average condition. That may be true, but EPA is requiring that the PLERs be used to make decisions on a much smaller watershed and sub watershed scale, which is inappropriate.
19. **PLERs - Derivation:** It is not clear how the values for PLERs in the EPA documents are derived, however, a literature search shows that there is a large range of values for any given land use. For example, the PLER for medium density residential is given as 0.55 lb/ac/yr in Table 1-1 (App. F Attachment 1), but the range of PLERs for medium density residential in the scientific literature can be an order of magnitude around the value. Please provide further information regarding derivation of the PLERs since these values have significant impact on program implementation for regulated communities.

20. **PLERs – Blanket vs. Site Specific:** PLERs found in older literature generally do not reflect the presence of stormwater BMPs, low impact development (LID) planning, etc., and therefore may overestimate pollutant loads for current land uses. In addition, composite PLERs are a particular concern for communities that have previously instituted stricter local development standards for stormwater management many years ago (in some cases, decades) where assumed PLERs may be much greater than actual conditions. *Proposed Modification:* Rather than limiting appeals of assumed baseline watershed phosphorus loading to updates of land use information, allow permittees the option to develop their own alternative methodology for determining baseline phosphorus loads and reduction requirements based on more detailed data and/or site specific information.
21. **Ambiguity in Determining Contributing Drainage Area:** It is not clear in Appendix F and its pertaining attachments whether the permittee will be using the impervious area or the directly connected impervious area (DCIA) in the PLER calculations, which includes factoring in DCIA in determining PCP area. The phosphorous loads should be determined from the DCIA of a target catchment, but this is not explicitly mentioned in either Appendix F or its attachments. The only explicit mention on DCIA is in Appendix F under sections "Phosphorous Source Identification Report" and "Nitrogen Source Identification Report" which simply state that the source identification report should include the "Impervious area and DCIA for the target catchment." There is no mention of how this DCIA information needs to be used, for example, in determining either the PCP area, total development area, impervious area (IA) for calculating phosphorous reduction credits for non-structural BMPs, or in distributing the total drainage area into impervious area for BMP load and volume calculations. In all the above instances, DCIA should be considered, rather than total impervious area. This needs to be clarified in the new permit.
22. **Determining Infiltration Rate for Structural BMPs:** Attachment 3 of Appendix F specifies identification of infiltration rate for a particular BMP when determining the design volume of a structural BMP to achieve a known phosphorous load reduction target from a contributing drainage area. However, it is not clear how the infiltration rate needs to be determined. It is stated that the infiltration rates represent the saturated hydraulic conductivity of the soils. Since saturated hydraulic conductivity of soils is a function of its hydrologic soil group, it is important to mention how this rate needs to be determined for a combination of soil types. Please provide further guidance to determine infiltration rates for an infiltration type structural BMP, such as an infiltration trench or infiltration basin.
23. **Choosing BMP Performance Curve for Multiple Combination of BMPs:** Attachment 3 of Appendix F provides several BMP performance curves for different types of structural BMPs. However, the permittee may choose a combination of BMPs to achieve a desired phosphorous load reduction. It has been noted through literature search that a combination of BMPs may be more effective in capturing larger storms, and hence will be more effective in providing desired phosphorous load reductions from these storm events. For example, if a bio-retention system is coupled with a secondary spillway to a porous pavement, it has been found from literature that this combination is effective in capturing the first 1" rain (first flush) and higher flows, respectively. In such a situation, it is not clear what BMP performance curve should be referenced and how the curve(s) need to be used by the permittee. Please

provide further documentation regarding the method to determine BMP performance curves for a combination of BMPs.

24. **Appendix H. II (1)(a)(i)(3) Additional /Enhanced BMPs for Phosphorus-Impaired Waters:** Under the Good House Keeping requirement, permitees are required to increase frequency of street sweeping to at least twice a year for **all municipal streets and parking lots.** This requirement should be related exclusively to those streets within the impaired catchment, not all streets/ parking lots in the Town. It might be what was intended, but that is not how the language reads and should be modified.

Other Issues

25. **Non-Stormwater Discharges**: At public meetings during which EPA has presented material about the new permit, there has been much discussion about the classification of sump pump discharges as an allowed "non-stormwater discharge." Explicit guidance is necessary regarding local permit programs sufficient to meet documentation of determination standards relative to sump pump discharges as a class of allowed discharges.
26. **Town Administration Outreach**: In most communities responsibility for permit compliance resides with Public Works or similar agency officials. Boards of Selectmen and/or Town Managers are often not involved in program administration outside of procurement or appropriation processes for identified projects. Their lack of understanding and support to local implementing agencies has been a continuing challenge. EPA and/or DEP must increase their involvement in educating Town officials about the extent, costs, operational impacts and policy determinations incumbent on program administrators to ensure continued organizational support, particularly for funding strategies.
27. **Floor Drain Inventory:** It is appropriate and appreciated that this requirement has been removed from the Draft Permit.
28. **Errors:** A number of errors in referencing were noted in the document. The ones we noticed are listed below, there may be more. Please carefully check all cross references in the preparation of the Final Permit and correct the following errors:

- Page 12 – change references from Table F-5 to Table F-6
- Page 14 – change references from Table F-6 to Table F-8
- Page 14 lists reference to Buzzards Bay but there is no Nitrogen TMDL for Buzzards Bay watershed on DEP's website
- Page 14 list does not include Wareham although Wareham is in Buzzards Bay watershed
- Page 15 change reference from Table F-7 to F-9
- Page 17 – reference to Table F-10 is incorrect (that is a table of Assabet towns)
- Appendix F page 5 of 53 – footnote No. 4 incorrectly references Table F-2 for PCP area scope inclusive of MS4 only (should be Table F3) and references Table F-1 for jurisdiction-wide PCP area (should be F-2)
- Section I.1.c.iii, page 44 of Appendix F references Table 4-3 of Attachment 1 to Appendix H. There is no such table in Appendix H.

As you have assuredly noticed, we are echoing the comments from just about every MS4 community in the state of Massachusetts. Your serious consideration of our comments and concerns, and those of all the other affected communities in the state, shall be greatly appreciated.

Respectfully submitted,

Joseph I. Pipczynski
Director of Public Works

cc: Mayor Karen Cadieux
James A. Gracia, City Engineer

City of Fitchburg Department of Public Works

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February 26, 2015

Attention: Newton Tedder, Permit Writer
US EPA-Region 1
5 Post Office Square
Suite 100 – OEP06-4
Boston, MA 02109-3912

Subject: Submittal of Comments and Concerns
September 2014 Draft MA MS4 General Permit

Dear Mr. Tedder:

This correspondence provides our comments on the Environmental Protection Agency's (EPA) 2014 Draft of the Massachusetts Municipal Separate Storm Sewer System (MS4) Permit regulated under the National Pollutant Discharge Elimination System (NPDES). Although we certainly agree with the EPA's goal of removing pollutants from stormwater runoff, we find that many of the permit requirements are burdensome while providing minimal benefits to our waterways and resource areas. We appreciate some of the steps that the EPA has taken in relation to the 2010 Draft Permit, by minimizing some of the less-effective requirements and extending the time table of numerous requirements.

General Comments

1. Currently the City of Fitchburg (City) is under a Consent Decree from the EPA, which mandates the City upgrade its sewer system to meet the Clean Water Act. As a result of all the improvements required under this Decree, the City has raised sewer rates exponentially. This increase is causing the annual combination of water and sewer service costs be near 4.5% of the median household income (MHI) in the City, which is the maximum amount recommended by MassDEP. Adding an additional fee for stormwater will push these costs over the 4.5% limit.
2. In the current economic climate, implementing new fees to assist in funding storm water improvements will most likely be met with stiff resistance. Many requirements of the permit have a low cost-benefit ratio, and will require high capital costs. We recommended the EPA concentrate on requirements that will have the most impact for the least amount of municipal financial resources, such as public education and outreach, and implementing regulations that emphasize low-impact development. Many of the "hard" requirements, such as increased street sweeping, catch basin cleaning, and outfall monitoring are very time consuming and costly. These types of procedures will require additional staff and equipment, with most likely minimal improvement in water quality, as they do not address

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infiltrating runoff from impervious surface, which has the largest negative impact on stormwater quality.

3. The sampling requirement of outfalls and subsequent catchment investigation is excessively onerous and will most likely cost in the hundreds of thousands of dollars, for what will amount to a small amount of previously unknown illicit discharges detected. The cost-benefit ratio for this requirement appears to be small. We feel funds for this task would better be delegated to installing a stormwater treatment BMP at a city-owned property, such as a city-owned parking lot or park. Completing a BMP in these high-visibility areas presents an opportunity to inform the public about stormwater issues, and also guarantee a level of stormwater treatment in a high-use area.
4. Although extensive research has shown that runoff from impervious surfaces contributes to decreased water quality, we feel there is limited research that shows all the requirements in the Draft Permit will lead to increased water quality. We ask that the EPA conducts a case study in Massachusetts. The case study would consist of rewarding one community based on a written grant application, where the EPA or MassDEP funds and conducts all the requirements in the Permit. Outfalls and waterways would be monitored, over a 5-year term, to determine if water quality increases and to what extent. After the 5-year term, a report would be produced identifying which aspects were most effective and had the highest cost-benefit ratio. From the results a more effective and direct permit could be produced and applied to communities.
5. As with many communities in Massachusetts, budgets are strained in the current economy. The remainder of our infrastructure, not just our stormwater infrastructure, is in great need of repair. The City of Fitchburg is an aging mill city in the lower echelon of median household income in Massachusetts. We feel the limited available funds of our municipality and our citizens would best be spent on improving our roads, sidewalks, municipal facilities, and water distribution system. This infrastructure is in greater need of repair than our stormwater system, and will have a greater impact on quality of life. We receive relatively few complaints or concerns about water quality in the Nashua River or other water bodies, however we receive constant criticisms about our remaining infrastructure.
6. This is an unfunded mandate. If the Federal Government does not have funds to even partially pay for the requirements of the permit, it seems unreasonable that small and struggling communities be expected to fund it?
7. In the past, the EPA and MassDEP have relied upon municipal DPWs and Engineering Departments to convey information about the MS4 Permit to local elected and administrative officials. It is often up to these departments to explain why the permit is needed, the requirements of the permit, and the associated costs with implementing the permit. This approach leads to these

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municipal departments conveying the details of a permit which they did not write or develop themselves. We appeal to the EPA to take a more "hands-on" approach to the MS4 Permit, by reaching out directly to elected municipal officials, mayors, and selectmen, in via e-mails, letters, or pamphlets, or informational sessions. Using these methods, questions and concerns can be relayed directly from officials who serve local citizens, to the agency who developed the permit.

8. We recommend the EPA be at the forefront of the education requirement by placing nationwide newspaper ads and developing stormwater education into school curriculum. The best way to raise nationwide awareness about a nationwide problem is to start at the national level. Stormwater impacts can occur in all communities and areas, not just areas within MS4 jurisdiction. It is important to educate people in all communities, as currently rural areas, and other areas outside the MS4 jurisdiction may see increased development, and hence more negative stormwater impacts.
9. We ask the EPA and State to collaborate on a state regulation that mandates communities develop a stormwater utility. This would be similar to what has been completed in the State of Maryland (*Stormwater Management Watershed Protection and Restoration Program*). By initiating this requirement on the state level, there will be less resistance from residents in each community that attempt to set up a utility, as the municipality is obligated by state law to do so. However, we still ask that our suggestions within this letter are taken into consideration, to reduce the burdensome user fees that will need to be collected as a result of the new permit.
10. For the past several years Fitchburg has consistently ranked in the top 2-3% of all Massachusetts communities in both foreclosure and distressed property rates. The additional cost burden of implementing the proposed MS4 Regulations without allowing for more targeted and cost effective approaches to achieve the intent of the regulations may very well exacerbate the ravages of abandonment and foreclosure in our community, which in turn will further erode the very tax base upon which we must rely to cover the costs of this unfunded mandate.

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Specific Permit Comments

Section 1.7 – Obtaining Authorization to Discharge

1. 1.7.2.d - We request that the MS4 Permit requirement deadlines start at the date an "acceptance" is granted by the EPA for a Permittee's Notice of Intent (NOI). The first 90 days after the final permit is published will be spent by communities developing the NOI, with the following 30 days slated for public comment on the NOI. This effectively shortens the time frame to complete a task by 4 months or more.

Section 2.3.2 – Public Education and Outreach

1. 2.3.2.d.iv – The "industrial program" educational requirement should be conducted by the EPA. These industries are regulated directly by the EPA under the MSGP Program, with no input from the municipalities. It would be more effective for the EPA to develop and distribute these materials, as the EPA could track the amount of new registrations within the MSGP Program more effectively.
2. 2.3.2.d.e – Tracking a change in public opinion and behaviors is a slow and evolving process. Tracking the effectiveness of the public education and outreach program is a difficult and time-consuming task, especially on a yearly basis. We recommend an evaluation of the education program be conducted in the final permit reporting year (or every 5-years). Making this adjustment will allow for a more realistic time period of gauging the public's actions and the education program effectiveness. Any results of the program evaluation can be used in implementing the public education program in the next permit term.

Section 2.3.4 – Illicit Discharge Detection and Elimination (IDDE) Program

1. 2.3.4. – As part of the City's Consent Decree with the EPA for its Wastewater Operations, a full CCTV and evaluation of the sewer collections system is required. During these operations, the sewer is being investigated and evaluated for condition, illicit connections, inflow/infiltration, and proper and legal connectivity. During this operation, almost all illicit discharges to the storm drain system would be detected. The amount of service connections will be verified on each street to ensure the total amount of services matches the number of dwellings on a specific street, greatly eliminating the possibility that a sanitary service is connected to the storm drain. We recommend that the EPA reconsider extensive IDDE in communities where a full sewer collections system investigation and evaluation is being conducted.

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2. The City has recently separated tens of thousands of linear feet of combined sewer. In these areas it is extremely unlikely that an illicit discharge exists, as new catch basins and drains were installed in almost every street where construction took place. During construction, it is relatively easy to identify an illicit discharge as all buried infrastructure is exposed, and all intersecting drain lines and laterals are reconnected properly. We request that an exception to IDDE be provided for areas separated within the last 20 years, as a large financial expense will be required for investigation in areas where it is unlikely that many, if any, IDs will be found.
3. 2.3.4.2.b – The draft permit states that the 60-day period allowed to correct an illicit discharge is not a grace period and the discharge remains unlawful. We request this statement be struck from the permit, as it exposes municipalities to enforcement action immediately upon discovering an ID. These seems unreasonable, and effectively contradicts the statement that a permittee has 60 days to rectify the situation.
4. 2.3.4.4 – As part of the City's Consent Decree with the EPA, a full investigation of SSOs have been mapped and identified, including all manholes with twin inverts. The City is actively monitoring each SSO location, including twin invert manholes, and has to report this information to the EPA with a timetable for removal. We request that the SSO requirements in the permit be removed for communities in our situation. The requirement effectively will double the City's efforts by submitting the same information to the same agency for minimal, if any, benefit.
5. 2.3.4.6 – The City has thousands of catch basins and manholes, many of which are cross country or paved over. Mapping all of these features is daunting to complete within the two year permit term, especially if a municipality would like to use its own staff or volunteers to save funds. Confirming connectivity of the system will also be a time consuming task as much of the infrastructure is over 100-years old with no records, this will require tedious and time-consuming dye testing and CCTVing in many instances. We recommend that the mapping of the system be completed within 5-years. In addition, without an accurate system map, implementation of the Catchment Investigation Procedure of the IDDE Program will be difficult to conduct, especially on large catchments.

Section 2.3.4.7 – Written IDDE Program

1. 2.3.4 – The catchment assessment/ranking and the outfall sampling are overly complicated for what will amount in most communities, to only a few illicit discharges detected. For the few illicit discharges that are currently occurring, they most likely have been occurring for years. The permit requires that **all** catchments are investigated in 10 years, eliminating the need to rank and prioritize catchments. For instance, if an ID has been

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occurring for 30 years, the impact of the ID occurring for a few more years seems minimal compared to the burdensome expense and time it will take to prioritize and rank all catchments. In addition, the outfall sampling requirements are also unnecessary. If all catchments need to be investigated, most IDs are almost certain to be found during the task of inspecting manholes (in non-combined systems), eliminating the need to sample outfalls.

2. Vice-versa to the above, if we are conducting outfall sampling in wet and dry weather in areas with a System Vulnerability Factor, it seems ill-advised to proceed with the Catchment Investigation if no water quality issues were noted by the sample results. It appears we'd be looking for IDs where none exist, or at a minimum, where no IDs are impacting the receiving water. We are in favor of conducting dry weather inspections of outfalls, similar to the 2003 MS4 Permit, especially in areas with a separated sewer/drain system.

Section 2.3.5 – Construction Site Stormwater Runoff Control

1. 2.3.5 - Although it is important to have local enforcement on construction site stormwater issues, the permitting aspect should be regulated on the national level, and should be part of the EPA's Construction Stormwater Permit Program. As stated previously in this letter, stormwater impacts are a nationwide issue. Many contributing areas to the Nashua River for instance, are not within MS4 jurisdiction, however these areas could have construction stormwater runoff issues, which impact the river downstream in Fitchburg. It would seem prudent for the EPA to develop the regulations for this aspect of the MS4 Permit, and to have the municipality assist with inspections to ensure developers are in compliance, and to report to the EPA when a problem is noted. The requirements of this portion of the draft MS4 permit could be incorporated into the EPA's Existing Construction Stormwater Program, as the requirement only applies to a site over one-acre in size, which is the threshold for EPA's Construction Stormwater Permit.

Section 2.3.6 – Construction Site Stormwater Runoff Control

1. 2.3.6.a - As a general comment, the requirements noted in this portion of the draft permit would be more applicable to implement on a state or national level. The Massachusetts Stormwater Standards are implemented on the state level under the Wetlands Protection Act, and a similar approach would be fitting here to provide consistency for developers, engineers, and municipalities. By implementing these requirements on a state level, the regulations could be applied to all communities. Impervious surfaces are the biggest contributor to stormwater degradation, so it would seem reasonable to enforce the same regulations in non-MS4 areas, as it is more effective to start treating and infiltrating stormwater from the early stages of an area being developed.

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2. 2.3.6.a.i – The one-acre threshold leaves room for interpretation. The purpose of post-construction stormwater BMPs is to treat and infiltrate stormwater from impervious surfaces. Stating the requirement applies to sites which "disturb more than one acre" is not relevant to post-construction stormwater management. For example, a site of a half-acre may have the entire site composed of impervious area, where a site that disturbs one-acre may only have a quarter acre of impervious area. The requirement should solely be based on the impervious area of a site.
3. 2.3.6.a.ii.a – Requiring infiltration and/or treatment of the first 1-inch of rain on a redeveloped site contradicts the MA Stormwater Standards, which only require this standard be met to the maximum extent practicable on redevelopment sites. On many redevelopment sites space is a premium, especially in Fitchburg, which limits the practicability of implementing stormwater controls. In a post-industrial City such as Fitchburg, the City expends much effort in attracting redevelopment. By adding additional regulation, many developers will seek other areas. We recommend the EPA work with the State to develop consist standards, and implement "maximum extent practicable" attributes to the redevelopment requirement.
4. We request that full-depth reclamation road paving projects be exempt from this minimum control measure. Many communities are struggling to keep roads in a basic state of usability. Adding infiltration or treatment requirements to any reclamation project will increase costs substantially.

Section 2.3.7 – Good Housekeeping and Pollution Prevention for Permittee Owned Operations

1. To develop all the programs required under this Control Measure is a large undertaking, which will take inordinate amounts of time and investigation. If municipalities were to use their own employees or volunteers to generate these programs and procedures, it would take far longer than a year. We recommend a minimum of 3-years to develop these programs, with implementation occurring in the final two years of the permit term.
2. 2.3.7.ii.a – Many of these procedures are already conducted by municipalities, eliminating the need for a written plan, as it will provide little additional benefit. Fertilizers, herbicides, and grass mowing operations are already minimized to the greatest extent possible, as it is fiscally irresponsible to conduct these activities more than necessary. In addition, the DPW already inspects city owned trash receptacles and empties as necessary.
3. 2.3.7.ii.b – All municipally owned facilities actively manage their grounds, and store hazardous chemicals in a careful manner. For any spills of hazardous materials, the Fire Department is capable of responding, as the

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978-829-1910
978-345-9687 FAX

STREETS & PARKS
301 Broad Street
978-829-1900
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WASTEWATER
Princeton Road
978-345-9622
978-345-9623 FAX

SEWER COLLECTION
301 Broad Street
978-829-1905
978-345-9687 FAX

WATER
1200 Rindge Road
978-345-9616
978-345-9555 FAX

ENGINEERING
301 Broad Street
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PLANNING & CONSERVATION
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COMMUNITY DEVELOPMENT
610 Main Street
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CEMETERIES
115 Mount Elam Road
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939 High Rock Road
978-345-1461

department personnel has proper spill prevention training (Haz-Mat Operations Level). We ask the EPA to allow for a blanket plan to be produced by a permittee that can be applied to all municipally owned buildings and facilities.

4. 2.3.7.iii.b – The requirements for catch basin cleaning should be streamlined. Much of the reporting requirements will provide little value or difficult to obtain. For instance, estimating the amount of debris removed from a catch basin is a difficult measurement to obtain without weighing the material from each catch basin. A percentage full measurement, along with the date of inspection/cleaning should be the only two requirements. Using these two data points will allow a municipality to determine problem areas.
5. 2.3.7.iii.c – Requiring street sweeping twice a year (as the City is subject to Appendix H.II), is a very costly proposition. This requirement will most likely require the addition of additional staff and equipment, with a cost in the hundreds of thousands of dollars. Although street sweeping is an important mechanism in reducing sediment in our waterways, we recommend an investigative approach, similar to the catch basin approach. Instead of requiring sweeping twice a year, an inspection program should be done in specific areas to determine where street sweeping would be most effective. Sweeping and catch basin investigations should be blended together to maximize effectiveness; street sweeping should be targeted in areas where catch basins are reaching more than 50% full in a short time frame. In many instances, the City would be sweeping streets that have very little sediment accumulation or leaf litter, as the City already sweeps once a year.

Appendix H – Requirements Related to Discharges to Certain Water Quality Limited Waterbodies

1. II – Phosphorous loading in many waterways is directly linked to sewerage entering a waterway. As the EPA is aware, the City has been aggressively separating its combined sewer system to prevent SSOs, and is also in the process of designing a $22 Million upgrade to its East WWTF for enhanced nutrient removal. In addition to this upgrade, the City may also be required to construct tertiary treatment for phosphorous removal. We recommend that the EPA suspend the enhanced phosphorous removal requirements in Appendix H for the City until it is determined how successful the wastewater system upgrades are.
2. II.1.c – It should be noted if roadways are included as "permittee-owned" property, and are subject to requirements of sub-section II.1.c.

City of Fitchburg Department of Public Works

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3. III – As previously stated, we recommend the City is exempt from the additional requirements due to bacteria, until sufficient water quality monitoring results are obtained after completion of the latest, and largest-to-date, separation project in June 2015. The City has a strong inclination that high bacteriological results will be greatly reduced as a result of this separation project.
4. III.3.i – As the entire City drains to the Nashua River, this would put the entire sewer system in the "HIGH" priority ranking for the IDDE program requirements. This would require the City complete the IDDE program, including wet weather sampling, on hundreds of outfalls, within 5-years. This is a daunting task and has a likelihood of not being feasible, as the high-precipitation events that are required to sample may not occur on a frequent enough basis to sample all outfalls.

This completes our comments on the 2014 MS4 Draft Permit for Massachusetts. If there are any comments or questions regarding the above subject please feel free to contact us.

Sincerely,

FITCHBURG DPW, ENGINEERING DIVISION

Anthony W. Maressa, P.E.
Civil Engineer

City of Fitchburg, Massachusetts 01420
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TOWN OF FRAMINGHAM

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February 13, 2015

Mr. Newton Tedder
U.S. Environmental Protection Agency, Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

Re: 2014 Draft Massachusetts Small MS4 General Permit
Comments from the Town of Framingham

Dear Mr. Tedder:

The Town of Framingham currently operates its storm sewer system under the NPDES Phase II Municipal Separate Storm Sewer System (MS4) General Permit (Permit No. MAR041116), effective May 1, 2003. The Town of Framingham appreciates the opportunity to provide comments on the Draft General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts (draft permit) that was published in the Federal Register on September 30, 2014. The Town participated in the Public Meeting held in Westborough on October 22, 2014 and attended the Public Hearing in Leominster on November 19, 2014. The Town also submitted comments on the 2010 Draft General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts Interstate, Merrimack, and South Coastal Watersheds and has noted that some, but not all, of these comments appear to have been considered and incorporated into the changes in the 2014 draft permit.

BACKGROUND

At nearly 69,000 inhabitants, the Town of Framingham is the largest Town in the Commonwealth of Massachusetts located approximately 20 miles west of Boston. The Board of Selectmen and the Town Manager form the executive branch of the Town, with the Town Meeting serving as the legislative branch. Town Meetings, at which operating and capital budgets are approved and changes to bylaws are requested, are held annually in spring.

The Town has a land area of approximately 26 square miles containing mixed land uses ranging from agricultural to highly urbanized, historically industrialized areas. Of that land area, approximately 24% is impervious. The Town has very large and complex infrastructure, which includes over 250 miles of roadways, 200 miles of subsurface storm drainage pipes, 8,500 catch basins, 3,700 drainage manholes, 600 storm drainage outfalls, 450 Town owned properties, and 50 Town owned buildings. Our sanitary sewer system is separate from our stormwater sewer (aka drainage) system. In addition to municipal properties and facilities, several large state and federal facilities and infrastructure are located within the Town limits, some of which are

permitted under other NPDES permits, including: the Massachusetts Turnpike (*Individual NPDES permit*), Framingham State University (*non-traditional MS4 permit*), Massachusetts Correctional Institution – Framingham (*non-traditional MS4 permit*), National Guard Armory (*MSGP permit*), US Postal Service (*MSGP permit*), MWRA facilities (*MSGP permit*), Mass Bay Community College, Massachusetts Emergency Management Agency headquarters, and Callahan and Cochituate State Parks.

The Town supports improvements in water quality. We work very closely with the Massachusetts Department of Environmental Protection (MassDEP) and EPA managers to implement the existing stormwater regulations. All stormwater runoff from the Town's MS4 ultimately flows to the Sudbury River; therefore the Town lies completely in one watershed. A Total Maximum Daily Load, or TMDL, has not been developed for the Sudbury River. The most recent *Massachusetts Integrated List of Waters* listing of waterbodies in Massachusetts that do not meet surface water quality standards (their capacity to support designated uses such as fishing, recreation, drinking water supply, or aquatic life support) has identified nine water bodies within Framingham that are currently identified as impaired. It should be noted that many of the causes of impairments are not attributed to stormwater runoff and some are noted as "TMDL not required (Non-pollutant)". One cause of impairment in several of the waterbodies is Mercury associated with impacts from the Nyanza Superfund site and not attributed to the Town's MS4 stormwater discharge.

COMMENTS ON PROPOSED MS4 GENERAL PERMIT

We have reviewed the 2014 Draft MA MS4 General Permit, and are concerned that our next permit will require a significant increase in the level of effort beyond the current program with limited additional benefits. We understand it is challenging to create an effective regulatory program to address a watershed-based problem that is also economically feasible. However, it is incumbent upon the EPA to make every effort to develop a reasonable program with set goals achievable through a reasonable use of Town resources, which builds upon the investments and improvements in water quality already made.

The Town encourages the EPA to more thoroughly review the economic impact proposed under the draft permit. According to EPA's News Release dated September 30, 2014, "As drafted, EPA estimates the cost to meet the requirements associated with implementation of the six minimum control measures to be between $78,000 and $829,000 per year averaged over the permit term." EPA "…does not have sufficient information to reasonably estimate those [costs] associated with achievement of water quality based limitations." The Town currently makes a significant investment in both operational costs and capital improvement for stormwater management. The new requirements contained in the draft permit amount to unfunded federal and state mandates with the burden of implementation falling upon local communities. The cost of implementation of the new requirements in the draft permit will be a financial burden to the Town, which has many high priority needs competing for limited available funding. In our opinion, these costs are far more than reasonable and do not represent an iterative approach. Thus the Town considers these permit requirements to be beyond its financial capabilities and exceed the Town's requirement to implement stormwater BMPs to the maximum extent practicable.

- Based on the Town's initial assessment, costs associated with complying with the six minimum control measures and initial requirements for discharges to certain impaired waters as outlined in the draft permit are estimated at over $1.85 Million in annual costs.
- Annual capital and operating costs would increase further depending on the level and extent of BMPs and retrofits required to comply with requirements for discharges to water quality limited waters following the initial assessments and planning efforts.

The effort to maintain and improve stormwater management and water quality needs to be balanced with future infrastructure demands, economic conditions, and the Town's overall master planning. Although the Town appreciates that EPA extended many timelines for implementation from the 2010 draft permit based on comments from the municipalities, the Town feels that the timeframe for implementation of all the additional requirements beyond the 2003 permit is still extremely aggressive. We anticipate that meeting the EPA permit goals outlined in the draft permit will take at least 15 years to implement. This is because we will need to both

understand and prioritize the stormwater problems within Town, plan for improvements, and set in place funding mechanisms to accomplish the work. The Town would like to continue building on the planning and implementation investment made under the 2003 MS4 permit, but focus on high priority areas and BMPs during the next permit term for the best use of the Town's funds.

We are providing the following comments organized by major topic with specific reference to the 2014 draft permit and the Town's specific request for EPA's response and/or modification to the permit.

Administration & Recordkeeping

1. *Part 1.7.2.d Notice of Intent* – "The NOI shall be submitted within 90 days of the effective date of the permit."

   Comment: The NOI requires a significant effort by the Town to develop. The commitment to activities outlined in the NOI requires review and approval by multiple departments within the Town. The authorization for funding needs to coincide with the Town's budget cycle and be approved at the annual Town Meeting. This effort cannot be effectively completed, reviewed and approved within such as short time frame.

   From the Public Meeting on October 22, 2014, it is the Town's understanding that the effective date of the permit will be approximately 6 months following finalization of the permit and will be synchronized with the fiscal year. The NOI will be due 90 days following the effective date. Therefore, the Town will have approximately 9 months from announcement of the final permit until the NOI is due.

   Request: The Town requests that the EPA verifies that the deadline for submitting the NOI will be 9 months to one year from the date the final permit is announced and will be synchronized with the fiscal year to allow more efficient coordination with the Stormwater Management Plan development and the Town's budget cycle beginning July 1st.

2. *Part 4.4 Annual Reports* – The annual reports shall contain the following information and data:
   - *IDDE summaries – Part 4.4.b.iv.* "… number and identifier of catchments evaluated; number and identifier of outfalls screened; number of illicit discharges located; number of illicit discharges removed; gallons of flow removed…"
   - *Outfall Inventory - Part 2.3.4.5.b & c Outfall/Interconnection Inventory* – "[The permittee] shall include the inventory in each annual report. The inventory shall be updated annually to include data collected in connection with the dry weather screening under Part 2.3.4.7.d. and other relevant inspections conducted by the permittee."
   - *Outfall Monitoring - Part 4.4.b.v* – "[The annual reports shall contain the following information]…All outfall screening and monitoring data collected by or on behalf of the permittee during the reporting period and cumulative for the permit term, including but not limited to all data collected pursuant to Parts 2.3.4. The permittee shall also provide a description of any additional monitoring data received by the permittee during the reporting period."
   - *SSOs – Part 2.3.4.4.d* "The permittee shall include and update the SSO inventory in its annual report, including the status of mitigation and corrective measures implemented by the permittee to address each SSO identified pursuant to this part."
   - *Catch Basin Cleaning – Part 2.3.7.a.iii.(b)* "The permittee shall report in each annual report the total number of catch basins, number inspected, number cleaned, and the volume or mass of material removed from each catch basin draining to water quality limited waters and the total volume or mass of material removed from all catch basins."
   - *Street Sweeping – Part 2.3.7.a.iii.(c)* "The permittee shall report in each annual report the number of miles cleaned and the volume or mass of material removed."

- *SWPPP findings - Part 2.3.7.b.iii (a) Stormwater Pollution Prevention Plan (SWPPP)* - "Inspect all areas that are exposed to stormwater and all stormwater control measures… The permittee shall report the findings from the Site Inspections in the annual report."

Comment: As stated in the Fact Sheet that accompanied the draft permit, "The Draft Permit contains more detailed reporting requirements than in the previous permit. Reports must contain sufficient information to enable EPA to assess the permittee's compliance with the permit." The EPA is requesting a significant amount of information to be provided with the annual reports, as shown with the examples above, which will create an administrative burden on the permittee. The information submitted with each annual report should be limited to a status update for that reporting period. The intent of the annual report is to document new progress and it is an unnecessary administrative burden to continue reporting the cumulative data for the permit term with each annual report. The Town feels that we can provide sufficient information to justify compliance with the permit without providing all the specific information requested by the EPA.

Also, the EPA has not specified in what format or method this information should be provided. The EPA is developing an annual report template for MS4s, which will reportedly populate information from the eNOI and be in the form of an electronic fillable .pdf. The effort to update information previously saved from the eNOI to a web-based reporting system would be less burdensome than re-submitting tables, databases, or GIS files each year. The Town is concerned about how compatible the annual report template will be to the Town's methods for data management.

Request: Data, inventories, and other detailed information should be tracked as part of the Town's SWMP and made available to EPA upon request, not submitted with each annual report. Please remove the requirement to submit the cumulative outfall monitoring and water quality data with each annual report.

The annual report template should be available when the final permit is issued so that MS4s can better customize their SWMPs and NOIs. Allow MS4s to comment and provide feedback on the annual report template before finalizing.

3. *Part 4.3.c Outfall Monitoring Reporting* – "The permittee shall also include in the annual report results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period" conducted on behalf of the permittee or conducted by other entities and reported to the permittee.

Comment: Again, this seems like an unnecessary administrative burden. Monitoring conducted by volunteers or required and reported to the EPA under separate permits or regulatory requirements should not be required in the MS4's Annual Report. The Town should also not report data for which they cannot verify quality assurance. The Town feels this information, if used by the Town for evaluating, designing, or implementing BMPs or other measurable goals identified in the MS4's SWMP, should be maintained with the SWMP and made available to EPA upon request.

Request: Please remove the requirement to submit any other stormwater or receiving water quality monitoring or studies with each annual report.

Stormwater Management Program (SWMP)

4. *Part 1.10.c Stormwater Management Program (SWMP)* – "The permittee is encouraged to maintain an adequate funding source for implementation of this program."

Comment: According to the Fact Sheet that accompanied the draft permit, "EPA recognizes that compliance with this permit will require substantial investment by permittees..." and that "…additional funding sources or mechanisms will be necessary to comply with the provisions in this Draft Permit." Federal funding programs (e.g., grants, revolving loans, LID incentive programs, etc.) should be available to support permit

requirements. More communities should benefit from federally funded water quality studies and planning, similar to the significant investment to support evaluation and planning in the Upper Charles River watershed. This is important for the ongoing evaluation of water quality issues, development of cost-effective solutions, and support of regional solutions.

Many of the current water quality funding programs, such as the Section 319 Nonpoint Source Competitive Grants Program, provide limited support for or even preclude NPDES Phase II planning and implementation activities. Revolving loan programs offer little incentive over the current bonding capacity of regulated communities.

The Town proposes to continue focusing available funding on high priority BMPs, as identified in our SWMP, as we continue to seek adequate funding sources.

Request: The Town requests more technical and funding support from federal and state programs to assist regulated MS4s with addressing regional water quality problems and support the federal unfunded mandates associated with the draft permit.

5. *Part 1.10.1.b Stormwater Management Program Availability* – "The permittee shall also post the SWMP online if the permittee has a website on which to post the SWMP."

   Comment: The Town prefers not to post the SWMP to the Town's website for the following two reasons:
   - The SWMP is a dynamic document that is continuously updated. Maintaining a dynamic document on the Town's website is difficult and can lead to outdated, misinformation for the public.
   - The mapping and municipal inventory components of the SWMP have a lot of critical information about the Town's infrastructure that we would prefer to provide upon request.

   Although the Town agrees with making more information about the stormwater program available through our website, the Town would prefer not to publish the SWMP through our website. The Town would prefer to continue to maintain the SWMP at the Department of Public Works Engineering Division and make it available to the public during normal business hours with a proper request.

   Request: Please remove the requirement to post the SWMP to the permitte's website. Revert to language from the 2010 Draft Permit "The permittee is encouraged to post the SWMP online…"

Non-Numeric Effluent Limitations

6. *Part 2.1.1.a Requirement to Meet Water Quality Standards* – "The permittee shall reduce the discharge of pollutants such that the discharges from the MS4 do not cause or contribute to an exceedance of water quality standards."

   Comment: According to the Fact Sheet provided with the draft permit, "Congress enacted Section 402(p) of the Clean Water Act, which requires that "[p]ermits for discharges from municipal storm sewers . . . shall include a requirement to effectively prohibit non-stormwater discharges into the storm sewers; and shall require controls to reduce the discharge of pollutants to the maximum extent practicable…" MEP is the statutory standard that established the level of pollution reductions that MS4 operators must achieve. Application of pollution controls to the MEP may not assure that discharges do not cause or contribute to an exceedance of water quality standards. Since MEP is the statutory standard for MS4s, it should apply throughout the permit and be the governing standard to determine compliance.

   Request: Revise this part of the permit to clarify that "…discharges from the MS4 do not cause or contribute to an exceedance of water quality standards *to the maximum extent practicable based on the measures outlined in the MS4's SWMP*."

7. *Part 2.1.1.d Requirement to Meet Water Quality Standards* - "… if there is a discharge from the MS4 that is causing or contributing to a violation of applicable water quality standards (including numeric and narrative water quality criteria) for the receiving water…, the permittee shall, as expeditiously as possible, but no later than 60 days of becoming aware of the situation, eliminate the condition causing or contributing to an exceedance of water quality standards."

   Comment: This requirement does not differentiate between point and non-point source causes of the violation of applicable water quality standards. Although it seems reasonable to be able to identify and eliminate point sources within 60 days using the Town's IDDE procedures, this time frame seems unreasonable for nonpoint sources. Permittees can reasonably be expected to investigate non-point pollution sources and make progress towards eliminating them within this time frame, but not completely eliminate them.

   Request: Please remove the requirement to eliminate the condition "no later than 60 days of becoming aware of the situation". The Town recommends requiring permittees to provide a plan and schedule for eliminating the condition within 60 days of becoming aware of the situation.

Discharges to Certain Water Quality Limited Waters Subject to Additional Requirements

8. *Part 2.2.2 Discharges to Certain Water Quality Limited Waters Subject to Additional Requirements* – "For purposes of this permit, a 'water quality limited water body' is any water body that does not meet applicable water quality standards, *including but not limited to* waters listed in categories 5 or 4b on the Massachusetts Integrated Report of Waters listed pursuant to Clean Water Act section 303(d) and 305(b). "

   Comment: "Any water body that does not meet applicable water quality standards" is subjective. The definition should be limited to waters listed on the Massachusetts Integrated List of Waters which is the tool used to evaluate and identify waters with respect to their capacity to support designated uses as defined in the states' surface water quality standards. The 2010 draft permit used this standard ("Impaired waters include those waters that MassDEP has identified pursuant to section 303(d) of the Clean Water Act as not meeting applicable state water quality standards). The 2014 draft has expanded the definition of water quality limited water bodies. The Massachusetts Integrated List of Waters should be used to define which waters are subject to the additional requirements of Part 2.2.2.

   Request: Please revise the definition of 'water quality limited water body' to limit it to only waters listed in categories 5 or 4b on the Massachusetts Integrated Report of Waters.

9. *Part 2.2.2 Discharges to Certain Water Quality Limited Waters Subject to Additional Requirements* – "In the absence of a defined pollutant reduction target and where no approved TMDL has been established, this permit Part and Appendix H define an iterative approach addressing pollutant reductions to waterbodies where the permittee's discharge is causing or contributing to an excursion above water quality ..."

   Comment: Similar to the comment 8 above, "..where the permittee's discharge is causing or contributing to an excursion …" is subjective. The Town does not agree with the EPA's following assumption as stated in the Fact Sheet that accompanied the draft permit that "…urban stormwater discharges from urbanized areas in New England contain bacteria/pathogens, nutrients, chloride, sediments, metals, and oil and grease (hydrocarbons) and finds that MS4 discharges are likely causing or contributing to the excursion above water quality standards when the receiving waterbody impairment is caused by bacteria/pathogens, nutrients, chloride, metals, sediments, or oil and grease (hydrocarbons)." According to the Fact Sheet, "Roughly half of [impairments] were related to stormwater pollution…" That also means that roughly half of the impairments are due to other sources not related to stormwater discharges.

The default assumption should not be that stormwater discharges from the MS4 are causing or contributing to the impairment and the EPA should have the burden of proof to show that the Town's discharge is causing or contributing to the impairments before the Town is subject to Part 2.2.2 and Appendix H of the draft permit. TMDL studies, environmental assessments, and water quality monitoring conducted with approved Quality Assurance Project Plans (QAPP) are used to identify what sources are causing or contributing to water quality impairments. In many cases, these studies show that the permittee is not a source of the pollutant. For example, Framingham Reservoirs #1 and #2, Saxonville Pond, and the Sudbury River within Framingham are Category 5 Waters requiring a TMDL for mercury in fish tissue. Based on environmental assessments, it is known that the mercury impairment is a result of a Superfund site located upstream and that the Town of Framingham's MS4 did not contribute to this impairment.

Another example is that much sediment and silt in the drainage channels, streams, and brooks in Town is from leaching of surrounding fine soils and organics, bank erosion, and re-suspension. The Town has focused operations on preventing silt and sediment deposits into streams from our roadways. To further reduce the pollutants that are causing the silt and sediment impairments would require a watershed approach and require cooperation between numerous entities to include Towns, the state, EPA, and US Corps of Engineers and would be better achieved by a regional, state, or federal entity.

Request: The EPA should have the burden of proof to show that the Town's discharge is causing or contributing to the impairments before the Town is subject to Part 2.2.2 and Appendix H of the draft permit. Please identify what method(s) will be used to confirm that the permittee's discharge is considered a source for the pollutant causing the excursion above water quality standards and therefore, must comply with Part 2.2.2 and Appendix H.

10. *Part 2.2.2 Discharges to Certain Water Quality Limited Waters Subject to Additional Requirements* – "… where the permittee's discharge is causing or contributing to an excursion above water quality standards due to nutrients (nitrogen or phosphorus), solids, bacteria/pathogens, chloride, metals or oil and grease (hydrocarbons)."

    Comment: Categories of pollutants in Part 2.2.2 should be consistent with the impairment causes listed in the Massachusetts Integrated Report of Waters for Category 5 Waters to avoid confusion. There are currently no waters listed as impaired for "solids" or "metals".

    The listed impairment cause that seems to be most closesly correlated to "solids" listed in Category 5 is "Total Suspended Solids (TSS)". Is that the only impairment that will be subject to this requirement for "solids"? The MS4 should not be expected to infer which other impairments, such as "turbidity", would also be considered "solids" for compliance with Part 2.2.2.

    Metals is too broad a category and some metals, such as the mercury impairment referenced in Comment 9, are not typically associated with stormwater runoff. Only the following specific metals are listed under the Massachusetts Integrated Report of Waters for Category 5: Lead, Mercury, Cadmium, Copper, and Arsenic. In the fact sheet that accompanies the draft permit, the EPA stated that "Metals like lead, zinc, copper, and cadmium get into runoff from impervious areas that are trafficked by vehicles, such as roadways, driveways and parking lots, from vehicle wear, tire wear, motor oil, grease and rust. Zinc was used here as a surrogate for other metals found in stormwater runoff because it is the most ubiquitous of all metals found in urban runoff, and as the concentration of metals like copper, chromium and lead increase, so does the concentration of zinc (generally)." Note that neither Mercury nor Arsenic was associated with stormwater runoff although these listed metals impairments would require additional actions by the MS4 for compliance with Part 2.2.2. of the permit as written. Also note that zinc, which was identified as "the most ubiquitous of all metals found in urban runoff" is not an impairment listed on the Massachusetts Integrated Report of

Waters for Category 5. Therefore, the Town does not feel that the EPA has adequately verified the assumptions that "metals" impairments are a result of stormwater runoff for which MS4s must comply with Part 2.2.2 and Appendix H for metals impairments.

Additionally, some listed impairments causes are not directly attributed to a pollutant source. The Massachusetts Integrated Report of Waters has impairments causes which could or could not be indirectly attributed to a pollutant listed in Part 2.2.2. For example dissolved oxygen and aquatic macroinertebrate bioassessments could be indirectly attributed to many pollutant sources, including those listed. As stated above regarding solids, the MS4s should not be expected to infer if compliance to Part 2.2.2 is required for impairments that are not directly attributed to a pollutant source.

Request: The Town requests that the EPA provide additional clarification of which impairments listed in Category 5 will be subject to Part 2.2.2 and Appendix H of the permit. The Town requests that the permit language is revised to reflect the same impairment causes listed in the Massachusetts Integrated Report of Waters for Category 5 Waters, such as listing specific metals, to avoid confusion as to which water bodies will be subject to Part 2.2.2 and Appendix H. The permit should specify that Mercury and Arsenic impairments will not be subject to Part 2.2.2 or Appendix H.

11. *Part 2.2.2 c.i.1., Part 2.2.2 d.i., and Part 2.2.2 e.i.1.* – The requirements of these Parts are applicable to any MS4 discharging directly to a water quality limited waterbody where bacteria, chloride, solids, oil and grease (hydrocarbons) or metals are the cause of the impairment.

    Comment: Unlike the previous sections for nutrients where specific MS4s were listed that were required to comply with those Parts, these sections do not identify the MS4s. Similar to Comment 10, the MS4 should not be expected to infer whether they are subject to these parts since the MS4 may be unclear if the water body's impairment applies to these categories or whether the MS4 is contributing a pollutant that is causing or contributing to the impairment.

    Request: Consistent with the previous permit parts, specific MS4s should be listed for Parts2.2.2.c.i.1, 2.2.2.d.i.1,and 2.2.2.e.i.1 as they have been for 2.2.2.a and 2.2.2.b
12. *Part 2.2.2 e.i.1.* – "The requirements of this Part are applicable to: Any MS4 discharging directly to a water quality limited waterbody where solids, oil and grease (hydrocarbons) or metals is the cause of the impairment."

    Comment: Similar to previous comments, although these pollutants may typically be found in stormwater it cannot be assumed that stormwater discharge from the MS4 is a source of these pollutants causing or contributing to water quality impairments. Until it is confirmed that the MS4 is a source, the MS4 should not be subject to the requirements of this Part. For example, Framingham Reservoirs #1 and #2, Saxonville Pond, and the Sudbury River within Framingham are Category 5 Waters requiring a TMDL for mercury in fish tissue. Based on environmental assessments, it is known that the mercury impairment is a result of a Superfund site located upstream and that the Town of Framingham's MS4 did not contribute to this impairment.

    Request: Revise the text to state "The requirements of this Part are applicable to: Any MS4 discharging directly to a water quality limited waterbody where solids, oil and grease (hydrocarbons) or metals is the cause of the impairment and where the permittee's discharge has been shown to be a causing or contributing source."
13. *Appendix H* – "At any time, a permittee may submit information to EPA demonstrating that its discharge does not contain [nitrogen, phosphorus, bacteria or pathogens, chloride, solids, oil and grease (hydrocarbons), or metals] by characterizing its discharge. Such demonstration must be documented through long term monitoring using the outfall characterization recommendations of the National Research Council.

The National Research Council recommends a minimum of 30 flow weighted composite samples collected over the course of 2-3 years on a variety of storm sizes to characterize a discharge properly."

Comment: The NRC's outfall characterization recommendations should not be the only means by which a MS4 can demonstrate that the MS4's discharge does not contain pollutant loading that would cause a water quality impairment. Similar to Comment 12, other studies completed by either the MS4 or other organizations should be allowed. For example, the Town should not be required to demonstrate that the MS4 is not a source of mercury when the EPA has already identified another source as part of their Superfund program.

Request: Revise language to allow flexibility to use other methods to demonstrate that the MS4's discharge does not contain pollutant loading that would cause a water quality impairment and is not required to comply with requirements in Part 2.2.2 or Appendix H.

14. *Appendix H, Part II.1.c.ii. Discharges to water quality limited waterbodies and their tributaries where phosphorus is the cause of the impairment* – "The permittee shall plan and install a minimum of one structural BMP as a demonstration project within the drainage area of the water quality limited water or its tributaries within six years of the permit effective date."

Comments:
Non-structural BMPs can be as effective as structural BMPs and should also be allowed to meet the requirement of a demonstration project.

The Phosphorus Source Identification Report is required within 4 years and the demonstration project is required to be installed within 6 years of the effective date of the permit. Therefore, there is a 2 year period to plan and install the BMP following the report. Considering the design, permitting, funding, contracting, and execution requirements for a demonstration BMP, the BMP should not be required to be installed for at least 3-5 years following completion of the Phosphorus Source Identification Report.
The Town has had difficulty developing and implementing BMPs near or within streams, tributaries, and other waterbodies that are subject to multiple, sometimes conflicting, permitting requirements from the state and federal governments. Several BMPs that the Town would like to implement to improve stormwater management and water quality, such as stream restoration, dam removal, or dredging to remove contaminated sediments, become infeasible due to the varying permit requirements under the limitations imposed by other agencies. We recommend as part of the MS4 permitting process, the EPA coordinates with other state and federal agencies such as the US Army Corps of Engineers and MassDEP which have permitting jurisdiction over water resources to streamline the permitting process and improve the feasibility for implementing BMPs as required by this permit. Otherwise, the Town does not feel that it may be feasible to install a structural demonstration BMP within six years of the permit effective date.

Request: Allow a non-structural or structural BMP to be implemented as the demonstration project. Allow additional time from the completion of the Phosphorus Source Identification Report until the installation of the BMP. The Town recommends that installation of the BMP is required within 10 years of effective date of the permit.

Public Education and Outreach

15. *Part 2.3.2.b. Public Education and Outreach* – "The educational program shall include education and outreach efforts for the following four audiences: (1) residents, (2) businesses, institutions (private colleges, private schools, hospitals), and commercial facilities, (3) developers (construction), and (4) industrial facilities."

Comment: Some of these audiences should be targeted at a regional, state, or national level instead of a local level. The local MS4 has limited authority or ability to reach these audiences effectively. Specifically:

- The Town does not feel that industrial facilities should be included as an audience under this requirement since industrial discharges are permitted separately by the EPA under the NPDES Multi-Sector General Permit (MSGP). The MSGP requires annual training which should meet the intent of education for this audience.
- Similarly, the Town does not feel that developers should be included as an audience under this requirement since construction operations are permitted separately by the EPA under the NPDES Construction General Permit (CGP). The CGP includes training and certification requirements which should meet the intent of education for this audience.
- Identifying and reaching a broad audience for commercial operations and businesses which have the potential to adversely affect water quality will be difficult for the Town. At this time, the Town has targeted efforts for the commercial sector as part of our IDDE program. The Town uses our outfall monitoring program to identify potential illicit discharges, identify potential sources, and then target the facilities from which those potential sources may have originated. Additionally, most businesses, institutions, and commercial facilities that can potentially adversely impact stormwater runoff based on their operations are (or should be) required to permitted under the MSGP or non-traditional MS4 permits. The Town feels that this audience is best addressed with the IDDE program or separate NPDES permits and that this audience should not be included under Part 2.3.2.b.

Request: Please remove commercial facilities, developers, and industrial facilities as audiences from this part of the permit. Let the Town continue to focus education efforts on (1) residents since residential areas are our leading contributors to non-point pollution and (2) targeted audiences identified as part of our IDDE program.

16. *Part 2.3.2.e. Public Education and Outreach* – "The program shall show evidence of focused messages for specific audiences as well as *evidence* that progress toward the defined educational goals of the program has been achieved. The permittee shall identify methods that it will use to evaluate the effectiveness of the educational messages and the overall education program."

    Comment: It is difficult to provide evidence of the ultimate objectives of this minimum control measure which are to "increase knowledge and change behavior of the public".

    Request: Provide guidance on what will be acceptable evaluation methods and "evidence" required to be documented in the annual report.

Illicit Discharge Detection and Elimination (IDDE)

In general, the Town feels that the IDDE Program requirements as outlined in the draft permit are too prescriptive. The Town feels we can achieve the intent and goals of the IDDE minimum control measure with a program customized for our community which will better use our resources and achieve better results by focusing on priorities developed from previous assessments and master planning efforts. Compliance with the overly detailed methods and requirements in the draft permit will limit, not enhance, the Town's ability to address illicit discharges effectively.

17. *Part 2.3.4.2.b* – "The period between identification and elimination of an illicit discharge is not a grace period. Discharges from an MS4 that are mixed with an illicit discharge are not authorized by this Permit (Part 1.3.a) and remain unlawful until eliminated."

Comment: The Town recognizes and understands that the MS4 Permit does not authorize illicit discharges. However, the purpose of the IDDE program is to identify and remove these unauthorized discharges. As long as the Town has an effective IDDE program in place pursuant to Part 2.3.4 with a reasonable schedule as described in Part 2.3.4.2. for the removal of identified illicit discharges, the presence of such discharges should not constitute an ongoing violation of the permit. It would be more appropriate to state that failure to effectively implement the IDDE program is a violation.

Request: Please remove Part 2.3.4.2.b from the permit.

18. *Part 2.3.4.4. Sanitary Sewer Overflows* – Overall SSO inventory and reporting requirements.

    Comment: The Town currently tracks and reports SSOs as required by MassDEP's Bureau of Resource Protection – Wastewater Management Program which has similar, if not the same, requirements for inventory and reporting as Part 2.3.4.4 of the draft permit. This program also requires EPA notification. The requirements in part 2.3.4.4 seem to duplicate efforts and be an unnecessary administrative burden since the goal of identifying and addressing SSOs is already accomplished by the other state program.

    Request: Please remove Part 2.3.4.4.

19. *Part 2.3.4.5.b Outfall/Interconnection Inventory* – "The permittee shall physically label all MS4 outfall pipes (excluding interconnections) with their unique identifier by the end of the permit term."

    Comment: The Town does not see a benefit to physically labeling all MS4 outfalls. All of our outfalls can be identified by their unique identifier and associated attributes using our GIS mapping and located with a GPS in the field. With over 600 outfalls of various size, construction, and location this requirement will take considerable effort. Although this may be easy for outfalls with well-maintained headwalls, it will be difficult, if not impossible, to physically label many outfalls. For example, some outfalls are located under bridges or are pipe ends within a steep vegetated bank.

    Request: Please remove this requirement from the permit.

20. *Part 2.3.4.6.a.i. Required Mapping Elements* – Mapping requirements include "Catchment delineations. For the purpose of this permit, a catchment is the area that drains to an individual outfall or interconnection, for use in priority rankings …"

    Comment: Although the Town agrees that delineation of drainage areas is important for the IDDE program, the Town feels that delineation down to the catchment drainage area for every outfall is unnecessary. With over 600 outfalls, the effort to delineate each catchment would be significant. The effort required to accomplish this within the 2 year deadline for system mapping would pull resources from other Town priorities identified in our SWMP. The Town would prefer to build on previous IDDE efforts which focused on sub-basin delineation. Within prioritized sub-basins, the Town would identify, assess, and prioritize outfalls to identify which catchments need further evaluation. Catchment delineation would not be needed for outfalls with no or low potential for illicit discharges. Catchment delineation would be conducted as part of the assessment for outfalls with medium or high potential for illicit discharges.

    Request: Remove the catchment delineation mapping requirement from the permit. If the requirement remains, allow additional time to complete this element of the mapping to within the 5-year permit cycle and not within 2 years.

21. *Part 2.3.4.7.c. Assessment and Priority of Catchments* – "The permittee shall assess and priority rank the catchments… This ranking will determine the priority order for screening of outfalls and interconnections

pursuant to Part 2.3.4.7.d., catchment investigations for evidence of illicit discharges and SSOs pursuant to Part 2.3.4.7.e., and provides the basis for determining permit milestones pursuant to Part 2.3.4.8"

Comment: Although the Town agrees that there should be a procedure for assessing and prioritizing IDDE efforts, the Town would prefer to have more flexibility to develop the program. The Town would prefer to build on previous stormwater master planning efforts which focused on assessing and prioritizing sub-basins instead of catchments. In prioritized sub-basins, the Town would identify, assess, and prioritize outfalls to identify which catchments need further evaluation.

Request: Allow more flexibility for Towns to develop an assessment and priority ranking for their IDDE program. Part 2.3.4.7.c. should be guidance for the IDDE program and not the required method.

22. *Part 2.3.4.7.d.iii Dry Weather Screening and Sampling* – "When a flow is observed, a sample of the flow shall be collected and analyzed for the parameters listed in 2.3.4.7.d.v."

    Comment: If the screening assessment and an inspection of physical indicators does not indicate a potential illicit discharge, sampling should not be required. The parameter list for dry weather monitoring should be specific to the outfall and receiving water body based on the screening and inspection and not the generalized list in the permit. Flow should only be required to be analyzed for suspect pollutants if the screening assessment and inspection indicate the potential for those pollutants. For example, if previous screening events and visual observation indicate that the flow is likely groundwater infiltration and the receiving water is impaired for pathogens, then the Town should not be required to analyze for ammonia.

    Request: Please revise the permit to provide flexibility for MS4s to exclude unnecessary analytical parameters for dry weather flows based on the MS4's understanding of the drainage system, water quality issues, past analytical data, and inspections.

23. *Part 2.3.4.7.d.v Dry Weather Sampling* – "Samples shall be analyzed at a minimum for ammonia, chlorine, conductivity, salinity, *E. coli*. (freshwater receiving water) or enterococcus (saline or brackish receiving water), surfactants (such as MBAS), and temperature."

    Comment: The Town of Framingham is located entirely in freshwater watersheds and does not have waters impaired for chlorides. The Town does not see the need or benefit for analyzing for salinity. Impacts from salt used on roads during winter conditions is addressed in Part 2.3.7 under Good Housekeeping and would not be captured by dry weather sampling efforts. Water quality limited waterbodies where chloride is the cause of the impairment are addressed by Part 2.2.2.c.

    Request: Remove requirement for salinity analysis.

24. *Part 2.3.4.8.a – IDDE Program Implementation Goals and Milestones* – "The permittee shall complete dry weather screening and sampling (where flowing) of every MS4 outfall and interconnection (except Excluded and Problem Catchments) no later than three years from the permit effective date. The permittee may rely on screening conducted under the MS4-2003 permit."

    Comment: The Town has previously completed dry weather screening of all outfalls and will rely on our records to revise and update our IDDE Program for compliance with the new permit. The previous draft permit allowed considerably more time to complete outfall screening using a prioritized method. If previous data is not available or cannot be used, 3 years is very aggressive for completing the screening.

    Request: Allow for the full permit term (five years) to complete screening of all outfalls, using a prioritized method outlined in the MS4's IDDE Program.

25. *Part 2.3.4.8.c – IDDE Program Implementation Goals and Milestones* – "The permittee shall implement the Catchment Investigation Procedures in every catchment of the MS4, even where dry weather screening does not indicate evidence of illicit discharges."
and
Part 2.3.4.7.e.ii Catchment Investigation Procedure – "Either method [of manhole inspection methodology] must, at a minimum, include an investigation of each key junction manhole within the MS4, even where no evidence of an illicit discharge is observed at the outfall."

Comment: If the purpose of these parts of the permit is to identify and remove illicit discharges, the Town does not understand why investigation procedures are required in every catchment and manhole of the system where there is no evidence of an illicit discharge. The ability to reduce the number of catchments and manholes for physical investigation by a clearly defined desktop screening process in accordance with Part 2.3.4.7.e.i. would focus the Town's efforts and result in a more feasible and achievable goal.

Request: Please remove the requirement to conduct catchment investigations in every catchment and manhole of the MS4, even where dry weather screening does not indicate evidence of illicit discharges. The IDDE program development, specifically the priority ranking of catchments based on detailed mapping information, is an appropriate screening tool to focus the Town's efforts on catchments where illicit discharges are most likely to be present.

Construction Site Stormwater Management

No comments.

Post-Construction Stormwater Management

26. *Part 2.3.6.a.ii Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management)* – "The permittee shall develop or modify, as appropriate, an ordinance or other regulatory mechanism within two (2) years of the effective date of the permit to contain provisions that are as least as stringent as the following:
    (a) Stormwater management systems on new and re-developed sites shall be designed to either:
        1. Retain the first one (1) inch of runoff from all impervious surfaces on site. OR
        2. Provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration on the first one (1) inch of runoff from all impervious surfaces on site."

Comment: The Town feels that this requirement is very stringent as compared to current requirements and requires a very aggressive schedule for completion. "All impervious surfaces" is vague and can be interpreted in multiple ways. The Town believes that regulatory changes should be promulgated at the state or federal level, not the local level, to provide consistent standards. Additionally, enforcement of these regulations should be at the state or federal level, or additional financial support should be provided to the Town for implementation and enforcement of these regulations. There are many reasons why this makes more sense than requiring municipalities to promulgate their own ordinances or regulations.

1) Like many other municipalities, the Town's bylaws for design of stormwater management systems require meeting the Stormwater Management Standards and technical guidance contained in the Massachusetts Department of Environmental Protection's Stormwater Management Handbook. This requires treatment for water quality to the maximum extent practicable. The proposed permit requirement is more stringent than the MassDEP requirements, although the Fact Sheet accompanying the permit states "State-wide consistency will provide a common bar for development and

redevelopment in every regulated community and afford more consistent protection of affected waters."

2) Local ordinances are not easily enforceable and do not have the strength of state or federal laws. The Town has seen an increasing number of appeals and request for variances to local requirements, especially those that are more stringent than state requirements. The locally elected boards, in an effort to be development and business friendly, usually grant these variances since economic drivers and encouraging redevelopment are Town priorities above environmental drivers.

Redevelopment projects may have site restrictions that make the proposed water quality treatment and level of pollutant removal infeasible. There should be a waiver for this requirement for sites where infiltration is determined to be infeasible (e.g., due to contamination, high groundwater table, shallow bed rock, poor infiltration rates, etc.) or where it can be demonstrated that infiltration would cause property or environmental damage.

Request: If these regulations are required, EPA should provide more guidance on what will be considered part of "all impervious surfaces" for the proposed requirement for re-development. The Town recommends that this standard be required for management of the first one inch of runoff from all Directly Connected Impervious Areas (DCIA) within the limits of earth disturbance.

These regulatory changes should be promulgated at the state or federal level, not the local level. BMP design requirements in the permit should be consistent with the MassDEP Stormwater Management Standards. EPA should work with MassDEP to ensure the MassDEP's standards are consistent and should not require individual municipalities to develop or modify their bylaws to be more stringent than the MassDEP standards. Waivers should be considered to allow for potential redevelopment on sites for which these requirements are infeasible.

27. *Appendix H.II.1.a.i.2. Additional or Enhanced BMPs for Discharges to water quality limited waterbodies and their tributaries where phosphorus is the cause of the impairment* – Requires "adoption/amendment of the permittee's ordinance or other regulatory mechanism shall include a requirement that new development and redevelopment stormwater management BMPs be optimized for phosphorus removal."

Comment: Similar to Comment 26 above, the Town feels that this requirement is very stringent as compared to current requirements and that regulatory changes should be promulgated at the state or federal level, not the local level.

Request: If these regulations are required, promulgate these regulatory changes at the state or federal level, not the local level. BMP design requirements in the permit should be consistent with the MassDEP Stormwater Management Standards. EPA should work with MassDEP to ensure the MassDEP's standards are consistent and should not require individual municipalities to develop or modify their bylaws to be more stringent than the MassDEP standards.

28. *Part 2.3.6.a.ii(b)* – "Stormwater management systems designed on sites with documented soil contamination or management systems designed on industrial sites shall not include BMPs that promote infiltration and shall instead require the use of treatment BMPs on site."

Comment: Infiltration BMPs should not be excluded from all industrial sites, but should be evaluated on a case-by-case basis since not all industrial sites are land uses with higher potential pollutant loads. Similar to the comment above, this requirement should be consistent with the MassDEP Stormwater Management Standards and require water quality controls to the maximum extent practicable. The achievement of pollutant removal equal to or greater than the level of pollutant removal provided through the use of

biofiltration on the first one (1) inch of runoff will be difficult for sites with poor soils and limited space.

Request: Revise the permit language to "Stormwater management systems designed on sites with documented soil contamination or management systems designed on *land uses with higher potential pollutant loads as defined in 310 CMR 10.04 and 314 CMR 9.02* shall not include BMPs that promote infiltration and shall instead require the use of treatment BMPs on site *to the maximum extent practicable*."

29. *Part 2.3.6.b & c* – Permittees must assess if and how regulations and guidance support LID and green infrastructure. "The permittee shall implement *all* recommendations, in accordance with the schedules, contained in the assessment."

    Comment: The permittee should not be required to implement all recommendations. Instead, the permittee should be allowed to evaluate recommendations and implement those that they feel are appropriate.

    Request: Revise language to remove "all recommendations" and replace with "appropriate recommendations".

30. *Part 2.3.6.c* – "Within four (4) years from the effective date of the permit, the permittee shall develop a report assessing existing local regulations to determine the feasibility of making, *at a minimum*, the following practices allowable when appropriate site conditions exist:
    i. Green roofs;
    ii. Infiltration practices such as rain gardens, curb extensions, planter gardens, porous and pervious pavements, and other designs to manage stormwater using landscaping and structured or augmented soils; and
    iii. Water harvesting devices such as rain barrels and cisterns, and the use of stormwater for non-potable uses."

    Comment: The Town agrees with the requirement to assess local regulations and the feasibility to remove barriers and encourage green infrastructure and LID. That being said, the Town feels that the draft permit should not specify which minimum green infrastructure and LID practices should be assessed (i.e. the minimum practices listed above).

    Request: Revise language to remove specified practices. For example, "…the permittee shall develop a report assessing existing local regulations to determine the feasibility of making green infrastructure and low impact development practices allowable when appropriate site conditions exist, *such as* the following:…"

31. *Part 2.3.6.d Directly Connected Impervious Area* – "The permittee shall estimate the annual increase or decrease in the number of acres of impervious area (IA) and directly connected impervious area (DCIA) discharging stormwater to its MS4 …and report those estimates in each annual report… the permittee shall estimate for each sub-basin identified pursuant to Part 2.3.4.6.a. the number of acres of IA and DCIA discharging stormwater to its MS4 that have been added or removed during the prior year. The permittee shall include in its estimates the additions or reductions resulting from development, redevelopment, or retrofit projects undertaken directly by the permittee; or by private developers and other parties in a voluntary manner or in compliance with the permittee's ordinance or bylaw pursuant to Part 2.3.6.a. of this permit.

    Comment: The Town appreciates that the draft permit is only requesting estimated IA and DCIA, as opposed to detailed analysis. The Town sees the value in detailed analysis for MS4s required to develop and implement a Phosphorus Control Plan or MS4s that plan to or currently implement a stormwater utility,

but neither of these situations apply to Framingham. The Town feels that the baseline data provided by MassGIS is sufficient for our needs and that additional evaluation of IA or DCIA at the local level will be burdensome and take staff away from more valuable functions while resulting in little benefit to the municipal stormwater managers. Local stormwater managers should not be charged with gathering or improving data that is not significantly beneficial to them when baseline data is available.

Additionally, this data is currently owned and managed at the state level through MassGIS with the quality controls and assurances provided by the MassGIS program. Locally gathered data that is not collected or managed using the same QA/QC procedures may lead to future confusion and contradictions. Not every MS4 has the staff, training, equipment, or personnel to collect and maintain GIS data.

Note: This section references "sub-basins" as opposed to "catchments" pursuant to Part 2.3.4.6.a. The Town supports the use of sub-basins as opposed to catchments for planning and assessment.

Request: Remove Parts 2.3.6.d.i and ii which require tracking and estimating IA and DCIA at the local level. If change in impervious surface over time is a metric of interest to federal and state regulators, then this GIS data should be tracked and maintained at the state level to provide consistent quality and reliability statewide.

Good Housekeeping and Pollution Prevention

32. *Part 2.3.7.a.i Operations and Maintenance Programs* - *"*Within one (1) year from the effective date of the permit, the permittee shall develop, if not already developed, written operations and maintenance procedures for [parks and open space, buildings and facilities where pollutants are exposed to storwmater runoff, and vehicles and equipment]. These written procedures shall be included as part of the SWMP."

    Comment: This will require a significant coordination effort amongst multiple Town departments including, but not limited to, Parks & Recreation, Conservation Commission, Schools, Police, Fire, and DPW. Operations and maintenance procedures are being followed, but we do not currently have written O&M procedures that specifically address stormwater management concerns. The Town anticipates that significant effort is needed and one year will not be sufficient to plan and complete this requirement.

    Request: The full permit term (5 years) should be granted for this effort.

33. *Part 2.3.7. a.iii(b)Second Bullet Infrastructure Operations and Maintenance* – *"*Establish a schedule that the frequency of routine cleaning will ensure that no catch basin at anytime will be more than 50 percent full."

    Comment: The requirement to clean all catch basins when they are 50 percent full could potentially require frequent cleaning of all catch basins in areas where deep sump basins have not yet been installed (the Town has an on-going program to retrofit catch basins with deep sump catch basins as part of roadway projects). The catch basin cleaning protocol outlined in this part of the draft permit may be excessive compared to the associated benefit. Town departments responsible for catch basin cleaning strive to maximize efficiency, despite local budgets constraints and staff and specialized equipment shortages. For the roadways, greatest efficiency is realized when catch basins are cleaned following a geographic pattern, i.e., all basins in a given area are cleaned one after the other before moving on to a new area. Cleaning catch basins when they become 50 percent full is contrary to efficient use of manpower and cannot be implemented in a practical way. Furthermore, the inspection and cleaning of stormwater structures should be modified to be at the same frequency, allowing both to be performed at once.

Request: Change the permit language to allow more flexibility in developing the cleaning schedule. This can be done by establishing goals, not required actions. For example, revise the language to be similar to the 2010 draft "Establish a goal that the frequency of routine cleaning will prevent catch basins at anytime from being more than 50 percent full."

34. *Part 2.3.7.a.iii(f) Infrastructure Operations and Maintenance* - "All permit-owned stormwater treatment structures (excluding catch basins) shall be inspected annually at a minimum."

    Comment: The Department of Public Works is currently in the third of five phases of a Stormwater Master Plan which assesses, evaluates, and recommends improvements to the Town's stormwater system. The phased approach was prioritized by sub-basin and allows the Town to focus on our most critical stormwater management infrastructure. As a result of our Stormwater Master Plan, the Department of Public Works has installed a SmartSponge® stormwater treatment system at an outfall to a Town beach, Stormceptors at high priority areas that discharge to the Sudbury River, deep sump and hooded catch basins as part of Town roadway projects, and other BMPs throughout the Town. Based on our previous efforts and amount of infrastructure, we feel it would be nearly impossible to comply with an annual inspection requirement. Inspection frequencies should be part of stormwater planning and should be based on recommended industry best practices, manufacturer's recommendations, and inspection history. The inspection frequency should not be set arbitrarily at an annual minimum requirement. This will allow the Town to focus on high priority areas and maximize the use of our limited staff and equipment.

    Request: Please revise this part to allow the MS4 to set the appropriate inspection frequency for stormwater treatment structures. Additionally, the Town requests that the EPA allow MS4s to develop a prioritized inspection and cleaning schedule for all BMPs.

35. *Part 2.3.7.b.iii (a) Stormwater Pollution Prevention Plan (SWPPP)* - "Inspect all areas that are exposed to stormwater and all stormwater control measures. Inspections shall be conducted at least once each calendar quarter… The permittee shall report the findings from the Site Inspections in the annual report."

    Comment: Quarterly inspections of facilities under a SWPPP are inefficient and wasteful. The Town recommends an annual inspection of facilities and semi-annual inspection (spring and fall) of discharge points.

    Also, the draft permit requires that SWPPPs be developed and implemented for maintenance garages, public works facilities, transfer stations, and other waste handling facilities. The Town recommends that a comprehensive SWPPP that covers all facilities be required rather than developing individual SWPPPs for each of the facilities. The Town has used this method successfully to develop and implement a comprehensive Spill Prevention, Control, and Countermeasures (SPCC) Plan for DPW facilities. Developing and implementing individual SWPPPs will result in significant cost burden to the Town.

    Request: Allow a comprehensive SWPPP to covers all similar municipal facilities and operations and adjust inspection schedule to annually.

36. *Part 4.1.a Program Evaluation* - "EPA or MassDEP may require the permittee to add, modify, repair, replace or change BMPs or other measures described in the annual reports as needed."

    Comment: This is open-ended and onerous.

    Request: More specific allowances should be made for what will be required and how long a community will be given to make changes if they are requested or required by the regulatory agencies.

In closing, thank you for the opportunity to comment on the 2014 Draft Massachusetts MS4 General Permit and for your consideration of these comments as the permit is finalized. We hope that these comments and information are helpful in shaping the new MS4 Permit and the Town respectfully requests a written response from EPA to each of the items in this letter.

The Town feels we are proactive in our Stormwater Management Program and we continue to move towards the mutual goal of improved water quality in our waterways as we implement our Stormwater Management Plan under the MS4 Permit. If you have any questions or wish to discuss this information, please feel free to contact the Town's Stormwater Engineer, Kerry Reed, by phone at 508-532-6015 or e-mail at kr@framinghamma.gov.

Respectfully,

Robert J. Halpin
Town Manager

cc: H. Curtis Spalding, Regional Administrator, USEPA, Region 1
Thelma Murphy, USEPA, Region 1
David Webster, USEPA, Region 1
Ken Moraff, USEPA, Region 1
David Ferris, USEPA, Region 1
Fred Civian, MassDEP
Karen Spilka, State Senator
Chris Walsh, State Representative
Tom Sannicandro, State Representative
Board of Selectmen, Town of Framingham
Peter Sellers, Executive Director, FDPW

TOWN OF FRANKLIN
DEPARTMENT OF PUBLIC WORKS
257 Fisher Street
Franklin, MA 02038

February 25, 2015

Mr. Newton Tedder
US Environmental Protection Agency, Region 1
5 Post Office Square, Suite 100
Boston MA 02109-3912

Re: 2014 Draft Massachusetts Small MS4 General Permit
Comments from the Town of Franklin

Dear Mr. Tedder,

The Town of Franklin would like to take this opportunity to respectfully submit comments on the 2014 Draft Massachusetts Small MS4 General Permit, which was published on September 30, 2014.

While the goal of the Clean Water Act is commendable and supported by the Town of Franklin, we consider the majority of the requirements in the new proposed MA Small MS4 general permit to be overly assertive, burdensome, expensive, unrealistic and most likely not feasible and unachievable for the Town of Franklin within the specified timeframe and without funding support from the US Environmental Protection Agency (US EPA) and/or the Massachusetts Department of Environmental Protection (MassDEP).

As you are aware, The Town of Franklin has made huge strides towards improving the overall water quality and water availability in Franklin. These improvements have been made in not only Stormwater Management, but also drinking water and sewer connivance over the past decade. Our successes have been made through MS4 compliance activities, proven and innovative drinking water conservation practices, smart sewer infiltration and inflow (I/I) monitoring and improvements, stormwater drainage improvements, impervious area reductions during redevelopment of public and private property, and with capital infrastructure improvements in all areas. The Town of Franklin has spent in excess of $30,000,000.00 on all drinking water, sewer and stormwater improvements over the last 12 years. The majority of the funding for this work has come from an operational increase of 22% for stormwater, increases of water and sewer rates of 334%, additional local bylaws and requirements for development and redevelopment and an aggressive pursuit of grants that were matched with Town effort.

In the absence of a current updated permit, resulting in little or no direction from EPA over the last eight years, the town has developed its own approach for stormwater management and we have relied heavily on capital improvement projects to execute stormwater improvements. The Town has been able to include these improvements with every town construction project, allowing for a variety of stormwater improvements including the removal of impervious surfaces (road narrowing and sidewalk removal), the construction of rain gardens and tree wells and the installation of proprietary BMPs, such as stormceptors.

Full compliance with the 2014 Draft MS4 Permit is an additional significant effort that cannot be currently supported with the Town's existing resources and funding within the next permit cycle, as specified in the draft permit. The Town wishes to continue improving stormwater management and water quality, but this effort needs to take into consideration the progress made to date and be balanced with future infrastructure demands town-wide and economic conditions. Additionally, the town feels that the most cost-effective approach for stormwater improvements is integration with redevelopment and capital projects as infrastructure needs to be upgraded and/or replaced.

Similar to many other communities, Franklin has considered creating a stormwater utility to meet the current and proposed additional costs associated with the updated MS4 permit. Attached are working budget sheets that are based on current costs to meet the existing MS4 permit compared to estimated short-term EPA proposed MS4 stormwater activities. These worksheets clearly show that the additional tasks proposed by the new MS4 permit would go up over 100%!

Presently the Public Work's General Fund Operational Budget (GFOB) is $3,996,424.00. It is estimated that 14% or $559,499.00 of the GFOB is used for only stormwater tasks. If the new MS4 permit becomes effective as proposed, it is estimated that the stormwater program effort in Franklin would require an increase to 26% or $1,039,070.00 of the GFOB. In order for the Town to maintain "level funded services" they would have to increase taxes to come up with an additional $479,571.00 or other services and personnel would have to be cut from one or more town sectors (public works, police, fire, library, senior services, education or elsewhere). Please be aware this large increase is just for annual operation costs and does not consider the capital improvement costs and related operation and maintenance needs required under the draft MS4 permit.

In 2011, The Town of Franklin, in conjunction with EPA, studied the cost for the Town to meet the requirements of the Charles River TMDL. EPA estimated Franklin's capital improvement cost to be $74,600,000.00! The tables below are from the 2011 Upper Charles Study. The target reduction in phosphorous for Franklin was 52%, 15% of which would be met by enhanced operational and non-structural BMPs, which are rolled up into the future operational costs. The remaining 37% was to be achieved through implementation of structural BMPs. It also needs to be noted that the $74,600,000.00 is only for operational and construction of new BMPs and there is consideration for land acquisition that would be needed. It is estimated that many more millions of dollars would be needed to acquire the land though purchase or easement to install future BMPs.

Table E.5: Recommended Capital Cost for Implementation of Structural Stormwater Controls to Achieve Compliance with Phosphorus Load Reductions (2011 Dollars)

Town	% Phosphorus Removal from Structural Controls[1]	Total Cost of Structural BMPs (Charles River Watershed)[2]
Bellingham	37%	$29,700,000
Franklin	37%	$74,600,000
Milford	42%	$75,800,000

[1] Assumes 15% TP reductions in each community via non-structural controls
[2] Estimated costs are based on a calibration against Spruce Pond Brook subwatershed and rounded to the nearest $100,000

Table E.9: Estimated Operational and Capital Costs – Charles River Watershed (2011 dollars)

Town	DD CIP	Town CIP	Total CIP	Operating Costs[1]
Bellingham	$2,600,000[2]	$27,100,000	$29,700,000	$891,000
Franklin	$10,900,000	$63,700,000	$74,600,000	$1,815,000
Milford	$11,100,000	$64,700,000	$75,800,000	$1,037,000
TOTALS	$24,600,000	$155,500,000	$180,100,000	$3,744,000

[1] Annual Average for first five years
[2] Bellingham DD implementation costs per impervious acre are estimated to be significantly lower due to the presence of higher infiltration capacity soils underlying subject properties and the lower ratio of impervious to pervious surfaces compared to DD properties in the other two municipalities.
Costs are rounded to the nearest $1,000 (totals may not add up due to round-off error).

Table E.10: Estimated Total Implementation Costs over 25 Years Beginning in 2012 (2011 Dollars)

Town	10-Year Implementation	15-Year Implementation	20-Year Implementation	25-Year Implementation
Bellingham	$70,800,000	$65,900,000	$60,700,000	$55,000,000
Franklin	$165,900,000	$153,400,000	$140,400,000	$127,000,000
Milford	$146,000,000	$133,400,000	$120,200,000	$107,000,000
TOTALS	$382,700,000	$352,700,000	$321,300,000	$289,000,000

Costs are rounded to the nearest $100,000.

Besides the unrealistic cost associated with the proposed Phosphorus Control Plan that was identified during the 2011 Upper Charles River Study, the current draft MS4 permit outlines an implementation time frame of no later than 20 years to complete the Phosphorous Control Plan. The table above clearly shows the overall cost savings that are realized with a longer implementation time table. EPA needs to consider extending the time table to implement the Phosphorus Control Plan to save money for all communities.

The draft MS4 permit outlines a 37% reduction requirement for Franklin, which is less than the 52% previously outlined in the Upper Charles Study. Even if we only have to meet a 37% reduction, I calculated the costs for the relative structural BMP cost and weight by lbs. of phosphorous from 52% to 37%. The table below still shows an implementation cost of over $42,000,000.00 to meet proposed Phosphorus Reductions in Franklin.

Phosphorous Reduction Requirements

	Existing Load (lbs/yr)	TMDL Allowable Load (lbs/yr)	Required Load Reduction (lbs/yr)	% Reduction	Non-Structural BMPs %	lbs Removed by Non-structural BMPs	Structural BMPs %	lbs Removed by Structural BMPs	Structural BMPs Cost	$/lb Structural BMPs
Upper Charles Study	5,428	2,600	2,828	52.1%	15%	814	37%	2,008	$74,600,000	$ 37,145
2014 MS4 Permit	5,218	3,302	1,916	36.7%	15%	783	22%	1,133	$42,096,429	$ 37,145

As mentioned previously regarding operational costs, I am unsure how the Town of Franklin can come up with $42,096,429.00 over the next 20 years for the implantation of the Phosphorus Control Plan and realistically implement this magnitude of projects. The Town of Franklin presently has a FY15 operation budget (schools, DPW, police, fire, library, etc.) of $111,318,801.00, with a capital improvement appropriation of $2,092,000.00. It would be difficult, if not impossible for the Town of Franklin to come up with an additional $2,104,821.45 for this program without reductions in other areas for capital improvements in Town like needed repairs to our schools and Town buildings, roadway improvements and equipment purchases, just to name a few. Taxes would need to be increased significantly or other services and personal would have to be cut from all other town sectors (public works, police, fire, library, senior services, education or elsewhere).

In conjunction with the comments mentioned above, EPA needs to be aware of the release date of the proposed permit and the Massachusetts municipal budget cycles. Many of the deadlines provided in the draft permit do not allow sufficient time to allocate appropriate time to complete the tasks required. No item in the permit should be required to be completed during the first permit year, except for the preparation of the Notice of Intent (NOI) and the Stormwater Management Plan (SWMP).

Additionally, there should be language within the permit that references EPA's Integrated Planning framework and allow communities the flexibility to utilize this approach to address a community's stormwater/MS4 requirements. EPA's Integrated Planning framework has been shown to save time and money so it should be embraced and recognized.

Additionally, the Town of Franklin and all communities should be recognized and credit should be given for all the improvements that have been constructed and completed since the implantation of the first MS4 permit in 2003, not just the last five years. Through local regulations, zoning requirement, the Town's overall infrastructure improvement program, and grants many BMP have been constructed over the last 10+ years and the Town should receive credit. Additionally, there are many older BMPs in town that may not have been designed for water quality, but still provide some benefit. The Town should have the option to incorporate these BMPs into its approach and calculations to meet the MS4 permit requirements for phosphorous control.

Finally, I would request that before the new MS4 permit is issued in Massachusetts that EPA evaluate how the permit program has worked since the initial phase "Small" MS4 program was implemented in 2003. It appears that the new permit is based on information that was collected and compiled before 2003. Charles River Basin communities have spent millions of dollars on stormwater improvements. How much better is the condition of the Charles River in 2015 compared to the understanding of water quality in 2003? EPA should be able to show some sort of measurable results! Why has there been no incremental evaluation of these permits to see if they are working before new and more stringent and expensive permits are implemented?

Below are our comments along with feedback specific to the proposed Small MS4 General Permit.

Comments on Proposed MS4 General Permit

1. **Section 1.7.2.d** Notice of Intent – "The NOI shall be submitted within 90 days of the effective date of the permit."
   Comment: The NOI and Stormwater Management Plan (SWMP) requires a significant effort by the Town as it represents the Town's commitment to meeting the MS4 Permit requirement and a significant upfront effort to develop a realistic and effective approach to meet the MS4 Permit with clearly defined roles and responsibilities. It is unrealistic to expect such a detailed plan in such a short period of time.
   Suggestion: Extend the deadline for submitting the NOI to one year from the effective date of the permit to allow for more coordination and integration with the SWMP development. If an extension is not possible, please consider a less detailed document that requires only an outline of the proposed SWMP.

2. **Section 1.10.c** Stormwater Management Plan – "The permittee is encourages to maintain an adequate funding source for the implementation of this program. Adequate funding means that a consistent source of revenue exists for the program."
   Comment: The increased level of effort to address water quality needs as required under the 2014 Draft Small MS4 General Permit should include Federal funding sources. This is crucial to not only continue monitoring water quality and foster development of solutions but also to allow for construction that will ensure compliance. The current source of grants available in Massachusetts will not be sufficient, particularly if other MS4s require assistance.
   Suggestion: The EPA and/or MassDEP need to provide financial assistance to MS4 communities to help them meet the MS4 Permit.

3. **Section 2.3.4.6** System Mapping – "The mapping shall include a depiction of the permittee's separate storm sewer system in the permit area. The mapping is intended to facilitate the identification of key infrastructure and factors influencing proper system operation, and the potential for illicit sanitary sewer discharges."
   Comment: The MS4 Permit requires that all system mapping of the MS4 be completed within two years of the effective date of the permit. This mapping will be crucial in determining the catchment areas, as stated in section 2.3.4.7.c. There is a discontinuity between these two activities; the catchment priority ranking is required to be completed within one year of the effective date of the permit.
   Suggestion: Please revise the order of these planning efforts to ensure that mapping data that will be gathered can be utilized and built upon.

4. **Section 2.3.4.7.e.ii.b** Wet Weather Investigation – "The permittee shall conduct at least one wet weather screening and sampling at the outfall for any catchment where one or more System Vulnerability Factors are present."

Comment: Wet weather sampling for outfalls should be based on an evaluation of catchments under Part 2.3.4.7.c and the requirements for discharges to impaired waters under Part 2.2.
Suggestion: Please revise the permit to provide flexibility for MS4s to conduct wet weather investigations based on priority catchments and the MS4s specific knowledge and understanding of their drainage system and water quality issues.

5. **Section 2.3.4.7.e.ii.b** Wet Weather Investigation – The permittee "inspect and sample under wet weather conditions to the extent necessary to determine whether wet weather-induced high flows in sanitary sewers or high groundwater in areas served by septic systems result in discharges of sanitary flow to the MS4."
Comment: While the intent of this effort is to identify potential illicit discharges that occur during wet weather events, a wet weather outfall sampling program could be utilized to collect data in relation to the Phosphorous Control Plan (PCP) by characterizing high priority catchments.
Suggestion: Please revise the wet weather sampling until the end of year four so that it coincides with the assessment of catchments and load reduction requirements under the PCP.

6. **Section 2.3.4.8.c** IDDE Program Implementation Goals and Milestones – "The permittee shall implement the Catchment Investigation Procedures in every catchment of the MS4, even where dry weather screening does not indicate evidence of illicit discharges."
Comment: The Town of Franklin has already done initial screening of all its outfalls under the 2003 MS4 Permit and has identified areas that require additional monitoring. Reducing field visits to catchment areas by using an office screening process (in accordance with section 2.3.4.7.e.i) will focus the Town's efforts with added efficiency.
Suggestion: Please remove the requirement to implement the Catchment Investigation Procedures in every catchment of the MS4, even where dry weather screening does not indicate evidence of illicit discharges. Using the IDDE program development (based on detailed mapping information) is an appropriate method of screening.

7. **Section 2.3.7.a.iii.f** – "All permittee-owned stormwater treatment structures (excluding catch basins) shall be inspected annually at a minimum."
Comment: Stormwater treatment structures should be inspected on a frequency that is based on industry standards/best practices, manufacturer's recommendations (stormceptors) and inspection history.
Suggestion: Please revise this to allow individual MS4s to set the appropriate inspection schedule of all stormwater treatment structures.

8. **Section 4.4.b.v** – The annual report shall contain the following information: "All outfall screening and monitoring data collected by or on behalf of the permittee during the reporting period and cumulative for the permit term…"
Comment: The data submitted with the annual report should be limited to the reporting period and not be cumulative. The reason a MS4 submits an annual report is to submit progress made over the year and it is therefore inefficient to continue reporting cumulative information.

Suggestion: Please remove the requirement to submit the cumulative data for the entire permit term with each annual report.

General Feedback on Proposed MS4 General Permit

9. Phosphorous Control Plan – The draft MS4 permit does not address pollutant loads from private properties.
   Suggestion: The Town believes that MS4s should be allowed to identify and investigate phosphorous reduction from private properties, but over a longer time period for planning and implementation. This may be more cost-effective and not constrain MS4s to working only within the MS4 regulated area and within the Town's current jurisdiction. The potential saving for the Town of Franklin was evaluated in the 2011 Upper Charles River Study.

10. Phosphorous Control Plan Implementation Timeframe – The current timeframe for implementation of the PCP capital projects is 15 years from the development of the PCP. The 2011 Upper Charles Study outlined an option for a 25-year implementation timeframe, which proved to be costly and the study suggested that an even longer timeframe may be needed.
    Suggestion: As stated previously, based on the findings of the study, it was determined that a longer implementation period would provide greater flexibility and cost saving in meeting the permit requirements. The time frame should be extended beyond 25 years if communities are making reasonable and measurable progress towards water quality goals.

11. The 2011 Upper Charles Study suggested using a "back-end-loaded" approach for implementing structural controls. It was found that using such an approach would lessen initial funding to "allow for better quantification of benefits from non-structural measures and early implementation of the most cost effective structural practices. This approach would also reduce initial expenditures as practitioners gain expertise and will likely lead to long-term savings over time."
    Suggestion: The Town suggests that this capital expenditure approach be considered by the EPA to ensure successful and long term compliance with cost savings for the Town.

12. Regional coalition groups – The permit doesn't discuss any benefits for municipalities to work together and pool their resources to meet requirements of the Permit. It would be beneficial if the EPA offered an incentive program to encourage cooperation between municipalities to meet some of the goals stated in the Permit. For example, it would be more efficient and cost effective for a coalition of towns to hire a contractor to do catch basin cleaning instead of each municipality contracting the work or burdening their current staff.
    Suggestion: An incentive from the EPA would encourage municipal cooperation and assist in obtaining support from the public and local officials, which would be difficult to otherwise achieve.

13. Education programs for government/elected officials – The Permit does not address providing education/information programs geared towards government/elected officials.

It would be helpful if the EPA provided training materials or personally conducted regional information sessions geared specifically towards these officials. Obtaining funding for this permit is going to be difficult, if not impossible, particularly without the support of the town government.
Suggestion: A presentation specifically for government officials by the EPA would be crucial in selling the permit and ensuring acceptance, cooperation and the motivation needed to establish stable funding.

14. Public outreach and educational programs – The Permit does not provide guidance or specific requirements for providing education/information programs geared to the general public.
Suggestion: EPA at the regional or national level needs to provide a structured approach and curriculum for local communities to follow. The burden should not be placed at the local level. There are many creative individuals at the EPA; they need to come up with the appropriate guidance and message for local communities to facilitate and share with their residents.

In closing, thank you for the opportunity to comment on the 2014 Draft Massachusetts Small MS4 General Permit and for your consideration of these comments as the permit is finalized. The Town feels we are proactive in our Stormwater Management Program and we would like to continue making progress towards water quality goals under a reasonable MS4 Permit. We hope that these comments and information are helpful in shaping the final MS4 Permit.

If you have any questions or wish to discuss this information, please feel free to contact me by phone at 508-553-5300 or e-mail at rcantoreggi@franklin.ma.us.

Respectfully,

Robert A. Cantoreggi
Director

CC: Senator Elizabeth Warren, United States Senate
Senator Edward Markey, United States Senate
Representatives Joseph Kennedy, 4th MA Dist., United States House of Representatives
Representatives James McGovern, 2nd MA Dist., United States House of Representatives
Richard Ross, Massachusetts State Senate
Karen Spilka, Massachusetts State Senate
Jeffery Roy, Massachusetts House of Representatives
Thelma Murphy, US EPA Region 1
Fred Civian, MassDEP
James Vallee, Chairman Franklin Town Council
Jeff Nutting, Town Administrator
Deacon Perrotta, Director of Operations
Mike Maglio, Town Engineer

Attachments

STORMWATER ENTERPRISE CAPITAL BUDGET

	Description	Details	Actual 2012	Budget 2013	Proposed 2014	Potential
Highway	BMP Rehab/Retrofits		$ -	$ -	$ -	$ 125,000
	Stormwater/drainage improvements with current projects		$ 178,000	$ 195,800	$ 215,380	$ 236,918
	HIGHWAY DIVISION PROJECT SUBTOTAL		**$ 178,000**	**$ 195,800**	**$ 215,380**	**$ 361,918**
	CATCH BASIN TRUCK	$170,000 with 15 year life-cycle	$ -	$ -	$ -	$ 11,333
	STREET SWEEPER	$185,000 with 10 year life-cycle	$ -	$ -	$ -	$ 18,500
	VACUUM TRUCK	$300,000 with 15 year life-cycle	$ -	$ -	$ -	$ 20,000
	HIGHWAY DIVISION EQUIPMENT SUBTOTAL		**$ -**	**$ -**	**$ -**	**$ 49,833**
DPW Admin	Water Quality Monitoring	For NPDES & TMDL compliance	$ -	$ -	$ -	$ 25,000
	Drainage Mapping & Permitting	For NPDES compliance	$ -	$ -	$ -	$ 50,000
	DPW ADMINISTRATION SUBTOTAL		**$ -**	**$ -**	**$ -**	**$ 75,000**
	TOTAL CAPITAL COSTS		**$178,000**	**$195,800**	**$215,380**	**$486,751**

Yellow highlighted cells are estimated based on the 2011 stormwater utility study and should be updated based on actual completed and planned projects.
BMP Rehab/Retrofit should be estimated on the average cost per BMP and the realistic # of BMP projects that could be conducted per year, assuming addi
Potential equipment costs = cost of equipment/estimate life-cycle for annual cost
Water quality monitoring & drainage mapping costs are based on sub-contracting these services. If done in-house, budgets for personnel should be adjuste

STORMWATER ENTERPRISE BUDGET

	Task	Current Effort	Actual 2012	Budget 2013	Proposed 2014	Potential
Highway Department Services	Catch Basin Cleaning Street Sweeping BMP Retrofit and Maintenance	Clean catch basins once per year Currently all streets are swept annually; limited high priority areas are swept more frequently Maintenance performed on an emergency basis	$228,538	$338,751	$364,107	$452,228
DPW Admin Services	NPDES MS4 Compliance General Management GIS Services	Efforts are presently performed to address different aspects of NPDES mandate Management of O&M and capital projects Limited information regarding existing drainage system and detention basins has been added to GIS system	$28,215	$40,729	$44,438	$102,505
Central Motors	Maintenance & Fuel	Maintenance and fuel for stormwater equipment including street sweeper, vacuum truck, heavy equipment for BMP maintenance, vehicles	$33,445	$39,333	$39,460	$39,981
	Operating Cost Sub-Total		**$292,211**	**$420,826**	**$450,019**	**$594,714**
Stormwater Capital Costs	Projects	Stormwater/drainage components of existing project budgets for road and utility work Emergency projects such as culvert repairs/replacements or repair of major erosion Potential includes BMP rehab projects	$178,000	$195,800	$215,380	$361,918
	Equipment	New equipment to support stormwater tasks (street sweeper, vacuum truck, catch basin truck) average annual cost over life-cycle	$0	$0	$0	$49,833
	Engineering & Consulting Support	Additional requirements for permit & TMDL compliance including: water quality monitoring, GIS/mapping	$0	$0	$0	$75,000
	Capital Cost Sub-Total		**$178,000**	**$195,800**	**$215,380**	**$411,751**
	Total		**$470,211**	**$616,626**	**$665,399**	**$1,006,465**
	Average Annual Cost per ERU		**$22.01**	**$28.86**	**$31.14**	**$47.11**

STORMWATER ENTERPRISE - Highway Dept BUDGET

	POSITION	TASKING	Actual 2012	Budget 2013	Proposed 2014	BENEFITS	%	Program Costs* 2012	Program Costs* 2013	Program Costs* 2014	Potential
Personnel	WORKING FOREMAN	DRAINAGE SYSTEM MAINT	$ 52,160			$ 28,688	20%	$ 16,170			
	MECHANIC	VEHICLE MAINTENANCE	$ 52,535			$ 28,894	20%	$ 16,286			
	HEAVY EQUIPMENT OPERATOR	CATCH BASIN CLEANING	$ 45,159			$ 24,837	100%	$ 69,996			
	HEAVY EQUIPMENT OPERATOR	STREET SWEEPING	$ 45,159			$ 24,837	100%	$ 69,996			
	SEASONAL	DRAINAGE SYSTEM MAINT	$ 12,000			$ 6,600	200%	$ 37,200			
	HEAVY EQUIPMENT OPERATOR	*BMP Maintenance*	*$ 45,159*			*$ 24,837*	*100%*				*$ 69,996*
	TOTAL Highway Div Salary Budget			$ 446,563	$ 451,153	55%	32%		$ 221,495	$ 223,772	$ 223,772
	HIGHWAY DIVISION PERSONNEL SUBTOTAL							**$ 209,648**	**$ 221,495**	**$ 223,772**	**$ 293,768**
Expenses	Architects & Engineers	Drainage & Stormwater Design and T	$ 5,059	$ 10,000	$ 10,000		100%	$ 5,059	$ 10,000	$ 10,000	$ 10,000
	Other Professional Services	Materials Disposal, Roadside Vegeta	$ 295	$ 74,756	$ 88,000		100%	$ 295	$ 74,756	$ 88,000	$ 88,000
	Culvert & Drainage Supplies	Pipe and Other Materials for Drainage	$ 1,136	$ 10,000	$ -		100%	$ 1,136	$ 10,000	$ -	$ 20,000
	Construction Materials	Construction Materials for Road and I	$ -	$ 10,000	$ 30,000		75%	$ -	$ 10,000	$ 30,000	$ 28,125
	Dues & Memberships	NEWEA Membership	$ 400	$ 500	$ 335		100%	$ 400	$ 500	$ 335	$ 335
	Waterfowl & Pest Management	Goose & beaver control	$ 12,000	$ 12,000	$ 12,000		100%	$ 12,000	$ 12,000	$ 12,000	$ 12,000
	HIGHWAY DIVISION EXPENSES SUBTOTAL							**$ 18,890**	**$ 117,256**	**$ 140,335**	**$ 158,460**
	TOTAL OPERATING COSTS							**$ 228,538**	**$ 338,751**	**$ 364,107**	**$ 452,228**

Notes:
2012 costs are actual. 2013 are budget. 2014 are proposed.
% = % of time spent on stormwater tasks
Benefits estimated at 55% of based salary based on FY2013 indirect cost calculation for enterprises (30% for direct salaries fringe benefits + 22% for indirect salaries/fringe benefits)
Program costs = the DPW budgeted costs x % allocated for specifically for stormwater
2012 personnel rates based on actual salaries per person; 2013/2014 personel budget based on % of TOTAL personnel budget. % calculated based on actual 2012 rates (2011 stormwater utility study)
Yelllow highlighted cells are estimates based on past performance and can be modified if better current estimates are available.
Gray highlighted cells are placeholders for potential costs (not currently budgeted but will be required to implement program)
Waterfowl & Pest Management services were captured under the Highway Expenses, considered part of "other contractual services"
Red font needs to be confirmed by DPW - AMEC assusmed this line item was for disposal of cleanings from catch basins/BMPs, but could not explain the jump between 2012 & 2013

STORMWATER ENTERPRISE - DPW Admin BUDGET

	POSITION	TASKING	Actual 2012	Budget 2013	Proposed 2014	BENEFITS	%	Program Costs* 2012	Program Costs* 2013	Program Costs* 2014	Potential
Personnel	DPW DIRECTOR		$ 104,174	$ 104,417	$ 105,983	55%	5%	$ 8,073	$ 8,092	$ 8,214	$ 5,299
	DPW OFFICE MANAGER		$ 58,174	$ 52,336	$ 52,879	55%	5%	$ 2,909	$ 2,617	$ 2,644	$ 2,644
	GIS TECHNICIAN		$ 55,620	$ 56,732	$ 57,867	55%	15%	$ 8,343	$ 8,510	$ 8,680	$ 8,680
	Adminstrative Personnel	*Utility Billing*				55%	*50%*	$ -	$ -	$ -	$ 40,981
	DPW Admin PERSONNEL SUBTOTAL							**$ 19,325**	**$ 19,219**	**$ 19,538**	**$ 57,605**
Expenses	Overall Admin expenses	% of costs associated with NPDES comp	$ 28,902	$ 115,100	$ 99,000		10%	$ 2,890	$ 11,510	$ 9,900	$ 9,900
	Other Professional Services	Consultant support for NPDES permit co	$ 6,000	$ 10,000	$ 15,000		100%	$ 6,000	$ 10,000	$ 15,000	$ 15,000
	Additional Admin expenses	*Billing costs (postage, paper, envelope, etc.)*					*100%*	$ -	$ -	$ -	$ 20,000
								$ 8,890	**$ 21,510**	**$ 24,900**	**$ 44,900**
	TOTAL OPERATING COSTS							**$ 28,215**	**$ 40,729**	**$ 44,438**	**$ 102,505**

Notes:
2012 costs are actual. 2013 are budget. 2014 are proposed.
GIS technician salary was based on 2011 stormwater utility study as it was not listed as a line item under the DPW budget and is assumed to support multiple departments
% = % of time spent on stormwater tasks
Benefits estimated at 55% of based salary based on FY2013 indirect cost calculation for enterprises (30% for direct salaries fringe benefits + 22% for indirect salaries/fringe benefits)
Program costs = the DPW budgeted costs x % allocated for specifically for stormwater
Yellow highlighted cells are estimates based on past performance and can be modified if better current estimates are available.
Gray highlighted cells are placeholders for potential costs (not currently budgeted but will be required to implement program)

Expenses: Personne

STORMWATER ENTERPRISE - Central Motors BUDGET

POSITION	TASKING	Actual 2012	Budget 2013	Proposed 2014	BENEFITS	%	Program Costs* 2012	Program Costs* 2013	Program Costs* 2014	Potential
TOTAL Central Motors Salary Budget		$ 160,983	$ 170,824	$ 173,099	55%	5%	$ 12,476	$ 13,239	$ 13,415	$ 13,415
Central Motors PERSONNEL SUBTOTAL							**$ 12,476**	**$ 13,239**	**$ 13,415**	**$ 13,415**
TOTAL Central Motors Expenses Budget		$ 524,225	$ 652,350	$ 651,130		4%	$ 20,969	$ 26,094	$ 26,045	$ 26,566
Central Motors EXPENSES SUBTOTAL							**$ 20,969**	**$ 26,094**	**$ 26,045**	**$ 26,566**
TOTAL OPERATING COSTS							**$ 33,445**	**$ 39,333**	**$ 39,460**	**$ 39,981**

Notes:
2012 costs are actual. 2013 are budget. 2014 are proposed.
% = % of time spent on stormwater tasks
Benefits estimated at 55% of based salary based on FY2013 indirect cost calculation for enterprises (30% for direct salaries fringe benefits + 22% for indirect salaries/fringe benefits)
Program costs = the DPW budgeted costs x % allocated for specifically for stormwater
Since central maintenance personnel & expenses were not specified per equipment the budgets are based on % of TOTAL budgets. % were calculated based on the 2011 stormwater utility study
Yellow highlighted cells are estimates based on past performance and can be modified if better current estimates are available.

TOWN OF GRAFTON

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February 26, 2015

Mr. Newton Tedder
US EPA Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

Attention: Comments on the 2014 Draft Massachusetts MS4 Permit
Docket ID No. FRL-9917-31-Region-1; Document No. 2014-23262

Sent via email to Tedder.Newton@epa.gov on February 26, 2015

Dear Mr. Tedder:

The Town of Grafton, currently regulated under the United States Environmental Protection Agency's (the Agency's) 2003 NPDES Phase II Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, has reviewed the proposed Draft 2014 Massachusetts MS4 Permit (proposed Permit) that was released for public comment by the Agency on September 30, 2014. Based on the Town's review, several concerns have been identified related to the feasibility of in-the-field implementation and administrative compliance documentation required by the proposed Permit. This draft Permit will require a significant increase in man hours and funding to maintain compliance with the proposed increased stormwater regulations. The Town is concerned that it will not have the resources required by the proposed Permit to meet future stormwater compliance regulations.

The Town is also a member of the Central Massachusetts Regional Stormwater Coalition (the Coalition), which represents 28 Towns in Central Massachusetts, most of which are Permittees under the Agency's 2003 MS4 Permit. The Town of Grafton defers to the Coalition's separately prepared comments on the proposed Permit for specific technical concerns.

Through this letter, the Town of Grafton reserves the right to: (1) submit additional comments to any Response to Comments prepared by the Agency after the close of the public comment period for the 2014 Draft Massachusetts MS4 Permit, (2) submit additional comments on the Final Massachusetts MS4 Permit to address any and all changes made by the Agency subject to comments the Agency receives on the proposed Permit, and (3) appeal any provision of the Final Massachusetts MS4 Permit when it is issued, regardless of the origin of the provision or related comments.

This signature page documents the Town of Grafton's official comments related to the 2014 Draft Massachusetts Municipal Storm Sewer System (MS4) Permit.

TOWN OF GRAFTON
By its Town Administrator

Timothy P. McInerney
Name

Town Administrator

Additional Signatories

Doug Willardson
Name

Assistant Town Administrator

Brian Szczurko
Name

Engineer

Maria Mast
Name

Conservation Agent

Dated: 2/26/15

TOWN OF GRANBY

Select Board
Senior Center Building, 2nd Floor
10-B West State Street
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Tel#: 413-467-7177 Fax#: 413-467-2080
Website: www.granby-ma.gov

RECEIVED 12/8/14

December 1, 2014

U.S. Environmental Protection Agency, Region 1
5 Post Office Square, Suite 100 Code OEP06-4
Boston, MA 02109-3912

Attn: Newton Tedder

Re: Objections to Proposed draft Massachusetts new EPA Storm Phase 2 regulations

The following is a list of the most troubling portions of the proposed new Stormwater Phase Two regulations.

1) Pavement maintenance work triggers retaining first inch of stormwater or stormwater treatment. Under the new regulations, when one disturbs more than 1 acre in area or phased construction totaling one acre (translates to only ¼ mile of 30' wide pavement) or more which will include road reclamation projects, the new regulations require that the first inch of storm water be retained or all the stormwater must be treated. This essentially means one now not only has to resurface the road one has to completely redesign and re-construct the entire stormwater collection system to satisfy this requirement. This will cripple road maintenance budgets. Accordingly, cities and towns will be forced to purchase/take extra land by eminent domain for stormwater storage or pay for the expense of stormwater treatment systems on simple routine maintenance projects. This is a huge expense in downtown business districts and even in rural areas with old roads and narrow town-owned rights-of-way.

   As everyone is aware, the funds available for pavement maintenance are less than half of what are needed to simply preserve the condition of the current infrastructure. This means that Massachusetts roads are falling apart faster than they can be repaired. The above added costs will compound the problem and create more failing roads and more erosion. Municipalities will be forced to use the wrong pavement rehabilitation technique at the wrong time which will squander the available limited pavement maintenance resources.
   There must be an exemption for pavement maintenance projects. The above regulations should not be applied to maintenance projects. If a new road is being

constructed or a lane is being added, these stormwater management upgrades may be able to be accommodated, depending on surrounding conditions like available right-of-way width and/or proximity of buildings to the right-of-way. Simple pavement surface maintenance projects or minor improvements should not trigger rebuilding the world.

2) Chloride Reduction. Most municipalities already are trying to limit salt/chloride usage. The cost of road salt and deicers is a large portion of the winter storm budgets. Any responsible DPW director or winter road program manager is looking to reduce the costs in all areas that are practical. There is no objection to installing computers on the truck spreaders and training the operators in best management practices nor do we object to the EPA providing Best Management Practices or guidance suggestions; however, reducing salt usage below what is practical with the current technology is irresponsible and to do this exposes the motorists to hazardous conditions and the municipalities to legal action. Yes, usage of chlorides could all stop tomorrow, but at what cost to human life. If the EPA will protect an endangered salamander, it should be equally as concerned with the loss of human life. The chloride reduction regulations should be limited to recommending that municipalities follow the latest accepted Best Management Practices.
3) Requirement for tracking impervious area. The EPA in its permit guidance documents implicitly admits that the simple presence of impervious areas is not a direct correlation to stormwater quality. Sites with paved areas can store/detain or treat stormwater so that the presence of paved areas on stormwater quality is mitigated. Similarly, the MaDEP considers roof water runoff "clean" and can be infiltrated into the ground without pre treatment. Tracking the amount of impervious areas does not have a direct correlation to water quality; therefore the MS4's should not have to expend resources tracking changes in impervious area. As long as new development is in compliance with Best Management Practices, control of development should be under the jurisdiction and control of local planning authorities. Any attempt at limiting /restricting development through the veiled attempt at controlling impervious area is outside the purview of the Clean Water Act.
4) Cost of implementation. An article published in Construction Outlook a publication of UCANE recently published EPA cost estimates of compliance between $70,000 and $829,000 per year depending on population and size. This is very troubling because they have been known to significantly under-estimate the actual cost. At the meeting, Newton Tedder from the EPA commented that he believes most cities and towns will have to pass a stormwater utility in order to pay for the costs to comply with the new Storm Phase Two regulations. Obviously, the EPA is admitting that the new regulations are an undue burden and so costly that the municipalities cannot afford them with existing revenues. It seems unlikely that the intent of Congress in passing the Clean Water Act was to authorize the EPA to mandate additional taxes and create its own hidden tax structure to accomplish its charge of cleaning the water. The EPA was charged with cleaning the water and operating within its budget as set by Congress.

The States and local cities and towns must do the same. It is unconscionable at a time when state and local governments are undergoing staff and budget cuts to capriciously raise the cost of compliance with the new regulations. The local governments will be happy to work with the EPA to achieve progress on storm water. However, the heavy handed, adversarial and punishing regulations as proposed will not encourage cooperation from state and municipal partners.

The Congress of the United States should act to restrain the EPA from imposing uncontrolled and expensive tax burdens on the subjects it regulates. Taking reasonable actions to improve water quality is one thing, but being mandated to accomplish everything overnight is unfathomable. All levels of government must be cognizant of costs. The regulations, reporting requirements and the overall implementation costs must be reduced to a sustainable and rational level. The taxpayers and the country cannot be bankrupted by an attempt to reach unrealistic goals set by a bloated out of touch federal bureaucracy.

5) Signage at outfalls: Installation of signage at outfalls provides no tangible benefit to water quality. Installation of signs and posts will waste resources. The signs will encourage theft or vandalism and will provide little to no use in management of the stormdrain system. All regulated organizations are required to have maps with locations of all outfalls. The availability of low cost GPS devices makes these outfalls easily located by just about anyone.

Mark L Bail, Chair

Louis M Barry, Clerk

Mary A McDowell, Member

Granby Select Board

JAMES J. FIORENTINI
MAYOR

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February 25, 2015

Mr. Newton Tedder
U.S. EPA – Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912
Tedder.Newton@epa.gov

Re: Comments on Draft NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts

Dear Mr. Tedder:

The City of Haverhill (the "City") appreciates the opportunity to comment on the *Draft NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts* (the "Draft Permit"), which EPA made available for public review and comment on September 30, 2014. These comments are timely based on EPA's extension of the public comment period to February 27, 2015.

As EPA knows, the City was actively involved in providing comments on the *Draft Massachusetts Interstate, Merrimack and South Coastal Small MS4 General Permit* (the "2010 Draft Permit"). On March 9, 2011, the City submitted extensive written comments on the 2010 Draft Permit. That letter enclosed and incorporated the comments submitted on February 22, 2011 by the Massachusetts Coalition for Water Resources Stewardship. The City also joined with 35 other municipalities and towns in comments submitted under separate cover by Kopelman and Paige, P.C. on March 11, 2011. Because the Draft Permit is a modestly-revised version of the 2010 Draft Permit, and like the 2010 Draft Permit is to be compared with the permit it will replace, i.e., the May 1, 2003 *General Permit for Stormwater Discharges from Small MS4s*, the above-referenced comments remain highly germane, and therefore copies of the three comment letters are enclosed and incorporated by reference. Furthermore, in the interest of economy, the balance of this comment letter restates in summary form and underscores the essential elements of the earlier comments.

The City is extremely disappointed that EPA has failed to recognize the substantial economic burden imposed on cities and towns in Massachusetts, including the City of Haverhill, by the Draft Permit. The City recognizes the need to maintain its stormwater collection and discharge system to control the introduction of pollutants to the Merrimack River, and will continue to take the necessary steps to control contributing sources of pollutants in stormwater by all practicable means. However, the Draft Permit imposes an expansive set of detailed prescriptive measures and requirements which micromanage the permittee's local permitting and public facilities operations and procedures, with no apparent justification or basis for determining that such detailed measures will result in measurable improvements in water quality. In effect, the Draft Permit would require the City to undertake substantial administrative actions,

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at great cost, and on an unrealistically tight timeline, simply because EPA believes that these actions may result in a reduction of pollutants being introduced by the public (on both public and private property) into the waters of the United States. It is wholly unnecessary to mandate such actions. Instead, each community should be permitted to determine the best practicable measures to manage its stormwater systems to reduce the overall impacts on the receiving waters.

Inconsistent with the Clean Water Act. The Draft Permit continues to include provisions that conflict with the limited scope of municipal stormwater pollution control required under the Clean Water Act (the "Act"), specifically, the obligations imposed on municipalities. As previously stated, Section 402(p)(3)(B)(iii) of the Act, 33 U.S.C. § 1342(p)(3)(B)(iii), does not mention water quality standards or requirements for MS4 dischargers to not cause or contribute to exceedance of such standards. Rather, the Act states that MS4s must remove pollutants in stormwater to the maximum extent practicable, a term undefined in the Act, but which explicitly establishes that there are cost and reasonableness considerations to stormwater pollution removal by municipalities.

Inappropriate Transfer of Federal Responsibilities to the City. The Draft Permit requires the City develop and enforce a detailed set of procedures to ensure that certain development projects in the City apply for and comply with the *NPDES General Permit for Discharges from Construction Activities* issued under the Act. There is no explicit authority under the Act to require the City to serve as the "first line" enforcement mechanism for this federal permitting program. Whereas the City acknowledges EPA's authority to regulate direct discharges from the City's stormwater system to waters of the United States, the City has no legal responsibility under the Act to ensure that private developers, who may or may not be discharging to the MS4 system, comply with the federal requirements.

Limitations on Local Resources. Though EPA included a reference in Part 2.3.2.(c) of the Draft Permit to a web address at which municipalities may access prepared educational materials, EPA's overall effort to respond to commenters on the 2010 Draft Permit falls far short of what the City and others, including MassDEP, had requested in their earlier comments. We see EPA's effort in producing these educational materials as an acknowledgment that the overwhelming number of administrative requirements in the 2010 Draft Permit created enormous and unreasonable burdens on municipalities. One of MassDEP's comments on the 2010 Draft Permit speaks to this. MassDEP said that the changes in the 2010 Draft Permit were more than incremental, and would require significant changes in the ways municipalities fund and conduct their stormwater programs.

While the MS4 permit requirements *may* produce some environmental benefits, they will require of permittees an overwhelming amount of work and investment. Competing demands and dwindling budgets will make complying with the Draft Permit impossible for many municipalities, opening them up to potential enforcement action. We believe that in order for municipal leaders to justify to their citizens the dedication of such enormous human and financial resources, EPA must satisfy a greater burden. For example, with respect to wet weather

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sampling, EPA must answer questions about its effectiveness, must provide data demonstrating how discharges were actually discovered using this protocol, and the quantity of pollutant reduction it produced. In short, it requires a cost-benefit analysis.

EPA's effort, therefore, falls far short. The City's earlier comments also sought agency assistance in other areas, e.g., ordinances, policies, templates, etc., none of which are addressed in the Draft Permit. In 2011, MassDEP was another voice seeking ways to make implementation more efficient, stating that additional changes should be made to streamline the public education, illicit discharge, monitoring and reporting requirements. EPA should reduce the multitude of administrative requirements in the Draft Permit so that implementation can be more affordably and effectively administered by cities and towns.

Time to Implement. Though in some instances, EPA provided additional time to reach certain milestones, e.g., IDDE program implementation, here too the agency's response is far from adequate. More time without fewer requirements during the five-year permit cycle does not generate a realistic formula for success. The timeline for completion of permit milestones requires dozens of varied tasks of each community with detailed reports during the permit cycle. This is unrealistic and a setup for failure. The list should be pared to achievable goals to be achieved over a realistic period of time, to be in effect "practicable."

Cost and Cost Effectiveness. In the City's 2011 comments, we went to great lengths to demonstrate the extent of the financial burden imposed on the City by the requirements in the 2010 Draft Permit. In preparing these comments, we have not rerun the numbers. Nonetheless, the points regarding cost effectiveness and "bang for the buck" running throughout the comment letters on the 2010 Draft Permit are no less valid. Indeed, in at least one area – MS4 outfalls – already a major cost item due among other things to the pointless requirement to perform wet weather sampling, information developed since 2011 indicates that there are one-third more outfalls in the City than previously thought (±800 rather than ±600), adding yet further costs. Conditions since then, i.e., over the past 4 years, have not improved; if anything, the struggle with severe constraints on resources to deliver an array of programs, including those that will have greater environmental benefit, is significantly worse. Though some activities in the Draft Permit may provide incremental benefits to stormwater quality, a federal mandate which prescribes specific measures and reporting requirements imposes significant administrative costs which are not reasonably recoverable.

At Odds With Integrated Planning. In recent years, EPA has increasingly embraced integrated planning approaches to municipal wastewater and stormwater management. According to EPA, integrated planning is intended to assist municipalities by identifying efficiencies in implementing requirements from different wastewater and stormwater programs. Integrated planning is a process to identify, evaluate and select alternatives and propose implementation schedules. The Draft Permit is at odds with the flexibilities built into integrated planning. The Draft Permit imposes extremely burdensome obligations and mandates compliance with all of its requirements within a five-year term. Effectively, this renders moot efforts by cities and towns to develop an integrated plan and find some relief from the

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cumulative requirements of compliance with the permits for their publicly-owned treatment works and MS4 obligations with respect to stormwater. The Draft Permit must be revised so that it provides greater flexibility for municipalities to remove pollutants in stormwater to the maximum extent practicable, through the integrated planning process, i.e., a process that acknowledges there are cost and reasonableness considerations in stormwater pollution removal by municipalities. This should include recognition that each community is best able to establish priorities for public works expenditures to manage and upgrade the components of its stormwater and wastewater systems.

Thank you for your consideration of the City's comments. Should you have any questions, please contact Mr. Michael Stankovich, Haverhill DPW Director, at (978) 420-3815.

Very truly yours,

James J. Fiorentini
Mayor, City of Haverhill

Enclosures

Comments on the Draft Massachusetts Interstate, Merrimack and South Coastal Small MS4 General Permit submitted on March 9, 2011 by the City of Haverhill

Comments on the 2010 Massachusetts Interstate, Merrimack and South Coastal Watersheds Small MS4 NPDES Draft General Permit submitted on March 11, 2011 by Kopelman & Paige, P.C. on behalf of 35 municipalities

Comments on the Draft Massachusetts Interstate, Merrimack, and South Coastal Small MS4 General Permit submitted on February 22, 2011 by the Massachusetts Coalition for Water Resources Stewardship

cc: The Honorable Elizabeth Warren, U.S. Senator
The Honorable Edward J. Markey, U.S. Senator
The Honorable Niki S. Tsongas, U.S. Representative

March 9, 2011

EPA – Region 1
Attn: Kate Renahan
Office of the Regional Administrator
5 Post Office Square, Suite 100
Mail Code: ORA01-1
Boston, MA 02109-3912

Subject: Comments on the Draft Massachusetts Interstate, Merrimack and South Coastal Small MS4 General Permit

Dear Ms. Renahan:

The City of Haverhill ("the City") is in receipt of the Draft Massachusetts Interstate, Merrimack and South Coastal Small MS4 General Permit for stormwater management. This letter provides our comments for consideration when developing the final permit. Please note that these comments within are in addition to comments submitted on behalf of the City by Kopelman and Paige, P.C. under separate cover.

The regulatory agencies and the regulated communities share a common mission – to ensure the health and quality of our cities and towns and their natural resources. In order to accomplish these goals, environmental programs must be balanced with other needs and responsibilities of each community and implemented in a fashion that is both feasible and financially responsible. In this context, we offer the following comments on the Draft Permit:

Financial Burden to City of Haverhill

We anticipate that the Stormwater Permit will cost the City of Haverhill nearly $**5,400,000 over the 5-year permit to comply with all the requirements therein**. For example, the Draft Permit requires sampling of the outfalls that discharge to waters of the United States. The City has 604 outfalls. To deal with these outfalls through Minimum Control Measure # 3, Stormwater Illicit Discharge Detection and Elimination could cost up to **$294,000** annually. This is just one small component of the Draft Permit. Combined with the labor and consulting fees required to develop and distribute public education materials, to conduct illicit discharge detection and elimination investigations, to complete data and mapping requirements, to inventory and inspect municipal facilities, to inspect and enforce construction activities, to review site plans for proposed new development or redevelopment projects, and to develop and implement reports, policies and ordinances, the financial burden of the Draft Permit is excessive.

The Fact Sheet for the Draft Permit addresses the Unfunded Mandates Reform Act (UMRA). UMRA requires Federal agencies to assess effects of regulatory actions on tribal, state, and local governments and the private sector. UMRA defines "regulatory actions" to include proposed or final rules with Federal mandates. The Fact Sheet indicates that the Draft Permit is not considered a rule and is not subject to the requirements of UMRA. The EPA justified that the original 1999 Final Rule that created the NPDES Phase II program (FR Doc. 99-29181) as not an unfunded mandate and, accordingly, has not provided any direct financial assistance for this program since then. The City disagrees that the 1999 Final Rule is not an unfunded mandate, and because the Draft Permit is an extension of the 1999 Final Rule, the new Draft Permit is also

an unfunded mandate. Compared to the 1999 Final Rule, the Draft Permit has many additional costly requirements. The enclosed City of Haverhill analysis of what we feel it will take to comply with the new stormwater permit indicates that the Stormwater Permit will cost the City over **$1,200,000 for permit year one** and over $**5,400,000 over the 5-year permit to comply**. The City hereby requests that the Federal government provide direct financial assistance regarding this permit or reduce the scope of the Draft Permit.

Furthermore, in Section 1.10 c, the permittee is "encouraged to maintain an adequate funding source for the implementation of this program. Adequate funding means that a consistent source of revenue exists for the program." With only 120 days from the permit's authorization date to develop the Stormwater Management Plan and commit to particular measures for implementation, there is not adequate time for funding to be secured. In addition, a "consistent source of revenue" implies a funding mechanism such as a stormwater utility. Although the City of Haverhill is exploring options to implement a stormwater utility, this type of program requires years to develop and implement, normally requiring multiple levels of review, public hearings, and approval from Haverhill City Council. At a time when communities are not flush with money, and when most communities do not have enterprise funds for addressing stormwater infrastructure needs, the financial obligations of the proposed regulations are insurmountable. Therefore, the City requests that it be allowed the entire length of the permit cycle to comply with this requirement.

<u>Notice of Intent (NOI)/Stormwater Management Program (SWMP)</u>

The Draft Permit requires the submission of the NOI within 90 days of the effective date of the permit in order to receive authorization to discharge under the permit. Once authorization from EPA is granted, the SWMP must be completed within 120 days. Preparation of these documents will require assistance from an engineering consulting firm. However, because of City and state procurement requirements, seeking out and selecting a consulting firm to complete these documents within the required time-frames is not feasible. We suggest extending the submission of the NOI to 180 days from the effective date of the permit and then completion of the SWMP within one (1) year following receipt of authorization.

<u>Increased Discharges to Impaired Waters without an Approved TMDL</u>

The Draft Permit requires a permittee to identify and estimate a load for each pollutant in the increased discharge for which the receiving water is impaired and implement additional BMPs to assure that the increased discharge is not causing or contributing to a water quality standards violation. It places additional burden and financial cost upon the City to determine pollutant loads in increased discharges. Dry weather screening and the wet weather monitoring of

outfalls should be sufficient to meet water quality standards. Therefore, the City requests that this requirement be eliminated from the permit.

Outfall Inventory

The Draft Permit requires that each outfall be labeled in the field with a unique identifier. The City has identified over 600 outfalls. A Global Positioning System (GPS), reading which captures the latitude and longitude for all outfalls, along with the mapping requirements, should be sufficient to locate each outfall in the field. Accordingly, the requirement to individually label outfalls in the field should be eliminated.

Illicit Discharge Detection and Elimination (IDDE) Program

The City has completed most of the mapping requirements in the Draft Permit. Nevertheless, the requirement to delineate the drainage system into catchments and then evaluate each catchment for potential illicit discharges within one (1) year of the permit effective date is unrealistic. Within that year, the City is being required to identify catchments that are known "Problem Catchments" and then rank each delineated catchment not designated as "Problem Catchments" as "high", "medium" or "low" based on numerous factors. With over 600 outfalls, this will be a time-consuming and costly task for the City. Therefore, the City suggests completion of the mapping and prioritization of the catchments within three (3) years of the permit effective date.

In addition, the City is tasked with establishing a written protocol that identifies responsibilities for eliminating illicit discharges within one (1) year from the effective date of the permit. Combined with the mapping and catchment prioritization requirements, this task places additional burden on the City.

Lastly, the IDDE investigation and elimination schedule is too aggressive. By the end of year 3, a minimum of one-half of the Problem Catchments and catchments identified as "high" or "medium" must be investigated. By the end of the permit term, 100 percent of these areas must be investigated. Within seven (7) years of the effective date of the permit, all catchment areas ranked as "low" must be investigated. Given the high number of catchments and the cost associated with performing these investigations, we suggest completion of all investigations within ten (10) years of the effective date of the permit. The Draft Permit also requires the elimination or appropriate enforcement actions of a confirmed illicit discharge no later than 6 months after confirmation. Because of procurement laws, seeking out and selecting a consulting firm to assist the City in the elimination of an illicit connection will not be feasible within that time frame. The City suggests the Draft Permit provide one (1) full year to eliminate or commence an enforcement action to eliminate the illicit connection.

Outfall Monitoring

The monitoring of 25% of outfalls each year in both wet and dry weather conditions is cumbersome, costly, and unreasonable. Currently, the City has over 604 stormwater outfalls; with a 25% sampling rate, the City would need to sample up to 150 outfalls during dry and wet weather. Dry weather monitoring should be sufficient to identify an illicit connection. The City suggests removing the wet weather requirement or scaling back the dry and wet weather screening program to a more achievable level, such as 10% per year, starting with known problem areas.

In addition, the Draft Permit requires that if no dry weather flow is observed at the outfall, but evidence of flow exists, the outfall shall be revisited during dry weather within one week of the initial observation, if practicable. EPA needs to provide some guidance for the meaning of "no flow is observed, but evidence of flow exists." How does the City distinguish evidence of normal stormwater flow from evidence of dry weather flows? The EPA should clarify.

Sanitary Sewer Overflows

Sanitary Sewer Overflows SSO should not be in a MS4 permit. The definition of MS4 is Municipal **Separate** Storm Sewer System. Nowhere in this definition is there any reference to a "**Sanitary** sewer." Furthermore sanitary sewer overflows do not exist in a separate sewer system. No where in the 33 U.S.C or 40 CFR 122 is there a mention regarding SSO except for Wastewater Treatment Plant see 314 CMR 12.03(8).

Infrastructure Operations and Maintenance

Catch Basins

The Draft Permit requires the permittee to optimize catch basin inspection and cleaning such that the catch basins are no more than 50 percent full. The City currently has mapped nearly

4,000 catch basins thus far, but we estimate there may be as many as 10,000 catch basins within Haverhill. The additional cost to inspect and clean all catch basins according to the permit cycle is estimated to be over $557,000. We therefore request that just 20% of our catch basins be inspected and cleaned during the permit cycle.

Street Sweeping

The Draft Permit requires streets to be swept and/or cleaned a minimum of twice per year, once in the spring (following winter activities) and once in the fall (leaf clean up). The City currently has over 452 lane miles of streets. Currently, the City only sweeps streets with the most debris from sanding operations during the winter months.

The projected cost to sweep the streets is estimated to be $244,000. This is yet another example of EPA adding additional burdens to the City for this unfunded mandate. We request that the EPA drop this request in the permit.

Stormwater Structures

Lastly, the Draft Permit requires all City-owned stormwater structures, such as swales; retention/detention basins or other structures, be inspected annually at a minimum. As there has been no requirement to date to inspect stormwater structures, it is unknown how many swales and retention/detention areas are currently installed within the City. However, we anticipate this task to be very time consuming based upon a preliminary review of this situation. Over the 5-year permit period this could potentially costs upwards of $ 50,000.00 to complete this requirement. We request that this requirement be eliminated and instead the City will commit to locating and inspecting all the city-owned structures by the end of the permit cycle.

<u>Floor Drains</u>

The Draft Permit requires the development of an inventory of all floor drains within all City-owned buildings within one (1) year of the effective date of the permit. Identifying all floor drains in City-owned facilities and their connectivity within a year is a requirement that the City will not be able to meet. This is an extensive task that will take much longer than a year. For example, the City has 18 schools and these activities need to be done when school is not in session. The City suggests the deadline be extended to be within five (5) years of the effective

date of the permit. With 40 City owned buildings and reduced staff, this is another example of burdensome (est. $50,000) unfunded mandate to the City.

The permit also requires that all floor drains not be connected to the drainage system. The City disagrees with this requirement. A spill prevention control plan for City-owned facilities that have floor drains should be sufficient for protecting the drainage system. Requiring disconnection of floor drains is another example of a burdensome cost to the City.

Foundation Drains

In the Fact Sheet, EPA requested comments on potential pollutants in discharges from foundation drains. The purpose of a foundation drain is to collect rainwater so that basements do not become flooded. Foundation drains are located below the basement floor, away from potential sources of pollution. It is doubtful that foundation drains are a source of pollution and the City is aware of no documentation to the contrary.

Assistance from the Regulatory Agencies

There are several areas in which the regulatory agencies could provide information that would greatly reduce the financial burden and time constraints imposed by the Draft Permit, as described below. As much as possible, the regulatory agencies should provide guidance documents and templates to meet the individual requirements of the permit.

Public Education Materials
For the required public education materials, having each community create their own language and graphics for brochures, websites, signs, etc. is an inefficient use of resources. Enough of the information on non-structural controls implementable by the public is generic and can be provided in a series of templates to communities. A few versions of this information could be developed depending on the size and demographics of each community or depending on the watershed. Similarly, for business and industrial user education, much of the information is generic and applies to all facilities. Specific recommendations regarding pet waste management, the use of alternative fertilizers, appropriate fertilizer application, and yard waste recycling, to name a few, are common to most locations. Templates could include areas where communities can input information specific to their locations. This would greatly reduce duplicate efforts and costs.

Ordinances and Policies
Similar to public education materials, the regulatory agencies should provide suggested language for ordinances and policies. The Draft Permit requires the development of a number of specific policies and procedures, including those relating to illicit discharges, construction

oversight, new development reviews, and management of municipal facilities. Again, much of this information is generic and could be provided to communities as a range of templates. Furthermore, many communities are likely to have counsel review new bylaw language prior to its adoption. If the regulatory agencies provide only that language that has been reviewed from a legal perspective and is deemed appropriate and enforceable, this would further reduce the costs to the City.

Other Comments

The following is a list of miscellaneous comments that apply to topics other than those discussed above:

- The definition of a "New Discharger" states, in part, that the discharges did not begin at a particular site prior to August 13, 1979. However, the Fact Sheet states that it would be reasonable for a community to use the effective date of the permit, rather than August 13, 1979, in determining whether a new discharge should be treated as a new discharger. This is a more reasonable approach in defining a "New Discharger" and we recommend that the language "prior to August 13, 1979" be removed from the Draft Permit.

- The requirement to annually estimate changes in the number of acres of impervious area (IA) and directly connected impervious area (DCIA) tributary within the City will be time-consuming and add a financial burden to the City. This requirement should be removed from the permit, or alternatively, be required just in year 1 and year 5 of the permit.

- Section 5.1.5 states that "EPA or MassDEP may require the permittee to add, modify, repair, replace or change BMPs or other measures" at any time. This is open-ended and onerous. More specific allowances should be made for how long a community will be given to make changes if they are requested or required by the regulatory agencies. Please be reminded that the City budgets its expenses on an annual bases. Thus if EPA requires additional BMP's or changes after the budget is completed, additional funding must wait until the start of the next budget cycle.
- The requirements for construction site stormwater runoff control represent an improvement over the present General Construction Permit. Enforcement is often lacking with the present program, and having communities more involved with construction within their limits should help to mitigate the impacts of construction-related erosion and sedimentation. There could be a substantial reduction in pollutants from this alone, and the requirements appear to be reasonable and achievable.

- Similarly, post-construction stormwater management from new development and redevelopment are also "low-hanging fruit." The application of the existing DEP stormwater management standards to upland areas outside of the Massachusetts Wetlands Protection Act jurisdiction, which results in two or more acres of impervious surfaces, is appropriate. These are standards that have been implemented in and around wetland resource areas for a number of years and are tested, implementable, and enforceable.

In conclusion, the Draft Permit as presented includes several requirements which are not achievable and do not take into account time and budget constraints that affect cities and towns. The permit should be scaled back to include achievable, cost-effective goals during the course of the five-year permitting period. The final permit should present a means of building upon previous efforts to achieve continuous improvements to water quality in a rational, feasible manner and cost effective manner.

Enclosed for your review is a spreadsheet which illustrates the potential costs to comply with the requirements for permit year one for the City of Haverhill, as well as the projected 5-year cost to the City to maintain compliance. Additionally, attached hereto and incorporated by reference as if fully set forth herein are the "Comments on the Draft Massachusetts Interstate, Merrimack, and South Coastal Small MS4 General Permit" (dated February 22, 2011).

Thank you for your consideration of these comments. Should you have any questions, please contact Mr. Michael Stankovich, Haverhill DPW Director, at (978) 420-3815.

Very truly yours,

James J. Fiorentini

James J. Fiorentini
Mayor City of Haverhill

cc: The Honorable John F. Kerry, U.S. Senator
The Honorable Scott Brown, U.S. Representative
The Honorable Niki S. Tsongas. U.S. Representative

STORMWATER WORK ACTIVITIES FOR THE 6 MINIMUM CONTROL MEASURES	New Permit Requirement (Days)	Cost to Implement Year One	Cost to Implement Year Two	Cost to Implement Entire Permit
Notice of Intent and SWMP				
Preparation and submission of Notice of Intent	7.5	$7,200		$7,200
Preparation and submission of SWMP	15	$14,400		$14,400
Sub Total:	**23**	**$21,600**		**$21,600**
Minimum Control Measure 1: Public Education and Outreach	**New Permit Requirement (Days)**	**Cost to Implement Year One**	**Cost to Implement Year Two**	**Cost to Implement Entire Permit**
Distribute a minimum of two (2) educational messages to each of the four audiences identified in Part 2.4.2.1(a). The educational program shall include education and outreach efforts for the following four (4) audiences: (1) residents, (2) businesses, (3)				
Develop educational material	3	$2,160		$2,160
Distribute 2 educational messages to the four targeted group	3	$2,160	$2,160	$10,800
Minimum Control 1 Sub Total:	**6**	**$4,320**	**$2,160**	**$12,960**
Minimum Control Measure 2: Public Participation /Involvement	**New Permit Requirement (Days)**	**Cost to Implement Year One**	**Cost to Implement Year Two**	**Cost to Implement Entire Permit**
Conduct one public meeting (residential)	2	$2,240	$0	$2,240
Conduct one public meeting (business)	0.5	$560	$0	$560
Conduct one public meeting (industrial)	0.5	$560	$0	$560
Conduct one public meeting (developers)	1	$1,120	$0	$1,120
Minimum Control 2 Sub Total:	**4**	**$4,479**	**$0**	**$4,479**
Minimum Control Measure 3: Stormwater Illicit Discharge Detection and Elimination (IDDE)	**New Permit Requirement (Days)**	**Cost to Implement Year One**	**Cost to Implement Year Two**	**Cost to Implement Entire Permit**
Field locate, inspect and sample (assume 20% have flow) 150 outfalls, dry weather, 20 outfalls/day	7.5	$6,300	$6,300	$31,500
Field locate, inspect and sample 150 outfalls, wet weather, 10 outfalls/day	15	$12,600	$12,600	$63,000

Lab analysis/field kits 20% dry weather outfalls, 100% wet weather outfalls		$14,200	$14,200	$71,000
Investigate positive (20% positive) sample results for 150 outfalls sampled 3 staff days to investigate with two staff members	180	$151,200	$151,200	$756,000
Preparation of a report summarizing IDDE program, including dry and wet weather screening.	10	$9,600	$9,600	$48,000
Develop a map of the separate storm sewer system and all structures associated with the system per 2.4.4.6 (a). The map shall include the entire separate storm sewer system, including pipes, catch basins, interconnections to other small MS4s	35	$60,000	$0	$60,000
Establish a written protocol which clearly identifies responsibilities with regard to eliminating illicit discharges and the systematic procedure for locating and removing illicit connections.	5	$4,200		$4,200
Delineate catchments and complete illicit discharge potential assessment and prioritization of catchments as part of IDDE program	17	$14,280		$14,280
Remove all illicit discharges found in each identified problem catchment.	10	$20,000	$20,000	$100,000
Train employees about the IDDE Program including how to recognize discharges and SSOs	2	$1,920	$1,920	$9,600
Minimum Control 3 Sub Total:	**282**	**$294,300**	**$215,820**	**$1,157,580**
Minimum Control Measure 4: Construction Site Runoff Control	**New Permit Requirement (Days)**	**Cost to Implement Year One**	**Cost to Implement Year Two**	**Cost to Implement Entire Permit**
Enact an ordinance or regulatory mechanism that requires use of sediment and erosion control practices at construction sites	-	-		
Develop procedures for site plan review and enforcement, site plan review	5	$5,599		$5,599
Minimum Control 4 Sub Total:	**5**	**$5,599**	**$0**	**$5,599**

Minimum Control Measure 5: Post-Construction Stormwater Management in New Development and Redevelopment	**New Permit Requirement (Days)**	**Cost to Implement Year One**	**Cost to Implement Year Two**	**Cost to Implement Entire Permit**
Enact an ordinance or regulatory mechanism that regulates runoff from new development and redevelopment projects.		-		
Develop a report assessing current street design and parking lot guidelines and requirements that affect the creation of impervious cover	7.5	$7,200		$7,200
Develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable	8	$7,680		$7,680
Estimate number of acres of impervious area (IA) and directly connected impervious area (DCIA) ; Report tabulated results and estimation methodology if baselines provided by EPA are not used.	5	$4,200	$4,200	$21,000
Estimate the number of acres of DCIA added or removed to each sub basin during the prior year	4	$3,360	$3,360	$16,800
Complete an inventory and priority ranking of MS4 owned property and infrastructure that may be retrofitted with BMPs designed to reduce the frequency, volume, and peak intensity of stormwater discharges to and from its MS4.	5	$4,800		$4,800
Minimum Control 5 Sub Total:	**30**	**$27,240**	**$7,560**	**$57,480**
Minimum Control Measure 6: Pollution Prevention/Good Housekeeping for Municipal Operations	**New Permit Requirement (Days)**	**Cost to Implement Year One**	**Cost to Implement Year Two**	**Cost to Implement Entire Permit**
Develop written operations and maintenance procedures for the municipal activities listed in paragraphs of 2.4.7.1 (a-c). a. Parks and open space: b. Building and facilities: c. Vehicles and equipment	15	$12,600		$12,600

a. Parks and open space: Establish procedures to address the proper use, storage, and disposal of pesticides, herbicides, and fertilizers including minimizing the use of these products and using only in accordance manufacturer's instruction. Evaluate l		$0		$0
b. Buildings and facilities: This includes schools, town offices, police, and fire stations, pools, parking garages and other permittee-owned or operated buildings or utilities. Evaluate the use, storage, and disposal of both petroleum and non-petroleum		$0		$0
c. Vehicles and Equipment: Establish procedures for the storage of permittee-owned vehicles. Vehicles with fluid leaks shall be stored indoors or in contained areas until repaired. Evaluate fueling areas owned by the permittee and used by permittee-own		$0		$0
Clean and inspect approximately 10,000 catch basins, assuming inspect and/or clean twice during the 5-yr. permit cycle.		$557,000	$557,000	$2,785,000
Establish procedures for sweeping and/or cleaning streets, sidewalks, and permittee-owned parking lots. These areas shall be swept and/or cleaned a minimum of twice per year.		$240,000	$240,000	$1,200,000
Develop an inventory of all permittee owned facilities within the categories listed per 2.4.7.1 (a-d) and other facilities not in the categories listed, but owned and operated by the permittee.	5	$2,599		$2,599
Develop an inventory of all floor drains within all permittee owned buildings Schools, DPW, etc.	5	$50,000		$2,599
Minimum Control Measure 6: Pollution Prevention/Good Housekeeping for Municipal Operations	**New Permit Requirement (Days)**	**Cost to Implement Year One**	**Cost to Implement Year Two**	**Cost to Implement Entire Permit**
If a catch basin sump is more than 50 percent full during two consecutive routine cleaning events, describe any actions taken to investigate the contributing drainage area for sources of excessive sediment loading, and to the extent practicable, abate con	8	$6,720		$6,720

Document plan for optimizing catch basin cleaning, which includes metrics and other information used to reach the determination that the established plan for cleaning and maintenance is optimal for the MS4.	5	$4,200		$4,200
Establish within 6 months of the effective date of the permit a program to repair and rehabilitate its MS4 infrastructure in a timely manner to reduce or eliminate the discharge of pollutants from the MS4.	5	$4,800		$4,800
Establish inspection and maintenance frequencies and procedures for the storm drain systems and for all structural stormwater BMPs such as swales; retention/detention basins or other structures. All permittee-owned stormwater structures shall be inspected	20	$19,200	$9,000	$55,200
Develop, implement, and sign a written SWPPP for maintenance garages, public works facilities, transfer stations, and other waste handling facilities. SWPPP to include all requirements identified in 2.4.7.2 (b)	15	$14,400		$14,400
Conduct SWPPP quarterly inspections	10	$9,600		$9,600
Minimum Control 6 Sub Total:	**88**	**$921,1**	**$806,000**	**$4,097,718**

Annual Reporting	**New Permit Requirement (Days)**	**Cost to Implement Year One**	**Cost to Implement Year Two**	**Cost to Implement Entire Permit**
Self assessment on permit terms and conditions and appropriateness of BMPS	0.5	$420	$420	$2,100
For increased discharges identify those additional BMPs that the permittee has or will implement to assure that the increased discharge is not causing or contributing to a water quality standards violation.	0.5	$420	$420	$2,100

For the public education program report on the messages for each audience; the method for distribution; the measures/methods used to assess the effectiveness of the messages, and the method/measures used to assess the overall effectiveness of the education	0.5	$420	$420	$2,100
For public participation report on the activities undertaken to provide public participation opportunities including compliance with Part 2.4.3.1.	0.5	$420	$420	$2,100
Include inventory of all Problem Catchments and track removal illicit discharges	4	$3,360	$3,360	$16,800
Track progress of IDDE program, including mapping, SSO's, outfall inventory progress, illicit discharge removal in annual reports.	5	$4,200	$4,200	$21,000
Document the number of site reviews, inspections, and enforcement actions in the SWMP and include in each annual report.	1	$840	$840	$4,200
Report on (a) status of assessment of current street design and parking lot guidelines, (b) progress towards allowing green infrastructure, (c) those MS4 owned properties and infrastructure that have been retrofitted with BMPs designed to reduce the freq.	1	$840	$840	$4,200
Annual Reporting	**New Permit Requirement (Days)**	**Cost to Implement Year One**	**Cost to Implement Year Two**	**Cost to Implement Entire Permit**
Report on actions taken for catch basin sumps that are more than 50 percent full during two consecutive routine inspections. Report on plan for optimizing catch basin cleaning. Report the number of catch basins inspected, number cleaned, and the volume o	2	$1,680	$1,680	$8,400
Report the number of miles of streets swept/cleaned and the volume or mass of material removed.	0.5	$420	$420	$2,100

Report on the status of the inventory and any subsequent updates; The status of the O&M programs for the permittee owned facilities and activities in Parts 2.4.7.1(a – d) ; In addition, the maintenance activities associated with each.	1	$840	$840	$4,200
Report on results of inspections conducted under the Stormwater Pollution Prevention Plan (SWPPP)	0.5	$420	$420	$2,100
Description of activities for next reporting cycle and changes in identified BMPS or measurable goals.	0.5	$420	$420	$2,100
Sub Total for Annual Reporting:	**18**	**$14,700**	**$14,700**	**$73,500**
Total	**454**	**$1,29,358**	**$1,046,240**	**$5,430,917**

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March 11, 2011

BY HAND
BY ELECTRONIC MAIL renahan.kate@epa.gov

EPA—Region 1
Attn: Kate Renahan
Office of the Regional Administrator
5 Post Office Square, Suite 100
Mail Code: ORA01-1
Boston, MA 02109-3912

Subject: Comments on the 2010 Massachusetts Interstate, Merrimack and South Coastal Watersheds Small MS4 NPDES Draft General Permit.

Dear Ms. Renahan:

The following comments on the 2010 Massachusetts Interstate, Merrimack, and South Coastal Small MS4 NPDES draft general permit (the "Permit") are submitted on behalf of the Town of Abington (pop. 6,799),[1] Town of Acushnet (pop. 10,161), Town of Boxborough (pop. 4,868), Town of Burlington (pop. 22,876), Town of Carver (pop. 11,163), Town of Chelmsford (pop. 33,858), Town of Dennis (pop. 15,973), Town of Douglas (pop. 7,045), Town of Eastham (pop. 5,453), Town of Freetown (pop. 8,472), Town of Groton (pop. 9,547), Town of Groveland (pop. 6,038), Town of Hadley (pop. 4,793), City of Haverhill (pop. 58,969), Town of Lakeville (pop. 9,821), Town of Lancaster (pop. 7,380), City of Leominster (pop. 41,303), Town of Lunenburg (pop. 9,401), Town of Mattapoisett (pop. 6,268), Town of Millbury (pop. 12,784), City of Newburyport (pop. 17,189), Town of Northborough (pop. 14,013), Town of Northbridge (pop. 13,182), Town of Oxford (pop. 13,352), Town of Pembroke (pop. 16,927), Town of Plymouth (pop. 51,701), Town of Rehoboth (pop. 10,172), Town of Sandwich (pop. 20,136), Town of Sturbridge (pop. 7,837), Town of Templeton (pop. 6,799), Town of Townsend (pop. 9,198), Town of Upton (pop. 5,642), Town of Wareham (pop. 20,335), Town of Webster (pop. 16,415), Town of Westminster (pop. 6,907) and the Town of Westport (pop. 14,185) (the "Municipalities").[2]

As an initial matter, the Municipalities recognize and share the EPA's goals and objectives in eliminating pollution in the Commonwealth's waterways and recognize that that stormwater management is an important factor in eliminating and cleaning up the waterways. All of the communities that have joined in submitting these comments have an excellent track record of

[1] Population estimates are based on information publicly available through the Massachusetts Department of Housing and Community Development.

[2] Please note that certain of the Municipalities have provided additional comments under separate cover, the within comments are in addition to not a substitute for the other comments already submitted.

compliance with prior permits and take their role as stewards of the environment extremely seriously. However, while the goals and objectives of the Permit may be laudable, the Municipalities object to the means by which the EPA is attempting to achieve them. As will be discussed in greater detail below, there are numerous provisions in the Permit that unduly shift the burden of obtaining the EPA's goals and objectives to the Municipalities. This burden shifting would be unwarranted and troublesome in prosperous economic times, but in these uncertain economic times it is simply unacceptable. As a result, the Municipalities request that the EPA withdraw the draft Permit and take additional time to work with all of the stakeholders in this matter to craft a permit that properly recognizes the Municipalities' role in preventing degradation of the Commonwealth's waterways as well as the role of private stakeholders.

The Municipalities object to the Permit for the following reasons.

A. The Compliance with the Permit Conditions and Requirements is Cost Prohibitive

1. As a general observation, it is important to note that the Municipalities have an overall concern with increased Permit expectations and obligations. Earlier this year, the Massachusetts Legislature announced that local aid to cities and towns will be reduced for the coming Fiscal Year and further cuts are likely. This reduction follows significant reductions for the last two Fiscal Years. In addition to dramatic decreases in state aid, property values and other taxable spending by residents remains extremely low. As a result, cities and towns have to balance their budgets with record-low revenues and have to reduce staffing in order to stay afloat. Of course, these drastic reductions in state aid reflect the weakened state of the economy generally, and the loss of income by individual homeowners and ratepayers. This overall weakness not only constrains tax revenue, but also makes imposition of new fees and charges all but impossible. Therefore, in light of the present state of the world, national, state, and local economies and the resulting municipal budget cuts and staffing reduction, these increased expectations and obligations will place a burden on the Municipalities that will force a choice of compliance with the proposed Permit conditions or the provision of essential municipal services. The provision of both is not an economically feasible option.

2. As an example of the cost-prohibitive nature of the Permit conditions, as indicated in comments by other permittees and acknowledged by EPA at the Public Hearing, the cost for sampling and laboratory testing for 25% of the outfalls as required by the Permit (Section 3.0 et seq.) is approximately $70,000-$500,000 for communities with 20 to 600 outfalls. Other sources estimate that it will cost $60 per capita, per year to comply with the requirements of the draft Permit. Costs for compliance with the other conditions of the Permit, e.g. labor and consumable supplies required to develop and distribute public education materials, conduct site investigations, develop the data and mapping, to inventory and inspect municipal facilities, inspect and enforce construction activities, review site plans for proposed new development or redevelopment projects, and develop and implement reports, policies and ordinances make compliance with the Permit economically

impossible for the Municipalities in today's economic environment. Indeed, according to information on the EPA website, the Municipalities contain almost 32,000 acres of regulated impervious area. If remediation costs an average of $25,000 per impervious acre, the total cost to these Municipalities approaches $1 billion.

3. Section 1.10(a)(b) requires the Municipalities to develop a written Stormwater Management Plan (SWMP) within 120 days of the effective date to the Permit. This deadline is too stringent and fails to take into account the reality of having to coordinate with numerous municipal departments and consultants at the time where financial resources are scare. This requirement should be amended to allow significantly more time to complete and submit the SWMP.

4. Section 1.10(c) of the Permit "encourages" the permittee to maintain an adequate funding source for the implementation of the program. While the language of this section appears to be directory and not mandatory, it is vague and does not adequately provide the Municipalities with guidance for compliance with this provision. Moreover, to the extent that the language is mandatory, in all likelihood the Municipalities will be in violation of the Permit upon its effective date due to the timing of municipal funding. Municipal budgets are established at least 6 months prior to the end of a fiscal year. Fiscal Year 2011 budgets have already been established and adopted and Fiscal Year 2012 budgets will be established and adopted prior to the issuance of the final permit. The Permit was only recently released and still does not provide the necessary detail for the Municipalities to make long term financial projections. Even if the Permit did contain the necessary detail, the budgets for the first year Permit term will already be established.

5. Furthermore, the requirement that the Municipalities maintain a "consistent source of revenue" is not achievable. Unlike public water and sewer systems which are funded through user fees, stormwater systems costs may only be passed on to the citizens through property taxes or by adopting ordinances and bylaws, a process that is both lengthy and uncertain. With no independent source of revenue, stormwater budgets must be established annually by Town Meeting or City Council appropriation. Municipal officials cannot control how the voters will choose to spend limited resources in a given year. In these economic times it is difficult to see where the necessary funding would be obtained. In the short term, funding at least for the first year permit cycle will be unavailable as budgets will have been set and approved by Town Meeting or City action.

6. In this economic climate the Municipalities are struggling to maintain public roads, sidewalks, schools, teachers, fire and police personnel and other critical infrastructure and personnel requirements. Without financial assistance from the EPA and DEP, the diversion of funds for compliance with permit conditions such as requiring the monitoring and enforcing of dog waste bylaws and requiring personnel to monitor dumpster covers is simply too onerous and expensive and should be significantly scaled back to reflect the severe economic realities of today. Additionally,

and significantly, the numerous conditions in the Permit that require extensive expenditures of funds by the Municipalities amount to an unfunded mandate by the state and federal government.

B. Numerous Conditions and Requirements of the Permit are Vague

7. The Municipalities object to numerous conditions and requirements of the permit because they are vague in that the conditions and requirements fail to include specific, measurable quantitative standards to determine compliance with the Permit or inform the Municipalities of what is required of them, making it difficult, if not impossible to determine compliance. Such vague permit conditions and requirements also unlawfully allow the EPA or DEP unfettered discretion to determine which communities are in compliance and which communities are not, essentially leaving the determination to whichever EPA or DEP enforcing authority is charged with reviewing the reports submitted by the Municipalities. This may result in uneven and disparate enforcement and indefinite expansion and manipulation of the Municipalities' obligations. The Municipalities' vagueness objections include, but are not limited to, the following provisions:

8. 2.3.2.2 (d) is vague and does not provide the Municipalities with any notice as to what is required of them in order to comply with this section. Specifically the phrase "[t]o the extent consistent with law and EPA policy" leaves unfettered discretion to EPA to indefinitely expand and manipulate this condition.

9. Section 2.3.3 (b) is similarly vague, requiring permittees to "demonstrate to the satisfaction of MassDEP . . . ." This vague language and lack of specific criteria for compliance leaves the Municipalities with no guidance for compliance and MassDEP unfettered discretion to determine compliance. The condition should provide specific criteria for compliance so that the Municipalities can meaningfully comment on this requirement during the comment period.

10. Section 2.3.3(c) is vague and vests in both EPA and MassDEP unfettered and unappealable discretion to add requirements above and beyond those found in the Permit even if all of the conditions found in Section 2.3.3 are met. This condition should be struck from the Permit and clear criteria should be established so that the Municipalities can know, going forward, what will be required to comply with the Permit.

11. Section 2.4.4.8 (c) requires the Municipalities to designate catchments as problem catchments. However, the criteria for establishing a "problem catchment" is vague and could result in either requiring the Municipalities to check every catchment or miss a catchment because the Municipalities did not characterize the catchment as "highly suspect" since that term is not defined in the Permit. The term "highly suspect" should be defined and specific criteria for establishing a catchment as highly suspect should be provided in the Permit so that the Municipalities have an opportunity to comment on the criteria.

C. The Timeline Outlined in the Permit is Unrealistic

12. The many "milestones" described in the Permit cannot realistically be met. The requirements should be reduced to reflect a more realistic set of achievable milestones in light of the considerable other requirements of the Permit, including data gather and testing.

D. Compliance with Certain Permit Conditions is Impossible

13. Section 2.4.4.8 in some respects is impossible for the Municipalities to comply with. This section requires that the "permittee has adequate legal authority to accomplish the following tasks: prohibit illicit discharges; investigate suspected illicit discharges . . . including discharges from properties not owned or controlled by the MS4 . . ." The United States and Massachusetts Constitutions limit the extent to which government officials can enter private property without the permission of the property owner, and state law further limits the authority of the Municipalities to regulate certain entities and uses such as agricultural uses. The Municipalities cannot be required to violate the constitutional rights of its citizens a condition of a permit making this provision legally impossible for the Municipalities to comply with.

14. Likewise, Section 2.4.4.4 requires the permittee to "implement measures to control [non-stormwater discharges] so they are no longer significant contributors of pollutants or eliminate [them]." In many instances, this is an impossible condition for the Municipalities to comply with, there are numerous circumstances where a municipality simple does not have the legal authority to prevent non-stormwater discharges.

15. Finally, the IDDE program outlined in Section 2.4.4.8 is far too ambitious in its requirements in light of the other conditions in the Permit. The systemic procedure for locating and removing illicit connections will require significant resources thereby diverting valuable man hours and resources at a time when municipalities are forced to reduce their labor forces and not increase them.

E. EPA has Exceeded its Authority in Issuing this Permit

16. Section 2.1.1 requires that discharges not cause or contribute to an exceedance of water quality standards. Section 2.4 requires that the discharge of pollutants be reduced to the maximum extent practicable (MEP). These directives appear to be in conflict. MEP is the statutory standard that establishes the level of pollution reductions that MS4 operators must achieve. Application of pollution controls to the MEP may not assure that discharges do not cause or contribute to an exceedance of water quality standards. Since MEP is the statutory standard for MS4s it should apply throughout the Permit and be the governing standard to determine compliance.

F. The Permit Will Cause Undue Financial Burden On the Municipalities

17. Section 2.4.7.1 (ii) requires the municipalities to provide "pet waste baggies" and install signs along with "increased patrol for violators." This requirement will add significant costs to the already depleted municipal budgets.

18. Section 2.4.7.1 (c) requires that the "permittee shall ensure that all floor drains are not connected to the MS4." This condition will require municipalities to expend significant resources to determine where drains that have been in place for many years empty. In light of the requirements in the first sentence of this section, this added expense is unnecessary.

19. Section 2.4.7.1 (d) requires inspection of all catch basins twice per year. This requirement will entail the expenditure of additional man hours and resources at a time when municipalities are reducing their staffing and not increasing it.

20. Section 2.4.7.1 (d)(iv) requires street sweeping twice per year. This requirement will require the expenditure of additional man hours and resources at a time when municipalities are reducing their staffing and not increasing it.

21. Section 2.4.7.1 (vii) requires annual inspections of all permittee-owned stormwater structures. This requirement will require the expenditure of additional man hours and resources at a time when municipalities are reducing their staffing and not increasing it.

22. Section 2.4.7.2 requires that "the permittee shall select, design, install and implement the best available control measures to minimize or eliminate pollutants in the stormwater discharge from permittee owned facilities." Because this requirement fails to take into account the myriad of facilities owned and operated by municipalities and fails to establish a priority for implementing the best available control measures, the municipalities could be required to expend significant amounts of scarce resources in a very short time frame (one year) without the assurance that the benefit will have a rational relationship to the cost of the measure.

23. Additionally, due to the nature of municipal finance, the one year deadline for compliance with this condition may not be possible if the design and installation requires a third party vendor. Specifically, G.L. c. 30B requires adherence to a mandatory, time consuming procurement process before awarding of public contracts.

24. Section 3.0 requires the monitoring and testing of all permittee owned outfalls. As indicated in Section A.2 of this Comment, this requirement alone will place such a significant financial burden on the municipalities that compliance will be practically impossible.

G. Concerning Section 2.0 Non Numeric Effluent Limitations

25. This section should be re-titled "Effluent Limitations," as many of the limits imposed by this section are numeric.

H. Concerning 2.1.1.1. c The "Cause or Contribute" Provision

26. This section requires permittees to develop plans for remediation of discharges that "cause or contribute" to an exceedance of a water quality standard. At a minimum, this should be rewritten to clarify that only discharges that cause or contribute to a **violation** of a water quality standard are covered by this provision. It is possible to exceed a water quality standard, without causing or contributing to a violation. For example, a discharge could contain copper at a level above its CCC, but only if that concentration is above the CCC for 4 days would it actually be a violation of the standard.

27. This clause is impractical because permittees are not equipped to determine if their discharges "cause or contribute" to exceedances in the following circumstances:

> Where there are non-numeric standards applicable to the waterbody. For these standards, the permittee has no way of determining if a discharge contains pollutants in quantities that would cause or contribute to exceedances, as the standards are, by definition, subjective.
>
> Where the receiving waters are known to require a TMDL such waters invariably represent complicated environmental settings. In some cases a discharge may contain a pollutant in a concentration above a numeric criterion, but until the TMDL is completed, the appropriate level of control for the MS4 discharge is unknown.

28. This clause should explicitly exclude existing discharges to receiving waters that have been assessed to meet designated uses.

I. Concerning Section 2.2.1.d Limits on Phosphorus

29 The Permit is based on a misinterpretation of the various TMDLs referenced in the permit, when it requires each community to achieve the specific percentage reduction in phosphorus identified in the TMDL. The community level phosphorus loadings presented in the TMDLs were

developed based on land uses in the communities and export coefficients (pounds per unit of time) associated with those land uses. By knowing the different types of land uses and export coefficients, it is possible to estimate the phosphorus loading from that community. However, this does not mean that that EPA or DEP knows how much phosphorus comes from the community MS4; to the extent that the phosphorus comes from a property not a tributary to an MS4, that phosphorus is not the responsibility of the community under its ownership of the MS4. It may be either the responsibility of the owner of the storm sewer, or it may represent overland flow to the receiving water, and thus represent a non point phosphorus source. Thus, the requirements of appendix G-1 should be modified to reflect the phosphorus load reductions required from the MS4's, and not from the community as a whole.

30. Phosphorus limits should be expressed as a combined mass loading, where such loadings are known.

31. The limits on phosphorus discharge are expressed in the permit in terms of percent reduction from some baseline level, usually the loading based on the loads existing at the time of development of the TMDL. For those sources where the actual TMDL mass loading rates used to develop the TMDL are known, the permit should specify the mass loading rate, rather than a percent reduction. This will eliminate any confusion as to the baseline level, and will accommodate a more holistic evaluation of compliance with phosphorus reduction goals. For example, a community might attempt to meet its phosphorus reduction goal by maximizing phosphorous reductions at one site, rather than achieving the same level of phosphorous reduction at all sites. In this case, the percent reduction requirement may not always be met, even though the overall goal will have been met. Some might argue that the permittee is not in compliance with its permit for the outfall with lower percentage reduction.

32. Table G-1 could create confusion where it indicates that the Flint Pond and Lake Quinsigamond TMDLs require a 52 % reduction in storm flow. The TMDLs require a 52 % reduction in phosphorus. This should be clarified.

J. Concerning Section 2.2.1.e Long Island Sound TMDL Nitrogen Limits

A. The Nitrogen Limits Should Be Struck In Their Entirety.

33. The draft permit imposes nitrogen restriction on discharges tributary to Long Island Sound. These restrictions include a 10% reduction in nitrogen from existing levels, and a requirement to limit nitrogen such that they are "maintained, or decreased". See 2.2.1.e, appendix G-2, and part 2.4.2.1.1(c)(i),(ii). These limitations are based on the assumption that the approved TMDL requires these limitations.

34. Such an assumption is incorrect. Although the approved TMDL references a 10% reduction in total nitrogen loads for out-of-basin sources, EPA's approval letter of the TMDL, and the TMDL itself are clear that these represent assumptions made for the purpose of determining that there is "reasonable assurance" that the nonpoint source load reductions are achievable, and therefore that the detailed in-basin source reductions are appropriate[3]. The relevant portions of documents associated with the approved TMDL supporting this position are as follows:

35. EPA's Approval letter of the TMDL indicates the following:

> B. Phase IV Nonpoint Source Reductions
>
> The TMDL identifies load allocations for out-of-basin nitrogen loads (i.e., tributary loads) that would be achieved through the implementation of Phase IV reduction targets. For nonpoint sources, the Phase IV targets include a 10 percent reduction in urban and agricultural loads throughout the Long Island Sound basin north of Connecticut, and an 18 percent reduction in atmospheric nitrogen loads. These reductions are based on the clear role that these nonpoint sources have on water quality in Long Island Sound.
>
> Some public comments on the draft TMDL questioned whether states have the authority to assign allocations to sources in other states. ***In this case, EPA is not approving the out-of-basin nitrogen reductions as formal allocations but rather as reasonable assumptions on which the inbasin reductions are based.*** EPA believes that states have some flexibility to make assumptions about improvements in water quality beyond their jurisdictions. If they base a TMDL on such assumptions, states must clearly explain why the assumptions are reasonable. In this case, the states estimated 10 percent reduction in urban and agricultural nonpoint source loads is reasonable for the same reasons that were identified for the 10 percent reduction to the in-basin urban and agricultural loads. These reasons are detailed in the Reasonable Assurances section of this review. The estimated 18 percent reduction in atmospheric nitrogen loads is reasonable because it was taken from EPA estimates of the effect of implementation of CAA controls and its enforceable requirements, similar to the in-basin reductions of atmospheric nitrogen loads. EPA believes that these estimates of future reductions make sense. Moreover, as discussed in the Reasonable Assurance section below, EPA is committed to working with the three northern states to address nitrogen loads affecting Long Island Sound through their nonpoint source management programs. EPA TMDL approval letter, p. 9 (emphasis supplied).

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[3] If the TMDL could not prove "reasonable assurance" for the out of basin sources, then the in-basin reductions would need to be greater than presented in the TMDL.

36. The TMDL, in discussing the implementation plan for the TMDL says:

> Achieving reductions in point and nonpoint source loads from states north of Connecticut will require increased coordination and exchange of technical information between the Long Island Sound Management Conference and those states. Some reductions in nonpoint source nitrogen loads are anticipated through the ongoing implementation of state nonpoint source management, stormwater permitting, and animal feeding operation (AFO) permitting programs. However, it will be necessary to conduct additional monitoring and assessment to better determine the relative importance of point and nonpoint sources, as well as the role of natural attenuation as the distance from Long Island Sound increases. Based on this assessment, the ***TMDL revision scheduled for 2003 will describe a framework for managing these out-of-basin sources and a schedule for implementing Phase IV nitrogen reduction actions***. Because Phase III and IV overlap and are interrelated, Phase IV nitrogen reductions should be initiated as soon as interstate agreements on specific implementation actions are established. Several steps have been identified to assess and achieve nitrogen reductions from out-of-basin sources (Table 12). Long Island Sound TMDL, p. 45 (emphasis supplied).

37. Until the TMDL Revision has been developed, subjected to public review, and approved by the Agency, it is premature to include any limits on nitrogen in this permit based on the TMDL. All requirements associated with nitrogen control must be struck from the permit.

K. Concerning Section 2.2.1.f and g Regarding Bacteria TMDL's

38. The Permit expresses limits on pathogens in stormwater discharges for the Shawsheen River and Palmer River using the Commonwealth's old fecal coliform requirements for primary contact recreation . However, fecal coliform densities are no longer used as the measure of bacteriological contamination in these waters and for these uses under the Massachusetts water quality standards. The proper organism is E. Coli for freshwater. Thus, there is no basis for including fecal coliform standards in this permit.

A. All Percent Reduction Limits for Pathogens Should be Struck from the Permit

39. The percentage reduction requirements for pathogens contained in the Permit are based on calculations contained in the TMDL. Those calculations were based on the reduction in pathogen densities in the receiving water necessary to meet water quality standards. This is not a calculation of a "maximum daily load," which is what the TMDL regulations require. Thus, the percentage reduction limits for pathogens should be struck from the permit.

40. Moreover, the observed concentrations in the receiving waters represent a variety of sources ranging from combined sewer overflows to privately owned storm drains to animal wastes. Even if percentage reduction was some form of a "load," the proper way to allocate this "load" would be to identify the relative sources, and assign both waste load allocations and load allocations to the various sources, as specified by the TMDL regulations. This process would more properly assign the responsibility for source reductions.

B. All Numeric Limits on Fecal Coliform Should be Struck from the Permit

41. The numeric limits on fecal coliform are imposed as a result of the approved Buzzards Bay, Mt Hope Bay, the Palmer River, Cape Cod and Shawsheen River TMDLs, among others. However, the approved TMDLs are flawed because they fail to identify the maximum daily load which the water body can tolerate and then to provide load allocations and waste load allocations as established by the TMDL regulations. Rather, the TMDLs simply decide that if all discharges meet the water quality standards, the receiving water will then be protected. This line of logic is inconsistent with the entire regulatory scheme established under the Clean Water Act. If all discharges meet water quality standards, not only would there be no need for a TMDL, there would be no need for technology based effluent limits, or water quality based effluent limits that vary according to the dilution of the discharge in the receiving water . All discharges everywhere would simply need to meet water quality standards.

42. The basic rationale for this line of improper logic was presented in the Total Maximum Daily Loads of Bacteria for the Neponset River Basin which states:

43. FECAL COLIFORM TMDL

> Loading Capacity. The pollutant loading that a waterbody can safely assimilate is expressed as either mass-per-time, toxicity or some other appropriate measure (40 C.F.R. § 130.2(i)). Typically, TMDLs are expressed as total maximum daily loads. However, MADEP believes it is appropriate to express bacteria TMDLs in terms of concentration because the fecal coliform standard is also expressed in terms of the concentration of organisms per 100 ml. Since source concentrations may not be directly added, the previous equation does not apply. To ensure attainment with Massachusetts' water quality standards for bacteria, all sources (at their point of discharge to the receiving water) must be equal to or less than the standard. Expressing the TMDL in terms of daily loads is difficult to interpret given the very high numbers of bacteria and the magnitude of the allowable load is dependent on flow conditions and, therefore, will vary as flow rates change. For example, a very high number of bacteria are allowable if the volume of water that transports the bacteria is high too. Conversely, a relatively low number of bacteria may exceed water quality standard if flow rates are low.

For all the above reasons the TMDL is simply set equal to the standard and may be expressed as follows:

TMDL = Fecal Coliform Standard = WLA(p1) = LA(n1) = WLA(p2) = etc.

Where:
WLA(p1) = allowable concentration for point source category (1)
LA(n1) = allowable concentration for nonpoint source category (1)
WLA(p2) = allowable concentration for point source category (2) etc.

44. For Class B surface waters the fecal coliform TMDL includes two components: (1) the geometric mean of a representative set of fecal coliform samples shall not exceed 200 organisms per 100 ml; and (2) no more than 10 % of the samples shall exceed 400 organisms per 100 ml. For Class SB surface Waters the fecal coliform TMDL is more restrictive to protect the shellfish use goal and also includes two components: (1) the geometric mean of a representative set of fecal coliform samples shall not exceed 88 organisms per 100 ml; and (2) no more than 10 % of the samples shall exceed 260 organisms per 100 ml. The goal to attain water quality standards at the point of discharge is environmentally protective, and offers a practical means to identify and evaluate the effectiveness of control measures. In addition, this approach establishes clear objectives that can be easily understood by the public and individuals responsible for monitoring activities. Also, the goal of attaining standards at the point of discharge minimizes human health risks associated with exposure to pathogens because it does not consider losses due to die-off and settling that are known to occur.

45. This logic is faulty for a variety of reasons, including the following:

a. The fact that the standard is expressed as a concentration does not justify the use of concentration alone in establishing the "load." Virtually all numeric water quality standards are established in terms of concentrations, but TMDL's are expressly designed to measure the loading that a water body can safely assimilate, expressed as a mass per unit time. In the case of these bacteria TMDL's, it would have been appropriate to use the number of organisms per unit of time as the proper metric. EPA provides several example pathogen TMDL's on its website that approach pathogen total load development in this manner.

b. The statement is wrong when it says that source concentrations may not be added. It is quite common to "add" the sources using numerical simulation models to develop the assimilative capacity of the receiving water. EPA and the New England Interstate Water Pollution Control Commission have developed that kind of model for the lower Charles River which was published as Appendix B to the final pathogen TMDL for the Charles River, and is a technique used in the

example pathogen TMDL's on EPA's website.

c. The statement is wrong when it says that all sources must be at or below the standard to ensure compliance with standard. As a practical matter, to the extent that any source is below the standard, then other sources may be above the standard, and the standard may still be met. In addition, bacteria undergo natural reduction in the receiving waters due to die-off, settling and other factors. As a result, waters that may be initially contaminated becomes less contaminated over time, and can serve to offset the input of discharges that are in excess of the standard. All of these factors are amenable to analysis and simulation through numerical models. Indeed, simulation model described in Appendix B of the Charles River Pathogen TMDL clearly showed that implementation of stormwater controls at levels far above the 200/100 ml standard was effective in significantly reducing the distribution of water quality violations.

d. The statement is wrong when it claims that the limits represent a practical means for assessing the effectiveness of control measures. Since the requirement is for a geometric mean to be lower than 200 organisms per 100 ml, and not more than 10 % to be lower than 400 organisms per 100 ml, a person can only know if compliance is being achieved if they have the entire sampling dataset available to them. This is hardly more effective for assessing compliance than any other limitation, or more easily understood by the general public. For example, it is quite possible to have a single discharge with a concentration of 100,000 coliform per 100ml – but if less than 10 % of the discharges from this source are over 400/100 ml, or the geometric mean of all samples is over 200 per 100 ml, the single discharge does not constitute a violation.

e. The statement is correct when it says that the goal of meeting water quality standards at the point of discharge is environmentally protective. But in the context of a TMDL this is irrelevant – the purpose of a TMDL is to develop the assimilative capacity of the receiving water. The fact that a pollutant discharged at the water quality standard (or indeed if the proposal were to require no coliform in the discharge) is environmentally protective is not material and cannot be used to justify a TMDL limit.

46. The communities realize that development of tools necessary to establish proper total maximum daily loads will be neither simple nor inexpensive. But, by the same token, compliance with these arbitrary standards will be far more costly. More work on the basic pathogen sources, and controls needs to be done to justify the expenditures necessary to comply with these requirements.

L. Concerning Section 2.2.1 g Nitrogen limits for discharges to Cape Cod/Buzzard Bay Waters

47. The description in Appendix G, table G4 usually characterizes this as "negligible", and includes a footnote that says this means that the nitrogen from the MS4 is less than 2%. This appears

to be a slight mischaracterization of what the TMDL says. The TMDL says that stormwater usually percolates into the ground; and that on the whole, stormwater constitutes a very small fraction of the nitrogen load. The TMDL makes no estimate of a nitrogen waste load allocation associated with MS4's. It appears that there is no specific load allocation for stormwater, either. Perhaps the best way to characterize the TMDL limitation is in these situations is "NA".

48. The permit requires that communities identify those sources of nitrogen discharging to the impaired waters listed in table G-4. A pollution budget for these waters has already been done as part of the Mass Estuaries Project, and so this requirement appears unnecessary. In addition, taken literally, the requirement would essentially require detailed sampling of a number of sources that are not related to the MS4 – groundwater, atmospheric deposition, overland flow, etc. This would likely be very expensive, and is beyond the scope of what should be included in an MS4 permit. If the purpose of this requirement is to establish some understanding of the nitrogen loads from the MS4, that can be accomplished by the testing required under section 3.0 of the permit.

49. Table G-4 is in error when it says that there is a nutrient TMDL for the Bay (presumably Mount Hope Bay) and Palmer River for Swansea. There is no nutrient TMDL for these waters.

M. Adoption of Any and All other Comments Submitted during the Comment Period of this Permit

50. The Municipalities hereby adopt any and all other comments submitted on behalf of any municipality to the EPA in response to its request for comments as if actually set forth herein together with any and all documentary support for said comments.

If you have any questions regarding this matter please do not hesitate to contact me or Attorney Gregg J. Corbo.

THE MUNICIPALITIES

By their attorneys,

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Congressman Neal
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Congressman Tierney
Congresswoman Tsongas

MCWRS
Massachusetts Coalition for Water Resources Stewardship

COALITION MEMBERS

Agencies
Charles River Pollution Control District
City of Haverhill
City of Holyoke
City of Marlborough
City of New Bedford
South Essex Sewerage District
Springfield Water and Sewer Commission
Town of Concord
Town of Framingham
Town of Franklin
Town of Jaffrey, NH
Town of Medfield
Town of Milford
Town of North Reading
Town of Northbridge
Town of Southbridge
Town of Yarmouth
Upper Blackstone Water Pollution Abatement District

Affiliates
Cherry Valley Sewer District
City of Beverly
City of Chicopee
City of Peabody
City of Salem
City of Worcester
Town of Bellingham
Town of Danvers
Town of East Longmeadow
Town of Marblehead

Corporate
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Legal
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February 22, 2011

United States Environmental Protection Agency – Region 1
Ms. Kate Renahan
Office of the Regional Administrator
5 Post Office Square – Suite 100
Mail Code: ORA01-1
Boston, Massachusetts, 02109-3912

Subject: Comments on the Draft Massachusetts Interstate, Merrimack, and South Coastal Small MS4 General Permit

Dear Ms. Renahan:

The Massachusetts Coalition for Water Resources Stewardship ("the Coalition") is in receipt of the Draft Massachusetts Interstate, Merrimack, and South Coastal Small MS4 General Permit for stormwater management, applicable to over 150 communities in the Commonwealth. This letter provides our comments for consideration when developing the final permit.

The Coalition recognizes the importance of stormwater management to the environmental health of Massachusetts waterways and the maintenance of designated uses. With the Clean Water Act (CWA) long focusing on point sources alone, we applaud the efforts of the Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) over the last decade to incorporate non-point source pollutant reduction into the CWA regulatory program.

The regulatory agencies and the regulated communities share a common mission – to ensure the health and quality of our cities and towns and their natural resources. In order to accomplish these goals, communities must balance environmental programs with other needs and responsibilities they have and implement them in a fashion that is both feasible and financially responsible. In this context, the Coalition offers the following comments on the Draft Permit:

Municipal Stormwater Requirements under the Clean Water Act

- Section 2.1 (page 12) states that, "pursuant to Clean Water Act 402(p)(3)(B)(iii), this permit includes provisions to ensure that discharges from the permittee's small MS4 do not cause or contribute to an exceedance of applicable water quality standards." A check of this section of the Clean Water Act (CWA) reveals no mention of water quality standards or requirements for MS4 discharges to not cause or contribute to an exceedance of said standards. Rather, **the law** states that MS4's must remove pollutants in stormwater to the maximum extent practicable (MEP), a term undefined in the CWA but which explicitly establishes that there are cost and reasonableness considerations to stormwater pollutant removal by municipalities.[1] In crafting the 1987 amendments to the CWA that established the MS4 program, Congress recognized that achieving water quality standards in something so variable and often times uncontrollable as municipal stormwater was so daunting and unlikely that a new standard, MEP, must be applied. EPA has effectively ignored this reality of the law in drafting a permit that requires compliance with water quality standards. It is not until section 2.4 on page 18 that MEP is raised as a permit condition. In this section MEP is properly described and the BMP approach to meeting MEP through an iterative process is appropriately offered. It is suggested that all language in the water quality section of the draft permit be stricken and the permit begin with the language from section 2.4. Per the CWA, MEP is the standard to which pollutants must be removed. Achieving MEP may not, and is unlikely to, achieve water quality standards in MS4 discharges. MEP does not equate to achieving Water Quality Standards as the cost and effort involved to meet the standards will rarely be feasible for a municipality. Achievement of water quality standards and requirements that MS4 discharges not cause or contribute to exceedances of WQS can only be set as goals in a stormwater permit if the permit is to be consistent with federal law.

- Section 2.2 is a continuation of the "achieve water quality standards" requirements of the draft general permit with a focus on impaired waters and TMDL waste load allocations (WLA). The TMDL WLA is effectively a numeric water quality standard that permittees are directed to achieve. For phosphorus, Section 2.2.1(d)(i) requires that "The permittee shall develop a written plan to assess the amount of phosphorus discharged from the MS4 to the waters identified in Appendix G, Table G-1 **and to reduce the phosphorus to levels consistent with the assumptions and requirements of the LAs and WLAs of the TMDL."** Permittees are given 3 years to develop the written plan and 7 years to complete implementation. A check of Appendix G, Table G-1 reveals that phosphorus removal requirements of TMDLs can range up to 97% for some ponds! Table G-1 identifies specific numeric phosphorus reduction values for each town and each impaired water with values of 50%-97% not uncommon. These are numeric water quality requirements that go well beyond any interpretation of MEP. Requiring municipalities to achieve these phosphorus reduction levels is impracticable. The more appropriate permit language would be to the effect that the MS4 must remove phosphorus to the MEP from discharges to impaired waters with TMDLs for phosphorus.

[1] The Random House College Dictionary Revised Edition, 1988, defines practicable as " capable of being done, effected, or put into practice, with the available means; feasible"

Data Needs for Compliance by MS4 Communities

The Draft Permit requires an enormous quantity of data to be gathered in a very short timeframe in order to meet all of the permit requirements. The following is a list of data requirements included in the permit.

- The locations of all stormwater infrastructure including outfalls, pipes, catch basins, interconnections to other small MS4s, catchment delineations, treatment structures and other Best Management Practices (BMPs);
- Data regarding the water quality of receiving waters, including water quality classifications and standards, identified impairments, total maximum daily loads (TMDLs), and waste load allocations (WLAs);
- Additional detailed receiving water quality information to identify areas with a high illicit discharge potential, such as fecal coliform, ammonia-nitrogen, total phosphorus, and surfactant data, and "any other available sources of dry weather water quality data including state agencies or watershed associations";
- Locations of drinking water supplies, shellfish beds, fishing areas and other sensitive environmental resources;
- Parcel-by-parcel land use information, including specific uses (car dealers, car washes, gas stations, garden centers, industrial manufacturing areas, colleges, and residential areas), building ages, septic system ages, results of Title 5 inspections, locations of swimming pools, and ages of industries;
- Sanitary sewer system information, including sewer ages, the location, date, volume, and mitigation of sanitary sewer overflows, and the locations of existing and former combined sewer overflows; and
- Additional optional information such as topography and orthophotography.

If a community does not already have a robust Geographic Information System (GIS), the development of these data layers would require years of work and will cost hundreds of thousands of dollars. The timeline for completion of much of the mapping in the Draft Permit and the data analyses that are contingent upon its completion is one to two years from the effective date. These are not achievable milestones for communities that do not already have access to this information. Data collection would require a flyover of the community and/or extensive global positioning system (GPS) field work. The allocation of funds followed by the procurement of the required services could consume the majority of the time allowed for these mapping and data analysis tasks. This could be exacerbated depending on the timing of the permit issuance within a community's fiscal year. For a community that already has all of the required data, the data compilation and analyses could consume the entire time allowable for these tasks.

Timeline for Completion of Permit Milestones

Among the many requirements in the Draft Permit, the following milestones are included at the times indicated for communities that were subject to the 2003 permit:

120 days following EPA authorization:

- Submit the Stormwater Management Plan, including initial mapping, measurable goals for each BMP, milestones, timeframes, and measures of assessment.

Within 6 months of the effective date:

- Inventory all permittee-owned facilities within the categories listed;
- Develop a program to rehabilitate infrastructure at municipal facilities as needed;
- Begin sweeping all streets twice per year; and
- Begin quarterly inspections of all municipal facilities.

Within 1 year of the effective date:

- Submit a Stormwater Pollution Prevention Plan for all municipal facilities;
- Prepare written operations and maintenance procedures for municipal activities;
- Develop a procedure for site inspections and enforcement of construction site measures;
- Develop a protocol for the illicit discharge detection program and prioritize areas based on the data listed above;
- Inspect all stormwater structures on municipal properties annually;
- Begin distribution of public education materials to four identified audiences;
- Identify areas of inappropriate pet waste management; and
- Develop an inventory of all floor drains within permittee-owned buildings.

Within two years of the effective date:

- Submit the storm sewer infrastructure map showing all stormwater utilities;
- Submit an inventory and priority ranking of MS4-owned property and infrastructure;
- Implement targeted management efforts for pet waste at identified locations;
- Submit a report assessing the current street design and parking lot guidelines;
- Amend the previously enacted ordinance (if completed under the 2003 Permit) for development/redevelopment post-construction stormwater standards;
- Distribute public educational materials about feeding waterfowl in targeted areas;
- Begin monitoring and sampling 25% of outfalls per year in both dry and wet weather;
- Submit an annual estimate of changes in impervious area in each sub-basin tributary to the stormwater system, both directly and indirectly connected, from both public and private projects; and
- For communities that ultimately discharge to Long Island Sound and those within the Cape Cod and Buzzards Bay watersheds, identify sources of nitrogen which discharge from or through the MS4.

Within 3 years of the effective date:

- Develop a report assessing existing local regulations to determine the feasibility of allowing or encouraging green infrastructure; and
- For communities with approved phosphorus TMDLs, develop a plan to assess the amount of phosphorus discharged.

Within 4 years of the effective date:

- Complete investigations of 50% of the storm sewer catchments; and

- For communities that ultimately discharge to Long Island Sound, implement practices such that nitrogen discharge levels are reduced.

Within 7 years of the effective date:

- For communities with approved phosphorus TMDLs, implement the plan to reduce phosphorus discharges.

By the end of the permit cycle:

- Monitor and sample all outfalls in both dry and wet weather; and
- Distribute a minimum of eight public educational messages.

Many of the individual requirements, on their own, would be achievable. However, requiring so many varied tasks of each community during a five-year permit cycle is unrealistic and is setting communities up for failure to comply. For this permit cycle, the program should be pared down to a list of achievable goals that build on the efforts that communities have already expended for compliance with the 2003 permit.

Financial Burden to Regulated Communities

For sample communities with 200 to 700 outfalls, the sampling and laboratory testing alone for 25% of the outfalls could cost upwards of $40,000 to $100,000 annually, depending on the parameters being tested. This is just one small component of the Draft Permit. While EPA has estimated compliance costs on the order of $100,000, it is important to note that the Massachusetts **2002** Clean Water SRF had 19 stormwater planning projects that ranged from $190,000 to $750,000, with an average of a little over $400,000. Combined with the labor costs required to develop and distribute public education materials, to conduct site investigations, to develop the data and mapping described above, to inventory and inspect municipal facilities, to inspect and enforce construction activities, to review site plans for proposed new development or redevelopment projects, and to develop and implement reports, policies and ordinances, the financial burden of the Draft Permit is excessive.

In Section 1.10 c, the permittee is "encouraged to maintain an adequate funding source for the implementation of this program. Adequate funding means that a consistent source of revenue exists for the program." With only 120 days from the permit's effective date to develop the Stormwater Management Plan and commit to particular measures for implementation, there is not adequate time for funding to be secured. Furthermore, a "consistent source of revenue" implies a funding mechanism such as a stormwater utility assessing user fees. This type of program could require years to develop and implement, normally requiring multiple levels of review and approval from town boards and committees, town counsel, town meetings or general elections, and sometimes the state legislature. At a time when communities are not flush with money, and when most communities do not have enterprise funds for addressing stormwater infrastructure needs, the financial obligations of the proposed regulations are insurmountable.

Pollutant Loading Offsets

Pollutant loading "offsets" are mentioned in the Draft Permit with regards to watersheds both with and without approved TMDLs. The Coalition is hopeful that this is a step in the direction of more holistic water resources planning, where trading could be between not only stormwater outlets discharging to a particular receiving water, but also between MS4 communities and a host of stakeholders involved in watershed management. This could include wastewater treatment facilities, agricultural operations, golf courses and impoundment managers.

Many communities are presently spending millions of dollars to upgrade their wastewater treatment facilities to meet stringent new pollutant goals. Some of these facilities can already attain levels below those required in TMDLs. Communities should be able to extend the benefit of their investment and offset some of the costs of stormwater treatment by meeting less stringent standards for stormwater, as long as the same total load can be achieved. Conversely, they should be able to invest in stormwater management and offset the need for additional wastewater treatment upgrades. Options for achieving offsets might also be present by provision of such in-stream improvements as impoundment removal or management, management of stream shading to reduce water temperature and management of aquatic vegetation. Other opportunities might also include better fertilizer management at agricultural operations and golf courses, which could be addressed as offsets to stormwater or wastewater treatment.

Watersheds with Phosphorus TMDLs

Based on the Draft Permit, communities with phosphorus TMDLs are required to meet unrealistic phosphorus reduction goals over a 7-year period, as specified in the tables in Appendix G. Presently, BMPs for stormwater phosphorus reduction are not well-developed. Furthermore, consistent guidance is needed in the permit regarding how to calculate the reduction potential associated with particular BMPs. Without presenting a consistent approach to calculating their reduction potentials, each community is likely to assess its achieved removal differently. In order to have an equitable program across cities and towns within the watershed, the permit documents must be more specific in this regard. A list of phosphorus-reducing BMPs should be provided as an appendix, with detailed instructions as to how to relate BMP implementation to a removal percentage for the flow that is affected by the BMP. This should apply to both structural and non-structural controls. Alternatively, one specific BMP guidance document should be referenced as the resource for all communities to perform these calculations. This will also minimize the frequency of phosphorus sampling required to assess compliance with the permit.

In addition to the need for more detailed and equitable methods of calculating reduction potential, the permit should address alternatives for highly urbanized areas where the installation of structural BMPs on public property may not be feasible. In these areas, communities can work with private property owners as properties are redeveloped to require BMPs on their sites. In the meantime, however, there may not be feasible approaches to meeting TMDL WLAs for phosphorus.

For all communities subject to phosphorus TMDLs, a phased approach with less stringent, achievable goals over a longer period of time is more appropriate at least until a range of feasible, cost-effective options for meeting water quality goals is developed through bona fide research and testing.

Shawsheen River Bacteria Reduction Requirements

In an August 2004 report entitled, "Evaluation of Stormwater Management Benefits to the Lower Charles River," prepared by Metcalf & Eddy for the EPA, 2000 cfu/100 mL is described as "the extreme of dry weather and wet weather stormwater quality that could occur if aggressive illicit connection removal is implemented, and all possible BMPs are applied to their fullest extent." The bacteria removal requirements in Appendix G of the draft permit are 200 cfu/100 mL (geometric mean) across Shawsheen River communities. Achieving these levels in urban stormwater discharges is not realistic.

Long Island Sound Tributary Nitrogen Reduction Requirements

The draft permit imposes nitrogen restrictions on discharges tributary to Long Island Sound. These restrictions include a 10% reduction in nitrogen from existing levels, and a requirement to limit nitrogen levels such that they are "maintained or decreased." These limitations are based on the assumption that the approved TMDL requires these limitations.

Such an assumption is incorrect. Although the approved TMDL references a 10% reduction in total nitrogen loads for out-of-basin sources, EPA's approval letter of the TMDL, and the TMDL itself, are clear that these are only assumptions made for the purpose of determining that there is "reasonable assurance" that the nonpoint source load reductions are achievable, and therefore that the detailed in-basin source reductions are appropriate. In particular, the TMDL includes the following language: "*the TMDL revision scheduled for 2003 will describe a framework for managing these out-of-basin sources and a schedule for implementing Phase IV nitrogen reduction actions*." Until the TMDL Revision has been developed, subjected to public review and approved by the EPA, it is premature to include any limits on nitrogen in this permit based on the TMDL.

Assistance from the Regulatory Agencies

There are several areas in which the regulatory agencies could provide information that would greatly reduce the financial burden and time constraints imposed by the Draft Permit. These include the following, each of which is described in more detail below: (1) public education materials, (2) ordinances and policies, (3) GIS data, (4) BMP removal efficiencies and related data, and (5) coordination with other review agencies. The provision of impervious area and directly connected impervious area for each community in Section 2.4.6.9 is a good example of the type of information that should be provided to assist in compliance. We note also that this Draft Permit included many more links to such resources than the North Coastal Draft Permit, which will be of assistance to communities. As much as possible, the regulatory agencies should provide guidance documents and templates to meet the individual requirements of the permit.

Public Education Materials
For the required public education materials, having each community create their own language and graphics for brochures, websites, signs, etc., is an inefficient use of resources. Enough of the information on non-structural controls implementable by the public is generic and can be provided in a series of templates to communities. A few versions of this information could be developed depending on the size and demographics of each community or depending on the watershed. Similarly, for business and industrial user education, much of the information is generic and applies to all facilities. Specific recommendations regarding pet waste management, the use of alternative fertilizers, appropriate fertilizer application, and yard waste recycling, to name a few, are common to most locations. Templates could include areas where communities can input information specific to their locations. Providing these templates would greatly reduce duplicate efforts and costs.

Ordinances and Policies
Similar to public education materials, the regulatory agencies should provide suggested language for ordinances and policies. The Draft Permit requires the development of a number of specific policies and procedures, including those relating to illicit discharges, construction oversight, new development reviews, and management of municipal facilities. Again, much of this information is generic and could be provided to communities as a range of templates, where a community could select the provisions applicable to their needs from a list of potential wording. If five templates could be made for each ordinance, rather than one for each community, this, again, would greatly reduce duplicate efforts and costs. Furthermore, many communities are likely to have counsel review new bylaw language prior to its adoption. If the regulatory agencies provide only that language that has been reviewed from a legal perspective and is deemed appropriate and enforceable, this would further reduce the costs to communities.

GIS Data
Many of the data needs listed above are a part of state-wide or regional initiatives. For instance, water quality classifications and standards, identified impairments, data from watershed organizations, waste load allocations, and waterways with endangered species habitat are not specific to individual communities, but instead are applicable to reaches of receiving waters that cross town boundaries. Rather than each community seeking out this information individually, the Draft Permit should contain links to downloadable GIS data for all regional or state-wide data required to be used to comply with the permit requirements.

BMP Removal Efficiencies and Related Information
As described above, the regulatory agencies should provide means of calculating removal efficiencies based on particular BMPs to arrive at a fair and equitable accounting across all communities. This is especially true for non-structural controls, such as public education and outreach, detection and elimination of illicit discharges, source control, and good housekeeping. Results from these activities are hard to measure otherwise.

Coordination with Other Review Agencies
Reviews for the presence of and impacts to endangered species, specific habitats, historical resources, and archeologically significant areas are cumbersome for each community to coordinate individually, both for the communities and for the review agencies. The permitting

authorities should coordinate the reviews by these agencies with the comment periods and with particular future milestones, and all comments should be funneled through the permitting agencies to the applicants via formal comments. The Draft Permit describes activities as minor as constructing a ditch or installing a new catch basin as requiring the community to contact the review agencies due to the disturbance of land, especially in relation to archeological resources. A more streamlined process is required for obtaining input from these agencies on minor activities such as these.

Other Comments

The following is a list of miscellaneous comments that apply to topics other than those discussed above:

- The monitoring of 25% of outfalls each year in both wet and dry weather conditions is cumbersome, costly, and unreasonable. This should be lowered to a more achievable level, such as 10% per year, starting with known problem areas. Because of the vagaries of stormwater quality, wet weather monitoring is of little value. Such monitoring should be kept to a minimum with representative sampling rather than monitoring of all outfalls. Representative sampling could be used to provide a general overview of stormwater quality. This overview will no doubt affirm what is already well known and documented – stormwater quality is highly variable and can be very poor.

- For receiving waters both with and without approved TMDLs (Sections 2.2.2 and 2.3.1), requiring the installation of BMPs in municipal systems to meet all impaired water quality standards is an enormous and expensive undertaking.

- Many, if not most, of the TMDLs cited in this draft permit are questionable as to their scientific basis and applicability to a regulatory program. There are inconsistencies in the development of TMDLs that may lead to imposition of costly requirements on some communities and not others. If TMDLs are to form the basis for assigning enforceable water quality improvements to permittees then the quality of TMDLs needs to be re-evaluated and held to a higher standard.

- The permit states that the regulations only apply to the "urbanized" areas of each community – those with at least 500 people per square mile – and that "irrigation water" is excluded as a non-stormwater discharge. This may result in an exclusion of agricultural areas, which tend to be major contributors to stormwater pollution, especially with regard to nutrients. The regulatory agencies would be remiss to require such stringent requirements to meet WLAs from urbanized areas but not include agricultural inputs.

- In Section 2.3.3 – Antidegradation, item (b) requires that for "discharges to tier II waters as defined by 314 CMR 4.04 the permittee shall demonstrate to the satisfaction of MassDEP that the discharge will cause no significant lowering of water quality by documenting one or more of the following: …(iii) The discharge does not cause a significant lowering of water quality because the effluent will be of a quality equal to or

better than the existing water quality of the receiving water…" This should be clarified, as it implies that water quality standards do not need to be met in water bodies where they are not presently being met. This rationale could be used by all permittees discharging to tier II waters to maintain the status quo.

- Several of the data needs may require data from adjacent communities or from entities other than the MS4 communities being regulated. For instance, if the sanitary sewers are owned and operated by a different entity, such as a sewer district, the MS4 community may be relying on the adequacy and quality of their data to meet some of the permit requirements. This applies to information on sewer locations, ages, sanitary sewer overflows (SSOs), etc. Similarly, where this situation exists, requiring correction of SSOs may be more challenging if they are not within the community's jurisdiction.

- The permit mentions that areas with sanitary sewers over 50 years old should be considered as having a high illicit discharge potential. Note that in some communities, the majority of sewers are over 50 years old. Therefore, a further division of priority areas would be required.

- Section 5.1.5 states that "EPA or MassDEP may require the permittee to add, modify, repair, replace or change BMPs or other measures" at any time. This is open-ended and onerous. More specific allowances should be made for how long a community will be given to make changes if they are requested or required by the regulatory agencies.

- Section 2.4.4.2 accurately recognizes that 6 months is not enough time to pursue and resolve a legal dispute with a discharger unwilling to comply; this could take years, and no time limit should be placed on such a dispute where it is beyond the control of the community.

- The requirements for construction site stormwater runoff control represent an improvement over the present General Construction Permit. Enforcement is often lacking with the present program, and having communities more involved with construction within their limits should help to mitigate the impacts of construction-related erosion and sedimentation. There could be a substantial reduction in pollutants from this alone, and the requirements appear to be reasonable and achievable.

- Similarly, post-construction stormwater management from new development and redevelopment are also "low-hanging fruit." The application of the existing DEP stormwater management standards to upland areas outside of the Massachusetts Wetlands Protection Act jurisdiction is appropriate. These are standards that have been implemented in and around wetland resource areas for a number of years and are tested, implementable, and enforceable.

- The requirements for good housekeeping and pollution prevention from municipal facilities all appear to be reasonable and achievable, with the exception of the following two provisions: (1) Investigating municipal buildings to identify all floor drains may be a challenging task, especially in a 1-year timeframe, if large facilities such as school

buildings and public meeting spaces are included; (2) The requirement to clean all catch basins when they are 50% full could require frequent cleaning of all catch basins in areas where deep sump basins have not yet been installed and may be excessive compared to the associated benefit. Agencies responsible for catch basin cleaning strive to maximize efficiency in light of local budgets and staff shortages. Greatest efficiency is realized when catch basins are cleaned following a geographic pattern, i.e., all basins in a given area are cleaned one after the other before moving on to a new area. Cleaning basins when they become 50% full is contrary to efficient use of manpower and cannot be implemented in a practical way. Furthermore, the inspection and cleaning of stormwater structures should be modified to be at the same frequency, allowing both to be performed at once.

- The requirements to measure and monitor changes in impervious area (Section 2.4.6.9), while an interesting academic exercise, provides little benefit to the municipal stormwater manager. This exercise will be burdensome and will take staff away from more valuable functions. If change in impervious surface over time is a metric of interest to Federal and State regulators then perhaps every 10 years the regulators can utilize advances in satellite imagery or other statewide GIS data to track this information. Stormwater managers should not be charged with gathering data that does not provide them with useful information.

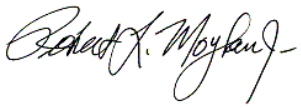
- The Coalition agrees with the requirements for stormwater inputs into drinking water supply areas (Section 4.1) and the encouragement of groundwater recharge where feasible (Section 4.2).

- Where some of the permit requirements extend for a period of 10 years, it seems that record keeping should be required for longer than a five-year period.

In conclusion, while the Coalition agrees with the regulation of stormwater inputs to maintain high water quality, the Draft Permit as presented includes several requirements that are not achievable by many communities and do not take into account time and budget constraints that affect cities and towns. The permit should be scaled back, especially in the areas of mapping, outfall monitoring and sampling, and loading requirements, to include achievable, cost-effective goals during the course of the five-year permitting period. The final permit should present a means of building upon previous efforts to achieve continuous improvements to water quality in a rational, feasible manner. The CWA stipulates that municipal stormwater systems must remove pollutants to the maximum extent practicable. That is the standard to which this permit must be written in its entirety. The Coalition believes EPA has gone well beyond practicable in many of its requirements and needs to reconsider its timelines, expectations and stipulations. If communities are presented with a permit they can meet, that is within their means and advances the concept of continual improvement, they are more likely to successfully invest the necessary funds and labor into implementation.

We appreciate the opportunity to submit comments on the Draft Massachusetts Interstate, Merrimack, and South Coastal Small MS4 General Permit. Please do not hesitate to contact me with any questions. I can be reached at 508-799-1430 or at MoylanR@worcesterma.gov.

Sincerely,
MASSACHUSETTS COALITION FOR WATER RESOURCES STEWARDSHIP, INC.



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Congressman William Keating
Congressman Stephen F. Lynch
Congressman Edward J. Markey
Congressman James McGovern
Congressman Richard E. Neal
Congressman John W. Olver
Congressman John Tierney
Congresswoman Niki S. Tsongas

Home Builders & Remodelers Association Massachusetts

February 26, 2015

VIA EMAIL AND REGULAR MAIL

Newton Tedder
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5 Post Office Square
Suite 100, Mail Code – OEP06-4
Boston, Massachusetts 02109-3912

RE: Comments of Homebuilders and Remodelers Association of Massachusetts, Inc. (HBRAMA) on Draft NPDES General Permit for Stormwater Discharges From Small Municipal Separate Storm Sewer Systems in Massachusetts

Dear Mr. Tedder:

On behalf of the Homebuilders and Remodelers Association of Massachusetts, Inc. (HBRAMA), I want to thank you for the opportunity to comment on the U.S. EPA's proposed draft National Pollutant Discharge Elimination System (NPDES) General Permit for stormwater discharges from small Municipal Separate Storm Sewer Systems (MS4s) to certain waters of the Commonwealth of Massachusetts (MS4 Permit).

The HBRAMA is a Massachusetts-based trade association representing builder and associate member firms organized in both a state, as well as six local, associations, spread geographically through the Commonwealth. HBRAMA is also an affiliate of the National Association of Home Builders (NAHB). Our members include those who design, construct, and supply single-family homes; build and manage multifamily, light commercial, and industrial structures; develop land; and remodel existing homes. HBRAMA has members in Massachusetts that discharge into affected MS4 systems potentially subject to the Draft MS4 Permit.

As an overall comment, HBRAMA understands the importance of stormwater management to water quality. The HBRAMA, however, is very concerned over the cost of implementing MS4 Permit requirements locally, and how those costs may disproportionately impact the residential building industry at a time when the

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Commonwealth desperately needs to build more housing. Moreover, a significant concern to HBRAMA is the increasing obligation imposed on municipalities to regulate more complex stormwater management requirements without adequate guidance, resulting in each municipality adopting variations of the requirements, and further resulting in a confusing array of different stormwater standards at the local level. Lastly, we feel that some of the standards are overly conservative, thus resulting in both increased implementation costs as well as the need to overdesign certain stormwater management facilities.

Our more detailed comments are as follows:

1.10.c Stormwater Management Program (SWMP) –Adequate Funding Source

While the draft permit encourages the permittee "…to maintain an adequate funding source.." (i.e., a consistent source of revenue) "…for the implementation of this program," the reality is that the cost burdens for implementing this permit are staggering. As noted in one example found on page 33 of 100 in the EPA Fact Sheet:

> the estimated range in construction cost for phosphorous control plans (PCPs) for the three upper Charles River communities, Milford, Bellingham and Franklin, to fully comply with the proposed PCP requirements to achieve the needed stormwater related phosphorus reductions (assuming no controls in place – worst case) is $ 200 million to $350 million. The estimates are substantially reduced to a range of $85 million to $195 million if aggressive phosphorus source reductions and non-structural controls are implemented to remove the most challenging 15% of the total load reduction needed.

Even if a municipality is given a 20-year implementation timetable, there is no way a municipality can devote such resources to such a plan, given all other competing programs mandating funding under this program, including the "paper burden" in permit implementation including the Notice of Intent (NOI), Stormwater Management Program (SWMP), Spill Prevention plans, in addition to reporting requirements and the development of new ordinances and bylaws. While having streamlined, generic, preformatted templates generated by one agency instead of the many individual communities working independently would standardize and expedite the permit process, EPA's implementation goals are unrealistic for this type of investment. We are not even considering other non-permit programs competing for funding at the local level, including funding to maintain roads, sidewalks, schools, teachers, fire and police personnel and other municipal revenue demands, especially in those cities and towns struggling financially. In sum, encouraging municipalities to maintain an adequate funding source to implement the permit program will not achieve EPA's objective, and

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if funding becomes mandatory, it will put most municipalities into noncompliance within a very short time period.

Municipal Funding Sources

Of significant concern to our members is the method by which municipalities may seek to generate revenue to pay for the implementation of this permit program. As noted on page 23 of the EPA Fact Sheet, the

> *EPA does not require or recommend a specific funding mechanism or funding alternative. These decisions rest with the operator of the MS4. There are several funding options available to permittees; these include service fees, formation of a stormwater utility, use of the general fund of the municipality, grants, and loans. Each mechanism has its own advantages or disadvantages and a municipality should choose the option that is right for it."*

Any such funding source must provide parity among all users, as it would be unfair to disproportionately impact a residential developer with new fees simply because the developer is the source of new development within a municipality. As noted in the Fact Sheet,

> *fees are usually based on the size of the property and the amount of impervious area associated with that property. Typically, fees are one rate for residential homes and are varied for commercial and industrial facilities, usually based on the impervious area of a property.*

Accordingly, in the scramble to secure scarce local funds, we caution EPA that it needs to encourage a form of revenue generation that is equitable so that the significant need for housing, including affordable housing, is not disproportionately impacted in a manner which further drives up the cost of housing, thereby making it more difficult for persons to afford housing, whether rental or ownership housing.

2.3.5. Construction Site Stormwater Runoff Control
Implementation – Enactment of Local Bylaws and Ordinances

The experience of our membership in dealing with the multitude of various locally-adopted stormwater bylaws and ordinances since the implementation of the MS4 Program has been nothing short of a bureaucratic and costly nightmare. Since each municipality has its own independent authority to promulgate new bylaws and regulations implementing stormwater programs mandated at the federal level, these bylaws have proven to be wildly inconsistent with both federal and state requirements,

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and such bylaws and ordinances frequently mandate additional burdensome and costly requirements which do not necessarily translate to greater environmental protection. This problem has been the greatest source of frustration with our membership.

As you know, each municipality regulates stormwater through multiple sources which frequently contradict with one another, including: (a) local planning board subdivision regulations; (b) local site plan review bylaws and ordinances; (c) local special permit design standards; (d) local wetlands bylaw and regulatory requirements; and, (e) local board of health regulations. These requirements are in addition to state and federal sources of stormwater regulation, including: (e) state wetlands protection regulatory requirements; (f) EPA NPDES Stormwater requirements; and (g) Army Corps – Massachusetts Programmatic General Permit Requirements, all in addition to MS4 Permit requirements being imposed under inconsistent local stormwater bylaws and ordinances which not only regulate construction O & M, but are now being expanded to regulate post-construction O & M in connection with stormwater.

This inconsistency of application of stormwater requirements is quickly becoming one of the more problematic areas of regulation. From a policy perspective, local regulation of stormwater discharges from new developments or redevelopment in more urbanized areas must not become so burdensome that projects are relocated to greenfield sites, resulting in greater environmental impacts. To remedy this persistent problem, we encourage you to develop a model stormwater bylaw or ordinance in cooperation with the Massachusetts DEP (with input from stakeholders) so that EPA does not continue to add more confusion, inconsistency and cost to an already costly and burdensome stormwater regulatory program cutting across federal, state and local jurisdictions. The development and mandated implementation of a model ordinance which provides consistent performance standards under both federal and state requirements would go a long way in correcting this problem. One other possible alternative would be to create a federal-state general permit which provides that if one meets certain performance criteria, then the applicant simply needs to certify compliance with such criteria.

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2.3.6. Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management)

A significant concern to the HBRAMA is the proposed performance standard described in Section 2.3.6 calling for the design of stormwater management systems on both new and redeveloped sites to either:

> *1. Retain the first one (1) inch of runoff from all impervious surfaces on site. OR*
> *2. Provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration on the first one (1) inch of runoff from all impervious surfaces on site. This standard shall be met through a combination of practices designed to retain runoff on site (environmentally sensitive site design, low impact development techniques) where technically feasible, and stormwater BMPs designed to treat the remainder of runoff that cannot be retained on site due to site constraints. The level of pollutant removal from BMPs shall be calculated consistent with EPA Region 1's BMP Performance Extrapolation Tool.*

This section of the draft MS4 Permit attempts to require municipalities to "develop, implement, and enforce a program to address post-construction stormwater runoff from all new development and redevelopment projects that disturb one or more acres" by imposing standards that are nearly impossible to achieve and are significantly different from the stormwater regulations in Massachusetts, including those within the adopted Massachusetts Stormwater Handbook.

The regulation requires municipalities to impose a local ordinance or bylaw which mandates that: (a) all runoff be retained on site or alternatively - recognizing that many (if not most) sites cannot achieve 100% retention; or, (b) the first 1.0 inch of impervious surface shall be treated with advance Best Management Practices. However, the referenced standard will require 100% TSS removal or close to it; a standard that is not based on attainable practices. The impacts to an applicant are exacerbated in the circumstance of a redevelopment project.

This proposed performance standard is very different from our current state standards in Massachusetts. Specifically, Massachusetts only requires discharges within 100 feet of a wetland to address the "water quality volume." The standard requires not 1.0 inch, rather the first half (1/2) inch of runoff from all impervious surfaces on most sites. This higher standard of 1.0 inch is only required for critically important environmental areas in Massachusetts.[1] To require this standard for all developed and re-developed properties is overly onerous and without documented rationale.

[1] From Massachusetts Stormwater Handbook, Volume 1, Chapter 1:

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Further, most sites cannot fully retain the 1.0 inch of impervious areas. In the usual development scenario, the proposed regulation requires bio-retention to a very high standard developed empirically through a white paper prepared by a consultant for the EPA in 2010 without proper and thorough peer review. The referenced standard for most facilities with a discharge would require 100%, or very close to 100%, TSS removal or for all proposed uses. This standard is nearly impossible to achieve as recognized in the Massachusetts Stormwater Handbook, which only requires 80% TSS removal. At the very least, to achieve this standard almost every BMP will be designed two times larger than required under the Massachusetts regulations with the attendant loss of otherwise developable area and cost. Put another way, the standard forces the project to greatly expand the land disturbance which otherwise would not be disturbed but for this onerous standard. To further compound the differences, Massachusetts' requirement is not for all discharges, just simply those alterations located within 100 feet of a wetland. In summary, this regulation is far too onerous, will often be impossible to achieve, and is based on incomplete science without a rational nexus to the problem it seeks to address.

Legal Authority to Regulate Flow

Lastly, we also want to note that HBRAMA agrees with the comments provided to your attention by letter, dated December 30, 2014, from Attorney Jeffrey S. Longsworth, Barnes & Thornburg, LLP, on behalf of the National Association of Home Builders (NAHB), where it was stated that the Draft MS4 Permit impermissibly attempts to regulate stormwater flow, impervious cover and mandate on-site retention standards without appropriate Clean Water Act authority to regulate such flow as a surrogate for pollutants or to mandate on-site activities not directly related to the control of pollutant discharges to U.S. waters. *See e.g.* Section 2.3.6 and related Fact Sheet discussion at pp.

The required water quality volume equals 1.0 inch of runoff times the total impervious area of the post-development project site for a discharge

- from a land use with a higher potential pollutant load;
- within an area with a rapid infiltration rate (greater than 2.4 inches per hour);
- within a Zone II or Interim Wellhead Protection Area;
- near or to the following critical areas:
    - Outstanding Resource Waters,
    - Special Resource Waters,
    - bathing beaches,
    - shellfish growing areas,
    - cold-water fisheries.

The required water quality volume equals 0.5 inches of runoff times the total impervious area of the post-development site for all other discharges.

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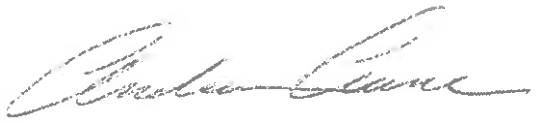
86 *et seq.* We therefore want to re-emphasize HBRAMA's agreement with the comments by Attorney Longsworth on behalf of the NAHB.

Thank you for the opportunity to comment on these important matters.

Sincerely,



Andrew Crane
President

AC/
cc: Jeffrey A. Brem, P.E., Meisner Brem Corp.
Joseph Peznola, P.E., Hancock Associates
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Enclosures

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Town of Holden

Department of Public Works

John R. Woodsmall, III, P.E.
Director of Public Works

February 26, 2015

Newton Tedder
US EPA Region 1
5 Post Square Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

Re: Comments on the 2014 Draft NPDES General Permit for Stormwater Discharges from MS4 in Massachusetts

Dear Mr. Tedder,

The Town of Holden Department of Public Works (DPW) has reviewed the Environmental Protection Agency's (EPA) 2014 National Pollutant Discharge Elimination System (NPDES) Draft General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts (Draft Permit). We thank you for the opportunity to provide comments. We also note that the Holden Town Manager and the Holden Board of Selectmen will be submitting comments separately to you.

The Town of Holden (the Town) is a community of approximately 18,000 people and is host to Massachusetts State Routes 31, 122A, 68 and 190. Additionally, approximately one third of the Town is protected open space intended to preserve the water quality of the reservoirs for water supply to the Worcester and Boston metropolitan areas. Holden is a Wachusett Reservoir Watershed community; most of the protected lands are owned or managed by the Massachusetts Department of Conservation and Recreation (DCR), which regulates these areas through the Massachusetts Watershed Protection Act.

The DPW supports the underlying goal of the Draft Permit, which is to improve the water quality of the United States. The DPW is the implementing agency for the Town of the 2003 Phase II MS4 General Permit (2003 Permit) and we have worked diligently and successfully to implement the requirements of the 2003 Permit. Indeed, the Town has shown its commitment to improving stormwater quality by being one of the original founding member towns of the Central Massachusetts Regional Stormwater Coalition (CMRSWC). The Town continues to be a member of the CMRSWC steering committee, and strongly supports the CMRSWC's goal of combining the resources of its member communities in order to provide common, shared, and effective methods of management of stormwater runoff. We note that the CMRSWC will be submitting a set of comments to the EPA, and the Town of Holden fully supports those comments.

To date, the Town has spent between $150,000 and $186,000 per year for compliance with the 2003 Permit. Based on the EPA's cost estimates for complying with the Draft Permit's requirements, provided on Page 76 of the Fact Sheet, the cost of compliance for the Draft Permit could vary from $78,000 to $829,000 per year, depending on the size of the municipality. On behalf of the Massachusetts Department of Environmental Protection (DEP), this past fall, a group of Worcester Polytechnic Institute (WPI) students performed a cost analysis of Holden's current and projected stormwater management activities. The projected stormwater management activities were based exclusively on the Draft Permit's proposed conditions. This cost analysis indicates that Holden's implementation of the Draft Permit requirements will be approximately $260,000 per year, an increase of between 40 and 60-percent of the existing permit compliance annual costs. A copy of the WPI study is provided as Attachment A. The increased cost is substantially a result of requiring written plans, procedures, reports, policies, protocols, inventories and redundant sampling which creates a paperwork burden on the Town that does not contribute to the goal of reducing the discharge of pollutants to the waters of the United States.

The following comments are intended to highlight the concerns that the Town has with a variety of requirements in the Draft Permit that will cause the Town to incur unnecessary costs for tasks that provide little to no appreciable increases in stormwater runoff quality. Additionally, Draft Permit items that create an undo regulatory burden upon the Town in terms of administrative filings, data collection, studies, etc. are discussed:

1. Within the Town of Holden, similarly to other cities in towns in Massachusetts, there are several traditional and non-traditional publicly owned MS4 systems. These include the Wachusett Regional School District, the Holden Housing Authority, the Massachusetts State Police Barracks, and Main Street (Route 122A), a State owned and maintained route. Each of these entities lies within the urbanized area of the Town of Holden, but constitute a separate MS4 from the Town. The Town has no responsibility for or legal authority over, these other MS4s. However, the outreach to these other regulated entities to inform them of their responsibilities under the Draft Permit has appeared to be non-existent. We ask that the EPA reach out directly to these other regulated entities and not rely on the Town to do this work on the EPA's behalf. The EPA's outreach will have a greater effect than if the message is delivered only by the Town.

2. The Notice of Intent (NOI) requires a significant amount of work that cannot be reasonably and accurately performed in the ninety (90) days mandated in Part 1.7.2 of the Draft Permit. We note that per Part 1.7.4, the NOI will be posted and allowed to be publicly commented upon. It is important that cities and towns have an appropriate amount of time to collect the requested information in the NOI, to determine what Best Management Practices (BMPs) will be used to comply with the Draft Permit, and to determine what Town Department will be responsible for implementing the BMPs. It is assumed that the EPA and the members of the public that will be reviewing the NOI will want the NOI to be as complete and accurate as

possible. Indeed, Part 1.7.2. requires the Town's appropriate official to sign the NOI under the pains and penalties of perjury, and to certify that the NOI is "...true, accurate, and complete." We request that the time allowed to submit a NOI from the date of release of the Final Permit be at least 180 calendar days. This 180 calendar day schedule would be similar to that provided to municipalities under the 2003 Permit, and we do not see any reason why it should not be provided for this Draft Permit.

3. There appears to be a discrepancy regarding increased discharges to Outstanding Resource Waters (ORW) between Part 2.1.2 of the Draft Permit and Section II.D.I.c of the Fact Sheet for the Draft Permit (Fact Sheet). Part 2.1.2.a of the Draft Permit states that:

> "Any increased discharge...through the MS4 to waters of the United States is subject to Massachusetts antidegradation regulations at 314 CMR 4.04. The permittee shall comply with the provisions of 314 CMR 4.04 including information submittal requirements and obtaining authorization for increased discharges where appropriate."

Section II.D.I.c of the Fact Sheet states:

> "Increased discharges to outstanding resource waters or special resource waters are not authorized under this permit and the permittee must seek authorization under an individual permit after satisfying the Massachusetts anti-degradation requirements..."

The difference between the language of the Draft Permit and the Fact Sheet needs to be clarified, as the Fact Sheet appears to be much more restrictive than the Draft Permit language regarding increased discharges to ORW.

Further, any prohibition on increased discharges to an ORW, regardless of whether there is a stormwater related water quality impairment associated with the ORW, is overly restrictive for a community such as Holden. Virtually all of the water bodies in Holden are classified as ORW, due to Holden being in the watersheds of the reservoir systems for both the Worcester and Boston metropolitan areas. The ORW classification is provided by the DEP through its Office of Geographic Information (MassGIS) and it covers most of the Town. This restrictive language would prevent virtually any expansion of the Town's MS4 in the future. New Town facilities with impervious areas could not be constructed, and no new subdivision developments could be accepted by the Town as new public roadways, unless those projects discharged to upland areas. Each of those situations would represent an increase in discharges to an ORW. A blanket restriction on increased discharges to an ORW in Holden is extremely restrictive, and we do not believe that the Draft Permit's goal is to end public development in the Town. Nor do we believe that the EPA wishes to require an individual NPDES stormwater permit for each and every increase in impervious area and increased discharge in the Town (and in other Towns that

discharge to an ORW). We strongly urge the EPA to re-evaluate the language and goals of the Draft Permit and Fact Sheet in regards to increased discharges.

4. Part 2.2.2.a of the Draft Permit included Holden within the list of permittees that discharge to a water body impaired by nitrogen. Based on the 2012 Integrated List of Water, Holden's waters listed under Categories 4C and 5 (known as the 303d List) are impaired due to: non-native aquatic plants, low flow alterations, milfoil, myriophyllium spicatum, and ambient bioasays -chronic aquatic toxicity. Neither nitrogen nor nutrients are listed as the cause of impairment for any of the waters within the Town. We believe that the Water Quality Based Effluent Limitations (WQBEL) do not apply to Holden because the Town's MS4 discharge is not to a water whose quality is limited due to nitrogen. Also, Holden's waterways that discharge to the Wachusett Reservoir watershed are constantly being monitored for nitrogen, among other parameters, by the DCR Division of Watershed Management. The sampling location is the Quinapoxet River which is downstream of all of Holden's stormwater outfalls into the Wachusett Reservoir Watershed. We have been provided by DCR with the results of more than 96 grab samples taken between 2007 and 2013; and 34 composite samples taken during storm events from 2011 through 2013. The results from the sampling indicate that the nitrogen levels are very low, ranging between 0.1 and 0.5 mg/l. Holden is in the low to middle end of the watershed nitrogen range. An email from Lawrence Pistrang, Environmental Analyst IV of the DCR Division of Watershed Protection, summarizing these results is attached as Attachment B.

   Additionally, only a small portion of the Town's Urbanized Area drains to the Blackstone River Watershed. Because of these reasons, the Town requests to be removed from the WQBEL requirements. If the Town is not removed from the WQBEL requirements, the Permit should be revised to clarify that the WQBEL requirements only pertain to that portion of the Town's Urbanized Area that is draining to nitrogen impaired watershed. Furthermore, the additional requirements included in Appendix H of the Draft Permit, including providing additional messages to target audiences 3 times per year; requiring nitrogen removal BMPs in new developments and redevelopments; writing procedures for managing fertilizer usage, grass clippings and leaf litter; increasing street sweeping schedules, and; completing a nitrogen source identification report and implementing structural BMPs for Year 5 are unnecessary to meet nitrogen water quality standards and unlikely to result in any appreciable further reduction of nitrogen.

5. The public education program found in Part 2.3.2 requires the Town to show evidence that progress towards the defined educational goals has been achieved. We request that EPA provide specific measures and/or methods for the Town to show evidence for achieving the educational goals. Efforts spent on designing and evaluating methodologies to evaluate the effectiveness of an educational program create a burden to the Town, as its personnel are not specialized in public relations. This requirement does not encourage the best use of Town's resources and does not contribute to the goal of increasing the quality of stormwater runoff.

6. Part 2.3.4.5.b of the Draft Permit requires that all outfall and interconnections be inventoried. The Town has 144 outfalls and expects that adding interconnections will double or triple this number. The Town agrees that adding information such as material, size, shape, and condition to the inventory of outfalls is beneficial. However, we request that inventory of all interconnections be removed from Part 2.3.4.5.b, as there is no benefit to inventorying all interconnections if the point of discharge (outfall), downstream from the interconnection, is being monitored, sampled and investigated. Inventorying the physical conditions of interconnections will create a burden to the Town by duplicating efforts unnecessarily. For example, in Holden, Main Street (Route 122A) is a State owned and maintained route. While pipe and manhole interconnections are beneficial to have, at each intersection of a Town street with Main Street, there is a drainage interconnection due to sheet and channelized flow from the pavement at the intersection. These types of interconnections should not be mapped or sampled. Additionally, we believe one year is not enough time to gather all of this information and request that the update to the inventory of outfalls be completed throughout the duration of the permit.

7. A more detailed map than the 2003 MS4 Permit's system map is required in Part 2.3.4.6.a. The new stormwater system map requires substantially more information, including but not limited to adding pipes and catchment delineations. Also, the time frame to complete this task is two years. The Town requests that additional time be provided for the completion of this requirement. We request that the new system map be completed throughout the duration of the Permit, as this will allow for a practical use of Town resources to complete this requirement.

8. In Holden, various departments and divisions have or share specific responsibilities for the implementation of the 2003 MS4 Permit. Part 2.3.4.7.b of the Draft Permit requires writing a description of each department's responsibilities in a report. We believe a report that stays on the shelf and which hardly gets used simply creates a paperwork burden that is not an efficient way to create awareness of stormwater management responsibilities. We recommend that EPA strives to outreach to a broader range of Town agencies and departments, in order to increase awareness of the Illicit Discharge Detection and Elimination (IDDE) program and convey the importance of implementing the program. Simply reaching out to local Departments of Public Works misses a wide variety of the different town departments that share stormwater responsibilities.

9. The excluded catchments category, as described in Part 2.3.4.7.c of the Draft Permit, does not allow the Town to exclude residential neighborhoods with a very low potential impact to stormwater quality, because of those neighborhoods' proximity to sanitary sewer alignments. Permittees should be allowed to categorize a catchment as excluded even if there is sewer alignments within the catchment based on visual outfall assessment similar to the NPDES Industrial Multi Sector General Permit, or other factors such as age and construction material of the sewer system, levels of groundwater, etc.

10. Part 2.3.4.7.d of the Draft Permit, dry and wet weather outfall screening and sampling, requires, at a minimum, sampling of 7 parameters (ammonia, chlorine, conductivity, salinity, ecoli/enterococcus, surfactants and temperature) for any flowing outfall. We believe this is excessive and request that a visual screening of flowing outfalls should be allowed and sampling should be required only if visible signs of pollutants exists. This will allow the Town to focus efforts on finding and eliminating sources of non-stormwater discharges instead of simply sampling locations where high ground water tables may exist.

11. Under Part 2.3.4.7.e, the catchment investigation (system vulnerability) consisting of dry and wet weather key junction manhole investigations seems to be repetitive to the outfall screening requirement. We agree that it would be necessary to conduct upstream investigations if an outfall shows signs of pollutants. But that upstream investigation is only necessary to determine the source of the pollutants. Simply investigating upstream key junctions without any evidence of a problem is a waste of resources that accomplishes nothing, other than verifying that no problem exists. Dry weather key junction manhole inspections should allow for a visual assessment and not require screening of three (3) parameters (ammonia, chlorine and surfactants) to all catchments. We recommend that wet weather investigations be required only if the outfall/interconnection screening shows signs of pollutants, known contributors of illicit discharges exist, or where a system vulnerability may exists. This will allow the Town to focus efforts on finding and eliminating sources of non-stormwater discharges and will avoid expending efforts and funds unnecessarily.

12. Under Part 2.3.4.8.a, we request that completion of the screening of each outfall be extended to the duration of the permit and not required to be completed in three (3) years.

13. Under Part 2.3.4.9, we request that EPA provide specific guidance on reporting the IDDE program effectiveness and that the EPA develops tracking indicators it would like to be used. Requiring permittees to identify and define tracking mechanism creates a burden to the Town by requesting a task that may be better suited to the organization receiving updates from each town or city on compliance with its IDDE program.

14. For Part 2.3.5, writing procedures for site plan review and inspection and enforcement creates a paperwork and administrative burden for a report that hardly gets used. If the EPA believes that there is a standard set of procedures that should be followed for these types of efforts, then the EPA should be providing this information to its regulated entities, and the Town should be allowed to continue to focus on its implementation of the site plan review, inspection, and enforcement processes.

15. In Part 2.3.6.a.ii.(a), the requirement for new development and redevelopment related to retain or treat the first inch of runoff from all impervious surfaces is in stark

disagreement with and abrogates the Massachusetts Stormwater Handbook standards. These standards are directly incorporated into the Massachusetts Wetland Protection Act regulations (310 CMR 10.00), the Massachusetts 401 Water Quality Certification regulations (314 CMR 9.00), other state regulations, as well as numerous cities' and towns' subdivision standards, site plan review standards, stormwater management bylaws, and local wetlands protection bylaws. Any changes that the EPA wishes to make in the land development regulations and processes in Massachusetts need to be done in conjunction with those existing laws and regulations. Failure to do so will create an untenable situation where project proponents will be faced with contradicting requirements from the various permitting agencies. We request that Part 2.3.6.a.ii.(a) be made consistent with the Massachusetts Stormwater Handbook Standards.

Further, it is imperative for the EPA to clarify whether any requirements placed on redevelopment projects will be applicable to the entire redevelopment site, or to just the portion of the site being redeveloped. For instance, as the Draft Permit is currently written, it appears that a developer wishing to redevelop 1-acre of a 5-acre site would be required to upgrade and retrofit the stormwater management system of the entire 5-acre site, and not simply the 1-acre being subject to redevelopment. This would represent a huge increase in costs for such a developer, and will severely limit the ability of abandoned or little-used parcels to be converted to new, beneficial uses.

16. Part 2.3.6.b requires writing an assessment of current street design and parking lot guidelines to determine if changes can be made to support low impact development (LID) options. This imposes a burden to the Town by spending money on efforts to design new roadway standards, rather than focusing on reducing the discharge of pollutants in stormwater. The Town, where appropriate, has been implementing and supporting LID techniques as recommended in the Massachusetts Stormwater Handbook. We recommend that additional information on LID design and impacts be provided to the Town for its use as feasible.

17. Part 2.3.6.c requires writing an assessment of local regulations to determine the feasibility of allowing greener practices and providing a schedule for implementation of such practices. Similar to Comment 16, this creates a burden to the Town by spending efforts on Land Use Development design. We recommend that this assessment be done at a larger scale and not by individual cities and towns.

18. In Part 2.3.6.d, the estimating and tracking of the annual increase or decrease in the number of acres of impervious areas (IA) and directly connected impervious areas (DCIA) imposes an unnecessary burden to the Town. This requirement requires spending money for efforts on calculations that do not in any way provide a reduction of pollutants discharged through stormwater. Further, the baseline information provided by the EPA is already several years old and not reflective of existing conditions, never mind the conditions that may exist when the Draft Permit is actually finalized and implemented. Also, collection of this data imposes a great

administrative and paperwork burden on the Town, for little benefit. The Town requests that this requirement be removed from the permit. We recommend that if the EPA believes this would be a useful metric for further study, than the EPA should take on the challenge of updating and maintaining this database.

19. Part 2.3.6.d.iii of the Draft Permit requires the inventorying and priority ranking of Town-owned properties to implement a retrofitting program after Year 5 of the permit. Many of the Town owned properties are within areas where adding a structural BMP is nearly unfeasible. To meet this requirement, the Town will be obligated to hire an outside consultant to assess the possibility of modifying the existing infrastructure. This can be cost prohibited. The Town request that this requirement be changed to implement structural BMPs where economically feasible on a site specific basis, and will only result in measurable improvements in stormwater runoff quality.

20. Part 2.3.7.a.iii.(b) of the Draft Permit requires the Town to annually report the volume or mass of material removed from each catch basin draining to water quality limited waters and the total volume or mass of material removed from all catch basins. This requirement creates a burden to the Town by spending efforts on estimates that are virtually impossible to obtain with any degree of accuracy. Based on the realities of how catch basin cleaning occurs, it is not feasible to measure the amount of material removed from any one particular catch basin. Gross estimates may be made from a number of catch basins based upon the size of the catch basin cleaning truck, but individual determination of a catch basin's material is not feasible from an operations point of view. Further, this calculation does not prevent or reduce the pollutant runoff from Town-owned operations. The Town requests that this requirement be removed.

21. The Draft Permit in Part 2.3.7.a.iii.(c) requires the Town to annually report on the number of miles of street cleaned and volume or mass of material removed. This requirement creates a burden to the Town by spending resources and efforts on estimates that are hard to obtain with accuracy. This calculation does not prevent or reduce the pollutant runoff from Town owned operations. The Town requests that this requirement be removed.

22. The standard permit conditions included in the Draft Permit are much different than the standard conditions included in other NPDES permits. It includes criminal penalties which have not been previously listed. The Town has and plans to continue to implement the requirements of the MS4 permit, but disagrees with the new language included in this Appendix B of the Draft Permit.

As described above we believe there are a number of proposals found with this Draft Permit that are either: 1) impractical to implement; 2) add little to no benefit to the environment; 3) cost prohibitive, or; 4) some combination thereof. We believe that a number of changes must be made to the Draft Permit, in order to create a regulation that will work for the municipalities, the EPA, and the environment as a whole. We

believe that many of the requirements of this Draft Permit are best instituted on a nationwide or statewide level, given the greater amount of resources available to EPA and DEP. Without an infusion of state and federal fiscal resources, as currently designed this Draft Permit sets up small towns and cities for failure, as the required fiscal resources needed to implement the Draft Permit are simply not available to them. We strongly suggest that the Draft Permit be pared back to better reflect the resources available at all levels of government.

We thank EPA for providing the opportunity to comment, and look forward to working with you to create a more practical and easy to implement general permit. If you have additional questions regarding these comments feel free to contact me at 508-210-5550 or via email at jwoodsmall@holdenma.gov.

Sincerely,

John R. Woodsmall, III, P.E.
Director of Public Works

Isabel McCauley, P.E.
Senior Civil Engineer

Cc: Holden Board of Selectmen
Holden Planning Board
Holden Zoning Board of Appeals
Holden Conservation Commission
Holden Economic Development Commission
MA State Representative Kim Ferguson
MA State Senator Harriette Chandler
US State Representative Jim McGovern
US State Senator Elizabeth Warren
US State Senator Edward Markey
Jacquelyn Kelly, Holden Town Manager
Dennis Lipka, Holden Director of Growth Management
Pamela Harding, Holden Town Planner

Attachment A-Comprehensive Cost Analysis of the 2014 Massachusetts MS4 Permit
Attachment B-January 7, 2015 email from Lawrence Pistrang, DCR

ATTACHMENT A

COMPREHENSIVE COST ANALYSIS OF THE 2014 MASSACHUSETTS MS4 PERMIT

Comprehensive Cost Analysis of the 2014 Massachusetts MS4 Permit

An Interactive Qualifying Project Report

Submitted to the Faculty of

WORCESTER POLYTECHNIC INSTITUTE

in partial fulfillment of the requirements for the

Degree of Bachelor of Science

By

Eric Correia Michael Giroux Cameron Peterson

December 18th, 2014

Worcester Community Project Center

Sponsored By: Massachusetts Department of Environmental Protection

Abstract

Stormwater runoff is one of the leading causes of water pollution in the United States. The MS4 permit reduces pollution by regulating the runoff of pollutants into stormwater drains. With the assistance of the MassDEP and the Worcester Community Project Center, we sought to provide the Massachusetts towns of Southbridge, Holden, and Millbury with a cost analysis for implementation of the 2014 draft MS4 permit. In order to achieve this goal, we learned the details of the 2003 permit and 2014 draft permit, interviewed town officials, and performed water quality sampling. After creating our cost analysis, we provided our subject towns with findings and recommendations assessing the feasibility of implementing the permit, and suggestions for best practices each town uses to manage stormwater.

Acknowledgements

We would like to thank our sponsor, the Massachusetts Department of Environmental Protection, for their support and assistance throughout our project. In particular, we would like to thank Frederick Civian, Andrea Briggs, Stella Tamul, and Cheryl Poirier. We would especially like to thank Frederick Civian for his ongoing commitment to answer any questions we had, for helping us produce our cost sheet, and for appearing in our video.

Next, we would like to thank the representatives from Holden, Millbury, and Southbridge, who were extremely generous in allowing us to interview them and perform outfall tests. From Holden, we would like to thank Isabel McCauley, John Woodsmall, and Pamela Harding. We are especially grateful to John Woodsmall for appearing in our video, and to Isabel McCauley for taking us out to all of the outfalls we tested. From Millbury, we would like to thank Robert McNeil and Cindy Allard for allowing us to interview them, and for showing us a smoke test demonstration. From Southbridge, we would like to thank Heather Blakeley, Ken Pickerin, and Mark DiFronzo for allowing us to conduct our interviews and sampling.

Additionally, we would like to thank Robert Lowell and Larry Pistrang from the Department of Conservation and Recreation (DCR) for allowing us to interview them and gain from their experience. We would also like to thank Kelley Freda from the DCR, for contributing a detailed cost estimation.

We would also like to thank the Central Massachusetts Regional Stormwater Coalition, in particular Aubrey Strause and Matthew St. Pierre for giving us data, answering our questions, and allowing us to attend steering committee meetings.

Finally, we would like to thank our advisors Corey Dehner and Anne Ogilvie for their ongoing support and dedication to the success of our projects. Thank you for pushing us to

perform to the best of our ability no matter what happened during the term. We would also like to thank you for the various donuts, pizzas, and coffee to keep us going along the way.

Executive Summary

Background

Water Pollution affects an enormous number of water bodies in the United States. "In 2006, there were over 15,000 beach closings or swimming advisories issued due to bacterial levels exceeding health and safety standards" (Council, 2008). Much of this pollution is due to stormwater runoff. Stormwater runoff occurs when water becomes displaced by weather and flows over impervious surfaces, such as roads and roofs. When stormwater flows over these surfaces, it often collects pollutants such as oils, nutrients, ammonia, sediments, and heavy metals (EPA, 2012). These pollutants can have environmental, aesthetic, and economic ramifications on surface bodies of water. In order to combat stormwater runoff, the United States Environmental Protection Agency (USEPA) has created a system to move stormwater runoff into nearby bodies of water through what is known as Municipal Separate Storm Sewer Systems (MS4). Unfortunately, while these systems are useful for draining stormwater runoff, they are also very effective at directing pollutants into water bodies.

Before 1972, stormwater runoff and sewage drained through the same pipe, which led to frequent overflows (Robert B. Stegmaier, 1942). These overflows led to the pollution of topsoil, and the need for a better solution became apparent. This situation led to the creation of the Clean Water Act (CWA) in 1972 (Andreen, 2003a). In 1990, the USEPA first released the MS4 permit as part of the CWA. The MS4 permit allows municipalities to regulate the discharge of pollutants into stormwater drains. The MS4 permit defines six minimum control measures to reduce pollution caused by stormwater runoff. These control measures are:

1) Public Education
2) Public Involvement and Participation
3) Illicit Discharge Detection and Elimination (IDDE)
4) Construction Site Runoff Control

5) Post-Construction Runoff Control
6) Pollution Prevention and Good Housekeeping

Municipalities fulfill these control measures with Best Management Practices (BMPs). These BMPs can include street sweeping, waste collection, and outfall sampling. The implementation of these BMPs cost municipalities money. Massachusetts has been regulated under the same MS4 permit since 2003. Even though this permit expired in 2008, the USEPA continued to administer it indefinitely until they were able to release a new permit. On September 30, 2014, the USEPA released the 2014 draft MS4 permit. This new draft permit is much more detailed than the 2003 permit and has much more stringent regulations. Due to this increased level of regulation, the 2014 draft MS4 permit will cost much more to implement than the 2003 MS4 permit.

The Massachusetts Department of Environmental Protection (MassDEP), in collaboration with Worcester Polytechnic Institute (WPI), developed this project in order to assess the cost of implementing the 2014 draft MS4 permit in three Massachusetts towns: Southbridge, Holden, and Millbury. Our subject towns are part of the Central Massachusetts Regional Stormwater Coalition (CMRSWC). As of the 2014 fiscal year, The CMRSWC consists of communities that share resources for stormwater management, such as water sampling kits and GPS mapping equipment. Our goal for this project was to provide a comprehensive analysis of the cost of implementing the 2014 draft MS4 permit in Southbridge, Holden, and Millbury Massachusetts.

Methodology

In order to achieve our goal of providing a comprehensive analysis of the cost of implementing the 2014 draft MS4 permit in Southbridge, Holden, and Millbury Massachusetts, we utilized the following methodology.

1) Became educated on the details of the 2003 MS4 permit and 2014 MS4 permit
2) Assessed what Holden, Millbury, and Southbridge, Massachusetts have done to meet the requirements of the 2003 MS4 permit
3) Identified Holden, Millbury, and Southbridge's total current expenditures for stormwater management
4) Identified what changes each of our subject towns will have to make in order to comply with the requirements of the 2014 MS4 permit
5) Provided a detailed analysis of the complete costs for each town to comply with the requirements of the 2014 MS4 permit
6) Created an informational video to explain the costs of implementing the 2014 MS4 permit

Throughout our project, we used various research methods such as document analysis, field work, and interviews in order to learn about the cost of compliance with the MS4 permit. By analyzing various background documents about stormwater management, including the 2003 MS4 permit and 2014 draft MS4 permit, we were able to learn about the need for stormwater management as well as the BMPs typically used to manage stormwater.

We conducted interviews with various municipal officials, including public works directors, fire chiefs, town engineers, and members of town conservation commissions. These interviews allowed us to learn about our subject towns' stormwater programs and the costs associated with these programs. We also conducted an interview with the Department of Conservation and Recreation (DCR), which allowed us to estimate costs of BMPs, which town officials could not provide to us.

During our project, we also performed field work, which included outfall sampling using the CMRSWC kits, using dry and wet weather screening forms, and using the geographical information system (GIS) maps of our subject towns. This fieldwork allowed us to gain a more accurate understanding of the amount of labor involved with screening outfalls, which ultimately assisted us in completing our cost analysis.

After we completed our goals and objectives, we were able to provide findings and recommendations to our subject towns.

Findings and Recommendations

Finding 1: The 2014 draft MS4 permit may cost too much for the towns to effectively implement

The costs associated with stormwater management are very high, yet many towns have a limited budget for stormwater. The MS4 permit may cost too much for towns to individually implement. For implementation of the 2014 draft MS4 permit, Holden should expect to spend $258,790 annually, Millbury should expect to spend $753,173 annually, and Southbridge should expect to spend $343,008 annually.

Recommendation 1: Effective regionalization will allow towns to better implement their stormwater management programs

Due to the high cost of implementing the 2014 draft MS4 permit, we recommend that the towns regionalize. Regional organization, such as through the CMRSWC, can reduce the cost of many materials related to stormwater management.

Finding 2: Using innovative funding techniques can help the towns spend less from their general funds on stormwater management

The CMRSWC has received funding from the Community Innovation Challenge (CIC) grant. The first year of the Coalition's existence was fully funded by the CIC grant program and the subsequent two years of grant funding supplemented the Coalitions expenditures. In FY2014, member towns paid 4,000 dollars to continue as members of the Coalition. Millbury has begun applying for other grants to support implementation of BMPs, which may save them money over time.

Recommendation 2: The towns should seek alternative sources of funding such as additional grants beyond the CIC

Due to the reduction of CMRSWC funding from the CIC, we recommend that the towns apply for other grants. These grants can include the 604(b) grant from the MassDEP. The Towns should apply to these grants as quickly as possible, and the Coalition should lobby for additional future funding from the USEPA and MassDEP.

Finding 3: Using innovative stormwater management techniques can help the towns save money and thus implement the permit more effectively

Millbury uses innovative stormwater BMPs, such as a school art contest, to fulfill the public participation control measure. These BMPs allow Millbury to implement the MS4 permit effectively and at a low cost.

Recommendation 3: The towns should strive to utilize innovative stormwater management techniques

Millbury's use of creative BMPs has saved them money in implementing the MS4 permit. We encourage other towns to do the same, as they may be able to come up with BMPs, which are more efficient and cost-effective than their current BMPs.

Finding 4: Towns that communicate with other towns, even to a small extent, can more effectively manage and fund their stormwater management programs

A previous IQP group from WPI demonstrated that the CMRSWC towns spend less money on stormwater management than towns that work independently. This type of collaboration can also help generate more innovative BMPs, which will save the towns money.

Recommendation 4: Regionalization can help towns save money by sharing information and resources

We recommend that the towns regionalize and attempt to share information and resources. This practice will help them implement the 2014 draft MS4 permit more effectively.

Finding 5: In each of our subject towns, stormwater management information was divided amongst different departments

In many of our subject towns, there was not one person fully dedicated to stormwater management. Multiple departments in each town were responsible for implementing the stormwater management programs. As a result, we often had to request information from more than one department in each town.

Recommendation 5: Having a central source of stormwater management should allow for easier implementation of future MS4 permits and make continuous compliance easier for the towns

We recommend that the towns research the feasibility of either creating a position dedicated to managing stormwater information, or making this responsibility part of a single position. If smaller towns cannot afford to pay for this position, we recommend that multiple towns share a person dedicated to stormwater information. This practice will make it easier to implement the MS4 permit in the future.

Finding 6: The IDDE control measure will be a significant contributor to the increase in cost between the 2003 and 2014 draft MS4 permits

The 2014 draft MS4 permit has many more requirements than the 2003 MS4 permit, especially in the IDDE control measure. Much of the increase in cost between the two permits will be due to the increased stringency of the IDDE measure. The IDDE measure will also have more detailed requirements for practices such as outfall sampling with water testing kits.

Recommendation 6: The CMRSWC should have one person in charge of keeping track of and maintaining the sampling kits

When we performed sampling in the field, the sampling kits were often disorganized and had expired components, which slowed down our work. Having the kits intact will make it easier to sample, and will thus save money on sampling costs.

Finding 7: The current Asus tablet in use by the CMRSWC is slow and ineffective

When we used the tablet in the field, it was often slow to load. Town employees often complained about the delay. When we used a new smart phone, we did not see this delay. The delay caused by the old technology costs the towns in the CMRSWC money on labor costs.

Recommendation 7: The towns should use software, which can collect data offline and then upload it to an online database later, as well as a tablet, which is more up to date. This would allow the DPW workers to work more efficiently, thus saving the town labor costs

We recommend that the Coalition should purchase a new tablet, such as an Apple iPad. The labor costs that the tablet will save will pay for the cost of the tablet very quickly.

Other Recommendations

The Massachusetts Department of Environmental Protection should research the potential of providing standardized materials available to Massachusetts municipalities

Many of the control measures of the permit, such as public education and public involvement and participation, require municipalities to create similar documents. If the MassDEP could create standardized templates for these requirements, it could reduce the cost to towns, as well as give them more time to focus on eliminating pollutants.

The CMRSWC should streamline and update the digital forms. This practice would reduce the time needed to inspect outfalls, thus saving money

While we performed fieldwork in Holden, we found that the dry and wet weather forms had categories relating to pollutants, which are not regulated by the MS4 Permit. These extra categories made the forms time-consuming to fill out. Collecting this additional information causes the towns to spend increased labor costs. By updating the forms, the CMRSWC can reduce labor costs for the towns.

Recommendations for Future Research

We recommend that future project groups research the cost of implementing Total Maximum Daily Load (TMDL) requirements in towns. These requirements may generate a very large cost, which has not been researched well. We also recommend that future research groups

attempt to eliminate some of the biases, which may have appeared in our research. These biases stemmed from our limited sources of budget data, and as a result, some of our cost figures may be inaccurate. We recommend other project groups eliminate this bias by finding multiple sources for town budget data.

Conclusion

The findings and methods that we present should help the towns understand and prepare for the financial implications of implementing the 2014 draft MS4 permit. The towns will have to work hard to comply with this new permit, but this effort will be worth protecting people and the environment from the negative effects of stormwater runoff. Among our most important recommendations, we emphasize the benefits of regionalization, the use of innovative stormwater management and funding techniques, and the centralization of stormwater management in each town. We also recommend that the towns reach out to the MassDEP for advice on implementing the 2014 draft MS4 permit. Although the task of effective stormwater management is daunting, the towns can plan to effectively manage stormwater, thus protecting human health and the environment.

Authorship

Section	Author
1.0 Introduction	Cameron Peterson, Eric Correia
2.0 Background	All
2.1 Introduction	Eric Correia
2.2 Stormwater Runoff	Cameron Peterson, Eric Correia
2.2.1 Environmental Impacts of Stormwater Runoff	Cameron Peterson
2.2.2 Low Impact Designs	Cameron Peterson
2.2.3 Economic Impacts of Stormwater Management	Eric Correia
2.3 History of Stormwater Management	Cameron Peterson, Michael Giroux
2.3.1 Evolution of the Clean Water Act	Michael Giroux
2.3.2 What is the NPDES Stormwater Program?	Cameron Peterson
2.4 The Municipal Separate Storm Sewer System Permit	Michael Giroux
2.4.1 Public Education & Outreach	Michael Giroux
2.4.2 Public Involvement and Participation	Michael Giroux
2.4.3 Illicit Discharge Detection and Elimination	Michael Giroux
2.4.4 Construction Site Stormwater Runoff Control	Michael Giroux
2.4.5 Post-Construction Stormwater Management	Michael Giroux
2.4.6 Pollution Prevention and Good Housekeeping	Michael Giroux
2.4.7 General Practices and Municipal Individuality	Michael Giroux
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Acronym	Meaning
WPI	Worcester Polytechnic Institute
MS4	Municipal Separate Storm Sewer System
MassDEP	Massachusetts Department of Environmental Protection
DCR	Department of Conservation and Recreation
CMRSWC	Central Massachusetts Regional Stormwater Coalition
USEPA	United States Environmental Protection Agency
CWA	Clean Water Act
BMP	Best Management Practice
GPS	Global Positioning System
GIS	Geographical Information System
IDDE	Illicit Discharge Detection and Elimination
NPDES	National Pollutant Discharge Elimination System
U.S.	United States
NWQIR	National Water Quality Inventory Report
E. Coli	Escherichia coli
PCB	Polychlorinated biphenyl
TMDL	Total Maximum Daily Load
EIA	Effective Impervious Area
HAB	Harmful Algal Blooms
LID	Low Impact Designs
FWPCA	Federal Water Pollution Control Act
NEETF	National Environmental Education and Training Foundation
CIC Grant	Community Innovation Challenge Grant

SWPPP	Stormwater Pollution Prevention Plan
SWMP	Stormwater Management Program
DPW	Department of Public Works
CCTV	Closed Circuit Television
EPG	Environmental Partners Group
MassEEA	The Massachusetts Environmental and Energy Agency
MassDFG	Massachusetts Department of Fish and Game
CSO	Combined Sewer Overflow
TDS	Total Dissolved Solids

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1.0 Introduction

Pollution affects a staggering number of water bodies in the United States. "In 2006 there were over 15,000 beach closings or swimming advisories issued due to bacterial levels exceeding health and safety standards" (Council, 2008). A 2012 United States Environmental Protection Agency (USEPA) study evaluating 57% of the lakes, reservoirs, and ponds in the United States found that 97.5% of the examined water bodies contained unacceptable levels of pollution (USEPA, 2012).

One illustrative example of the extent of water pollution is in Ohio's Cuyahoga River. The water pollution in the Cuyahoga River was so profound that the river has actually caught on fire multiple occasions, as Figure 1 illustrates. In the 1960s, industries used the river as a dumping ground for contaminants such as oil, industrial waste, sludge, and sewage.

Figure 1. Cuyahoga River on Fire

(Greater Elkhart County Stormwater Partnership)

In 1969, one of these fires captivated national attention, and caused a chain of events, which spawned the creation of the Clean Water Act (EPA, 2013). The Cuyahoga river fires are just one of many cases of such extreme water pollution.

Water displaced by the weather events, also known as stormwater runoff, pollutes the surface waters of the United States. Stormwater runoff occurs when stormwater flows over an impervious surface, an area that water cannot pass through, such as house roofs, streets, and

parking lots. As the stormwater flows over these surfaces, it often collects pollutants such as oils, sediment, and heavy metals (EPA, 2012). These pollutants are detrimental to aquatic life, which in turn, affects the people in the surrounding areas. Pollutants such as nutrients can cause severe harm to aquatic life through the formation of algal blooms. These are alga blooms that become harmful under certain conditions including light availability and an abundance of nutrients. These harmful algal blooms can damage aquatic plants by blocking sunlight and depleting nutrients from the water, which can kill aquatic fauna (Kuentzel, 1969). Beyond the flora and fauna, stormwater runoff pollution also erodes natural structures such as deltas as illustrated in Figure 2.

Figure 2. Example of sediment runoff (Lehman, 2010)

To combat the issue of stormwater runoff, the USEPA created a system to move stormwater runoff into nearby bodies of water this is known as Municipal Separate Storm Sewer Systems (MS4s). In order to minimize stormwater flow over impervious surfaces, the design of the area around MS4s incorporates efficient methods of directing stormwater into the MS4s. The issue with moving the stormwater runoff directly into the bodies of water is that the pollutants that the stormwater runoff carries end up in the body of water.

To mitigate the impact of stormwater runoff, the USEPA has created an MS4 permitting system. The USEPA categorizes these permits are as either MS4 or National Pollutant Discharge Elimination System (NPDES). NPDES permits are a more general category of permits, which apply to facilities that have a wastewater output. The MS4 permits fall under the category of the

NPDES permits, but MS4 permits deal with requirements more specific to stormwater runoff (US EPA, 2014b). Figure 3 shows a simplified example of an MS4. The MS4 permit contains measures, which help mitigate the impacts of stormwater runoff. (USEPA, 2014c)

The MS4 permit contains six minimum control measures that permittees must follow in order to maintain compliance with the permit. These six measures provide general guidelines for stormwater management and public education. On September 30, 2014, the USEPA issued a new draft MS4 permit for permit holders in Massachusetts. In Massachusetts, the USEPA issues the MS4 permit. In the meantime, the Massachusetts Department of Environmental Protection (MassDEP) acts as the cosigner, while the USEPA enforces the permit.

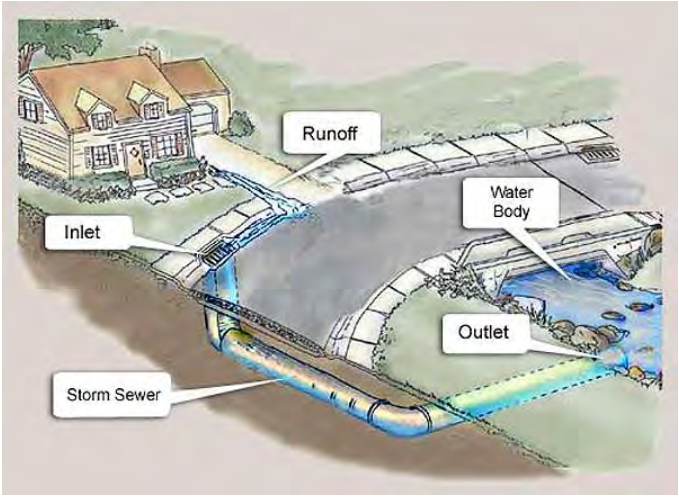

Figure 3. Example of a simple MS4 (Bardstown, 2014)

The MassDEP has developed this project requesting assistance from students with Worcester Polytechnic Institute's (WPI) Worcester Community Project Center. Our project was specifically aimed to assist the Central Massachusetts towns of Holden, Millbury, and Southbridge in understanding the costs of updating to the new 2014 draft MS4 permit. The goal of this project was to assess various municipalities' stormwater management practices for compliance with the MS4 permit, and provide a detailed analysis of the financial cost needed to fulfill the requirements of the 2014 draft MS4 permit. In addition to the cost analyses, we created

an informational video to help selectmen and town meeting members understand the implications of both stormwater runoff and the new MS4 permit requirements.

In chapter 2, we provide a detailed overview of stormwater runoff and its effects, the history and details of the MS4 permit, our sponsor the MassDEP, and the role of the Central Massachusetts Regional Stormwater Coalition (CMRSWC). In chapter 3, we describe the methodology we used to learn the details of the 2014 MS4 Draft permit and assess the total financial expenditures for compliance with its requirements. In our final two chapters, chapter 4 and 5, we outline our findings and provide recommendations for future research to the CMRSWC, the MassDEP, and the towns we worked with, Holden, Millbury, and Southbridge based on our findings.

We hope that this project will have a lasting and meaningful impact on stormwater management in Central Massachusetts. With the assistance of the MassDEP and CMRSWC, we hope our efforts help Central Massachusetts' municipalities prepare for the MS4 permit and protect the waters of the United States (U.S.) from pollution.

2.0 Background

2.1 Introduction

Rainwater runoff poses a serious risk of pollution to the world's surface water bodies. Impervious manmade surfaces such as roads and sidewalks drain pollutants into local water bodies after rain events occur. These pollutants, which can include chemicals, oils, metals, sediment, and bacteria, can directly affect human health by polluting local sources of drinking water (Gaffield, Goo, Richards, & Jackson, 2011). We discuss stormwater runoff and its impacts in more detail in section 2.2 of this chapter. To fully understand the problem of stormwater that the United States (U.S.) faces, we discuss the history of stormwater management in section 2.3

of this chapter. To help mitigate the impacts of stormwater, the United States Environmental Protection Agency (USEPA) released Municipal Separate Storm Sewer System (MS4) permit. This permit helps municipalities reduce pollution in water bodies by using effective stormwater management, which we discuss in more detail in section 2.4 (USEPA, 2014f). The Massachusetts Department of Environmental Protection (MassDEP), a Massachusetts state agency, helps municipalities navigate the intricacies of the MS4 permit. The MassDEP served as our sponsor throughout our project; we introduce them in section 2.5. We discuss the Central Massachusetts Regional Stormwater Coalition (CMRSWC), formed in 2012 to help communities meet the requirements of the MS4 permit (Spain, 2014); in section 2.6.

2.2 Stormwater Runoff

There is a difference between stormwater and stormwater runoff. Stormwater is the water that falls from storms or that which snowmelt produces. Stormwater runoff is the water that travels along impervious surfaces and gathers pollutants. The USEPA defines stormwater runoff as "generated when precipitation from rain and snowmelt events flows over land or impervious surfaces and does not percolate into the ground" (USEPA, 2014g). An impervious surface is a surface which water cannot pass through, such as asphalt and roofs. The stormwater runoff that flows over these impervious surfaces often collects pollutants that contaminate the stormwater and passes those contaminants into local water supplies. Contaminated stormwater runoff may contain oils, nutrients, and sediment. The oils, which usually come from leaking vehicles or car washing, are toxic to aquatic life. The nutrients that come from fertilizer and sewage overflow cause an unnatural increase in the growth of unwanted plant life, which depletes the oxygen in the body of water, causing aquatic life to die (EPA, 2012).

Sediment pollutants are found when land around the water body starts to erode, causing sediment to gather on aquatic life that lives close to the bottom of the water body, which prevents sunlight from getting to the plants (EPA, 2012).

In an effort to mitigate the impacts of stormwater runoff, municipalities may make land use changes, pass by-laws, and/or focus on public education. Municipalities mitigate the impacts of polluted stormwater runoff through Best Management Practices (BMP) and compliance with the MS4 permit, which we explain in section 2.4 below. When land use planners do not consider stormwater runoff, there can be serious environmental, aesthetic, and financial ramifications.

2.2.1 Environmental Impacts of Stormwater Runoff

Stormwater runoff is one of the top causes of water pollution in the U.S. today (Blair et al., 2014). Every two years, the USEPA releases a National Water Quality Inventory Report (NWQIR) on two groups of water bodies: rivers and streams, and lakes, reservoirs, and ponds. The NWQIR is the primary tool that the USEPA uses to keep the public, as well as Congress, informed about the quality of U.S. surface water. The USEPA monitors these bodies of water by regularly testing for various contaminants. These tests primarily look for contaminants such as fecal coliform, Escherichia Coli

Figure 4. Watershed

(S. R. W. Coalition, 2014)

(E. coli), polychlorinated biphenyls (PCB) in fish tissue, total phosphorus, and examine the concentration of dissolved oxygen. Based on these indicators and scientifically determined established safe levels, the USEPA determines if the body of water is impaired (Council, 2008). The USEPA breaks up the different municipalities by watersheds when issuing these reports to the public.

A watershed is the area where all of the connected rivers and ponds merge into one body of water as we illustrate in Figure 4. The Blackstone Watershed encompasses towns around Worcester, Massachusetts and municipalities to the south east of Worcester. In the 2012 NWQIR, the USEPA assessed 28.3% of Rivers and Streams; in the Blackstone watershed, 63.8% were impaired. The majority of the impairment was due to a lack of total maximum daily load (TMDL) management. TMDL is the total maximum amount of pollutants that can be discharged into a body of water while remaining safe for the water's intended use such as swimming or fishing (USEPA, 2013b). Since stormwater has caused so much pollution to bodies of water, the USEPA requires municipalities to use TMDLs, which the state creates, to help restore water bodies from over-pollution (USEPA, 2013b).

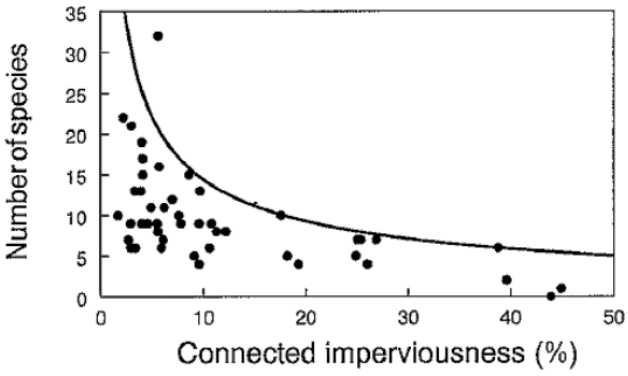

Figure 5: Species vs. EIA

(Council, 2008)

As more areas become urbanized, the amount of impervious area increases. The U.S. is experiencing a urbanization trend of increased urban population; the urban population went from 79.0% in 2000 to 80.7%

in 2010 (Bureau, 2012). This change would increase the Effective Impervious Area (EIA), causing more pollutants to run off into the local bodies of water.

The USEPA performed a study on surface water bodies, assessing, among other things, the amount of different fish species that inhabit that body of water. As Figure 5 illustrates, as the percent of imperviousness increases, the number of fish species in the area exponentially decreases. Figure 5 demonstrates a correlation between the amount of EIA and the presence of bio diverse aquatic system. This correlation is explained by an increase in pollution in the local area, causing the fish to either be poisoned by various pollutants or to suffocate on those same pollutants (Council, 2008).

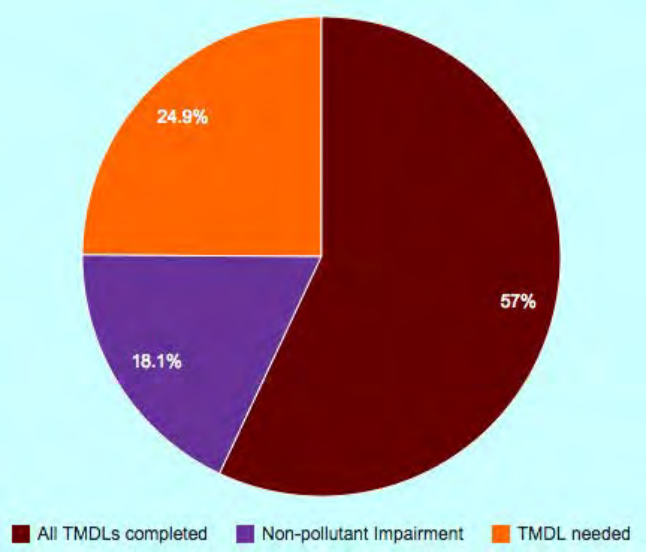

Figure 6. Causes of Lake Impairment (USEPA, 2012)

In addition, in 2012, the USEPA evaluated 57% of lakes, reservoirs, and ponds in the Blackstone watershed area. In this study, the USEPA found that of the 57% evaluated, 97.5% of the lakes, reservoirs, and ponds were impaired. In this case, however, only 24.9% of the lakes, reservoirs, and ponds needed a TMDL to be set in place (Council, 2008). THE USEPA also cited non-pollutant impairment as a problem in the lakes, reservoirs, and ponds in the Blackstone watershed, as seen in Figure 6. Non-stormwater pollutant impairment occurs when unregulated sources of non-stormwater pollution impair a body of water, such as turbidity (US EPA, 2014a).

The pollutants themselves are not the only problem with stormwater flowing into local water bodies untreated. Harmful algal blooms (HABs) are of great concern for aquatic life. HABs not only reduce water clarity, but they also deplete the oxygen in the water, which in turn can kill the natural life in the body of water. Since the HABs create a layer of colored algae on top of the water body, they also have a negative effect on the aesthetics of the water body. In addition, as the water becomes an eyesore, the tourism in the area also is likely to drop (Andersen, 2009).

2.2.2 Low Impact Designs

Low Impact Designs (LIDs) are a way to, "simulate natural hydrologic conditions, by gradually recharging groundwater and slowing runoff that flows to collection systems and receiving water systems" (MassDEP, 2014).

Figure 7. Bioswale

(Service, 2005)

Some of these methods include bioswales, green roofs, and infiltration or retention basins. People who design these areas usually create these designs as LIDs. A LID is a way that the designers try to address stormwater runoff by reducing the amount of impervious surface area and working with the natural landscape. LID includes stormwater BMPs, which we will explain in the next paragraph. LID can also be applied to redesigning areas; in that case, the LID would work more towards rebuilding the landscape rather than working with the existing area (Cahill, 2012).

BMPs are methods and designs that towns use to mitigate the effects of stormwater runoff. Some common BMPs include grassy swales, rain barrels, and vegetated roofs. *Grassy swales* are similar to the bio swales that we will discuss in the next paragraph, except the designers just use grass rather than other plant life. *Rain barrels* collect rainwater from roof runoff. Rather than dumping the runoff into the streets, the rain barrels allow the owner to use the water for watering plants or just dispersing on the ground so that the runoff naturally filters through the ground. *Vegetated roofs* are the same as extensive *green roofs*, which we will discuss later in this section.

Figure 8. Green Roof

(Division, 2014)

Bioswales can be an alternative method to using stormwater drains or simply to augment the drains. Workers place plants and foliage around an area, which is slightly lower than the area around it, as seen in Figure 7. The stormwater then flows into the bioswale, and the plants filter the stormwater for low flow storms. For larger storms, bioswales can direct the flow of stormwater into nearby drainage systems, however average bioswales can handle storms up to 4.3inches per 24hour period (Service, 2005). *Green Roofs* are a layer of dirt and plant life on the roof of a building. This layer above the roof provides shade to the roof, preventing it from reaching extremely hot temperatures; instead, the plant life absorbs most sunlight, which will normally heat the roof (Division, 2014). The layer of dirt also acts as a

Figure 9. Retention Basin

(USGS, 2004)

filtration system for light storms as seen in Figure 8. There are two types of green roofs, intensive and extensive. Intensive is similar to a roof garden, where the plant life is usually flowers, trees, and general garden plants in separate pots. Extensive roofs consist of a layer of dirt and rugged vegetation, which needs little to no maintenance (Division, 2014).

Figure 10. Infiltration Basin (University, 2011)

Infiltration and retention basins filter stormwater in a similar manner. An infiltration basin takes stormwater from the surface, trickles it down slightly below the surface of the ground, and dissipates the stormwater over a larger area, as Figure 9 illustrates. A retention basin is similar to an infiltration system, but instead of keeping the stormwater underground, it turns the stormwater into an artificial lake or pond, which drains slowly, but at a fixed rate, as Figure 10 illustrates (Mays, 2001).

LID	Average Cost
Green Roof (Intensive)	$10/ft^2
Green Roof (Extensive)	$25/ft^2
Rain Barrels	$216
Grassy Swales	$30/ft^2
Bioswales	$16.25/ft^2
Infiltration Basin	$4,500
Retention Basin	$7,500

Table 1. Comparison of LIDs

These methods of handling and filtering stormwater are just some of the ways that engineers and building planners handle the issue of stormwater runoff. Businesses work to mitigate stormwater runoff when it has an economic impact on their business. Below is Table 1[1], which compares the average costs of implementing each of the LIDs mention in this section. In the next section, we discuss the economic impacts of stormwater.

[1] (Brennan, 2014; Center, 2007; Division, 2014; PennsylvaniaDEP, 2006; USEPA, 2013a)

2.2.3 Economic Impacts of Stormwater Management

The goal of improved stormwater management raises questions about cost. Towns use many LID measures to effectively reduce the impact of stormwater runoff. The implementation of these LID measures, i.e. swales, permeable pavement, filter strips, and infiltration trenches, increases the cost of construction projects, as implementation requires careful planning and additional work. However, the economic benefits of these LIDs may in fact defray the cost of their implementation.

The BMPs, which towns use to comply with the requirements of the MS4 permit, can require a large initial financial input. For example, the town of Millbury, Massachusetts estimated that they spent about $75,000 on street sweeping during the 2013 fiscal year (Spain, 2014). The towns must understand the expenditures related to stormwater management in order to effectively fulfill the requirements of the MS4 permit.

Despite the increased cost of construction projects, LIDs can actually save towns money over time. The use of these LIDs minimizes the extent to which stormwater runoff impairs water quality. If there are fewer impaired water bodies, then towns spend less money on treating the water bodies. LIDs may also reduce the effects of flood damage, and eliminate the need for water treatment facilities (Thurston & EnvironetBase, 2012). LID measures can also save money by reducing construction cost. For example, a parking garage can cost approximately $20,000 per space to build. An open parking lot with non-impervious surfaces, however, can cost as little as $2,000 per space to build (Cahill, 2014). In this case, the use of an LID does not just reduce the construction cost; it also reduces the amount of runoff that needs to be treated.

2.3 History of Stormwater Management

October 2012 marked the 40th anniversary of the 1972 Amendments to the Federal Water Pollution Control Act, better known as the Clean Water Act (CWA). Many decades of surface

water pollution preceded the CWA, and some of the causes of pollution are rooted in the industrial surge of the previous two centuries. Unsanitary conditions and polluted drinking water led to health issues, such as yellow fever and cholera (Andreen, 2003b). Even in rural areas, water pollution was a problem. Most towns simply integrated any stormwater management systems into their sewer system. Easy to implement as a combined system, these constructs only involved the conveyance of water away from highly populated areas (Robert B. Stegmaier, 1942). Due to their combined nature, these systems were highly prone to overflow, contaminating topsoil and surrounding water bodies with raw sewage waste (Joseph-Duran, Jung, Ocampo-Martinez, Sager, & Cembrano, 2014). In 1948, the conclusion of World War II allowed the federal congress to bring focus onto more domestic issues. The massive industrial output of the war had taxed rivers, and funding for wastewater treatment had dropped during the years of conflict (Andreen, 2003a).

2.3.1 Evolution of the Clean Water Act

The 1948 Federal Water Pollution Control Act (FWPCA) served as a precursor to the CWA, which would undergo many revisions before the federal government expanded the CWA in 1972. The National Pollution Discharge Elimination System (NPDES) is a permit system added into the FWPCA with the 1972 amendments. Created by the Subcommittee on Air and Water Pollution of the Senate Committee on Public Works, the permit specifies what pollutant discharges the towns must manage. The permitting program specifies that discharges of a pollutant from a point source into a navigable waterway are prohibited unless the discharger has a NPDES. Specifically, the NPDES permit regulates point source discharges of pollutants into surface waters. A point source is defined by the CWA as "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel [etc.] from which

pollutants are or may be discharged" (U.S.C § 1251, (2014)). Originally, the USEPA intended the NPDES to regulate industrial wastewater and municipal sewage as this was the most abundant sources of liquid pollution (Tyer, 1993). Legislative amendments to the FWPCA in 1977, 1983, and 1987 increased the pollutants regulated under the CWA. As these regulations expanded, the EPA decided to implement stormwater management through a separate permit. Under the 1987 amendments, the Municipal Separate Storm Sewer System (MS4) came into being (MINAN, 2005). The CWA has since then expanded to cover many more pollutants than in its original conception.

2.3.2 What is the NPDES Stormwater Program

One of the main reasons that the USEPA put NPDES permits in place was to regulate how many pollutants can be safely discharged into surface waters (USEPA, 2014d). Congress charged the USEPA with administering the NPDES permit program. Congress first established this program with the enactment of the 1972 amendments to the FWPCA. The USEPA can also authorize state and local governments the power to administer the requirements of the CWA by what is called primacy authority (USEPA, 2014h). Massachusetts, however, does not have primacy authority to enforce the CWA so Massachusetts created its own set of laws that mirror the USEPA's laws. Generally, only industrial, municipal, and commercial facilities have to comply with the NPDES permits since they are the primary dischargers of pollutants into surface waters via point sources. Individuals, generally, do not have to get NPDES permits since their wastewater flows through the sewage system or septic tank.

The types of material that NPDES permits regulate are discharged pollutants from point sources. The CWA defines a point source as a pipe, ditch, channel, tunnel, conduit, well, landfill, etc. (U.S.C § 1251, (pg. 214) (2014)). A point source is a source of runoff that only has a single

point of release. A good example of a point source is a chemical treatment plant that uses a chemical to treat their product and then pumps out any of the runoff from their process into a local river. That pipe, which takes the runoff out of the plant, would be a point-based source, as Figure 11 illustrates.

Conversely, the other source of pollution comes from non-point sources. Non-point sources are sources of water pollution, which do not have a point of release such as rainwater and snow melting. Once the stormwater runoff and the melting snow travel into the local MS4s, the runoff becomes a point source, therefore falling under the regulatory authority of the NPDES permit program. A good example of a point source and a non-point source of pollution is Figure 11.

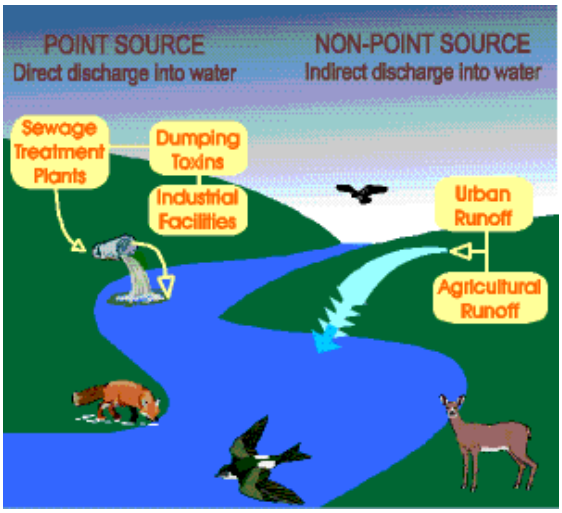

Figure 11. Point and Non Point Sources of Pollution

(College, 2014)

The USEPA and other government bodies, which have primacy authority, require companies and businesses to apply for these NPDES permits when they want to discharge any pollutant into a navigable surface water body through a point source (U.S.C § 1251, (2014))

2.4 The Municipal Separate Storm Sewer System Permit

As part of the CWA, the USEPA issued the MS4 permit in 1990 to reduce the impacts of storm water runoff. The government issues these permits with the sole purpose of addressing the large amounts of stormwater runoff that storms generate. These systems receive stormwater

runoff from the environment, and transport it into nearby bodies of water. These systems do not treat water; they only convey it from impermeable surfaces. With these permits, towns can regulate non-point discharges as point source discharges through the MS4, and create broad stormwater management programs. In 1990, at the inception of the MS4 permitting program, the USEPA issued phase-I MS4 permits on a per-city basis (USEPA, 2014h). These first permits contain measures tailored to individual municipalities, as many large cities had different requirements.

The primary requirement to qualify for a phase-I permit is that the town has a population of at least 100,000. In Massachusetts, there are 2 towns of this size: Boston and Worcester (Massachusetts, 2014b). The phase-II MS4 permit applies to smaller towns with a population of less than 100,000 and contains broad regulations so that it can be applicable to any small municipality. In total, the USEPA has issued approximately 7,450 MS4 permits across the United States from 1990 to 2014 (USEPA, 2014h) (USEPA, 2014b). At their core, these phase-II MS4 permits all integrate practices known as the six minimum control measures. The six minimum control measures are: Public Education, Public Involvement, Illicit Discharge Detection & Elimination, Construction, Post-Construction, and Pollution Prevention/Good Housekeeping.

Although the 2003 MS4 permit has expired, the six minimum control measures remain the primary focus of the 2014 MS4 permit draft. In the following sections, we outline the six minimum control measures and describe some of the BMPs that towns can use to comply with each control measure in the 2014 MS4 permit draft.

2.4.1 Public Education & Outreach

The first minimum control measure addresses the need for public education. Public education plays an important role in reducing pollution levels. Towns can meet the requirements through BMPs such as educational pamphlets, media campaigns, and workshops

The National Environmental Education and Training Foundation (NEETF) found that in 2005, 78% of Americans did not know that runoff from lawns, roads, and agricultural land is the most common source of water pollution. Of further concern, 47% of the public believes that industry accounts for most water pollution (USEPA, 2014b). In order to correct these misconceptions, this control measure requires municipalities to educate the public on the impacts of stormwater runoff and offer residents information on mitigation strategies they can implement at home.

2.4.2 Public Involvement and Participation

The second minimum control measure requires the municipality to form a working partnership with members of the community (USEPA, 2014b). A common way that municipalities fulfill the requirements of this control measure is to create volunteer programs, which engage the public in reducing the pollution caused by stormwater runoff. These programs offer opportunities for volunteers to mark storm drains and participate in cleanup and monitoring programs, as well as to create watershed groups and conservation corps teams (USEPA, 2014b). The officials of each municipality design these opportunities to integrate directly with stormwater programs. When towns implement and utilize this control measure correctly, they can involve the community and create self-monitoring environmental conservation groups.

2.4.3 Illicit Discharge Detection and Elimination

The third minimum control measure deals with the threat of stormwater contamination. Although the MS4 system carries stormwater, it does not treat the stormwater. The MS4 permit defines an illicit discharge as any discharge that is not entirely composed of stormwater. The MS4 stormwater drains are particularly vulnerable to foreign pollutants; the stormwater runoff in these MS4 systems may contain pathogens, nutrients, and various other pollutants. The phase-II MS4 permit requires four primary programs in this control measure, beginning with a full diagram of the MS4 system (USEPA, 2014b). The second program requires the municipality to create a legislative ordinance prohibiting discharges based on pollutant type (USEPA, 2014b). The third is the implementation of reporting techniques such as hotlines, onsite notifications, and outfall water tests (USEPA, 2014b). The fourth is an educational program on the dangers of these illicit discharges (USEPA, 2014b). When used effectively, these programs work to create a system that is both reactive in response to spills and proactive through prevention via education and enforcement.

2.4.4 Construction Site Stormwater Runoff Control

The fourth minimum control measure deals with construction-site stormwater runoff. Of the public works projects that adversely affect the health of a water system, construction site runoff is particularly detrimental. These effects stem from the sediment dissolved in the runoff, including dirt, sand, and other fine particles. When these concentrations of the sediment particles settle in waterways, they block sunlight, and can suffocate many forms of aquatic life (USEPA, 2014a). Phase-II MS4s require the municipalities they regulate to formulate a program to reduce pollutant stormwater runoff for construction exceeding one acre of land. This requirement is

comprised of six components. Collectively, they ensure that construction groups know of their management obligations for proper stormwater pollution management.

2.4.5 Post-Construction Stormwater Management

The fifth minimum control measure refers to post-construction stormwater management. In practice, this control measure is not a continuation of the previous control measure, but a different control measure to monitor BMP effectiveness, as well as the continued prevention of pollution. This control measure is implemented primarily through inspections of on-site facilities, and structures responsible for stormwater management. With these practices in place, areas with new development can continue to manage stormwater runoff pollution after construction has finished.

2.4.6 Pollution Prevention and Good Housekeeping

The final control measure is responsible for the housekeeping of a municipality's stormwater management program. In order for municipalities to maintain good operating conditions within municipal-owned facilities such as the Department of Public Works (DPW) and schools, they must construct a rigorous system of upkeep management. These components can consist of road maintenance and repairs, automobile fleet maintenance, landscape maintenance, as well as building upkeep. Pollution prevention practices can include activities such as street sweeping and storm drain system cleaning (USEPA, 2014e).

2.4.7 General Practices and Municipal Individuality

In order to account for thousands of different municipalities, the MS4 permit authors designed the six minimum control measures to be applicable to any possible situation. Independent of environmental conditions or area development, these measures have to be

comprehensive. Unfortunately, these phase-II MS4 permits rely on a large degree of self-reliance and proactive involvement by the municipalities, but there are resources available to help with this. In order to assist Massachusetts municipalities with MS4 permit compliance, the MassDEP has created a Stormwater Handbook, which contains resources about how a city or town can comply with the minimum control measures (MassDEP, 2014). Additionally, the Massachusetts Watershed Coalition, an organization dedicated to protecting and restoring Massachusetts watersheds, is able to provide many materials to their members, such as brochures and standard operating procedures (Coalition, 2014). However, the officials of each municipality must ultimately take responsibility to implement the practices in the six minimum control measures.

The MassDEP manages a system of computer checks and administering programs for stormwater management in Massachusetts. If the system flags a municipality for irregular readings or reports, inspection by MassDEP officials becomes necessary (Civian, Sept. 26, 2014). Implementation of these control measures requires the municipalities to spend a large amount of money, which raises budget concerns for the 2014 MS4 Draft permit.

2.5 The MassDEP and the Central Massachusetts Regional Stormwater Coalition

The MassDEP is the Massachusetts environmental agency charged with making sure Massachusetts has clean air and water (Massachusetts, 2014a). The central office of the MassDEP serves the entirety of Worcester County (MassDEP, 2013). The MassDEP assists the CMRSWC by providing them with numerous guidance documents, which teach the municipalities how to fulfill the requirements of the MS4 permit (CMRSWC, 2014b). In collaboration with the MassDEP, we sought to provide a cost analysis of implementing the new 2014 MS4 permit in three Massachusetts municipalities. During this project, we worked with

two primary contacts from the MassDEP: Frederick Civian, Statewide Stormwater Coordinator for the MassDEP, and Andrea Briggs, Deputy Regional Director of the Central MassDEP.

2.6 Central Massachusetts Regional Stormwater Coalition

Central Massachusetts is one of many regions in Massachusetts whose municipalities seek to effectively implement the 2014 MS4 permit. The CMRSWC helps its members achieve this goal. The CMRSWC, formed in 2012, initially consisted of 13 municipalities (Spain, 2014). Due to the success and utility of the CMRSWC, it has expanded to 30 municipalities by 2014. All of the municipalities within the CMRSWC are subject to regulations from the USEPA, which require the municipalities to mitigate the impacts of stormwater runoff (CMRSWC, 2014c).

The municipalities within the CMRSWC receive numerous benefits because of their collaboration. The municipalities can share stormwater management tools, such as Leica units and water quality testing kits, thus reducing cost (Coalition, 2014). Their collaboration also reduces redundancies in stormwater management projects, thus allowing the municipalities to use money more efficiently. Although the CMRSWC members try to collaborate as much as possible, the individual towns are ultimately responsible for utilizing the tools developed by the CMRSWC in order to comply with the MS4 permit (Spain, 2014).

2.6.1 Funding of the CMRSWC

The CMRSWC receives funding from the Community Innovation Challenge (CIC) Grant. Massachusetts Governor Deval Patrick started the CIC grant program in 2012 in order to ease the taxpayer burden of community improvements (Massachusetts, 2013a). The CMRSWC received $310,000 in 2012 to help implement the 2003 MS4 permit (Massachusetts, 2013b). The CIC Grant provided the CMRSWC with $105,000 for the 2013 fiscal year. This grant did not cover the total cost of the CMRSWC's efforts, thus each municipality had to provide $2,800 in order to supplement the cost (Spain, 2014). For the 2014 fiscal year, the CIC Grant provided the

CMRSWC with $80,000 (CMRSWC, 2014a). The grants are awarded in December, so at the current time the CMRSWC does not know if they have secured funding for next year.

2.6.2. Organizational Involvement in the CMRSWC

The CMRSWC operates with the help of various agencies and companies. The government agencies, which support the CMRSWC, include the MassDEP, the Massachusetts Department of Conservation and Recreation (DCR) and the USEPA. The CMRSWC also receives support from the private consulting firms of Tata & Howard and Verdant Water. The companies which provide services to the CMRSWC include Maine Technical Source, HACH Company Chemetrics, and People GIS (CMRSWC, 2014d).

2.6.3. Stormwater Consultants

The CMRSWC receives support from the private consulting firms of Tata & Howard and Verdant Water. Tata & Howard is an engineering firm which provides consulting for the management of wastewater, stormwater, and hazardous waste (Tata&Howard, 2014a). Tata & Howard also helped create a system which collects inspection data and maps runoff patterns within the CMRSWC (Tata&Howard, 2014b). Verdant Water operates from Scarborough, Maine, and focuses on industrial and municipal stormwater management. Verdant Water provides Stormwater Pollution Prevention Plans (SWPPPs), Illicit Discharge Detection and Elimination (IDDE) assistance and water quality screening.

The use of these private consulting services to fulfill components of the MS4 permit requires the municipalities to spend a large amount of money. We had to take the cost of these services into account in order to construct our cost analysis. In the next chapter of our report, we describe our methodology for creating our cost analysis.

2.7 Goals and Objectives

In collaboration with the MassDEP and the CMRSWC, we sought to provide the towns of Southbridge, Holden, and Millbury, Massachusetts with a comprehensive analysis of their cost of compliance with the new 2014 MS4 permit.

In order to achieve this goal, we:

1. Became educated on the details of the 2003 MS4 permit and the new 2014 MS4 permit
2. Assessed the degree to which Millbury, Holden, and Southbridge have met the requirements of the 2003 MS4 permit
3. Researched Millbury, Holden, and Southbridge's total current expenditures for stormwater management
4. Identified what changes each of the aforementioned towns will have to make to comply with the requirements of the new 2014 MS4 permit
5. Provided a detailed analysis of the complete costs each town will need to defray in order to comply with the requirements of the new permit.
6. Created an educational video to explain the costs of implementing the 2014 MS4 permit

We discuss our methodological approach to accomplishing these objectives in detail in chapter 3.

3.0 Methodology

3.1. Introduction

In collaboration with the Massachusetts Department of Environmental Protection (MassDEP) and the Central Massachusetts Regional Storm Water Coalition (CMRSWC), we provided the towns of Millbury, Holden, and Southbridge, Massachusetts with a comprehensive analysis of the cost of compliance with the new 2014 Municipal Separate Storm Sewer System (MS4) permit. We focused our project objectives on determining the current and future cost of stormwater management in the subject towns. The MassDEP and CMRSWC proposed this project to increase municipal and agency understanding of the cost of compliance with the MS4 permit; The MassDEP will not use this information for enforcement of the MS4 permit. The MassDEP recruited us to address this problem as independent consultants. The United States Environmental Protection Agency (USEPA) released the new 2014 draft MS4 permit on September 30, 2014. In order to accomplish our goal and objectives, we created the following methodology.

The main goal of our project was to gather information from the towns of Holden, Millbury, and Southbridge Massachusetts in order to help them identify the financial costs of implementing the 2014 MS4 permit draft when it eventually comes into effect. Below we discuss each of the objectives we achieved in order to accomplish our project goal.

3.2. Objective 1: Became educated on the details of the 2003 MS4 permit and the 2014 MS4 permit

In order to create a complete cost analysis of compliance with the 2014 Massachusetts draft MS4 permit, we first sought to understand the requirements of 2014 MS4 permit draft. Understanding the permit also involved an in-depth analysis of the expired 2003 MS4 permit that

the towns have to maintain compliance until the new permit goes into effect. The USEPA issued each of the towns a Phase II permit, as their populations do not exceed 100,000 people (US EPA, 2014).

We analyzed the content of the 2003 MS4 permit minimum control measures so that we would each become more familiar with the minimum control measures. We then contrasted the requirements of the 2003 MS4 permit with those of the 2014 MS4 Draft Permit. As we researched the requirements that are a part of the 2003 MS4 permit, we determined how the permit changed from the 2003 version to the 2014 version with the help of Fred Civian. In addition, we analyzed previous reports written by groups that have worked with the MS4 permit. We interviewed Worcester Polytechnic Institute (WPI) students Xinping Deng, Nicholas Houghton, Haoran Li, and Joseph Weiler, who completed the previous MS4 related project, to gain a better understanding of how to create a cost analysis and work with the towns. We also interviewed them to better understand the efforts that have gone into implementing the permit. After analyzing both permits and interviewing the past IQP group, we were better able to approach the task of creating a cost analysis for our subject towns, see Appendix A for a list of interview questions.

3.3. Objective 2: Assessed what Millbury, Holden, and Southbridge have done to meet the requirements of the 2003 MS4 permit

In order to achieve this objective, we reviewed annual stormwater reports, conducted interviews, and conducted fieldwork. Even though the 2003 MS4 permit expired, understanding what the towns have done to comply with the permit requirements helped us increase our understanding of the additional measures and costs the towns will need to take to maintain compliance once the USEPA implements the 2014 MS4 Draft permit.

In our subject towns, we interviewed Department of Public works (DPW) directors such as Heather Blakeley, John Woodsmall, and Rob McNeil. We also interviewed other municipal officials such as Mark DiFronzo Southbridge's fire chief, Isabel McCauley Holden's Town Engineer, a Conservation Commission member from Southbridge Ken Pickerin, and Pamela Harding Holden's Town Planner. We conducted these interviews to determine what each town currently does to comply with the 2003 MS4 permit. Through our sponsors at the MassDEP, we contacted these towns in order to set up interviews with the municipal officials that oversee compliance with MS4 permit requirements. We focused these interviews on each municipality's efforts to comply with the six minimum control measures. In addition, we asked the interviewees to provide us with any documentation of expenditures, which we used to determine their town's costs. See Appendix A for examples of the interview questions that we asked each of the towns.

The expense reports from the consultants, DPW, and highway department, which the officials provided to us, did not encompass all of the town's expenditures, so we also used these interviews and fieldwork to obtain a more complete understanding of the expenditures. We conducted this fieldwork in order to determine the man-hours needed to conduct sampling tests on site. We used this data for information regarding procedures, costs, and methods used to fulfill the 2003 MS4 permit.

3.4. Objective 3: Identified Millbury, Holden, and Southbridge's total current expenditures for stormwater management

Once we collected data detailing the practices that our subject towns use to manage their stormwater runoff, we aggregated our data to create a cost analysis. Millbury, Holden, and Southbridge are members of the CMRSWC, which utilizes the expertise of the environmental consulting firms Verdant Water and Tata & Howard. We analyzed cost data from any

expenditure that occurred before release of the 2014 draft MS4 permit, but after 2012 to get a general idea of expenses. We analyzed all expenditures from the experience reports mentioned in the previous objective because towns often do more than they report to manage stormwater but are not necessarily aware of the task coming under the rubric of one of the 2003 MS4 permit minimum control measures (Deng, Houghton, Li, & Weiler, 2014). These tasks could include street sweeping, public education, volunteer organizations, and hazardous waste cleanup.

Many municipalities hire construction contractors to make changes to existing Best Management Practices (BMP), if required, or to keep up with maintenance on the town's BMPs. These construction companies may not be a frequent cost, but towns may still face these costs, or similar as-needed costs, while they manage their stormwater. We spoke with stormwater consultants Matthew St. Pierre of Tata & Howard and Aubrey Strause of Verdant Water in order to get a better understanding of how much these municipalities have spent on stormwater management. We also interviewed the municipal officials that oversee the stormwater management programs such as the Directors of the DPW as mentioned in the previous objective. Andrea Briggs put us in contact with them during the course of the project. By interviewing both of these groups of people, we were able to assess stormwater management spending using multiple sources. Drawing on the research that we conducted in the previous objective, we analyzed the methods, which the towns used, and the cost of each method, in order to calculate a total amount that the towns spend on stormwater management.

To compile the data that we gathered from our subject towns, Ms. Strause and Mr. St. Pierre provided us with a chart that the previous IQP group had put together and that Ms. Strause and Mr. St. Pierre had updated, the chart can be seen in Appendix B. This chart had many common costs of towns and ways that towns pay for stormwater management. Once Ms. Strause

provided us with the chart, she was able to take the areas that we were looking at and add them to the chart. By using this chart, towns will be able to directly compare the data that we gathered with the data that the towns would gather from their own cost analyses.

Using the information that we gained from identifying Southbridge, Holden, and Millbury's current expenditures and the previous objective, we were able to compile data from all three municipalities and create a cost analysis.

3.5. Objective 4: Identified what changes each of the subject towns will have to make to comply with the requirements of the 2014 draft MS4 permit

In order to accomplish this objective, we used the knowledge gained in accomplishing objectives one, two, and three to begin calculating the cost of compliance with the 2014 MS4 permit. We performed research to determine the BMPs that the municipalities already have in place to comply with the 2003 MS4 permit. This research included a detailed analysis of the town's annual stormwater reports. In addition, we conducted interviews with town officials and stormwater consultants who have worked with the towns. Examples of the interview questions we used can be found in Appendix A. By identifying what Best Management Practices (BMPs) the towns already use, we were able to determine whether, and in what manner, our subject towns will need to expand their stormwater management efforts to meet the requirements of the 2014 MS4 permit.

In order to identify the necessary changes, we conducted interviews with municipal officials in each town. We also spoke with Frederick Civian; Regional Stormwater Coordinator of the MassDEP. These interviews provided us with insight into each town's level of preparedness toward meeting the requirements of the 2014 MS4 permit.

Ultimately, this objective helped us gain a comprehensive understanding of the financial cost of implementing the 2014 MS4 permit in each municipality. By understanding the BMPs each town uses, we were able to assess what changes they need to make, and by extension, the financial cost of implementing each change. We created a checklist of the common practices such as street sweeping, distribution of pamphlets, and outfall mapping that municipalities use to comply with stormwater permits, and combined this with a similar chart given to us by Mr. St. Pierre and Ms. Strause. We discuss our cost analysis in further detail in objective 5.

3.6. Objective 5: Provided a detailed analysis of the complete costs for each subject town to comply with the requirements of the 2014 draft MS4 permit

In order to complete this objective, we first determined the changes each town will need to make in order to comply with the 2014 draft MS4 permit, as we described in objective four. We then computed the financial cost of the implementation of these changes. In order to perform our cost analysis, we spoke with Mr. St. Pierre, Ms. Strause, and Mr. Civian. These people were able to provide us insight into the typical cost of implementing BMPs, which fulfill the MS4 permit. We were able to determine what equipment each town has, such as street sweepers, outfall mapping equipment, and signage, through interviews that we conducted with municipal officials. The CMRSWC possesses some of this equipment, which the municipalities can use, therefore eliminating the need for the towns to buy and maintain their own equipment. We also determined the human resources each municipality can provide to manage stormwater. This knowledge allowed us to determine the labor costs. This knowledge also allowed us to determine if the towns will need to hire contractors or additional personnel in order to supplement their workforce. Once we had a list of all of the costs of stormwater management from the subject

towns, we were able to estimate the total cost of meeting the requirements of the 2014 draft MS4 permit.

In order to assist us with our cost analysis, Mr. Civian provided us with a chart, which listed every regulation of the 2014 draft MS4 permit. This chart is utilized in Appendices D, E, and F where we used it for each of our three subject towns. We divided this chart into eight separate sheets. Seven of the sheets individually detail the requirements of the six minimum control measures, as well as miscellaneous requirements such as submitting a Notice of Intent (NOI). Within each of these sheets, we divided the costs into annual costs, one-time costs, and intermittent costs, and calculated a total for each. We then took the totals from each of the seven sheets and compiled them into an eighth master sheet. This chart allowed us to create a comprehensive analysis of implementing the 2014 draft MS4 permit in each of our subject towns.

3.7. Objective 6: Created an informational video to explain the costs of implementing the 2014 MS4 Draft permit

Over the course of the project term, we gathered photos, videos, and interviews from Fred Civian, Andrea Briggs, and John Woodsmall and compiled them into an informational video. By gathering this material, we were able to highlight the challenges and importance of stormwater management. These challenges include raising funds and garnering public support for stormwater management.

In order to create this video, we first created an outline. During the outlining process, we reached out to Frederick Civian, Andrea Briggs, Matthew St. Pierre, and Aubrey Strause in order to generate ideas for the content of our video. We then borrowed video recording equipment from WPI's Academic Technology Center (ATC). This equipment included a digital camera, monopod, tripod, GoPro, and a shotgun microphone. We used the GoPro to gather underwater

footage of the outfalls. The shotgun microphone allowed us to eliminate ambient noise from cars during our filming in the field. We also borrowed wireless clip-on interview microphones to get clear audio during our interviews. Once we acquired the equipment, we then began to create our video. We filmed our fieldwork, which included our use of the water sampling kits. We then conducted interviews with stormwater experts that we had contacted previously.

4.0 Cost Analysis

4.1 Introduction

One of our major findings details the benefits of regionalization to effectively implement the 2014 draft Municipal Separate Storm Sewer System (MS4) permit. Due to the high costs that we describe in this chapter, towns should consider joining an established coalition, such as the Central Massachusetts Regional Stormwater Coalition (CMRSWC), or starting a new coalition to serve their specific region.

After completing objectives one through four of our methodology, we were able to construct our cost analysis. In this cost analysis we detail both current stormwater expenditures for the towns of Southbridge, Holden, and Millbury, and potential costs of compliance with the new requirements of the 2014 MS4 Draft permit requirements.

After calculating the current expenditures of our towns, we sought to predict the cost of implementing the 2014 draft MS4 permit in our subject towns. In order to assist us with this portion of our cost analysis, Frederick Civian provided us with a spreadsheet, which lists each of

the requirements of the 2014 draft MS4 permit. We divided this table by the six minimum control measures of the MS4 permit, and then used the resulting spreadsheet to predict the cost of implementing each requirement in our subject towns. See the spreadsheets we used in Appendices D, E, and F.

In this chapter, we first provide some background information on the towns of Holden, Millbury, and Southbridge, Massachusetts. Then we discuss the results of our 2003 MS4 permit and 2014 draft MS4 permits cost analyses. We then explain the results of our comparative analysis of the three subject towns' current costs of implementing the 2003 permit requirements. Next, we describe the results of our comparative analysis of Holden, Millbury and Southbridge's estimated cost of compliance with the 2014 draft MS4 permit requirements.

4.2 Background Information on Millbury, Holden and Southbridge, Massachusetts

The three subject towns for the cost analysis are all located within Central Massachusetts. Despite their similar geographic location as seen in Figure 12, the subject towns vary in size, budget, and population. Southbridge, Massachusetts has a population of approximately 16,800, while Holden has a population of about 17,600, and Millbury has a population of about 13,300.

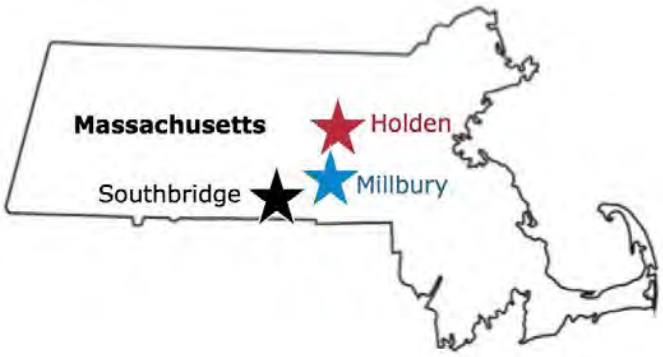

Figure 12: Town Locations in Massachusetts

The towns' geographic area and percentage of impervious surface area also varied. With a higher impervious surface area comes a more expensive stormwater management program since there is more area for the stormwater runoff to run along. As the runoff runs along

impervious area it collects pollutants and the more polluted the runoff becomes. This requires the towns to take more of an effort to reduce the pollution, which leads to a high cost for stormwater management. As our subject towns cover more geographic area, their budget increases except in Southbridge, which has a larger budget than Holden even though Southbridge is significantly smaller. Millbury has the highest percentage of impervious surface area even though they have the smallest total area, which significantly increases their stormwater management costs.

The form of town government can have a large effect on how long towns take to implement the new draft requirements for stormwater management. Both Millbury and Holden have open town meetings as their primary form of government, whereas Southbridge has a Council and an Alderman as their government structure. When we spoke with Robert McNeil, he told us that having open town meetings could cause regulations to take longer to pass since the meetings are open to the public. This, however, does allow for much more public involvement and participation.

Town	Form of Government	Population	Town Budget	Area	Percent Impervious
Southbridge	Council and Alderman	16,799	56,739,257	20.9mi^2	8.69%
Holden	Open Town Meeting	17,636	52,774,844	36.2mi^2	7.04%
Millbury	Open Town Meeting	13,305	39,018,827	16.3mi^2	13.09%

Table 2: Town Information

4.2.1 Current Cost of Public Education and Outreach

The Public Education control measure requires towns to educate their population about the issues the town faces with regard to stormwater and to offer opportunities for the residents to participate in stormwater-related activities. In Table 3, we show how much Southbridge, Holden, and Millbury currently spend on the Public Education control measure.

Town	Population	Cost
Southbridge	16,799	$10,952
Holden	17,636	$1,000
Millbury	13,305	$566

Table 3: Public Education Costs by Town

A first glance at Table 3 may indicate that Southbridge does much more for this control measure than the other towns, but that is not entirely the case. Much of Southbridge's cost comes from the pamphlets and brochures that they create and distribute to their residents. Both Holden and Millbury have savings of about $6,000 annually since they utilize the resources provided to them by the Central Massachusetts Regional Stormwater Coalition (CMRSWC). Holden also uses pamphlets and brochures comply with this control measure, but since they use materials from the CMRSWC, they only have to pay for distribution. Millbury distributes its public education material digitally through their Department of Public Works (DPW) website, saving on distribution and printing costs. Any town that is trying to maintain compliance with this control measure should utilize any already existing education materials, thereby saving money on design, especially if the town is part of the CMRSWC.

Southbridge also holds hazardous waste removal days in order to gather hazardous waste from households. This practice increases the amount Southbridge spends on this public education, but this helps prevent this waste from appearing in runoff, which in the end saves Southbridge money. This practice of preventative action is an example of what other towns can try as a cost-reduction effort.

4.2.2 Current Cost of Public Involvement and Participation

The next minimum control measure is Public Participation. Public Participation requires that towns comply with their own town meeting requirements. The United States Environmental Protection Agency (USEPA) designed this minimum control measure to allow the public to have a voice in the creation of town specific stormwater ordinances and regulations as required by the MS4 permit. In Table 4, we show the costs associated with maintaining compliance with the 2003 MS4 permit for each town.

Town	Cost
Southbridge	$0
Holden	$0
Millbury	$0

Table 4: Public Participation Costs by Town

The table has zero costs for each town, since this control measure only requires that the towns offer a place and time for people to comment and look at the regulations and ordinances before the town puts them into effect. Towns comply with most of this control measure by following basic town meeting requirements laid out outside of the MS4 permit.

4.2.3 Current Cost of Illicit Discharge Detection and Elimination (IDDE)

As illustrated by Table 5, the subject towns have a wide range of costs associated with implementing the 2003 MS4 permit IDDE control measure. Some of the requirements of the IDDE control measure include developing a storm sewer system map and creating a plan to detect and eliminate illicit discharges.

Town	Cost
Southbridge	$2,452
Holden	$3,520
Millbury	$4,678

Table 5: IDDE Costs by Town

Southbridge, Holden, and Millbury have all completed the mapping requirements of the 2003 MS4 permit. Therefore, the towns have not had to map their town in a couple years. The current costs associated with the IDDE control measure in Southbridge reflects outfall sampling since outfall sampling accounts for 97% of the money the town spends on this control measure. Millbury complies with this requirement by using a Best Management Practice (BMP) that includes use of a closed circuit television (CCTV) system and vacuum truck to remove blockages from their storm drain system. This takes up about 86% of the combined cost for this control measure.

Holden also spends much of their money on use of the vacuum truck totaling about 64% of their total costs for this control measure. Isabel McCauley the senior civil engineer for Holden, and John Woodsmall, the director of the department of public works (DPW) for Holden,

estimate that Holden typically spends $3,000-$4,000 per occurrence on the removal of illicit discharges and had to remove one illicit discharge this past year.

We must note, however, that our costs for Holden were based only on data which Ms. McCauley and Mr. Woodsmall were able to provide to us. Environmental Partners Group (EPG) performs many of Holden's costs associated with the IDDE control measure, including outfall mapping and water quality screening. Financial invoices from Holden detailed the town's annual expenditures on EPG services since 2007 at $119,000. However, the invoice descriptions do not specify exactly what service is associated with each line item. Therefore, it was difficult for us to discern between annual costs and one-time costs. We were unable to connect with EPG to obtain a more detailed cost breakdown.

4.2.4 Current Cost of Construction Site Runoff

As illustrated in Table 6, the costs associated with implementing the construction site runoff control measure of the 2003 MS4 permit in Southbridge, Holden, and Millbury is low. The 2003 MS4 permit requirements for this control measure include developing a plan to reduce the discharge of pollutants from construction sites.

Town	Cost
Southbridge	$0
Holden	$0
Millbury	$350

Table 6: Construction Site Runoff Control Cost by Town

Our three subject towns implement this control measure using volunteers from their conservation commissions. The volunteers conduct most of the site inspections for the towns. The use of these volunteers is an excellent way to enforce this control measure without costing the towns any additional money. Another reason the cost of implementing this control measure is so low is that contractors must eliminate any violations at their own expense, as Pamela Harding

of Holden (Holden Senior Planner) and Ken Pickerin (Conservation Commission member) of Southbridge described to us in our interviews.

Our subject towns also already have sediment control ordinances in place. These ordinances do not cost any money to the towns as they are laws, which are already in place, and they do not need to be developed by town lawmakers. Although we did not learn of the particular details of these ordinances, they are similar in the fact that they require sediment and erosion control measures at construction sites.

4.2.5 Current Cost of Post-Construction

Differently from the previous control measure, the USEPA designed the Post Construction Site Stormwater Runoff control measure to ensure continuing pollution prevention, as well as BMP functionality, after construction has been completed. In the 2003 MS4 permit, this control measure states that the permittee must develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb land greater than one acre and discharge into the municipal system (US EPA, 2013). Beyond this function, the control measure requires towns to have an ordinance addressing post-construction stormwater runoff, plans for BMP longevity, and that any control measure the towns put in place will prevent or minimize impacts to water quality (US EPA, 2013).

Town	Cost
Southbridge	$0
Holden	$1,760
Millbury	$0

Table 7: Post Construction Costs by Town

In calculating the costs for each town, we sought to determine what funds the towns spent for stormwater management after they completed development projects. Based on the cost estimation sheets developed in *Cost Analysis For The MS4 Permits* (used in Appendices A, B,

and C) we have found that the annual cost for this control measure is $0 for Southbridge, $1,760 for Holden, and $0 for Millbury as illustrated in Table 7.

These costs can be explained by the ways in which each town implements the post construction site regulations. A representative from Southbridge, Ken Pickerin, is part of the local conservation commission. The Southbridge Conservation Commission (ConCom) is a group of volunteers who inspect construction sites, as well review construction site plans for construction projects. In Southbridge, the ConCom volunteers complete all of the Post-Construction Stormwater Management control measure requirements. Consequently, Southbridge's cost of compliance with the Post-Construction Stormwater Management control measure is zero (Ken Pickerin, 2014).

The town of Holden handles this differently, because they are within the Wachusett watershed and the Department of Conservation and Recreation (DCR) performs a number of the required elements of this control measure without any cost to the town (Robert Lowell, 2014). The $1,760 annual cost is from collaborative efforts between the Department of Conservation and Recreation (DCR) (paid by their agency), and Holden DPW workers paid under Holden. Because of this, Holden does have a notable cost of $1,760 to pay its workforce.

In Millbury, developers of a construction project handle the cost of the post construction control measure for that project. As part of the requirements for development within Millbury, a developer must pay for all required inspection programs themselves (Robert McNeil, 2014). This method is aligned with some of the innovative funding techniques Millbury utilizes, which we discuss in Section 5. Developers who secure the appropriate grants to fund the projects perform many of the projects in the town. As part of the grant, the developers pay for the costs of the post-construction control measures as well.

4.2.6 Current Cost of Good Housekeeping

The final requirement in the 2003 MS4 permit is Good Housekeeping. The USEPA designed this control measure to minimize or prevent the effects of stormwater runoff from municipal operations (US EPA, 2013). Generally, this means the towns must implement maintenance activities, inspection procedures for structural controls, employee training, and the upkeep of BMPs. In the implementation of this control measure, the towns have varying costs.

The annual cost for complying with this control measure for Southbridge is $255,200, while the annual cost for Holden is $180,246, and the annual cost for Millbury is $555,123, as illustrated in Table 8. There is a large degree of variation between the towns on cost of current good housekeeping practices. However, this large variation in expenditures is not unique to these three towns.

Town	Cost
Southbridge	$255,200
Holden	$180,246
Millbury	$555,123

Table 8: Good Housekeeping Costs by Town

In 2011, the USEPA conducted an analysis of the cost of complying with the good housekeeping control measure and found similar results. In this analysis the USEPA found that the Massachusetts towns of Bellingham, Franklin, and Milford, good housekeeping expenditures had a difference of $791,000 between the highest and lowest costs for existing programs (Committee, 2011).

In the town of Southbridge, good housekeeping costs are primarily due to catch basin cleanings, salt and sand road management, a leaf collection program, and an employee training program. Of Southbridge's $255,200, 85% is due to the salt and sand road management, BMP maintenance schedule, street sweepings, and the cleaning of catch basins and outfalls every two years.

In Millbury, the town maintains a schedule of yearly catch basin and outfall cleanings, as well as street sweeping, and the use of salt in their roadway management. Their roadway

management constitutes 83% of the cost for complying with this control measure in Millbury, and represents the largest cost in Millbury's entire stormwater management program. While these costs are part of stormwater management, the actions are not for the stormwater management alone. A few of these procedures are part of other departments, such as the Highway Department (Robert McNeil, 2014), and so the costs do not accurately represent the total budget for a municipality.

4.2.7 Total Current Cost Comparison

When we combined the current costs of the control measure, we were able to obtain an estimation of the total costs of compliance for each town. In implementing their stormwater program, the town of Southbridge spends an estimated $268,604 annually, as illustrated in Table 9. The town of Holden spends an annual $186,526 to fund their stormwater management program, as we illustrate in Table 9. Our third town of Millbury annually spends $584,960 on 2003 MS4 compliance as we illustrate in Table 9. We compiled these total costs from available information provided by the towns.

Town	Cost
Southbridge	$268,604
Holden	$186,526
Millbury	$584,960

Table 9: Total Annual Costs by Town

Based on our research, each town appears to go above what is required for the 2003 MS4 permit, but the magnitude of this differs by town.

For example, Millbury cleans its catch basins and outfalls annually, while Holden cleans them every two years. Despite these differences, both towns maintain compliance with the permit, and do so through different methods. Between each municipality, there are differing divisions of stormwater management responsibility. In our experience interacting with each town, they divide their stormwater management programs amongst multiple departments. Because of this, there is a degree of reporting bias in our cost estimation for each town. These

biases are because different town representatives in different towns are all looking for or maintaining and providing different records. This means that towns may have over or underreported what their actual costs were, even with this, we hope that they can be used by towns in comparing the costs for different categories, if not the total costs.

4.3 Comparative Cost Analysis of 2014 MS4 Draft Permit

In this section, we analyze the cost of compliance with the 2014 draft MS4 permit. We discuss each of the minimum control measures and the costs associated with them on a town-by-town basis in the sections below. To complete the analysis we created a system of charts and created estimations with the assistance of Frederick Civian. The charts detail the costs of each of the requirements of the 2014 draft MS4 permit. There are columns in the charts for information about the control measure, the estimated cost of the specific requirement, the reference number to the MS4 Draft permit, and a justification for our estimation. Within the charts, and this section, we use three different frequencies of costs to describe when costs are applicable: annual, one-time, and intermittent.

Annual costs are costs that the towns will have to spend every year to maintain compliance, such as submitting an annual report, and yearly street sweeping. One-time costs include costs that towns have to pay for only once either in the beginning of the permit term or at some point during the permit term. One-time costs include mapping outfalls, submitting a notice of intent, and labeling outfalls. Finally, intermittent costs are costs that occur inconsistently, such as removing an illicit discharge. Appendices A, B, and C contain the completed cost sheets for Southbridge, Holden, and Millbury.

4.3.1 Future Public Education and Outreach Cost

In the 2014 MS4 Draft permit, requirements for the Public Education minimum control measure have increased. Specifically, in addition to the 2003 MS4 permit Public Education

requirements, the 2014 MS4 Draft permit requires towns to measure the effectiveness of their messages, such as educational materials released to the municipality public. Lawrence Pistrang, Environmental Analyst with the Wachusett Watershed DCR, explained that it will cost towns approximately $8,820 to comply with the measuring effectiveness requirement under this control measure. In both Holden and Millbury, the additional cost of assessing the effectiveness of Public Education control measure would increase their cost by over eight times what they spend currently in this control measure. The increase in cost for would amount to double the town's present expenditures on Public Education. The Public Education minimum control measure has small low-cost administrative tasks, but the bulk of the cost comes from continuing the education efforts and adding an evaluative component to the program.

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$19,242	$0	$0
Holden	$9,908	$0	$0
Millbury	$12,106	$0	$0

Table 10: Estimated Public Education Costs

Table 10 shows the cost of compliance of each of the towns, and as we can infer from the values present in the table, the annual costs have increased by 75.2% for Southbridge, 890% for Holden, and 2003% for Millbury. To save money on this control measure, the towns can reuse education materials that already exist within the town or the CMRSWC. The towns can also reduce costs by sharing the metrics and tools used to analyze the effectiveness of their education.

By regionalizing, and working with other towns, every town can save money since towns do not have to work complete these minimum control measures on their own.

4.3.2 Future Public Participation Cost

The Public Participation control measure changed little between the 2003 MS4 permit and the 2014 draft MS4 permit. Consequently, the towns will not have to expend any additional costs to maintain compliance with this control measure. Table 11 shows the expected costs of this minimum control measure based on our estimated costs to update and maintain compliance. The costs do not change for any of the towns since the requirements changed only slightly, the changes that did occur were minor administrative tasks such as adding a section in the annual report, which describes this control measure, and requiring that towns comply with public notice requirements outside of the MS4 permit.

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$0	$0	$0
Holden	$0	$0	$0
Millbury	$0	$0	$0

Table 11: Estimated Public Participation Costs

4.3.3 Future IDDE Cost

The IDDE control measure of the 2014 MS4 Draft permit represents a large portion of the cost associated with the permit. Much of this cost is due to more stringent requirements, including mapping, outfall sampling, and priority ranking outfalls. These requirements will

generate many material and labor costs, as the towns will have to sample all of their outfalls, while they currently only sample a small fraction of them.

As we show in Table 12, Millbury and Southbridge share similar annual costs on implementing the IDDE control measure of the 2014 draft MS4 permit. However, Holden's cost is much lower. The main reason for this difference is the variation in number of outfalls between

Town	Annual Cost	One-Time Cost	Intermittent Costs	Number of Outfalls
Southbridge	$19,242	$304,006	$50,440	206
Holden	$7,872	$314,494	$50,440	144
Millbury	$11,523	$306,833	$76,730	267

Table 12: Estimated IDDE Costs

the towns. Much of the annual cost for the IDDE control measure is due to the need for the towns to sample all of their outfalls. Southbridge and Millbury have 206 and 267 outfalls respectively, while Holden only has 144 outfalls.

The one-time cost of implementing the IDDE control measure is similar between our three subject towns. This similarity is because most of the one-time requirements are applicable to all of the towns. For example, all of the towns will be required to update their mapping system, which will cost approximately the same amount for all three towns, as they have a similar number of outfalls to map. The towns will also be required to develop an IDDE ordinance, as well as priority ranking catch basins based on conditions and other factors(US

EPA, 2014a). These requirements are of similar cost as the towns all have a similar number of catch basins, and similar resources from which to develop the ordinance.

The intermittent costs listed are very similar between the towns because many of these intermittent costs are indeterminable at this point. Consequently, for comparison purposes, we operated under the assumption that each town will have to treat one illicit discharge per year. We explain our assumptions in more detail in Appendices D, E, and F.

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$0	$770	$0
Holden	$0	$770	$0
Millbury	$350	$858	$0

Table 13: Estimated Construction Site Costs

4.3.4 Future Construction Site Runoff Cost

As we demonstrate in Table 13, the towns are almost identical in the cost that will be required for them to implement the construction site runoff control measure of the 2014 draft MS4 permit. There is only one annual cost associated with this control measure, which is to continue implementing the construction ordinance from the 2003 MS4 permit. Because of this, the town's only have to spend a minimal amount of funds in maintaining this already-establish construction ordinance. Since Millbury is the only town that actually has to spend money to implement this requirement, they are the only town with a future cost associated with it.

The one-time costs of the construction site runoff control measure are all administrative tasks, which should take a similar amount of labor from each town to implement. There is no intermittent cost associated with implementing this measure in any of the towns, as there is only

one intermittent requirement of this control measure, which is to develop and implement a construction site runoff program. In all of the subject towns, the responsibility of this cost primarily falls on independent contractors working on town projects. We found that every town official we spoke informed us that when stormwater runoff issues are found on-site, the responsibility for correcting these issues falls to the developer.

4.3.5 Future Post-Construction Costs

The 2014 MS4 Draft permit, contains numerous additional requirements for the post-construction site runoff minimum control measure. Some of these new requirements include the development, implementation, and enforcement of a post-construction stormwater program for new developments and redevelopments (US EPA, 2014a). Frederick Civian assisted us in analyzing this control measure, and making estimations for the completion of individual items as we demonstrate in Appendices D, E, and F. For the town of Southbridge, we estimated that to implement the requirements of the Post Construction control measure would require an annual cost of $5,280, as we show in Table 14. This cost is joined by a $1,496 cost to update from 2003 MS4 requirements, and an

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$5,280	$1,496	$7,436
Holden	$5,280	$1,496	$7,436
Millbury	$5,280	$1,496	$7,480

Table 14: Estimated Post Construction Costs

estimated $7,436 in intermittent costs as we show in Table 14. We have estimated that Holden will need to pay $5,280 annually, $1,496 in one-time costs, and $7,436 in intermittent costs as we illustrate in Table 14. We estimate our third town, Millbury, will need to pay $5,280 annually, $1496 in one-time costs, and $7,436 in intermittent costs as we show in Table 14. These are all estimated costs that each town should expect to pay, but they may be different depending on how the town plans to implement it. For example, Millbury could expect to reduce its costs by following its current grant funding system. If Millbury imparts these costs onto developers funded by grants, they will be significantly lower (Rob McNeil, 2014). Similarly, if Holden utilizes DCR services; they may be able to forgo some of these costs as well (Robert Lowell, 2014). This section needs some additional detail so we understand where each of the separate costs is coming from.

4.3.6 Future Good Housekeeping Costs

In the new 2014 draft MS4 permit, the Pollution Prevention and Good Housekeeping control measures represent an on average 20% increase in annual costs in comparison to the 2003 MS4 permit cost of compliance. This is because there are many new and specific requirements for this draft permit, where municipalities have to be far more specific in their practices to comply with the permit. We based these cost on our estimates provided in part by Mr. Civian.

We have estimated that the town of Southbridge will have an annual Good Housekeeping cost of $283,458, a onetime cost of $6,292, and an intermittent cost of $0 as illustrated in Table 15. The town of Holden will need to expend an estimated $220,562 annually, as well as $6,292 in one-time costs, but similarly to Southbridge, Holden will have $0 in intermittent costs as

illustrated in Table 15. We have estimated that the town of Millbury will need to pay an annual cost of $693,578, a one-time cost of $6, 292, and no intermittent cost we illustrate in Table 15.

We deduce these costs based on what the towns currently expend in good housekeeping compliance for the 2003 MS4 permit. The 2003 MS4 permit costs, shown in Table 7, represent the current costs for compliance for the subject towns. In the case of annual costs, the largest contributors for this value in each town were their current snow and ice road management. This is a requirement that the USEPA did not update from the 2003 MS4 permit to the 2014 MS4 permit draft.

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$283,458	$6,292	$0
Holden	$220,562	$6,292	$0
Millbury	$693,578	$6,292	$0

Table 15: Estimated Good Housekeeping Costs

The annual cost for Millbury is an estimated 275% increase from the average cost of Holden and Southbridge As mentioned earlier in Section 2.4.7, such a large deviation should not come as a surprise. After being interviewed, DPW Director for Millbury Rob McNeil provided us with the costs of salt, the largest contributor to this control measure cost as seen in Appendix F, in the 2014 Fiscal Year.

4.3.7 Total Future Cost Comparison

Beyond the cost of compliance with each of the control measures, there are many miscellaneous requirements that are located elsewhere in the permit. These requirements include: the submission of a notice of intent, total maximum daily load requirements, and the development of a stormwater management program. These costs are difficult to estimate, as some of them have not been performed before (such as meeting Total Maximum Daily Load requirements), and are not implemented as numbers in our cost sheets located in Appendices A (Southbridge 2003 Cost Analysis), B (Holden 2003 Cost Analysis), and C (Millbury 2003 Cost Analysis). The annual miscellaneous costs in each individual town are $15,168, $2,376 in one-time costs and $0 in intermittent costs we illustrate in Table 16 and Appendices A, B, and C. When all of the values in Tables 10 through 15 of this chapter have been summed up in Table 17, we estimate Southbridge's annual cost of compliance with the 2014 Draft MS4 permit to be $343,008 per year. We have also estimated their one-time cost for the 2014 MS4 permit to be $314,940, which we included in Table 17. In terms of intermittent costs, we expect the towns of Southbridge and Holden to have to pay $57,876 per year as we illustrate in Table 17. We estimate the town of Millbury to need to pay $84,210, as indicated in Table 17. In the Town of Holden, their annual costs are $258,790, their one-time costs are $325,428, and their

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$15,168	$2,376	$0
Holden	$15,168	$2,376	$0
Millbury	$15,168	$2,376	$0

Table 16: Estimated Miscellaneous Costs

intermittent costs are $57,876 as we include in Table 17. In the Town of Millbury, we expect the annual costs to total $753,173, their one-time costs to total $320,231, and their intermittent costs to total $84,210 per year, as illustrated in Table 17. These costs reflect the current stormwater management programs in each town that will continue, as well as a multitude of new requirements. We calculated these cost estimates in direct collaboration with Frederick Civian.

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$343,008	$314,940	$57,876
Holden	$258,790	$325,428	$57,876
Millbury	$753,173	$320,231	$84,210

Table 17: Estimated Total Costs

5.0 Findings and Recommendations

5.1 Introduction

Having completed our goals, objectives, and cost analysis, we were able to develop many findings and recommendations for the towns of Southbridge, Holden, and Millbury, Massachusetts, the Central Massachusetts Regional Stormwater Coalition (CMRSWC), and other Massachusetts towns. In this chapter, we discuss the results of our research and recommendations for the CMRSWC and the towns so they can be adequately prepared for the 2014 Municipal Separate Storm Sewer System (MS4) draft permit. Our findings detail the cost of implementing the 2014 draft MS4 permit, as well as the difficulties associated with implementing the draft permit in our subject towns. Despite our rigorous methods, our research may not have revealed all potential costs of compliance with the new draft permit. Therefore, the towns should read our cost analysis as an estimate guideline or starting point. We believe, however, that our findings will be accurate and can help our towns effectively implement the 2014 draft MS4 permit.

5.2 Finding 1: The 2014 MS4 permit may cost too much for the towns to effectively implement

Southbridge, Holden, and Millbury, Massachusetts all struggle to finance elements of their stormwater management programs. Currently, Southbridge spends an estimated $ 326,118 annually on their stormwater programs. Comparatively, the towns of Holden and Millbury spend approximately $150,232 and approximately $647,475 respectively on their annual stormwater budgets. We have compiled these reports from information that individual town representatives have provided us as well as our own observations. We also obtained financial information from town archives, such as 2014 annual stormwater reports from each town. In order to ensure the validity of each wage, capital cost, and reoccurring cost, we obtained each value from

representatives of their respective towns. In cases where we could not find specific details, we translated financial estimates for certain services and programs from one town to another and checked the numbers with Frederick Civian, Stormwater Coordinator for the Commonwealth of Massachusetts.

Based on the reports that each town has provided us, each of our subject towns are experiencing difficulties in meeting these requirements, both financially, and with enough workers. Heather Blakeley, the Director of the Southbridge Department of Public Works (DPW), has expressed concern for the town's ability to fund its stormwater management program. Southbridge is running into difficulty with Proposition 2.5, which prevents towns from increasing taxes by more than 2.5% per year, and citizens can vote to reject an increase in taxes. This issue makes compliance with new MS4 requirements more difficult (Heather Blakely, 2014). Based on our interview, Southbridge is especially concerned with the lack of available labor. There are a large number of new requirements in the current MS4 Draft permit, and Southbridge does not have the dedicated labor force to tackle so many new programs (Heather Blakely, 2014).

John Woodsmall, the Director of the DPW in Holden, has expressed similar concerns. He has stated, "A lot of it depends on what the final format of the permit will be, and what the magnitude is in the increase in costs. We're able to absorb some but not too much generally. If it's substantial then that's going to be a real concern." (John Woodsmall, 2014).
Millbury's DPW director Robert McNeil has also indicated a similar situation. He said, "Particularly since it's still in draft form, we have not made any effort to determine the cost of the changes. So I think part of this whole effort, the hope is to work through that. Either [our IQP team] Figure out where the gap is, or what's changing, or work through the [CMRSWC] to

determine what those costs are" (Robert McNeil, 2014). Mr. McNeil also stated in our interview that of all the preparations, funding lacks the most assistance, even though funding is the backbone for the whole system.

After collecting financial data from each town, we were able to create a cost estimate for each town's stormwater management costs as we show in the Finding 1. These cost estimates represent their total costs of compliance with the 2003 MS4 based on currently available information. We were able to contact representatives in the Massachusetts Department of Conservation and Recreation (DCR) during our project. We interviewed Robert Lowell, Stormwater Manager for the DCR, and Lawrence Pistrang, Environmental Analyst for the DCR. They were able to provide us with cost estimates for educational programs, as well as guidelines for estimating the costs of certain requirements. With these resources, we were able to construct a separate cost estimation of complying with the 2014 MS4 Draft permit for Southbridge, Holden, and Millbury. Appendix H contains the blank cost sheets, Appendix D for contains the completed sheets for Southbridge, Appendix E contains the completed sheets for Holden, and Appendix F for Millbury. In total, we expect an annual cost increase of 28% for Southbridge, 39% for Holden, and 30% for Millbury. These costs do not take into account the one-time costs for each town to update mapping systems, ordinances, and other one-time programs. Based on these increases in cost and the current state of the stormwater management programs in each town, we believe that the requirements in the 2014 MS4 Draft permit may cost too much for towns to effectively implement.

5.3 Recommendation 1: Effective regionalization will allow towns to better implement their stormwater management programs

If towns can regionalize their stormwater management programs, they will be able to implement the 2014 MS4 permit more effectively and at a lower cost. In our findings, we have

determined that towns can more effectively manage and fund their stormwater programs if they are part of a regional organization. In our study, the CMRSWC unified 30 towns by providing them an effective and centralized stormwater management resource. With the CMRSWC, the members do not have to produce many of the materials required under the 2014 MS4 Draft permit. Our project did not involve municipalities that were not part of a Coalition. Based on our interviews with DCR representatives and Massachusetts Stormwater Coordinator Frederick Civian, a municipality not part of a regional organization would need to expend an excess of $9,433 to develop these materials in house or hire a contractor. We discuss the benefits of regionalization further in finding 4 and recommendation 4.

5.4 Finding 2: Using innovative funding techniques can help the towns spend less from their general fund on stormwater management

With the new draft permit having so many new requirements, towns will have to use innovative funding techniques such as grants, stormwater taxes, or stormwater utilities to fund all of the necessary changes. When funding large construction projects, towns look outside of the town for assistance. Many towns, however, do not look for additional funding outside of their town for stormwater management. When we interviewed the directors of the DPW in Southbridge and Holden, Heather Blakely and John Woodsmall respectively, both said that they have a line item in the town's general fund that funds the stormwater management program. In addition, when we asked how they planned to fund the required changes, both said they would just seek additional funding from the town. However, our other subject town Millbury did not use the same funding strategy as Southbridge and Holden. Millbury uses a unique method of partially funding their stormwater management, which we learned about when we spoke with the Millbury's DPW director Robert McNeil.

As all towns do, Millbury has contractors bid for projects within the town, such as replacing pipes, building new municipal buildings, and repairing municipal buildings. As a part of this system, Millbury asks some of the contractors to write grant requests for the town. If the town gets the grant, then the town gives the project to the contractor. This is an innovative way for both the town and the contractor to benefit; the town has the project completed with all of, or some of the grant money, and the contractor gets the contract. Innovative ways of funding stormwater management are becoming increasingly necessary, as the Community Innovation Challenge (CIC) grant continues to decrease the amount of funds that the CMRSWC receives.

The CIC grant is an innovative way to get community projects off the ground, but the state government established the grant program to start the projects, not sustain the projects, so every year the funding decreases. The CMRSWC is in its 3rd year of CIC funding, and the funding decreased by 62.9% in the first year and 30.4% in the second year. Therefore, the Coalition should explore other ways to fund their efforts. The CMRSWC member towns help the CMRSWC continue to operate by contributing annual dues. Some towns in the CMRSWC are considering implementing a stormwater tax or a stormwater utility, and in some cases that will be necessary. However, by using innovative funding methods, towns can minimize the amount that their residents have to pay for these measures.

5.5 Recommendation 2: The towns should seek alternative sources of funding such as additional grants beyond the CIC

As we mentioned in Finding 2, towns should start to seek new ways of funding stormwater management. When the United States Environmental Protection Agency (USEPA) releases a new MS4 permit, towns are going to have to find ways to fund the permit, and their current method of funding stormwater management through the general fund can only work for a limited amount of time. Some towns in the CMRSWC have talked about implementing a

stormwater tax, but according to Southbridge's DPW director Heather Blakeley, town residents will be hesitant to vote for this tax. This reservation may be due to the citizens' lack of information of the need for and importance of stormwater management. Another method for funding the necessary changes to stormwater management is to create a stormwater utility. This is most likely the best option for many towns, since it is a small increase in cost to the property owners: $11 per single-family household or some similar number. Gathering this money from all of the properties in the town would significantly help towns pay for stormwater management (USEPA, 2009). The stormwater utility allows the town to gather funding based on a factor such as impervious surface or total area, or just a flat rate. A utility would also not have to through the town approval process, so it may be easier for towns to implement.

As we mentioned in Finding 2, Millbury has contractors look for grants that the town could apply for and has the contractors do the application for the town as part of bidding for a project. This way, the towns can source funding for stormwater management outside of their town with little effort, according to Robert McNeil. When we interviewed Mr. McNeil, he told us that the contractor does almost all of the work in this process, which means that even if the town does not get the grant they did not spend much time and money applying for it. The contractor does most of the actual work and it pays off for them if they can manage to get the grant for the town, since the town is much more willing to fund the project with grant money.

A few examples of grants the towns could apply for is the 604(b) grant from the Massachusetts Department of Environmental Protection (MassDEP), Wastewater grants from the Massachusetts Environmental and Energy Agency (MassEEA), and River Revitalization Grants from the Massachusetts Department of Fish and Game (MassDFG). The 604(b) grant program through the MassDEP serves to help towns determine issues in their current stormwater

management systems. The River Revitalization grant from the MassDFG directs the grant at towns for revitalizing rivers in the towns. The towns should apply for funding as quickly as possible before these funds go away. The Coalition should also lobby for additional future funding from the USEPA and the MassDEP

5.6 Finding 3: Using innovative stormwater management techniques can help towns save money and thus implement the MS4 permit more effectively

Millbury utilizes many innovative methods of stormwater management, which helps them save money in implementing the MS4 permit. During our interview with Millbury's DPW director Robert McNeil, we learned about many of these innovative techniques. Millbury has begun the process of removing sump pump lines from their sewer system and directing them into the stormwater system. The town initiated this process in order to prevent combined sewer overflows (CSOs). In anticipation of the increased flow volume from this project, Millbury has begun installing larger drainpipes. These pipes are much larger than they need to be to handle the flow volume from the current project. The town has installed these larger pipes in case they ever decide to tie more discharges into the stormwater system. If Millbury had installed pipes that were only of adequate size to handle the flow volume from the current project, then they would need to perform additional construction if they ever decided to tie more discharges into the stormwater system. Since Millbury has installed these larger pipes, they have eliminated the need to perform additional construction in the event that they decide to increase the flow volume through the stormwater system. Therefore, by anticipating the need for future construction, Millbury will save money over time, thus reducing their costs for stormwater management.

Millbury also saves money by performing innovative public participation programs. The town promoted an art contest to raise awareness of stormwater management in both their middle school and high school. The middle school art contest involved the entire 5^{th} and 6^{th} grade classes

in Millbury's public schools. The high school art contest targeted about 25 students (Rob McNeil, 2014). However, Mr. McNeil expressed interest in targeting the entire high school, which holds students from 7th through 12th grades, in the future. The town rewarded some of the students by allowing them to paint their artwork on the town's snowplows. The art contest was an effective way to target a large number of people. In addition, the contest only involved about four hours of labor from the town DPW. By keeping the cost of fulfilling the public participation control measure low, the town can focus more of their monetary resources on implementing the Illicit Discharge Detection and Elimination (IDDE) control measure, anticipated to be the most costly requirement of the 2014 draft permit.

5.7 Recommendation 3: The towns should strive to utilize innovative stormwater management techniques

As we have discussed in finding 3, the towns can save money by using innovative stormwater management techniques. The 2014 draft MS4 permit allows for a degree of creativity when designing BMPs. The permit allows the permittee to add a Best Management Practice (BMP) to their Stormwater Management Program (SWMP) at any time. If the towns strive to generate creative ideas, they may end up creating a new BMP, which is far more effective than any BMP, which is currently in use. Therefore, generating innovative ideas can be a tremendously helpful way to reduce the cost of implementing the 2014 draft MS4 permit.

5.8 Finding 4: Towns that communicate with other towns, even to a small extent, can more effectively manage and fund their stormwater management programs

In gathering data for our financial report, we have found that there is a lack of communication and sharing of information between towns to improve their stormwater management programs. Within the municipalities of the CMRSWC, there is a group called the Steering Committee, which meets on a monthly basis to discuss stormwater management within their municipalities. During our IQP term, we were able to attend two of these meetings, and in

both of these meetings, we noted the attendance of DPW Director for Millbury, Robert McNeil, DPW Director for Holden, John Woodsmall, and Town Engineer from Holden, Isabel McCauley. In addition, we noted the attendance of ten other members. These members represented other towns within the Coalition, and from the roster of attendees, we noted representatives from Auburn, Leicester, Millbury, Northborough, Shrewsbury, and Spencer. Of the thirty towns in the CMRSWC, only about 25% of towns were represented. Although there are many new members to the CMRSWC, this still represents a low level of communication between towns on this topic, even among towns that are members of a dedicated stormwater coalition. Despite this, the collaboration within the CMRSWC has benefitted all members. Based on our cost analysis efforts seen in Appendices D, E, and F, towns can save approximately $9,433, not including the thousands in a Global Positioning System (GPS) mapping tools such as a Leica, in the implementation of the new permit as members of the CMRSWC.

In our meetings with representatives within the towns of Millbury and Southbridge, we have found that some cost-saving practices of one town may not appear in another. For example, Southbridge prints and mails all of their public education materials, but Millbury uses digital materials from the CMRSWC. Using the materials from the CMRSWC and digitally distributing them, Millbury saves the $6,500 that Southbridge spends on postage. Millbury also has undertaken a way to gather grant funding that was unique among our subject towns the municipalities. Even though both of these towns are part of the CMRSWC, they were unaware of these cost saving techniques that they could apply to their own stormwater management programs.

In working with these towns in the CMRSWC, we have found that even though they do not always communicate their own techniques, they are able to save money through CMRSWC

membership. There are some requirements within the 2014 MS4 draft that require significant investment within a town, but other requirements that will have little or no financial cost. We found this particularly evident in the Public Education minimum control measure. This control measure requires information materials, such as pamphlets, brochures, or information on a website. Additionally, there are requirements such as a sump pump discharge policy, a municipal Stormwater Pollution Prevention Plan (SWPPP), and various ordinances that do not necessarily need to be uniquely tailored to every municipality. The CMRWSC has templates for these materials, and municipalities can save money by using these materials provided as opposed to developing their own.

5.9 Recommendation 4: Regionalization can help towns save money by sharing information and resources.

The CMRSWC is a great example of towns working together to help each other with stormwater management. Not every town needs to join the same coalition, but towns should form coalitions with neighboring towns to share knowledge and tools. The small $4,000 cost of membership to the CMRSWC more than covers the amount that the towns would normally spend on consultants, testing kits, mapping tools, and educational messages. All towns have to map their MS4 system and test their outfalls. This mapping does not have to happen every year, so a single town buying this equipment would be highly inefficient. Additionally, having to purchase water quality testing kits individually would also be a financial burden, based on the seven different factors to test for in the 2014 MS4 permit draft (US EPA, 2014a).

In the CMRSWC, there are monthly steering committee meetings where members talk about current issue in stormwater management as well as issues that they are facing in their town. This is a great place for the person who is in charge of stormwater to learn more from their peers and discuss the current methods of stormwater management. Towns looking to form their

own coalition should look to the CMRSWC as a model or if they are in the region, they should look into joining the CMRSWC.

5.10 Finding 5: In each of our subject towns, stormwater management information was divided amongst different departments

Since the USEPA released the 2014 draft MS4 permit, the towns recognized the increased importance of updating their stormwater management programs. However, some towns struggle to find all of their stormwater management data. Neither Millbury, Southbridge, nor Holden had a centralized source of stormwater management information. In Southbridge, Heather Blakeley knew some of the general costs of stormwater management, but had to send us to Ken Pickerin for information on the conservation commission and to the fire chief Mark DiFronzo for information on hazardous waste removal. Mr. Pickerin and Mr. DiFronzo both dealt with stormwater management indirectly, which led to some confusion as to what information we needed from them. In Holden, we spoke with Isabel McCauley and John Woodsmall, both of whom were knowledgeable on the stormwater management relating to their jobs, but had to send us to town planner Pamela Harding for information on the conservation commission. In our towns, we eventually received the data that we needed, but always after talking with many different people and looking at many different cost sheets. The people we interviewed were often located between different departments in the town.

In Millbury when we interviewed the director of the DPW, Robert McNeil, he had to check for some of the stormwater data, given that he is in charge of the whole department and there is not a single place for that information. However, the numbers he provided to us were from all from different parts of the town's records, which was the case for all three of our subject towns. Many requirements of the 2003 MS4 permit are likely to be performed by multiple departments, such as ordinance creation and street sweeping being two completely different

programs requiring completely different personnel. For all three of our subject towns, these records were not located in a single place, because the required tasks of stormwater management were handled by multiple departments.

5.11 Recommendation 5: Having a central source of stormwater management would allow for easier implementation of future MS4 permits and make continuous compliance easier for the towns.

Based on our previous finding, having a single person in charge of stormwater management, for example, a stormwater coordinator, would make compliance much easier for towns. According to the Department of Conservation and Recreation's (DCR) Stormwater Coordinator Robert Lowell, the USEPA classifies the Wachusett Watershed as a non-traditional MS4 system. Therefore, looking at the Wachusett Watershed DCR for stormwater management is not too different from looking at a town; there are just some different requirements. When interviewing Mr. Lowell, he was able to access information easily because of his position. Since Mr. Lowell is in charge of stormwater management for the Wachusett Watershed DCR, he had intimate knowledge of how many of the requirements the DCR are meeting and what their plans were for the future with the new 2014 draft MS4 permit. If towns were able to replicate what the Wachusett Watershed DCR does with a stormwater manager, then they would be in a much better position for the any future MS4 permits. We recommend that towns research the feasibility of either creating a full-time position to manage stormwater, or make it part of an already-existing position within the municipality. We realize that small towns may not be able to afford this option, and we suggest some towns research the potential of Regional Stormwater Coordinators. These could be Stormwater Managers for multiple municipalities, whose wages are paid in part by each municipality the manage stormwater for. This option may allow smaller

municipalities to be able to consolidate their stormwater management information within their municipal budget.

5.12 Finding 6: The IDDE control measure will be a significant contributor to the increase in cost between the 2003 and 2014 draft MS4 permits

The IDDE control measure of the 2014 draft MS4 permit will cause a significant increase in the cost of implementation in onetime costs. When researching the permits, we found that the IDDE control measure is much longer and has many more requirements in the 2014 draft MS4 permit than in the 2003 MS4 permit. These more stringent requirements will cause a significant increase in the cost of compliance with the MS4 permit, as we illustrate in Table 18. For example, the town of Southbridge should anticipate a large increase in the cost of testing their outfalls. Southbridge has 206 outfalls. In the 2014 fiscal year, they sampled 25 outfalls. Under the 2003 permit, this effort is enough to fulfill the permit requirements. However, the 2014 draft MS4 permit requires each town to sample all of their outfalls, which will result in an eightfold increase in cost for the town. Many of the other permittees will likely face the same challenge as Southbridge and have to increase their sampling work. Massachusetts's towns should anticipate much higher costs in order to fulfill the new requirements of the IDDE measure.

Town	2003	2014 Draft
Southbridge	$3,520	$7,872
Holden	$4,678	$11,523
Millbury	$2,452	$19,242

Table 18: Annual Cost Comparison of IDDE

5.13 Recommendation 6: The CMRSWC should have one person in charge of keeping track of and maintaining the field sampling kits.

One issue that we often faced during our project was with the field sampling kits. The kits often had disorganized and expired components. For example, there was one day we could not run the ammonia test in the field because of expired components. If town workers discover expired components while they sample in the field, this would delay their opportunity to run the test. The workers would have to take the time to find new components and return to their sampling locations. This delay would raise the labor costs for the towns. It was also difficult to find some of the kits. There was one day we had to travel to Oxford in order to find the Total Dissolved Solids (TDS) meter and the Turbidity test. As we discuss in finding 6, the condition of the sampling kits often made it difficult to perform the tests in the field. The kits often had expired components or were in many different locations. If one person was in charge of tracking and maintaining the kits, the CMRSWC would save time trying to find kits and would not have to perform repeat sampling days at outfalls. Therefore, having one person in charge of the kits will save the CMRSWC money.

5.14 Finding 7: The current Asus tablet in use by the CMRSWC is slow and ineffective

When we were in Holden doing outfall testing, we used the tablet from the CMRSWC, which towns use for mapping and data collection. The tablet was not able to connect to the Internet without Wi-Fi, which made it difficult to use in the field. The current solution to that issue is to have an AT&T wireless hotspot to create a mobile hotspot for the tablet. This was not always reliable since the mobile hot spot could be lost or be out of range of the tablet.

The next issue that we learned about with the tablet system was the software. According to Isabel McCauley, Holden's Town Engineer, the software was slow on the tablet and was hard

for the DPW workers to use. When we used the CMRSWC tools on the tablet in the field, we saw this delay. However, when we tried the same tools on one of our smart phones, an iPhone 5, the tools worked smoothly. The screen of the iPhone was smaller than that of the tablet, but the CMRSWC's software was clearly not the issue, the issue was with the tablet.

5.15 Recommendation 7: The towns should use software, which can collect data offline and then upload it to an online database later, as well as a tablet, which is more up to date. This would allow the DPW workers to work more efficiently, thus saving the town labor costs

There are many issues with using the current CMRSWC tablet. Sometimes there just is no cellular signal, which a new tablet could help with, but not be able to completely fix. For this issue, we recommend that the CMRSWC develop an offline mode for the tablet so that anyone using the tablet can collect data and save it so that when the tablet can connect to the network, either via Wi-Fi or via a cellular network, the tablet can upload any data it saved while in offline mode.

Since the tablet is almost three years old, and there are new tablets that would work better, we recommend that the CMRSWC buy a new tablet on which to use their software. Buying a tablet would decrease the amount of time that anyone using the tablet has to wait for loading and reloading when the tools crash. There are tablets that have built-in cell signal receptors, which may be better so the hot spot is not lost and there is a better signal. The combination of the mobile hotspot and the older tablet causes unnecessary frustration and loss of time. When buying the new tablet, the CMRSWC should invest in model that will be durable and will function well over time and with many different users.

For this purpose, we recommend that the CMRSWC purchase a low-end Apple iPad, since they run much better and have a much better life span compared to an Asus tablet. A low-end iPad would cost about $530 for the lowest end full iPad with a diagonal screen size of 9.7in.

A cheaper option is an iPad Mini, which costs $380 with a diagonal screen size of 7.87in. Either of those options would easily out-perform the current Asus tablet. The Asus tablet costs about $250 with a screen size of about 7in and lasted probably two good years. With either iPad they would continue to function well into four years after they are purchased. While working on the current Asus tablet, we lost about four minutes per outfall having to wait for pages to load and reloading pages. If a town is paying a DPW employee $22/hour to use this tablet and they lose four minutes per outfall, they are losing about $2 per outfall. Since the town has to go to each outfall for some of the new requirements approximating 145 outfalls a town, the town is losing $290 due to the cost of the inadequate technology. Just in that savings from one town, the CMRSCW is making the money back in timesaving, especially since the CMRSWC distributes the tablet to many different towns.

5.16 Other Recommendations

5.16.1 The Massachusetts Department of Environmental Protection should research the potential of providing standardized materials available to Massachusetts municipalities

Based on our findings, we believe the MassDEP should consider making available a collection of materials that municipalities could use for their permit compliance when administering the new 2014 MS4 permit. Within the requirements of the 2014 draft MS4 permit, there are many line items that municipalities must develop and implement. These materials primarily consist of those in the Public Education and Public Involvement control measures, such as pamphlets, brochures, and public notices. Beyond these two control measures there are still a number of material requirements, including Stormwater Pollution Prevention Plans (SWPPPs), outfall-screening procedures, and construction site stormwater plans. These materials will require a significant investment from municipalities to implement (See Appendices D, E, and F for cost estimations in our subject towns). In one case, Mr. Lowell provided our team with a high-end

cost estimate for complying with the Public Education requirement. Based on the requirements of the current MS4 Draft permit, a high-end public education program for a town of approximately 17,000 individuals costs an estimated $19,787 annually (Robert Lowell, 2014). This cost can be different, depending on how the municipality chooses to implement certain requirements. Some towns like Millbury are working to abolish paper materials completely (Robert McNeil, 2014). In regards to the Central Massachusetts Regional Stormwater Coalition (CMRSWC), these materials are made by the CMRSWC for its member municipalities, and are available as part of the paid membership to the CMRSWC. Beyond this Coalition, there is also the Massachusetts Watershed Coalition. Formed in 1991, this Coalition works with community partners across Massachusetts in order to protect and restore watershed ecosystems across the state (Coalition, 2014). As part of its goal, the Mass Watershed Coalition also provides information and other services relating to stormwater to many communities in the state (Coalition, 2014). In the 2014 MS4 Draft permit, Most of the requirements are not specific to individual municipalities. The USEPA made the MS4 permit to be applicable to many different municipalities, and the materials that are required are similarly nonspecific to any municipality. With special attention paid to the success of Coalitions distributing materials, it may be highly beneficial for the MassDEP to develop certain materials in-house, as opposed to municipalities developing them themselves. These would be materials like standard operating procedures, ordinances, and other administrative tools that are required under the 2014 draft permit. The MassDEP should certainly not force municipalities to use these materials, but the materials should be available in electronic and physical forms. Even if only a few towns make use of these materials, they could potentially save tens of thousands of dollars.

5.16.2 The CMRSWC should streamline and update the digital forms. This practice would reduce the time needed to inspect outfalls, thus saving money

While we performed outfall sampling in Holden, we completed wet and dry weather sampling forms. We spent roughly ten minutes per outfall in order to complete these forms. As noted by Matthew St. Pierre of Tata & Howard, these forms have many additional categories. These categories include test results for pollutants that are not regulated by the MS4 permit. It is worth noting that, by having categories that go beyond the regulations of the MS4 permit, the CMRSWC can create a cleaner and less polluted environment. The detail of these forms illustrates the CMRSWC's admirable commitment to protecting the environment. However, the cost of implementing the 2014 draft MS4 permit is significant, and will likely strain many towns' budgets. If the CMRSWC updates these forms and removes the categories unrelated to the draft MS4 permit, it will save the town workers time, and thus streamline the process of outfall sampling. These times savings will also save the towns labor costs.

The CMRSWC should also utilize these updated forms on their digital system. Digital sampling forms are easy to upload to a database or the CMRSWC's website. When we were performing field work in Holden, Ms. McCauley demonstrated how to complete the dry and wet weather sampling forms on the CMRSWC tablet and then upload them to the CMRSWC website. Having a database of these forms makes it easy to see trends in pollution, both within a single town, and between towns, which have shared watersheds. Therefore, the database makes it much easier to perform outfall sampling and inspections, thus saving money. A previous IQP group detailed the efficiency of uploading digital forms to the People GIS database using the Leica tablet. This process circumvented the need to submit the forms outside of the field, and also prevented municipal employees from making repeated trips to outfalls in order to inspect

them (Barat, Chin, & Feraco, 2012). Therefore, the use of a digital database makes sampling and inspection easier and more efficient.

5.16.3 Recommendations for Future Research

In the future, we recommend project groups perform an assessment of the cost of implementing Total Maximum Daily Load (TMDL) measures. According to Frederick Civian, the cost of implementing TMDL measures could be overwhelmingly significant for the towns. Although not much research has been done on TMDL, the USEPA has shown the extent of these costs. The USEPA estimated the cost of implementing TMDL requirements in Bellingham, Franklin, and Milford Massachusetts at $23,595,000, $62,810,000, and $67,363,000, respectively (Group, 2011). A proper assessment of these costs could prove to be valuable to the USEPA, as well as the towns, in the future.

We also recommend future project groups attempt to fill the gaps in our research. We received most of our data from the town officials, with few outside sources except for the DCR. We attempted to contact Environmental Partners Group for information about Holden, but we were unable to reach them. In addition, we had to estimate many of our costs. These factors made our cost numbers difficult to verify as being accurate. Because of this lack of verification, some of our data could have resulted in bias. We recommend that future research groups find a method to eliminate some of the biases in our data, such as by finding budget data from multiple sources.

6.0 Conclusion

Stormwater runoff is one of the leading contributors to water pollution in the United States. In order to combat this pollution, the United States Environmental Protection Agency

(USEPA) created the Municipal Separate Storm Sewer System (MS4) permit. On September 30, 2014, the USEPA released the 2014 draft MS4 permit. Once the USEPA releases the permit in full, towns throughout Massachusetts will have to comply with it, which will lead to substantial spending increases.

In our cost analysis chapter, we discuss the predicted annual costs of complying with the 2014 draft MS4 permit in our subject towns of Holden, Millbury, and Southbridge. From our cost analysis, we predict an annual cost of implementing the 2014 draft MS4 permit of $258,790 for Holden, $735,629 for Millbury, and $343,008 for Southbridge. These costs represent an increase in the annual cost of implementation from the 2003 MS4 permit of 39% for Holden, 26% for Millbury, and 28% for Southbridge.

These cost increases are significant, and we propose several potential methods for defraying the cost increases of effectively implementing the 2014 Draft MS4 to individual towns. In addition, we recommend that towns reach out to the Massachusetts Department of Environmental Protection (MassDEP) for advice on implementing the permit. In our findings and recommendations chapter, we provide recommendations to towns, and the Central Massachusetts Regional Stormwater Coalition (CMRSWC) for effective implementation of the 2014 draft MS4 permit. Among our most important recommendations, we emphasize the benefits of regionalization, the use of innovative stormwater management and funding techniques, and centralization of stormwater management in each town.

The task of effective stormwater management is daunting. However, by implementing the proper procedures, the towns can plan effectively manage stormwater management, thus protecting human health and the environment.

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Appendix A

Public Education and Outreach	Materials			Consultant	Legal	Staff Labor									Total cost
						Technician/ Equipment Operator		Foreman		Administrative		Director			
	Costs per unit	Multiplier	Total Materials Cost	Total	Total	Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Pamphlets/Brochures to residents	6500	1	$6,500.00											$0.00	$6,500.00
Pamphlets/Brochures to businesses	0		$0.00											$0.00	$0.00
Meetings	0		$0.00											$0.00	$0.00
Poster	0		$0.00											$0.00	$0.00
Video	0		$0.00											$0.00	$0.00
Newspapers	500	1	$500.00											$0.00	$500.00
Signs	0		$0.00											$0.00	$0.00
Broadcasting	0		$0.00											$0.00	$0.00
Develop collection program for hazardous waste	0		$0.00							22	80	40	40	$3,360.00	$3,360.00
Develop school curriculum and distribute to schools	1		$0.00			23	4							$92.00	$92.00
Educational training materials	0		$0.00											$0.00	$0.00
Media campaign	500	1	$500.00											$0.00	$500.00
Website	1		$0.00											$0.00	$0.00
Total															**$10,952.00**

Public Involvement and Participation	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Mark storm drains	0		$0.00											$0.00	$0.00
Stormwater telephone hotline	0		$0.00											$0.00	$0.00
River, stream and pond cleanups	0		$0.00											$0.00	$0.00
Native tree and shrub planting	0		$0.00											$0.00	$0.00
Classroom education program	0		$0.00											$0.00	$0.00
Prepare press releases	0		$0.00											$0.00	$0.00
Develop and implement composting program	0		$0.00											$0.00	$0.00
Coordinate Household Hazardous Waste collection events	1		$0.00											$0.00	$0.00
Form citizen watch groups to identify polluters	0		$0.00											$0.00	$0.00
Educational outreach materials	0		$0.00											$0.00	$0.00
Roadside cleanup day	0		$0.00											$0.00	$0.00
Catch basin stenciling/ medallion installation	0		$0.00											$0.00	$0.00
Poster contest for students	0		$0.00											$0.00	$0.00
Stormwater management committee	0		$0.00											$0.00	$0.00
Trash Removal	1		$0.00											$0.00	$0.00
Public meeting to discuss stormwater management plan	0		$0.00											$0.00	$0.00
Total															**$0.00**

		Materials		Consultant	Legal	Staff Labor									Total cost
IDDE Program	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Outfall mapping (Not Completed yearly)	20000	0	$0.00											$0.00	$0.00
Catch basin mapping (Not completed yearly)	20000	0	$0.00											$0.00	$0.00
Map structural BMPs	0		$0.00											$0.00	$0.00
Illicit discharge prohibition ordinance	0		$0.00											$0.00	$0.00
Incorporate information into public education	0		$0.00											$0.00	$0.00
Identify department to take stormwater calls	0		$0.00											$0.00	$0.00
Develop employee training program to identify discharges	0		$0.00											$0.00	$0.00
Host IDDE communication meeting with other Town Departments	0		$0.00											$0.00	$0.00
Water quality screening with field kits	30	25	$750.00			23	52							$1,196.00	$1,946.00
"Sewage sniffing dogs"	0														
CCTV System (camera and equipment)	0														
Vac truck and equipment	0														
Elimination of identified illicit discharge	0		$0.00											$0.00	$0.00
Bylaw prohibiting non storm water discharges into storm sewer system	0		$0.00											$0.00	$0.00
Program to evaluate and report on cond. after illicit material removed	0		$0.00											$0.00	$0.00
Develop stormwater management program web based GIS system	0		$0.00											$0.00	$0.00
Retention Ponds	1		$0.00											$0.00	$0.00
Disposal of Waste	0		$0.00			23	22							$506.00	$506.00
IDDE plan and implementation activities	0		$0.00											$0.00	$0.00
Total															**$2,452.00**

	Materials			Consultant	Legal	Staff Labor									Total cost
Construction Site Stormwater Runoff Control	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Develop erosion control regulations	0		$0.00											$0.00	$0.00
Conduct inspections for erosion controls	0		$0.00											$0.00	$0.00
Identify department to take stormwater calls	0		$0.00											$0.00	$0.00
Inform public of upcoming projects	0		$0.00											$0.00	$0.00
Develop and implementation site plan review process for sites	0		$0.00											$0.00	$0.00
Implement construction inspection program with fines for violations	0		$0.00											$0.00	$0.00
Develop construction inspection program and inspect	0		$0.00											$0.00	$0.00
Implement pre construction review of SW plan for site	0		$0.00											$0.00	$0.00
Develop and implement erosion and sediment control ordinances	0		$0.00											$0.00	$0.00
Total															**$0.00**

Post Construction Stormwater Management	Materials			Consultant	Legal	Staff Labor									
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Develop BMP regulation	0		$0.00											$0.00	$0.00
Develop and implementation inspection program	0		$0.00											$0.00	$0.00
review existing BMPs	0		$0.00											$0.00	$0.00
Develop inspection program of installed BMPs	0		$0.00											$0.00	$0.00
Zoning	0		$0.00											$0.00	$0.00
Urban forestry	0		$0.00											$0.00	$0.00
Eliminate curbs and gutters	0		$0.00											$0.00	$0.00
Conduct inspections of BMPs within 1st year of operation	0		$0.00											$0.00	$0.00
Develop operation and maintenance procedures for structural BMPs	0		$0.00											$0.00	$0.00
Total															**$0.00**

Good House Keeping and Pollution Prevention	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Clean catch basins	1		$2,500.00			23	672	32.5	120			50	24	$20,556.00	$23,056.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Number of basins cleaned, per year															
Street sweeping	1		$5,000.00			23	1376	32.5	80	22	8	50	24	$35,624.00	$40,624.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Curb miles swept, per year															
Road salt/sand management	150000	1	$150,000.00			23	40	32.5	40					$2,220.00	$152,220.00
Has equipment been calibrated?	yes														
Leaf collection program	1		$2,500.00			23	1280	32.5	64					$31,520.00	$34,020.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Snow removal procedures	1		$0.00					32.5	40			50	40	$3,300.00	$3,300.00
Develop an inspection and maintenance Plan	0		$0.00											$0.00	$0.00
Evaluate alternative vehicle washing options	0		$0.00											$0.00	$0.00
Develop and implement maintenance schedules for BMPs	0		$0.00											$0.00	$0.00
Employee training program	1		$0.00			23	40	32.5	8			50	16	$1,980.00	$1,980.00
Management program for fertilizer and pesticide application	0		$0.00											$0.00	$0.00
Training: fertilizer and pesticide applicators	0		$0.00											$0.00	$0.00
Training: Maintenance and repair for municipal vehicles	0		$0.00											$0.00	$0.00
Sump pump discharge policy	0		$0.00											$0.00	$0.00
Municipal SWPPP	0		$0.00											$0.00	$0.00
Total															**$255,200.00**

Grand Total **$268,604.00**

Appendix B

Public Education and Outreach	Materials			Consultant	Legal	Staff Labor									Total cost
						Technician/ Equipment Operator		Foreman		Administrative		Director			
	Costs per unit	Multiplier	Total Materials Cost	Total	Total	Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Pamphlets/Brochures to residents	500	1	$500.00											$0.00	$500.00
Pamphlets/Brochures to businesses	500	1	$500.00											$0.00	$500.00
Meetings	0		$0.00											$0.00	$0.00
Poster	0		$0.00											$0.00	$0.00
Video	0		$0.00											$0.00	$0.00
Newspapers	0		$0.00											$0.00	$0.00
Signs	0		$0.00											$0.00	$0.00
Broadcasting	0		$0.00											$0.00	$0.00
Develop collection program for hazardous waste	0		$0.00											$0.00	$0.00
Develop school curriculum and distribute to schools	0		$0.00											$0.00	$0.00
Educational training materials	0		$0.00											$0.00	$0.00
Media campaign	0		$0.00											$0.00	$0.00
Website	0		$0.00											$0.00	$0.00
Total															**$1,000.00**

	Materials			Consultant	Legal	Staff Labor									Total cost
Public Involvement and Participation	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Mark storm drains			$0.00											$0.00	$0.00
Stormwater telephone hotline	0		$0.00											$0.00	$0.00
River, stream and pond cleanups	0		$0.00											$0.00	$0.00
Native tree and shrub planting	0		$0.00											$0.00	$0.00
Classroom education program	0		$0.00											$0.00	$0.00
Prepare press releases	0		$0.00											$0.00	$0.00
Develop and implement composting program	0		$0.00											$0.00	$0.00
Coordinate Household Hazardous Waste collection events	0		$0.00											$0.00	$0.00
Form citizen watch groups to identify polluters	0		$0.00											$0.00	$0.00
Educational outreach materials	0		$0.00											$0.00	$0.00
Roadside cleanup day	0		$0.00											$0.00	$0.00
Catch basin stenciling/ medallion installation	0		$0.00											$0.00	$0.00
Poster contest for students	0		$0.00											$0.00	$0.00
Stormwater management committee	0		$0.00											$0.00	$0.00
Public meeting to discuss stormwater management plan	0		$0.00											$0.00	$0.00
Total															**$0.00**

	Materials			Consultant	Legal	Staff Labor									Total cost
IDDE Program	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Outfall mapping	0		$0.00											$0.00	$0.00
Catch basin mapping	0		$0.00											$0.00	$0.00
Map structural BMPs	0		$0.00											$0.00	$0.00
Illicit discharge prohibition ordinance	0		$0.00											$0.00	$0.00
Incorporate information into public education	0		$0.00											$0.00	$0.00
Identify department to take stormwater calls	0		$0.00											$0.00	$0.00
Develop employee training program to identify discharges	0		$0.00											$0.00	$0.00
Host IDDE communication meeting with other Town Departments	0		$0.00											$0.00	$0.00
Water quality screening with field kits	0		$0.00											$0.00	$0.00
"Sewage sniffing dogs"	0		0											0	0
CCTV System (camera and equipment)	0		0											0	0
Vac truck and equipment			0			22	160							3520	3520
Elimination of identified illicit discharge (last done in 2011)	4000	0	$0.00											$0.00	$0.00
Bylaw prohibiting non storm water discharges into storm sewer system	0		$0.00											$0.00	$0.00
Program to evaluate and report on cond. after illicit material removed	0		$0.00											$0.00	$0.00
Develop stormwater management program web based GIS system	0		$0.00											$0.00	$0.00
IDDE plan and implementation activities	0		$0.00											$0.00	$0.00
Total															**$3,520.00**

	Materials			Consultant	Legal	Staff Labor									Total cost
Construction Site Stormwater Runoff Control	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Develop erosion control regulations	0		$0.00											$0.00	$0.00
Conduct inspections for erosion controls	0		$0.00											$0.00	$0.00
Identify department to take stormwater calls	0		$0.00											$0.00	$0.00
Inform public of upcoming projects	0		$0.00											$0.00	$0.00
Develop and implementation site plan review process for sites	0		$0.00											$0.00	$0.00
Implement construction inspection program with fines for violations	0		$0.00											$0.00	$0.00
Develop construction inspection program and inspect	0		$0.00											$0.00	$0.00
Implement pre construction review of SW plan for site	0		$0.00											$0.00	$0.00
Develop and implement erosion and sediment control ordinances	0	1	$0.00											$0.00	$0.00
Total															**$0.00**

Post Construction Stormwater Management	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	
Develop BMP regulation	0		$0.00											$0.00	$0.00
Develop and implementation inspection program	0		$0.00											$0.00	$0.00
review existing BMPs	0		$0.00											$0.00	$0.00
Develop inspection program of installed BMPs	0		$0.00											$0.00	$0.00
Zoning	0		$0.00											$0.00	$0.00
Urban forestry	0		$0.00											$0.00	$0.00
Eliminate curbs and gutters	0		$0.00											$0.00	$0.00
Conduct inspections of BMPs within 1st year of operation	0		$0.00			22	80							$1,760.00	$1,760.00
Develop operation and maintenance procedures for structural BMPs	0		$0.00											$0.00	$0.00
Total															**$1,760.00**

Good House Keeping and Pollution Prevention	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Clean catch basins	0		$0.00			22	320							$7,040.00	$7,040.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Number of basins cleaned, per year															
Street sweeping	0		$0.00			22	480							$10,560.00	$10,560.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Curb miles swept, per year															
Road salt/sand management	150000	1	$150,000.00			23	40	32.5	40					$2,220.00	$152,220.00
Has equipment been calibrated?															
Leaf collection program	0		$0.00											$0.00	$0.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Snow removal procedures	0		$0.00											$0.00	$0.00
Develop an inspection and maintenance Plan	0		$0.00											$0.00	$0.00
Evaluate alternative vehicle washing options	0		$0.00											$0.00	$0.00
Develop and implement maintenance schedules for BMPs	5956.39	1	$5,956.39											$0.00	$5,956.39
Employee training program	0		$0.00											$0.00	$0.00
Management program for fertilizer and pesticide application	0		$0.00											$0.00	$0.00
Training: fertilizer and pesticide applicators	0		$0.00											$0.00	$0.00
Training: Maintenance and repair for municipal vehicles	0		$0.00											$0.00	$0.00
Sump pump discharge policy	0		$0.00											$0.00	$0.00
Municipal SWPPP	0		$0.00											$0.00	$0.00
Audits	4470	1	$4,470.00											$0.00	$4,470.00
Total															**$180,246.39**

Grand Total **$186,526.39**

Appendix C

Public Education and Outreach	Materials			Consultant	Legal	Staff Labor									Total cost
						Technician/ Equipment Operator		Foreman		Administrative		Director			
	Costs per unit	Multiplier	Total Materials Cost	Total	Total	Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Pamphlets/Brochures to residents	0	0	$0.00											$0.00	$0.00
Pamphlets/Brochures to businesses	0	0	$0.00											$0.00	$0.00
Meetings	500	1	$500.00											$0.00	$500.00
Poster	0	0	$0.00											$0.00	$0.00
Video	0	1	$0.00											$0.00	$0.00
Newspapers	0	0	$0.00											$0.00	$0.00
Signs	0	1	$0.00											$0.00	$0.00
Broadcasting	0	1	$0.00											$0.00	$0.00
Develop collection program for hazardous waste	0	1	$0.00							22	3			$66.00	$66.00
Develop school curriculum and distribute to schools	0	0												$0.00	$0.00
Educational training materials	0	1	$0.00											$0.00	$0.00
Media campaign	0	0	$0.00											$0.00	$0.00
Website	0	1	$0.00											$0.00	$0.00
Total															**$566.00**

Public Involvement and Participation	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Mark storm drains	0	1	$0.00											$0.00	$0.00
Stormwater telephone hotline	0	0	$0.00											$0.00	$0.00
River, stream and pond cleanups	0	1	$0.00							0	0			$0.00	$0.00
Native tree and shrub planting	0	0	$0.00											$0.00	$0.00
Classroom education program	0	0	$0.00											$0.00	$0.00
Prepare press releases	0	0	$0.00											$0.00	$0.00
Develop and implement composting program	0	0	$0.00											$0.00	$0.00
Coordinate Household Hazardous Waste collection events	0	0	$0.00							22	3			$66.00	$66.00
Form citizen watch groups to identify polluters	0	0	$0.00											$0.00	$0.00
Educational outreach materials	0	0	$0.00											$0.00	$0.00
Roadside cleanup day	0	1	$0.00											$0.00	$0.00
Catch basin stenciling/ medallion installation	0	1	$0.00											$0.00	$0.00
Poster contest for students	3000	1	$3,000.00							22	8			$176.00	$3,176.00
Stormwater management committee	0	0	$0.00											$0.00	$0.00
Public meeting to discuss stormwater management plan	*0*	*0*	$0.00											$0.00	$0.00
Total															**$3,242.00**

IDDE Program	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Outfall mapping	0	1	$0.00											$0.00	$0.00
Catch basin mapping	0	1	$0.00											$0.00	$0.00
Map structural BMPs	0	1	$0.00											$0.00	$0.00
Illicit discharge prohibition ordinance	0	1	$0.00											$0.00	$0.00
Incorporate information into public education	0	0	$0.00											$0.00	$0.00
Identify department to take stormwater calls	0	0	$0.00											$0.00	$0.00
Develop employee training program to identify discharges	0	1	$0.00											$0.00	$0.00
Host IDDE communication meeting with other Town Departments	0	0	$0.00											$0.00	$0.00
Water quality screening with field kits	0	1	$0.00											$0.00	$0.00
"Sewage sniffing dogs"	0	0													
Elimination of identified illicit discharge	0	1	$0.00											$0.00	$0.00
Bylaw prohibiting non storm water discharges into storm sewer system	1	0	$0.00	2500		22	20			20	20	50	20	$1,840.00	$4,340.00
Program to evaluate and report on cond. after illicit material removed	0	0	$0.00			22	4							$88.00	$88.00
Develop stormwater management program web based GIS system	0	0	$0.00											$0.00	$0.00
IDDE plan and implementation activities	250	1	$250.00											$0.00	$250.00
Total															**$4,678.00**

Construction Site Stormwater Runoff Control	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Develop erosion control regulations	0	1	$0.00											$0.00	$0.00
Conduct inspections for erosion controls	0	1	$0.00	350										$0.00	$350.00
Identify department to take stormwater calls	0		$0.00											$0.00	$0.00
Inform public of upcoming projects	0		$0.00											$0.00	$0.00
Develop and implement site plan review process for sites	0		$0.00											$0.00	$0.00
Implement construction inspection program with fines for violations	0		$0.00											$0.00	$0.00
Develop construction inspection program and inspect	0		$0.00											$0.00	$0.00
Implement pre construction review of SW plan for site	0		$0.00											$0.00	$0.00
Develop and implement erosion and sediment control ordinances	0		$0.00											$0.00	$0.00
Total															**$350.00**

Post Construction Stormwater Management	Materials			Consultant	Legal	Staff Labor									
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Develop BMP regulation	0	1	$0.00											$0.00	$0.00
Develop and implementation inspection program			$0.00											$0.00	$0.00
review existing BMPs			$0.00											$0.00	$0.00
Develop inspection program of installed BMPs	0	1	$0.00											$0.00	$0.00
Zoning			$0.00											$0.00	$0.00
Urban forestry			$0.00											$0.00	$0.00
Eliminate curbs and gutters			$0.00											$0.00	$0.00
Conduct inspections of BMPs within 1st year of operation	0	1	$0.00											$0.00	$0.00
Develop operation and maintenance procedures for structural BMPs			$0.00											$0.00	$0.00
Total															**$0.00**

Good House Keeping and Pollution Prevention	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Clean catch basins	21.5	610	$13,115.00			22	610							$13,420.00	$26,535.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Number of basins cleaned, per year	1210														
Street sweeping	75	600	$45,000.00			35	600							$21,000.00	$66,000.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Curb miles swept, per year															
Road salt/sand management	105.76	4505	$476,448.80											$0.00	$476,448.80
Has equipment been calibrated?															
Leaf collection program			$0.00											$0.00	$0.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Snow removal procedures			$0.00											$0.00	$0.00
Develop an inspection and maintenance Plan	2000	1	$2,000.00											$0.00	$2,000.00
Evaluate alternative vehicle washing options			$0.00											$0.00	$0.00
Develop and implement maintenance schedules for BMPs			$0.00			22	120							$2,640.00	$2,640.00
Employee training program	0	0	$0.00											$0.00	$0.00
Management program for fertilizer and pesticide application	1000	1	$1,000.00											$0.00	$1,000.00
Training: fertilizer and pesticide applicators			$0.00	500										$0.00	$500.00
Training: Maintenance and repair for municipal vehicles			$0.00	1000										$0.00	$1,000.00
Sump pump discharge policy			$0.00											$0.00	$0.00
Municipal SWPPP			$0.00											$0.00	$0.00
CCTV System (camera and equipment)	8000	1													8000
Vac truck and equipment	0	1	0											0	0
Total															**$576,123.80**

Grand Total **$584,959.80**

Appendix D

Control Measure	Estimated Annual Costs	Estimated One-time Costs	Estimated Intermittent Costs
Public Education and Outreach	$19,860	$0	$0
Public Involvement and Participation	$0	$0	$0
Illicit Discharge Detection and Elimination Program	$19,242	$304,006	$50,440
Construction Site Stormwater Runoff Control	$0	$770	$0
Post Construction Stormwater Management	$5,280	$1,496	$7,436
Good Housekeeping	$283,458	$6,292	$0
Non-Control Measure			
Miscellaneous	$15,168	$2,376	$0
Totals	**$343,008**	**$314,940**	**$57,876**

KEY:

Yearly	No. = Reference Number
Once	BMP/Admin = Is the requirement completed with either a BMP or Administrative work
As Needed	X Requirement = The short name for a requirement
	Requirement = Section in the 2014 MS4 permit draft
	Cost = Cost of completing the requirement
	Justification = List of methods used to complete the requirement, as well supporting data from sources
	In Place (Y/N) = Is the requirement listed currently in place

No.	BMP/Admin	Public Education and Outreach Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	Continue public education program required by 2003 permit	2.3.2 a	$10,952	Pamphlets (6500), Hazardous Waste Collection (3360), Newspaper Article (500), Media Campaign (500), Develop a curriculum for school system (92)	Yes
2	Admin	*Define goals, express specific messages define audience for each message	2.3.2 a	$44	2hrs @ $22/hr	No
3	Admin	*Identify parties responsible for each message	2.3.2 a	$22	1hr @ $22/hr, once a year for 8 years	No
4	Admin	*Develop and send out two separate messages for each of 4 different audiences	2.3.2 c	$22	1hr @ $22/hr	No
5	Admin	*Show evidence that messages are achieving results	2.3.2 e	$8,820	DCR explanation for assessing effectiveness	No
6	Admin	*Identify method used to evaluate effectiveness of messages	2.3.2 e	$0	Included in No. 5	No
7	Admin	*Put in annual report the methods of distribution and methods to assess effectiveness	2.3.2 g	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$19,860
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Public Involvement and Participation Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*Comply with state public Notice requirements	2.3.3 a	$0	Minimal cost, can post on website	No
2	Admin	Provide annual opportunity for public to participate in review and implementation of SWMP	2.3.3 b	$0	In compliance with public meeting requirement	Yes
3	Admin	*Put in annual report these public participation activities	2.3.3 c	$0	See Miscellaneous No. 50	Yes

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Illicit Discharge Detection and Elimination Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Eliminate any illicit discharge to the stormwater system as expeditiously as possible	2.3.4.2	$25,000	Varies depending on severity of infraction average cost, actual cost may vary	Yes
2	BMP	*Identify who is responsible for any such discharges	2.3.4.2	$0	Included in No. 1	Yes
3	Admin	*If elimination takes more than 60 days, establish an expeditious schedule for elimination	2.3.4.2	$44	2hr @ $22/hr for scheduling	Yes
4	Admin	*If more than 60 days, report dates of identification and schedules in annual report	2.3.4.2	$0	See Miscellaneous No. 50	Yes
5	BMP	Implement measures to control non-stormwater discharges if they add significant pollution	2.3.4.3	$25,000	Varies depending on severity of infraction around 25000-50000	No
6	Admin	*Identify all known locations where SSOs have discharged to the MS4 in last 5 years	2.3.4.4 b	$44	2hrs @ $22/hr if records are available	No
7	Admin	*For each such SSO discharge, include date and time, location, volume, suspected cause	2.3.4.4 b	$44	2hrs @ $22/hr to determine the information	No
8	Admin	*Also include whether each entered any surface water and what corrective actions were taken	2.3.4.4 b	$0	Included in No. 7	No
9	Admin	*Also include corrective measures planned and implementation schedule	2.3.4.4 b	$0	Included in No. 7	No
10	Admin	*Maintain the SSO inventory as part of the SWMP and the Annual Reports	2.3.4.4 b	$0	See Miscellaneous No. 50	No
11	Admin	*Provide oral and written notice to EPA and MassDEP for any SSO occurrence	2.3.4.4 c	$44	2hrs @ $22/hr for informing EPA/MassDEP orally/written	Yes
12	BMP	*Develop an inventory of each MS4 outfall, including location, interconnections, and condition (different only in that it requires the condition of the outfall)	2.3.4.5	$1,133	15min/outfall (includes travel), 206 outfalls, @ $22/hr	No
13	Admin	*Update inventory annually to include monitoring program	2.3.4.5 b	$0	See Miscellaneous No. 50	No
14	BMP	*Physically label all MS4 outfall pipes	2.3.4.5 b	$1,183	10min/outfall (includes travel), 206 outfalls, @ $22/hr, + materials ($2 stick per outfall + spraypaint + sharpie)	No
15	Admin	*For each outfall list unique identifier, receiving water, date of most recent inspection	2.3.4.5 c	$0	Included in No. 14	No
16	Admin	*Also include dimensions, shape, material, physical condition and indicators of non-SW discharges	2.3.4.5 c	$0	Included in No. 14	Yes
17	BMP	*Revise existing map of stormwater system within 2 years of effective date of the permit	2.3.4.6	$250,000	Enough new requirements to have to add new data elements, cost assuming outside contracting and implementation into GIS map	No
18	BMP	*Map shall include all outfalls, pipes, manholes, catch basins, interconnections, open channels	2.3.4.6 a i	$0	Included in No. 17	No
19	BMP	*Also include all municipally-owned BMPs (e.g., retention basins, oil/water separators, etc.)	2.3.4.6 a i	$0	Included in No. 17	No
20	BMP	*Also include catchment delineation and all waters listed on the 303(d) or 305 (b) list	2.3.4.6 a i	$0	Included in No. 17	No
21	BMP	*Also include municipal sanitary sewers or combined sewer systems	2.3.4.6 a ii	$0	Included in No. 17	No
22	BMP	*Include various recommended elements	2.3.4.6 a iii	$0	Included in No. 17	No
23	BMP	*Update the map to reflect newly discovered information and corrections or modifications	2.3.4.6 b	$1,144	1hr/week @ $22/hr for continuous additions to stormwater systems	No
24	Admin	*Report on the progress toward completion of the map in each annual report	2.3.4.6 c	$0	See Miscellaneous No. 50	Yes
25	BMP	*Write an Illicit Discharge Detection and Elimination (IDDE) program document (Discrete, specifically mentions the document must be written out)	2.3.4.7	$10,000	Complete redevelopment of the program, review and upgrades	No
26	Admin	Adopt an IDDE ordinance	2.3.4.7 a	$1,430	Change ordinance, 13 weeks @ 5hrs/week @ $22/hr, has to go to different committees	Yes
27	Admin	*Program shall clearly identify IDDE responsibilities and provide description of areas of responsibility	2.3.4.7 b	$0	Included in No. 25	No
28	BMP	*Assess and priority rank each catchment into one of 4 possible categories (soupped up from previous "priority" mark in 2003)	2.3.4.7 c i	$13,200	Approx. 1200 catch basins, approx. 30 min/basin @ $22/hr	No
29	Admin	*Priority rank each catchment within each category (except those "excluded") using 8 factors (soupped up from previous "priority" mark in 2003)	2.3.4.7 c ii	$26,400	Approx. 1200 catch basins, approx. 1hr/basin @ $22/hr	No
30	Admin	*Gather all information needed for the 8 screening factors (e.g., industrial areas > 40 years old)	2.3.4.7 c ii	$0	Included in No. 29	No
31	Admin	*Complete ranking using existing information within 1 year; update in annual report	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
32	Admin	*In annual report include summary of evidence of known/suspected illicit discharges by catchment	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
33	Admin	*Also include corrective measures and schedule for correcting each illicit discharge	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
34	Admin	*Develop written procedure for screening and sampling of outfalls	2.3.4.7 d	$0	$0 with CMRSWC Membership	Yes
35	Admin	*Include procedures for sample collection, use of field kits and storage and conveyance of samples	2.3.4.7 d i	$0	Included in No. 34	Yes
36	BMP	*If outfall is inaccessible, report the first accessible upstream structure	2.3.4.7 d ii	$0	Possible time extensions, no cost	Yes
37	BMP	*Perform dry weather screening when and how prescribed; identify in annual report any follow-up needed	2.3.4.7 d iii	$2,266	206 outfalls, approximately 30min/outfall @ $22/hr	Yes
38	BMP	*Perform wet weather screening when and how prescribed	2.3.4.7 d iv	$0	Included in No. 39	Yes
39	BMP	*Sample at minimum for 7 listed factors	2.3.4.7 d v	$15,656	206 outfalls, done by contractor, $30/outfall, $23/hr, 2hrs/outfall Testing Kits (0) b/c CMRSWC membership	Yes
40	Admin	*Catchments with specified septic or other results shall be listed as "High Priority" catchments	2.3.4.7 d vi	$44	2hrs @ $22/hr, if records are available	No
41	BMP	*Develop written Catchment Investigation Procedure including review of maps and historic records	2.3.4.7 e	$352	16hrs @ $22/hr	No
42	BMP	*Also include manhole investigation methodology and procedures to confirm sources of illicit discharges	2.3.4.7 e	$0	Included in No. 41	No
43	BMP	*For each catchment review sanitary sewer and storm sewer construction plans; prior work on either	2.3.4.7 e i	$88	Assuming 4 catchments, 1 hr/catchment @ $22/hr	No
44	BMP	*Also review Health department records for septic system or sanitary sewer system failures or complaints	2.3.4.7 e i	$0	Included in No.43	No
45	Admin	*Identify and record any of the 12 System Vulnerability Factors (e.g., infrastructure > 40 years old)	2.3.4.7 e i	$0	Included in No.43	No
46	Admin	*Document and annually report presence or absence of the 12 System Vulnerability Factors for each catchment	2.3.4.7 e i	$0	Assuming using WPI spreadsheet, otherwise about 10min per catchment	No
47	Admin	*Include these required elements of written manhole investigation and catchment investigation procedures	2.3.4.7 e ii	$0	$0 since CMRSWC Membership	No
48	Admin	*Include these required elements in written dry weather investigation procedure	2.3.4.7 e ii a	$0	Included in No. 47	No
49	Admin	*Include these required elements in written wet weather investigation procedure	2.3.4.7 e ii b	$0	Included in No. 47	No
50	Admin	*Develop procedures to isolate and confirm illicit sources (e.g., dye testing, smoke testing, caulk dams, etc.)	2.3.4.7 e iii	$176	8hrs @ $22/hr, for scheduling	Yes
51	Admin	*In annual report, for each illicit source list the location, its source, description of the discharge	2.3.4.7 f	$0	See Miscellaneous No. 50	No
52	Admin	*Also list date and method of discovery, date of elimination, mitigation or enforcement action	2.3.4.7 f	$0	Included in No. 51	No
53	Admin	*And estimate volume of flow reduced	2.3.4.7 f	$0	Included in No. 51	No
54	BMP	*One year after illicit discharge removal, perform confirmatory screening; wet, dry or both	2.3.4.7 f	$132	$22/hr 30min/screening, approximately 1.5hr/illicit, assuming 3 illicit	Yes
55	BMP	*Schedule follow up screening within 5 years after confirmatory screening	2.3.4.7 g	$132	$22/hr 30min/screening, approximately 1.5hr/illicit, assuming 3 illicit	No
56	BMP	*Develop and implement procedures to prevent illicit discharges and SSOs	2.3.4.7 h	$0	$0 since CMRSWC Membership	No
57	Admin	*Complete and report dry weather screening and sampling of High and Low Priority outfalls within 3 years	2.3.4.8 a	$0	Included in No. 37 and No. 38	No
58	Admin	*"All data shall be reported in each annual report . . ."	2.3.4.8 a	$0	See Miscellaneous No. 50	No
59	Admin	*Begin implementation of 2.3.4.7 d work no later than 15 months	2.3.4.8 b	$0	Deadlines, See No. 38 and 37	No
60	Admin	*Implement and report Catchment Investigation Procedure in every catchment . . .	2.3.4.8 c	$0	Deadlines, See No. 28	No
61	Admin	*In a minimum of 80% of the MS4 area serviced by Problem Catchments within 3 years and 100% within 5 years	2.3.4.8 c i	$0	Deadlines, See No. 28	No
62	Admin	*For all catchments where sampling indicates sewer input within 5 years	2.3.4.8 c ii	$0	Deadlines, See No. 28	No
63	Admin	*In 40% of all area served by all MS4 catchments within 5 years and in 100% of 4 area in 10 years	2.3.4.8 c iii	$0	Deadlines, See No. 28	No
64	Admin	*Track progress toward these milestones in each annual report	2.3.4.8 e	$0	See Miscellaneous No. 50	No
65	Admin	*Define or describe indicators for tracking program success; demonstrate efforts to locate illicit discharges	2.3.4.9	$176	8hrs @ $22/hr	No
66	Admin	*Also include percent and area in acres evaluated; volume of sewage removed; place in annual report (more detailed, 2003 only asks to measure progress)	2.3.4.9	$0	See Miscellaneous No. 50	No
67	Admin	provide annual training to employees involved in IDDE program	2.3.4.10	$0	$0 since CMRSWC Membership	Yes
68	Admin	*Include type and frequency of training in the annual report (2003 -> The program must include an employee training component)	2.3.4.10	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$19,242
Estimated One-time Costs	$304,006
Estimated Intermittent Costs	$50,440

No.	BMP/Admin	Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Continue to implement construction ordinance work from 2003 permit; expand to include 1 acre or more	2.3.5 a	$0	Volunteer based program	Yes
2	BMP	Develop and implement a construction site runoff program	2.3.5 c	$0	See No. 3-12	Yes
3	Admin	An ordinance that requires sediment and erosions controls and for other wastes at construction sites	2.3.5 c i	$22	1hrs @ $22/hr, for review of current document	No
4	Admin	Adopt written procedures for inspections and enforcement of the ordinance within 1 year (2003 -> (g.) Procedures for inspections and enforcement of control measures at construction sites.)	2.3.5 c ii	$44	2hrs @ $22/hr, for review of current document	No
5	Admin	*Document the procedures and responsibilities to implement in the SWMP	2.3.5 c ii	$88	4hrs @ $22/hr	No
6	Admin	*Include requirements for site operators to implement BMPs (e.g., reduce disturbed area, protect slopes, etc.)	2.3.5 c iii	$88	4hrs @ $22/hr	No
7	Admin	*Include requirements for site operators to control other wastes	2.3.5 c iv	$88	4hrs @ $22/hr	No
8	Admin	*Develop written procedures for site plan review and inspection and enforcement within 1 year (003 -> nearly same, now has time requirement)	2.3.5 c v	$88	4hrs @ $22/hr	No
9	Admin	*Include pre-construction review, consideration for protection of water quality impacts, LID components	2.3.5 c v	$88	4hrs @ $22/hr	No
10	Admin	*And receipt of information from the public, inspections during and after BMP installation (now covers post construction)	2.3.5 c v	$88	4hrs @ $22/hr	No
11	Admin	*And "qualifications necessary to perform the inspections"	2.3.5 c v	$88	4hrs @ $22/hr	No
12	Admin	*And procedure for tracking the number of site reviews, inspections and enforcement actions	2.3.5 c v	$88	4hrs @ $22/hr	No
13	Admin	*All to be included in the annual report	2.3.5 c v	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$0
Estimated One-time Costs	$770
Estimated Intermittent Costs	$0

No.	BMP/Admin	Post Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*develop implement and enforce a post-construction SW program for new developments and redevelopments	2.3.6 a	$0	depends on previous program, should already be in place	Yes
2	Admin	*adopt or amend a local ordinance to control projects that disturb an acre or more	2.3.6 a ii	$176	Already in place, but 8hrs @ $22/hr if not	Yes
3	BMP	*retain and/or treat first inch of runoff; where technically feasible do retention first	2.3.6 a ii a	$1,760	80hrs @ $22/hr, assumes no controversy and 4 people working	No
4	BMP	*"from all impervious surfaces on site"	2.3.6 a ii a	$0	Included in No. 3	No
5	Admin	*sites with soil contamination problems or at industrial sites shall not include any infiltration BMPs	2.3.6 a ii b	$0	Rule, does not require anything to be implemented, Possibly need Attorney	No
6	Admin	*infiltration systems near environmentally sensitive areas must include shutdown and containment systems	2.3.6 a ii c	$0	Rule, does not require anything to be implemented	No
7	Admin	*all BMPs must be constructed in accordance with the MA Stormwater Handbook	2.3.6 a ii d	$0	Rule, does not require anything to be implemented	Yes
8	Admin	*this system shall include development of a long term O&M plan to inspect and repair BMPs	2.3.6 a ii e	$0	Rule, does not require anything to be implemented	No
9	Admin	*systems shall be designed "to avoid disturbance of areas susceptible to erosion and sediment loss"	2.3.6 a ii f	$0	Rule, does not require anything to be implemented	Yes
10	BMP	*systems shall require submittal of as-built drawings that depict all on site controls	2.3.6 a iii	$1,100	Submitted by construction company, 50hrs @ $22/hr, if it's new	No
11	Admin	*shall have procedures to ensure O&M, such as dedicated funds, escrow accounts or management contracts	2.3.6 a iii	$4,576	5hrs w/ an attorney, 208hrs @ 22/hr, legal authority adds complexity and cost	No
12	Admin	*may include annual self-certification program	2.3.6 a iii	$0	Included in No. 11	No
13	Admin	*annual report shall include measures that the permittee has done to meet these requirements	2.3.6 a iii	$0	See Miscellaneous No. 50	Yes
14	BMP	*w/in 3 years document current street design and parking rules that affect creation of impervious cover	2.3.6 b	$1,320	60hrs @ $22/hr	No
15	BMP	*shall be used by permittee to determine if changes "can be made to support low impact design options"	2.3.6 b	$0	Included in No. 14	No
16	BMP	*if changes can be made, assessment shall include recommendations and proposed schedules to adopt changes	2.3.6 b	$0	Included in No. 14	No
17	BMP	*permittee "shall implement all recommendations . . ."; assessment must be placed in the SWMP	2.3.6 b	$0	Included in No. 14	No
18	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 b	$0	See Miscellaneous No. 50	No
19	BMP	*w/in 4 years assess local rules to determine feasibility of allowing green roofs, water harvesting and LID BMPs	2.3.6 c	$880	40hrs @ $22/hr	No
20	Admin	*assessment shall indicate if and under what circumstances these practices are allowed	2.3.6 c	$0	Included in No. 19	No
21	BMP	*if practices not allowed, determine what hinders use of these practices and what changes can be made	2.3.6 c	$0	Included in No. 19	No
22	BMP	*provide a schedule of implementation of recommendations	2.3.6 c	$0	Included in No. 19	No
23	BMP	*"permittee shall implement all recommendations, in accordance with the schedules . . ."	2.3.6 c	$0	Included in No. 19	No
24	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 c	$0	See Miscellaneous No. 50	Yes
25	Admin	*estimate the annual increase or decrease in Impervious Area and Directly Connected Impervious Area	2.3.6 d	$1,760	80hr @ $22/hr, a lot of data required	No
26	Admin	*tabulate results by sub-basins delineated per 2.3.4.6 a I	2.3.6 d i	$0	See No. 17 in IDDE	No
27	Admin	*must include conventional pavements, driveways, parking lots and rooftops	2.3.6 d i	$0	See No. 17 in IDDE	No
28	Admin	*starting with second annual report, estimate each sub-basin added or removed each year	2.3.6 d ii	$0	See Miscellaneous No. 50	No
29	Admin	*break out those figures by development, redevelopment or retrofit by permittee, by others voluntarily	2.3.6 d ii	$0	See Miscellaneous No. 50	No
30	Admin	*. . . or in compliance with the permittee's ordinances or bylaws	2.3.6 d ii	$0	See Miscellaneous No. 50	No
31	Admin	*within 4 years complete inventory and ranking of Municipal property suitable for modification or retrofit to . . .	2.3.6 d iii	$2,640	120hrs @ $22/hrs, many properties to assess	No
32	Admin	*. . .reduce frequency, volume and pollutant loads of stormwater discharges by reduction of impervious area	2.3.6 d iii	$0	Included in No. 32	No
33	Admin	*shall include both on site and off site reduction of IA and DCIA (e.g., parking lots, buildings, etc.)	2.3.6 d iii	$0	Included in No. 32	No
34	Admin	*also include existing rights-of-way,	2.3.6 d iii	$0	Included in No. 32	No
35	Admin	*for suitability the evaluation shall consider factors such as depth to water table; subsurface geology; access	2.3.6 d iii	$0	Included in No. 32	No
36	Admin	*priority ranking shall consider factors such as CIP schedules; current storm sewer level of service, etc.	2.3.6 d iii	$0	Included in No. 32	No
37	Admin	*starting with fifth year annual report, report on status of all such inventoried properties	2.3.6 d iii	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$5,280
Estimated One-time Costs	$1,496
Estimated Intermittent Costs	$7,436

No.	BMP/Admin	Pollution Prevention and Good Housekeeping Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*W/in 1 year develop or update written O&M procedures for listed municipal facilities	2.3.7 a i	$176	8hrs @ $22/hrs	No
2	Admin	*w/in 1 year inventory all permittee owned facilities in these "good housekeeping" categories	2.3.7 a ii	$0	Included in No. 1	No
3	Admin	*For Parks and Open Space: procedures to address the use, storage and minimization of pesticides, fertilizers, etc	2.3.7 a ii a	$2,640	120hrs @ $22/hr, Large amount of spaces to review plans for	No
4	Admin	*to be reviewed annually and updated as necessary	2.3.7 a ii a	$0	Included in No. 3	No
5	Admin	*evaluate lawn maintenance and landscaping activities to be protective of water quality	2.3.7 a ii a	$0	Included in No. 3	No
6	Admin	*including reduced mowing, proper disposal of lawn clippings, use of drought resistant plantings	2.3.7 a ii a	$0	Included in No. 3	No
7	Admin	*establish pet waste handling collection, disposal and signage at all parks and open spaces	2.3.7 a ii a	$0	Included in No. 3	No
8	Admin	*establish procedures for scheduled cleaning and sufficient number of trash containers	2.3.7 a ii a	$0	Included in No. 3	No
9	Admin	*For Buildings and Facilities, such as town offices, police and fire stations, municipal pools, etc	2.3.7 a ii b	$1,760	80hrs @ $22/hr	No
10	Admin	*evaluate the use. Storage and disposal of petroleum products and train employees on proper procedures	2.3.7 a ii b	$0	Included in No. 9	No
11	Admin	*ensure that spill prevention is in place and coordinate with fire department	2.3.7 a ii b	$0	Included in No. 9	No
12	Admin	*develop management procedures for dumpsters and other waste management equipment	2.3.7 a ii b	$0	Included in No. 9	No
13	Admin	*For Vehicles and Equipment: establish procedures for storage of permittee vehicles, including inside storage	2.3.7 a ii c	$176	4hrs @ $22/hr	No
14	Admin	*establish procedures to ensure that vehicle wash water does not enter the SW system	2.3.7 a ii c	$0	Included in No. 13	No
15	Admin	*evaluate fueling areas to minimize exposure	2.3.7 a ii c	$0	Included in No. 13	No
16	Admin	*Infrastructure O&M: w/in 1 year develop and implement procedures to take care for the MS4 system	2.3.7 a iii a	$0	See Below through No. 22	No
17	Admin	*optimize routine inspections (e.g., prioritize catch basins located near construction sites)	2.3.7 a iii b	$0	Included in No. 16	No
18	BMP	*ensure that "no catch basin at anytime will be more than 50 percent full"	2.3.7 a iii b	$440	2hrs/basin @ $22/hr, assuming 10 basins/year	No
19	BMP	*if more than 50% full during two routine cleanings, investigate the cause for excessive sediment loading	2.3.7 a iii b	$0	See No. 17 & Annual Report	No
20	Admin	*describe these actions in the annual report	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
21	Admin	*document in annual report the plan for optimizing catch basin cleaning, inspections or scheduling	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
22	Admin	*include metrics used to determine that the plan is optimal for the MS4	2.3.7 a iii b	$0	Included in No. 17	No
23	Admin	*in each annual report list the total number of catch basins, number inspected and/or cleaned	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
24	Admin	*and "volume or mass of material removed from each catch basin draining to water quality limited waters"	2.3.7 a iii b	$0	Included in No. 23	No
25	Admin	*and "total volume or mass of material removed from all catch basins"	2.3.7 a iii b	$0	Included in No. 23	No
26	BMP	*Sweeping: develop and implement procedures for sweeping streets and municipal-owned lots	2.3.7 a iii c	$40,624	Materials + Labor given by town	Yes
27	BMP	*sweep all streets (rural exceptions apply) a minimum of once a year in the spring	2.3.7 a iii c	$0	Included in No. 26	Yes
28	BMP	*procedures shall include more frequent sweeping of targeted area based on various listed criteria	2.3.7 a iii c	$0	Minimal Development Cost	No
29	BMP	*criteria include inspections, pollutant loads, catch basin cleanings, land use, TMDL or impaired waters	2.3.7 a iii c	$0	Minimal Development Cost	No
30	Admin	*Each annual report shall include number of miles cleaned and volume or mass of material removed	2.3.7 a iii c	$0	See Miscellaneous No. 50	No
31	Admin	*for rural exception areas, either sweep per usual or develop specific procedures and place in first annual report	2.3.7 a iii c	$0	See Miscellaneous No. 50	No
32	BMP	*properly store catch basin cleanings so they do not discharge to receiving waters	2.3.7 a iii d	$0	$0 Since Southbridge owns their own landfill	Yes
33	BMP	*establish and implement procedures for winter road maintenance including storage of salt and sand	2.3.7 a iii e	$0	Properly house materials in municipally owned properties	Yes
34	BMP	*minimize use of sodium chloride and other salts; evaluate opportunities for alternative materials	2.3.7 a iii e	$176	8hrs @ $22/hr	Yes
35	Admin	*ensure that snow is not disposed into surface waters	2.3.7 a iii e	$0		Yes
36	Admin	*establish procedures for O&M or all permittee-owned stormwater BMPs (e.g., swales, retention basins etc.)	2.3.7 a iii f	$176	8hrs @ $22/hr	No
37	BMP	*inspect all such structures at least once annually	2.3.7 a iii f	$11,000	Inspect each BMP, assuming 2000/year 15min/BMP @ 22/hr	No
38	Admin	*in annual report include status of work required in this part	2.3.7 a iv	$0	See Miscellaneous No. 50	No
39	Admin	*permittees shall keep a written record of all required activities	2.3.7 a v	$2,200	100hrs @ $22/hr, based on templates from the CMRSWC	No
40	BMP	*develop and fully implement a SWPPP for each of the listed facilities no later than 2 years after effective date	2.3.7 b	$1,540	4hrs to update existing SWPPPs, 10hrs for new SWPPPS, @ $22/hr, assume 5 new facilities + 5 old facilities	No
41	BMP	*includes maintenance garages, public works yards, transfer stations, other waste handling facilities	2.3.7 b	$0	Included in No. 40	No
42	BMP	*Identify name and title of staff of the Pollution Prevention Team for each facility	2.3.7 b ii a	$0	Included in No. 40	No
43	BMP	*for each facility: include map, description of activities, outfall locations, receiving waters and structural controls	2.3.7 b ii b	$0	Included in No. 40	No
44	BMP	*select , sign, install and implement the following 9 control measures to prevent or reduce discharge of pollutants	2.3.7 b ii c	$10,000	Depends on variations of the extent of impaired waters varies about 10000-25000	No
45	BMP	*take all reasonable measure to address quality of discharges that may not originate at the facility	2.3.7 b ii c	$0	Included in No. 44	No
46	Admin	*for areas that discharge to impaired waters, identify the control measures to address that issue	2.3.7 b ii c	$0	Included in No. 44	No
47	BMP	*SWPP Required Elements: Minimize or Prevent Exposure (e.g., move activities or materials under cover)	2.3.7 d 1	$0	Included in No. 44	No
48	BMP	*Good Housekeeping	2.3.7 d 2	$189,540	Snow removal (3300), leaf collection (34020), salt/sand distribution (152220)	Yes
49	BMP	*Preventative Maintenance	2.3.7 d 3	$23,056	Catchment cleaning (23056)	Yes
50	BMP	*Spill Prevention and Response	2.3.7 d 4	$0	Included in No. 44	Yes
51	BMP	*Erosion and Sediment Control	2.3.7 d 5	$0	Included in No. 44	Yes
52	BMP	*Management of Runoff	2.3.7 d 6	$0	Included in No. 44	Yes
53	BMP	*Salt Storage or Piles Containing Salt	2.3.7 d 7	$0	Included in No. 44	Yes
54	BMP	*Employee Training; document training date, title and duration; attendees; subjects covered during training	2.3.7 d 8	$1,980	Given by town	Yes
55	BMP	*Maintenance of Control Measures	2.3.7 d 8	$0	Included in No. 44	Yes
56	BMP	*Inspect all areas exposed to stormwater and all stormwater control measures at least every calendar quarter	2.3.7 b iii a	$2,000	30min/inspection, assume 10 facilities with 4 areas each @ $100/area	No
57	BMP	*at least one inspection shall occur when a stormwater discharge is occurring	2.3.7 b iii a	$2,266	206 outfalls, approx. 30min/outfall @ $22/hr	No
58	Admin	*document the date, time, name of inspector, weather, any control measures needing maintenance or repair, etc	2.3.7 b iii a	$0	Included in No. 44	No
59	BMP	*permittee shall repair or replace any control measures needing repair before the next anticipated storm event	2.3.7 b iii a	$0	Included in No. 44	No
60	Admin	*shall report the findings from the Site inspections in the annual report	2.3.7 b iii a	$0	See Miscellaneous No. 50	No
61	Admin	*keep a written record of all required activities required in this section	2.3.7 b iv	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$283,458
Estimated One-time Costs	$6,292
Estimated Intermittent Costs	$0

No.	BMP/Admin	Miscellaneous Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	Submit an NOI	1.7.1	$176	8hrs @ $22/hour, historical properties or endangered species will increase this cost	No
2	Admin	*Document endangered species status (part of NOI)	1.9.1	$0	Included under No. 1	No
3	BMP	*Implement measures to protect endangered species	1.9.1	$0	Included under No. 1	No
4	Admin	Document Historic Properties Observation (part of NOI)	1.9.2	$0	See Miscellaneous No. 50	No
5	BMP	*Describe effect of discharges on Historic properties	1.9.2	Varies	Included under No. 1	No
6	Admin	*Report documents received re: such discharges	1.9.2	$0	Included under No. 1	No
7	Admin	*Provide results of Appendix D historic property screening	1.9.2	$0	Included under No. 1	No
8	BMP	Describe efforts to avoid or minimize impacts on such properties	1.9.2	Varies	Included under No. 1	No
9	BMP	Develop a SWMP	1.10	$1,760	80hrs @ $22/hr	Yes
10	BMP	Implement a SWMP	1.10	$0	Included under No. 10	Yes
11	Admin	*Update/modify SWMP	1.10	$440	20hrs @ $22/hr	No
12	Admin	Provide SWMP "immediately" to various agencies and public	1.10.1	$0	Included under No. 9	No
13	Admin	*Post SWMP online	1.10.1	$0	Included under No. 9	No
14	Admin	Identify Names and titles of people implementing the SWMP	1.10.2	$0	Included under No. 9	No
15	Admin	***Include status of 2003 permit requirements**	1.10.2	$0	Included under No. 9	Yes
16	Admin	*List all receiving water bodies, classifications, pollutants of concern	1.10.2	$0	Included under No. 9	No
17	Admin	*list all applicable TMDLs, WLAs	1.10.2	$0	Included under No. 9	No
18	Admin	*List all outfalls that discharge to each water body	1.10.2	$0	Included under No. 9	No
19	Admin	*list all public water sources that may be affected by SW discharges	1.10.2	$0	Included under No. 9	No
20	Admin	*List all interconnected MS4s and receiving water body	1.10.2	$0	Included under No. 9	No
21	Admin	*Include applicable TMDLs, WLAs and pollutants of concern	1.10.2	$0	Included under No. 9	No
22	Admin	*Document all new or increased discharges	1.10.2	$0	Included under No. 9	No
23	Admin	*Include map of separate storm sewer system (Map must be improved)	1.10.2	$0	Included under No. 9	No
24	Admin	List all discharges to impaired water and the response	1.10.2	$0	Included under No. 9	No
25	Admin	*Describe BMPs proposed to meet TMDL requirements	1.10.2	$0	Included under No. 9	No
26	Admin	For each BMP, list the milestone, timeframe and assessment measure	1.10.2	$0	Included under No. 9	No
27	Admin	*For each BMP, list person or department responsible for implementation	1.10.2	$0	Included under No. 9	No
28	Admin	*Describe BMPs proposed to meet impaired waters requirements	1.10.2	$0	Included under No. 9	No
29	Admin	Describe BMPs used to meet the 6 minimum control measures	1.10.2	$0	Included under No. 9	No
30	Admin	*List measures to avoid/minimize impacts to surface drinking waters	1.10.2	$0	Included under No. 9	No
31	BMP	*Ensure that discharges "do not cause or contribute" to an exceedance of WQ standards	2.1	$0	Included under No. 9	Yes
32	BMP	*For TMDL waters, meet requirements of Appendix F (NB: contains multiple add'l req'ts)	2.1.1 b	Varies	May range into millions of dollars, no one has estimated this yet	No
33	BMP	*For impaired waters meet requirements of Appendix H (NB: contains multiple add'l req'ts)	2.1.1 c	Varies	May range into millions of dollars, no one has estimated this yet	No
34	BMP	*For any exceedances of WQ standards to TMDL or impaired waters, eliminate it within 60 days	2.1.1 d	Varies	May range into millions of dollars, no one has estimated this yet	No
35	BMP	*For any increased discharge, comply with MassDEP's regulations at 314 CMR 4.04	2.1.2 a	Varies	Cost will vary	No
36	BMP	*Demonstrate no net increase in pollutants for discharges to any 303 (d) or 305(b) water (previously only had to identify if 303 d)	2.1.2 b	Varies	Cost will vary	No
37	Admin	*Identify all discharges to waters that are impaired or which have TMDLs (Both in SWMP and Annual report)	2.2	$0	Varies depending on EPA interpretations	No
38	Admin	*Permittee shall annually self-evaluate and maintain the evaluation in its SWMP	4.1 a	$0	Included in No. 9	No
39	Admin	*In evaluating the appropriateness of BMPs, permittees may add BMPs at any time	4.1 b	$88	4hrs @ $22/hrs, of paperwork for new BMP	Yes
40	Admin	Subtracting or replacing BMPs may only be done in limited circumstances, after showing the BMP is ineffective	4.1 b	Varies	Cost of replacement will depend on the BMP being used	No
41	Admin	*Each Annual shall include a brief explanation of any BMP modification	4.1 b	$0	See Miscellaneous No. 50	No
42	Admin	EPA or MassDEP may require the permittee to add, modify, etc., any BMP to satisfy conditions of the permit	4.1.c	$0	Minimal cost	No
43	Admin	*The permittee shall keep all record required by this permit for at least five years	4.2 a	$880	40hrs at $22/hr, week of work annually	No
44	Admin	*"Records" includes "information used in the development of any written program . . . monitoring results, etc."	4.2 a	$0	Record keeping, doesn't cost anything to implement	No
45	Admin	these records all be made available to the public	4.2 c	$0	Record keeping, doesn't cost anything to implement	No
46	Admin	*the permittee "shall document all monitoring results each year in the annual report"	4.3 b	$0	See Miscellaneous No. 50	No
47	Admin	*that shall include the date, outfall identifier, location, weather, precipitation and screening or analysis results	4.3 b	$0	Part of annual report, see No. 46	No
48	Admin	*include all monitoring results for the current reporting period and for the entire permit term	4.3 b	$0	Part of annual report, see No. 46	No
49	Admin	*permittee shall include "results from any other stormwater or receiving water quality monitoring or studies . . ."	4.3 c	$0	Part of annual report, see No. 46	No
50	Admin	The annual report shall include a self-assessment of compliance; an assessment of the appropriateness of BMPs	4.4 b i	$14,200	The Consultant fee for creating the annual report increased based off of the increase in requirements	Yes
51	Admin	*The status of any required plans	4.4 b iii	$0	Part of annual report, see No. 50	No
52	Admin	*"Identification of all discharges determined to be causing or contributing to an exceedance" of WQ standards	4.4 b iii	$0	Part of annual report, see No. 50	No
53	Admin	*For discharges to TMDLs, identify specific BMPs used to address those requirements	4.4 b iii	$0	Part of annual report, see No. 50	No
54	Admin	*For discharges to impaired waters, "a description of each BMP required by Appendix H" and all deliverables	4.4 b iii	$0	Part of annual report, see No. 50	No
55	Admin	*Assessment of the progress toward meeting the requirements for the 6 minimum control measures (see details)	4.4 b iv	$0	Part of annual report, see No. 50	No
56	Admin	*"All outfall screening and monitoring data" for the reporting term and cumulative for the permit term	4.4 b v	$0	Part of annual report, see No. 50	No
57	Admin	Description of activities for the next reporting cycle	4.4 b vi	$0	Part of annual report, see No. 50	Yes
58	Admin	Description of any changes in identified BMPs or measurable goals	4.4 b vii	$0	Part of annual report, see No. 50	Yes
59	Admin	*Description of activities undertaken by any entity contracted for achieving any requirement of the permit	4.4 b viii	$0	Part of annual report, see No. 50	No

Estimated Annual Costs	$15,168
Estimated One-time Costs	$2,376
Estimated Intermittent Costs	$0

Appendix E

Control Measure	Annual	One-Time	Intermittent
Public Education and Outreach	$9,908	$0	$0
Public Involvement and Participation	$0	$0	$0
Illicit Discharge Detection and Elimination Program	$7,872	$314,494	$50,440
Construction Site Stormwater Runoff Control	$0	$770	$0
Post Construction Stormwater Management	$5,280	$1,496	$7,436
Good Housekeeping	$220,562	$6,292	$0
Non-Control Measure			
Miscellaneous	$15,168	$2,376	$0
Totals	**$258,790**	**$325,428**	**$57,876**

KEY:	
Yearly	No. = Reference Number
Once	BMP/Admin = Is the requirement completed with either a BMP or Administrative work
As Needed	X Requirement = The short name for a requirement
	Requirement = Section in the 2014 MS4 permit draft
	Cost = Cost of completing the requirement
	Justification = List of methods used to complete the requirement, as well supporting data from sources
	In Place (Y/N) = Is the requirement listed currently in place

No.	BMP/Admin	Public Education and Outreach Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	Continue public education program required by 2003 permit	2.3.2 a	$1,000	Pamphlets to homes, $500 and businesses,$500	Yes
2	Admin	*Define goals, express specific messages define audience for each message	2.3.2 a	$44	2 hrs @ $22/hr	No
3	Admin	*Identify parties responsible for each message	2.3.2 a	$22	1 hr @ $22/hr	No
4	Admin	*Develop and send out two separate messages for each of 4 different audiences	2.3.2 c	$22	1 hr @ $22/hr, once a year for 8 years	No
5	Admin	*Show evidence that messages are achieving results	2.3.2 e	$8,820	DCR explanation for assessing effectiveness	No
6	Admin	*Identify method used to evaluate effectiveness of messages	2.3.2 e	$0	Included in No. 5	No
7	Admin	*Put in annual report the methods of distribution and methods to assess effectiveness	2.3.2 g	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$9,908
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Public Involvement and Participation Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*Comply with state public Notice requirements	2.3.3 a	$0	Minimal cost, can post on website	Yes
2	Admin	Provide annual opportunity for public to participate in review and implementation of SWMP	2.3.3 b	$0	In compliance with public meeting requirement	No
3	Admin	*Put in annual report these public participation activities	2.3.3 c	$0	See Miscellaneous No. 50	Yes

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Illicit Discharge Detection and Elimination Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Eliminate any illicit discharge to the stormwater system as expeditiously as possible	2.3.4.2	$25,000	Varies depending on severity of infraction average cost, actual cost may vary	Yes
2	BMP	*Identify who is responsible for any such discharges	2.3.4.2	$0	Included in No. 1	Yes
3	Admin	*If elimination takes more than 60 days, establish an expeditious schedule for elimination	2.3.4.2	$44	2hrs @ $22/hr, for scheduling	Yes
4	Admin	*If more than 60 days, report dates of identification and schedules in annual report	2.3.4.2	$0	See Miscellaneous No. 50	Yes
5	BMP	Implement measures to control non-stormwater discharges if they add significant pollution	2.3.4.3	$25,000	Varies depending on severity of infraction, around $25,000-$50,000	No
6	Admin	*Identify all known locations where SSOs have discharged to the MS4 in last 5 years	2.3.4.4 b	$44	2hrs @ $22/hr, if records are available	No
7	Admin	*For each such SSO discharge, include date and time, location, volume, suspected cause	2.3.4.4 b	$44	2hrs @ $22/hr, to determine the information	No
8	Admin	*Also include whether each entered any surface water and what corrective actions were taken	2.3.4.4 b	$0	Included in No. 7	No
9	Admin	*Also include corrective measures planned and implementation schedule	2.3.4.4 b	$0	Included in No. 7	No
10	Admin	*Maintain the SSO inventory as part of the SWMP and the Annual Reports	2.3.4.4 b	$0	See Miscellaneous No. 50	No
11	Admin	*Provide oral and written notice to EPA and MassDEP for any SSO occurrence	2.3.4.4 c	$44	2hrs @ $22/hr, for informing EPA/MassDEP orally/written	No
12	BMP	*Develop an inventory of each MS4 outfall, including location, interconnections, and condition (different only in that it requires the condition of the outfall)	2.3.4.5	$792	15min/outfall (includes travel), 144 outfalls, @ $22/hr	No
13	Admin	*Update inventory annually to include monitoring program	2.3.4.5 b	$0	See Miscellaneous No. 50	No
14	BMP	*Physically label all MS4 outfall pipes	2.3.4.5 b	$528	10min/outfall (includes travel), 144 outfalls, @ $22/hr, + materials ($2 stick per outfall + spraypaint+sharpie)	No
15	Admin	*For each outfall list unique identifier, receiving water, date of most recent inspection	2.3.4.5 c	$0	Included in No. 14	No
16	Admin	*Also include dimensions, shape, material, physical condition and indicators of non-SW discharges	2.3.4.5 c	$0	Included in No. 14	Yes
17	BMP	*Revise existing map of stormwater system within 2 years of effective date of the permit	2.3.4.6	$250,000	Enough new requirements to have to add new data elements, cost assuming outside contracting and implementation into GIS map	No
18	BMP	*Map shall include all outfalls, pipes, manholes, catch basins, interconnections, open channels	2.3.4.6 a i	$0	Included in No. 17	No
19	BMP	*Also include all municipally-owned BMPs (e.g., retention basins, oil/water separators, etc.)	2.3.4.6 a i	$0	Included in No. 17	No
20	BMP	*Also include catchment delineation and all waters listed on the 303(d) or 305 (b) list	2.3.4.6 a i	$0	Included in No. 17	No
21	BMP	*Also include municipal sanitary sewers or combined sewer systems	2.3.4.6 a ii	$0	Included in No. 17	No
22	BMP	*Include various recommended elements	2.3.4.6 a iii	$0	Included in No. 17	No
23	BMP	*Update the map to reflect newly discovered information and corrections or modifications	2.3.4.6 b	$1,144	1hr/week @ $22/hr, for continuous additions to stormwater systems	No
24	Admin	*Report on the progress toward completion of the map in each annual report	2.3.4.6 c	$0	See Miscellaneous No. 50	Yes
25	BMP	*Write an Illicit Discharge Detection and Elimination (IDDE) program document (Discrete, specifically mentions the document must be written out)	2.3.4.7	$10,000	Complete redevelopment of the program, review and upgrades	No
26	Admin	Adopt an IDDE ordinance	2.3.4.7 a	$1,430	Change ordinance, 13 weeks @ 5 hrs/week @$22/hr, has to go to different committees	Yes
27	Admin	*Program shall clearly identify IDDE responsibilities and provide description of areas of responsibility	2.3.4.7 b	$0	Included in No. 25	No
28	BMP	*Assess and priority rank each catchment into one of 4 possible categories	2.3.4.7 c i	$17,028	Approx. 1548 catch basins, approx. 30 min/basin @ $22/hr	No
29	Admin	*Priority rank each catchment within each category (except those "excluded") using 8 factors	2.3.4.7 c ii	$34,056	Approx. 1548 catch basins, approx. 60min/basin @ $22/hr	No
30	Admin	*Gather all information needed for the 8 screening factors (e.g., industrial areas > 40 years old)	2.3.4.7 c ii	$0	Included in No. 29	No
31	Admin	*Complete ranking using existing information within 1 year; update in annual report	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
32	Admin	*In annual report include summary of evidence of known/suspected illicit discharges by catchment	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
33	Admin	*Also include corrective measures and schedule for correcting each illicit discharge	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
34	Admin	*Develop written procedure for screening and sampling of outfalls	2.3.4.7 d	$0	8hr @ $22/hr, work day to complete process, ($0 W/CMRSWC Membership)	Yes
35	Admin	*Include procedures for sample collection, use of field kits and storage and conveyance of samples	2.3.4.7 d i	$0	See No. 34	Yes
36	BMP	*If outfall is inaccessible, report the first accessible upstream structure	2.3.4.7 d ii	$0	possible time extensions	Yes
37	BMP	*Perform dry weather screening when and how prescribed; identify in annual report any follow-up needed	2.3.4.7 d iii	$1,584	144 outfalls, approx. 30min/outfall @ $22/hr	Yes
38	BMP	*Perform wet weather screening when and how prescribed	2.3.4.7 d iv	$0	Included in No. 39	Yes
39	BMP	*Sample at minimum for 7 listed factors	2.3.4.7 d v	$4,968	144 outfalls, approx. 1.5hr/outfall @ $23/hr, Paperwork for wet weather sampling (2,266), Testing Kits (0) b/c CMRSWC membership	No
40	Admin	*Catchments with specified septic or other results shall be listed as "High Priority" catchments	2.3.4.7 d vi	$44	2hrs @ $22/hr, if records are available	No
41	BMP	*Develop written Catchment Investigation Procedure including review of maps and historic records	2.3.4.7 e	$352	16hrs @ $22/hr	No
42	BMP	*Also include manhole investigation methodology and procedures to confirm sources of illicit discharges	2.3.4.7 e	$0	Included in No. 41	No
43	BMP	*For each catchment review sanitary sewer and storm sewer construction plans; prior work on either	2.3.4.7 e i	$88	Assuming 4 catchments, 1 hr/catchment @ $22/hr	No
44	BMP	*Also review Health department records for septic system or sanitary sewer system failures or complaints	2.3.4.7 e i	$0	Included in No.43	No
45	Admin	*Identify and record any of the 12 System Vulnerability Factors (e.g., infrastructure > 40 years old)	2.3.4.7 e i	$0	Included in No.43	No
46	Admin	*Document and annually report presence or absence of the 12 System Vulnerability Factors for each catchment	2.3.4.7 e i	$0	Assuming using WPI spreadsheet, otherwise about 10min per catchment	No
47	Admin	*Include these required elements of written manhole investigation and catchment investigation procedures	2.3.4.7 e ii	$0	$0 since CMRSWC Membership	No
48	Admin	*Include these required elements in written dry weather investigation procedure	2.3.4.7 e ii a	$0	Included in No. 47	No
49	Admin	*Include these required elements in written wet weather investigation procedure	2.3.4.7 e ii b	$0	Included in No. 47	No
50	Admin	*Develop procedures to isolate and confirm illicit sources (e.g., dye testing, smoke testing, caulk dams, etc.)	2.3.4.7 e iii	$176	8hrs @ $22/hr, for scheduling	Yes
51	Admin	*In annual report, for each illicit source list the location, its source, description of the discharge	2.3.4.7 f	$0	See Miscellaneous No. 50	No
52	Admin	*Also list date and method of discovery, date of elimination, mitigation or enforcement action	2.3.4.7 f	$0	Included in No. 51	No
53	Admin	*And estimate volume of flow reduced	2.3.4.7 f	$0	Included in No. 51	No
54	BMP	*One year after illicit discharge removal, perform confirmatory screening; wet, dry or both	2.3.4.7 f	$132	$22/hr 30min/screening, 1.5hr/illicit, 3 illicit	No
55	BMP	*Schedule follow up screening within 5 years after confirmatory screening	2.3.4.7 g	$132	$22/hr 30min/screening, 1.5hr/illicit, 3 illicit	No
56	BMP	*Develop and implement procedures to prevent illicit discharges and SSOs	2.3.4.7 h	$0	$0 since CMRSWC Membership	No
57	Admin	*Complete and report dry weather screening and sampling of High and Low Priority outfalls within 3 years	2.3.4.8 a	$0	Included in No. 37 and No. 38	No
58	Admin	*"All data shall be reported in each annual report . . ."	2.3.4.8 a	$0	See Miscellaneous No. 50	No
59	Admin	*Begin implementation of 2.3.4.7 d work no later than 15 months	2.3.4.8 b	$0	Deadlines, See No. 38 and 37	No
60	Admin	*Implement and report Catchment Investigation Procedure in every catchment . . .	2.3.4.8 c	$0	Deadlines, See No. 28	No
61	Admin	*In a minimum of 80% of the MS4 area serviced by Problem Catchments within 3 years and 100% within 5 years	2.3.4.8 c i	$0	Deadlines, See No. 28	No
62	Admin	*For all catchments where sampling indicates sewer input within 5 years	2.3.4.8 c ii	$0	Deadlines, See No. 28	No
63	Admin	*In 40% of all area served by all MS4 catchments within 5 years and in 100% of 4 area in 10 years	2.3.4.8 c iii	$0	Deadlines, See No. 28	No
64	Admin	*Track progress toward these milestones in each annual report	2.3.4.8 e	$0	See Miscellaneous No. 50	No
65	Admin	*Define or describe indicators for tracking program success; demonstrate efforts to locate illicit discharges	2.3.4.9	$176	8hrs @ $22/hr	No
66	Admin	*Also include percent and area in acres evaluated; volume of sewage removed; place in annual report (more detailed, 2003 only asks to measure progress)	2.3.4.9	$0	See Miscellaneous No. 50	No
67	Admin	provide annual training to employees involved in IDDE program	2.3.4.10	$0	$0 since CMRSWC Membership	Yes
68	Admin	*Include type and frequency of training in the annual report (2003 -> The program must include an employee training component)	2.3.4.10	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$7,872
Estimated One-time Costs	$314,494
Estimated Intermittent Costs	$50,440

No.	BMP/Admin	Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Continue to implement construction ordinance work from 2003 permit; expand to include 1 acre or more	2.3.5 a	$0	Volunteer based program	Yes
2	BMP	Develop and implement a construction site runoff program	2.3.5 c	$0	See No. 3-12	Yes
3	Admin	An ordinance that requires sediment and erosions controls and for other wastes at construction sites	2.3.5 c i	$22	1 hr @ $22/hr, for review of current document	Yes
4	Admin	Adopt written procedures for inspections and enforcement of the ordinance within 1 year (2003 -> (g.) Procedures for inspections and enforcement of control measures at construction sites.)	2.3.5 c ii	$44	2hrs @ $22/hr, for review of current document	No
5	Admin	*Document the procedures and responsibilities to implement in the SWMP	2.3.5 c ii	$88	4hrs @ $22/hr	No
6	Admin	*Include requirements for site operators to implement BMPs (e.g., reduce disturbed area, protect slopes, etc.)	2.3.5 c iii	$88	4hrs @ $22/hr	No
7	Admin	*Include requirements for site operators to control other wastes	2.3.5 c iv	$88	4hrs @ $22/hr	No
8	Admin	*Develop written procedures for site plan review and inspection and enforcement within 1 year (003 -> nearly same, now has time requirement)	2.3.5 c v	$88	4hrs @ $22/hr	Yes
9	Admin	*Include pre-construction review, consideration for protection of water quality impacts, LID components	2.3.5 c v	$88	4hrs @ $22/hr	No
10	Admin	*And receipt of information from the public, inspections during and after BMP installation (now covers post construction)	2.3.5 c v	$88	4hrs @ $22/hr	No
11	Admin	*And "qualifications necessary to perform the inspections"	2.3.5 c v	$88	4hrs @ $22/hr	No
12	Admin	*And procedure for tracking the number of site reviews, inspections and enforcement actions	2.3.5 c v	$88	4hrs @ $22/hr	No
13	Admin	*All to be included in the annual report	2.3.5 c v	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$0
Estimated One-time Costs	$770
Estimated Intermittent Costs	$0

No.	BMP/Admin	Post Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*develop implement and enforce a post-construction SW program for new developments and redevelopments	2.3.6 a	$0	depends on previous program, should already be in place	Yes
2	Admin	*adopt or amend a local ordinance to control projects that disturb an acre or more	2.3.6 a ii	$176	Already in place, but 8hrs @ $22/hr minimum	Yes
3	BMP	*retain and/or treat first inch of runoff; where technically feasible do retention first	2.3.6 a ii a	$1,760	80hrs @ $22/hr, assumes no controversy and 4 people working	No
4	BMP	*"from all impervious surfaces on site"	2.3.6 a ii a	$0	See No. 3	No
5	Admin	*sites with soil contamination problems or at industrial sites shall not include any infiltration BMPs	2.3.6 a ii b	$0	Rule, does not require anything to be implemented, Possibly need Attorney	No
6	Admin	*infiltration systems near environmentally sensitive areas must include shutdown and containment systems	2.3.6 a ii c	$0	Rule, does not require anything to be implemented	No
7	Admin	*all BMPs must be constructed in accordance with the MA stormwater Handbook	2.3.6 a ii d	$0	Rule, does not require anything to be implemented	Yes
8	Admin	*this system shall include development of a long term O&M plan to inspect and repair BMPs	2.3.6 a ii e	$0	Rule, does not require anything to be implemented	No
9	Admin	*systems shall be designed "to avoid disturbance of areas susceptible to erosion and sediment loss"	2.3.6 a ii f	$0	Rule, does not require anything to be implemented	Yes
10	BMP	*systems shall require submittal of as-built drawings that depict all on site controls	2.3.6 a iii	$1,100	Submitted by construction company, 52hrs @ $22/hr, if it's new	No
11	Admin	*shall have procedures to ensure O&M, such as dedicated funds, escrow accounts or management contracts	2.3.6 a iii	$4,576	legal authority adds complexity and cost, 5hr w/ an attorney, 208hrs of labor @ $22/hr	No
12	Admin	*may include annual self-certification program	2.3.6 a iii	$0	Included in No. 11	No
13	Admin	*annual report shall include measures that the permittee has done to meet these requirements	2.3.6 a iii	$0	See Miscellaneous No. 50	Yes
14	BMP	*w/in 3 years document current street design and parking rules that affect creation of impervious cover	2.3.6 b	$1,320	60hrs @ $22/hr	No
15	BMP	*shall be used by permittee to determine if changes "can be made to support low impact design options"	2.3.6 b	$0	Included in No. 14	No
16	BMP	*if changes can be made, assessment shall include recommendations and proposed schedules to adopt changes	2.3.6 b	$0	Included in No. 14	No
17	BMP	*permitee "shall implement all recommendations . . ."; assessment must be placed in the SWMP	2.3.6 b	$0	Included in No. 14	No
18	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 b	$0	See Miscellaneous No. 50	No
19	BMP	*w/in 4 years assess local rules to determine feasibility of allowing green roofs, water harvesting and LID BMPs	2.3.6 c	$880	40 hrs @ $22/hr	No
20	Admin	*assessment shall indicate if and under what circumstances these practices are allowed	2.3.6 c	$0	Included in No. 19	No
21	BMP	*if practices not allowed, determine what hinders use of these practices and what changes can be made	2.3.6 c	$0	Included in No. 19	No
22	BMP	*provide a schedule of implementation of recommendations	2.3.6 c	$0	Included in No. 19	No
23	BMP	*"permittee shall implement all recommendations, in accordance with the schedules . . ."	2.3.6 c	$0	Included in No. 19	No
24	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 c	$0	See Miscellaneous No. 50	Yes
25	Admin	*estimate the annual increase or decrease in Impervious Area and Directly Connected Impervious Area	2.3.6 d	$1,760	80 hrs @ $22/hr, a lot of data required	No
26	Admin	*tabulate results by sub-basins delineated per 2.3.4.6 a I	2.3.6 d i	$0	See No. 17 in IDDE	No
27	Admin	*must include conventional pavements, driveways, parking lots and rooftops	2.3.6 d i	$0	See No. 17 in IDDE	No
28	Admin	*starting with second annual report, estimate each sub-basin added or removed each year	2.3.6 d ii	$0	See Miscellaneous No. 50	No
29	Admin	*break out those figures by development, redevelopment or retrofit by permitee, by others voluntarily	2.3.6 d ii	$0	See Miscellaneous No. 50	No
30	Admin	*. . . or in compliance with the permittee's ordinances or bylaws	2.3.6 d ii	$0	See Miscellaneous No. 50	No
31	Admin	*within 4 years complete inventory and ranking of Municipal property suitable for modification or retrofit to . . .	2.3.6 d iii	$2,640	120hrs @ $22/hr, many properties to assess	No
32	Admin	*. . .reduce frequency, volume and pollutant loads of stormwater discharges by reduction of impervious area	2.3.6 d iii	$0	Included in No. 32	No
33	Admin	*shall include both on site and off site reduction of IA and DCIA (e.g., parking lots, buildings, etc)	2.3.6 d iii	$0	Included in No. 32	No
34	Admin	*also include existing rights-of-way,	2.3.6 d iii	$0	Included in No. 32	No
35	Admin	*for suitability the evaluation shall consider factors such as depth to water table; subsurface geology; access	2.3.6 d iii	$0	Included in No. 32	No
36	Admin	*priority ranking shall consider factors such as CIP schedules; current storm sewer level of service, etc.	2.3.6 d iii	$0	Included in No. 32	No
37	Admin	*starting with fifth year annual report, report on status of all such inventoried properties	2.3.6 d iii	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$5,280
Estimated One-time Costs	$1,496
Estimated Intermittent Costs	$7,436

No.	BMP/Admin	Pollution Prevention and Good Housekeeping Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*W/in 1 year develop or update written O&M procedures for listed municipal facilities	2.3.7 a i	$176	8hr @ $22/hr	No
2	Admin	*w/in 1 year inventory all permitee owned facilities in these "good housekeeping" categories	2.3.7 a ii	$0	Included in No. 1	No
3	Admin	*For Parks and Open Space: procedures to address the use, storage and minimization of pesticides, fertilizers, etc.	2.3.7 a ii a	$2,640	120hrs @ $22/hr, Large amount of spaces to review plans for	No
4	Admin	*to be reviewed annually and updated as necessary	2.3.7 a ii a	$0	Included in No. 3	No
5	Admin	*evaluate lawn maintenance and landscaping activities to be protective of water quality	2.3.7 a ii a	$0	Included in No. 3	No
6	Admin	*including reduced mowing, proper disposal of lawn clippings, use of drought resistant plantings	2.3.7 a ii a	$0	Included in No. 3	No
7	Admin	*establish pet waste handling collection, disposal and signage at all parks and open spaces	2.3.7 a ii a	$0	Included in No. 3	No
8	Admin	*establish procedures for scheduled cleaning and sufficient number of trash containers	2.3.7 a ii a	$0	Included in No. 3	No
9	Admin	*For Buildings and Facilities, such as town offices, police and fire stations, municipal pools, etc.	2.3.7 a ii b	$1,760	80hrs @ $22/hr	No
10	Admin	*evaluate the use. Storage and disposal of petroleum products and train employees on proper procedures	2.3.7 a ii b	$0	Included in No. 9	No
11	Admin	*ensure that spill prevention is in place and coordinate with fire department	2.3.7 a ii b	$0	Included in No. 9	No
12	Admin	*develop management procedures for dumpsters and other waste management equipment	2.3.7 a ii b	$0	Included in No. 9	No
13	Admin	*For Vehicles and Equipment: establish procedures for storage of permittee vehicles, including inside storage	2.3.7 a ii c	$176	8hrs @ $22/hr	No
14	Admin	*establish procedures to ensure that vehicle wash water does not enter the SW system	2.3.7 a ii c	$0	Included in No. 13	No
15	Admin	*evaluate fueling areas to minimize exposure	2.3.7 a ii c	$0	Included in No. 13	No
16	Admin	*Infrastructure O&M: w/in 1 year develop and implement procedures to take care for the MS4 system	2.3.7 a iii a	$0	See Below through No. 22	No
17	Admin	*optimize routine inspections (e.g., prioritize catch basins located near construction sites)	2.3.7 a iii b	$0		No
18	BMP	*ensure that "no catch basin at anytime will be more than 50 percent full"	2.3.7 a iii b	$440	2hrs/basin @ $22/hr, assuming 10 basins /year	No
19	BMP	*if more than 50% full during two routine cleanings, investigate the cause for excessive sediment loading	2.3.7 a iii b	$0	See No. 17/Annual Report	No
20	Admin	*describe these actions in the annual report	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
21	Admin	*document in annual report the plan for optimizing catch basin cleaning, inspections or scheduling	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
22	Admin	*include metrics used to determine that the plan is optimal for the MS4	2.3.7 a iii b	$0	Included in No. 17	No
23	Admin	*in each annual report list the total number of catch basins, number inspected and/or cleaned	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
24	Admin	*and "volume or mass of material removed from each catch basin draining to water quality limited waters"	2.3.7 a iii b	$0	included in No. 23	No
25	Admin	*and "total volume or mass of material removed from all catch basins"	2.3.7 a iii b	$0	included in No. 23	No
26	BMP	*Sweeping: develop and implement procedures for sweeping streets and municipal-owned lots	2.3.7 a iii c	$10,560	Materials + Labor	Yes
27	BMP	*sweep all streets (rural exceptions apply) a minimum of once a year in the spring	2.3.7 a iii c	$0	See No. 26	Yes
28	BMP	*procedures shall include more frequent sweeping of targeted area based on various listed criteria	2.3.7 a iii c	$0	Minimal Development Cost	No
29	BMP	*criteria include inspections, pollutant loads, catch basin cleanings, land use, TMDL or impaired waters	2.3.7 a iii c	$0	Minimal Development Cost	No
30	Admin	*Each annual report shall include number of miles cleaned and volume or mass of material removed	2.3.7 a iii c	$0	See Miscellaneous No. 50	No
31	Admin	*for rural exception areas, either sweep per usual or develop specific procedures and place in first annual report	2.3.7 a iii c	$0	See Miscellaneous No. 50	No
32	BMP	*properly store catch basin cleanings so they do not discharge to receiving waters	2.3.7 a iii d	$0	$0 Since Southbridge owns their own landfill	Yes
33	BMP	*establish and implement procedures for winter road maintenance including storage of salt and sand	2.3.7 a iii e	$0	Properly house materials in municipally owned properties	Yes
34	BMP	*minimize use of sodium chloride and other salts; evaluate opportunities for alternative materials	2.3.7 a iii e	$176	8hrs @ $22/hr	Yes
35	Admin	*ensure that snow is not disposed into surface waters	2.3.7 a iii e	$0		Yes
36	Admin	*establish procedures for O&M or all permitee-owned stormwater BMPs (e.g., swales, retention basins etc.)	2.3.7 a iii f	$176	8hrs @ $22/hr	No
37	BMP	*inspect all such structures at least once annually	2.3.7 a iii f	$11,000	Inspect each BMP, assuming 2000/year 15min/BMP @ $22/hr	No
38	Admin	*in annual report include status of work required in this part	2.3.7 a iv	$0	See Miscellaneous No. 50	No
39	Admin	*permittees shall keep a written record of all required activities	2.3.7 a v	$2,200	100hrs @ $22/hr, based on templates from the CMRSWC	No
40	BMP	*develop and fully implement a SWPPP for each of the listed facilities no later than 2 years after effective date	2.3.7 b	$1,540	4hrs to update existing SWPPPs, 10hrs for new SWPPPS, @ 22/hr, assume 5 new facilities and 5 old facilities	No
41	BMP	*includes maintenance garages, public works yards, transfer stations, other waste handling facilities	2.3.7 b	$0	Included in No. 40	No
42	BMP	*Identify name and title of staff of the Pollution Prevention Team for each facility	2.3.7 b ii a	$0	Included in No. 40	No
43	BMP	*for each facility: include map, description of activities, outfall locations, receiving waters and structural controls	2.3.7 b ii b	$0	Included in No. 40	No
44	BMP	*select , sign, install and implement the following 9 control measures to prevent or reduce discharge of pollutants	2.3.7 b ii c	$10,000	depends on variations of the extent of impaired waters	No
45	BMP	*take all reasonable measure to address quality of discharges that may not originate at the facility	2.3.7 b ii c	$0	Included in No. 44	No
46	Admin	*for areas that discharge to impaired waters, identify the control measures to address that issue	2.3.7 b ii c	$0	Included in No. 44	No
47	BMP	*SWPP Required Elements: Minimize or Prevent Exposure (e.g., move activities or materials under cover)	2.3.7 d 1	$0	Included in No. 44	No
48	BMP	*Good Housekeeping	2.3.7 d 2	$180,246	$7,040 catch basin cleaning, $10,560 street sweeping, $152,200 salt/sand, $5,956 maintenance, $4,470 audits	Yes
49	BMP	*Preventative Maintenance	2.3.7 d 3	$0		Yes
50	BMP	*Spill Prevention and Response	2.3.7 d 4	$0	Included in No. 44	Yes
51	BMP	*Erosion and Sediment Control	2.3.7 d 5	$0	Included in No. 44	Yes
52	BMP	*Management of Runoff	2.3.7 d 6	$0	Included in No. 44	Yes
53	BMP	*Salt Storage or Piles Containing Salt	2.3.7 d 7	$0	Included in No. 44	Yes
54	BMP	*Employee Training; document training date, title and duration; attendees; subjects covered during training	2.3.7 d 8	$1,980		Yes
55	BMP	*Maintenance of Control Measures	2.3.7 d 8	$0	Included in No. 44	Yes
56	BMP	*Inspect all areas exposed to stormwater and all stormwater control measures at least every calendar quarter	2.3.7 b iii a	$2,200	30 minutes per inspection , assume 10 facilities with four areas each @ $100/hr	No
57	BMP	*at least one inspection shall occur when a stormwater discharge is occurring	2.3.7 b iii a	$1,584	144 outfalls, approx. 30min/outfall @ $22/hr	No
58	Admin	*document the date, time, name of inspector, weather, any control measures needing maintenance or repair, etc.	2.3.7 b iii a	$0	Included in No. 44	No
59	BMP	*permitee shall repair or replace any control measures needing repair before the next anticipated storm event	2.3.7 b iii a	$0	Included in No. 44	No
60	Admin	*shall report the findings from the Site inspections in the annual report	2.3.7 b iii a	$0	See Miscellaneous No. 50	No
61	Admin	*keep a written record of all required activities required in this section	2.3.7 b iv	$0		No

Estimated Annual Costs	$220,562
Estimated One-time Costs	$6,292
Estimated Intermittent Costs	$0

No.	BMP/Admin	Miscellaneous Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	Submit an NOI	1.7.1	$176	8hrs at $22/hr, historical properties or endangered species will increase this	No
2	Admin	*Document endangered species status (part of NOI)	1.9.1	$0	Included under No. 1	No
3	BMP	*Implement measures to protect endangered species	1.9.1	Varies	Included under No. 1	No
4	Admin	Document Historic Properties Observation (part of NOI)	1.9.2	$0	See Miscellaneous No. 50	No
5	BMP	*Describe effect of discharges on Historic properties	1.9.2	Varies	Included under No. 1	No
6	Admin	*Report documents received re: such discharges	1.9.2	$0	Included under No. 1	No
7	Admin	*Provide results of Appendix D historic property screening	1.9.2	$0	Included under No. 1	No
8	BMP	Describe efforts to avoid or minimize impacts on such properties	1.9.2	Varies	Included under No. 1	No
9	BMP	Develop a SWMP	1.10	$1,760	80hrs at $22/hr	Yes
10	BMP	Implement a SWMP	1.10	$0		Yes
11	Admin	*Update/modify SWMP	1.10	$440	20hrs at $22/hr	No
12	Admin	Provide SWMP "immediately" to various agencies and public	1.10.1	$0	Included under No. 9	No
13	Admin	*Post SWMP online	1.10.1	$0	Included under No. 9	No
14	Admin	Identify Names and titles of people implementing the SWMP	1.10.2	$0	Included under No. 9	No
15	Admin	***Include status of 2003 permit requirements**	1.10.2	$0	Included under No. 9	Yes
16	Admin	*List all receiving waterbodies, classifications, pollutants of concern	1.10.2	$0	Included under No. 9	No
17	Admin	*list all applicable TMDLs, WLAs	1.10.2	$0	Included under No. 9	No
18	Admin	*List all outfalls that discharge to each waterbody	1.10.2	$0	Included under No. 9	No
19	Admin	*list all public water sources that may be affected by SW discharges	1.10.2	$0	Included under No. 9	No
20	Admin	*List all interconnected MS4s and receiving waterbody	1.10.2	$0	Included under No. 9	No
21	Admin	*Include applicable TMDLs, WLAs and pollutants of concern	1.10.2	$0	Included under No. 9	No
22	Admin	*Document all new or increased discharges	1.10.2	$0	Included under No. 9	No
23	Admin	*Include map of separate storm sewer system (Map must be improved)	1.10.2	$0	Included under No. 9	No
24	Admin	List all discharges to impaired water and the response	1.10.2	$0	Included under No. 9	No
25	Admin	*Describe BMPs proposed to meet TMDL requirements	1.10.2	$0	Included under No. 9	No
26	Admin	For each BMP, list the milestone, timeframe and assessment measure	1.10.2	$0	Included under No. 9	No
27	Admin	*For each BMP, list person or department responsible for implementation	1.10.2	$0	Included under No. 9	No
28	Admin	*Describe BMPs proposed to meet impaired waters requirements	1.10.2	$0	Included under No. 9	No
29	Admin	Describe BMPs used to meet the 6 minimum control measures	1.10.2	$0	Included under No. 9	No
30	Admin	*List measures to avoid/minimize impacts to surface drinking waters	1.10.2	$0	Included under No. 9	No
31	BMP	*Ensure that discharges "do not cause or contribute" to an exceedance of WQ standards	2.1	$0	Included under No. 9	Yes
32	BMP	*For TMDL waters, meet requirements of Appendix F (NB: contains multiple add'l req'ts)	2.1.1 b	Varies	May range into millions of dollars, no one has estimated this yet	No
33	BMP	*For impaired waters meet requirements of Appendix H (NB: contains multiple add'l req'ts)	2.1.1 c	Varies	May range into millions of dollars, no one has estimated this yet	No
34	BMP	*For any exceedances of WQ standards to TMDL or impaired waters, eliminate it within 60 days	2.1.1 d	Varies	May range into millions of dollars, no one has estimated this yet	No
35	BMP	*For any increased discharge, comply with MassDEP's regulations at 314 CMR 4.04	2.1.2 a	Varies	Cost will vary	No
36	BMP	*Demonstrate no net increase in pollutants for discharges to any 303 (d) or 305(b) water (previously only had to identify if 303 d)	2.1.2 b	Varies	Cost will vary	No
37	Admin	*Identify all discharges to waters that are impaired or which have TMDLs (Both in SWMP and Annual report)	2.2	$0	Varies depending on EPA interpretations	No
38	Admin	*Permittee shall annually self-evaluate and maintain the evaluation in its SWMP	4.1 a	$0	Included under No. 9	No
39	Admin	*In evaluating the appropriateness of BMPs, permittees may add BMPs at any time	4.1 b	$88	4hrs @ $22/hr, paperwork for new BMP	Yes
40	Admin	Subtracting or replacing BMPs may only be done in limited circumstances, after showing the BMP is ineffective	4.1 b	Varies	Cost of replacement will depend on the BMP being used	No
41	Admin	*Each Annual shall include a brief explanation of any BMP modification	4.1 b	$0	See No. 50	No
42	Admin	EPA or MassDEP may require the permittee to add, modify, etc., any BMP to satisfy conditions of the permit	4.1.c	$0	Minimal cost	No
43	Admin	*The permittee shall keep all record required by this permit for at least five years	4.2 a	$880	Week of work annually, 40hrs at $22/hr	No
44	Admin	*"Records" includes "information used in the development of any written program . . . monitoring results, etc."	4.2 a	$0	Record keeping, doesn't cost anything to implement	No
45	Admin	these records all be made available to the public	4.2 c	$0	Record keeping, doesn't cost anything to implement	No
46	Admin	*the permittee "shall document all monitoring results each year in the annual report"	4.3 b	$0	See No. 50	No
47	Admin	*that shall include the date, outfall identifier, location, weather, precipitation and screening or analysis results	4.3 b	$0	Part of annual report, see No. 46	No
48	Admin	*include all monitoring results for the current reporting period and for the entire permit term	4.3 b	$0	Part of annual report, see No. 46	No
49	Admin	*permittee shall include "results from any other stormwater or receiving water quality monitoring or studies . . ."	4.3 c	$0	Part of annual report, see No. 46	No
50	Admin	The annual report shall include a self-assessment of compliance; an assessment of the appropriateness of BMPs	4.4 b i	$14,200	Consulting fee for annual report	No
51	Admin	*The status of any required plans	4.4 b iii	$0	Part of annual report, see No. 50	No
52	Admin	*"Identification of all discharges determined to be causing or contributing to an exceedance" of WQ standards	4.4 b iii	$0	Part of annual report, see No. 50	No
53	Admin	*For discharges to TMDLs, identify specific BMPs used to address those requirements	4.4 b iii	$0	Part of annual report, see No. 50	No
54	Admin	*For discharges to impaired waters, "a description of each BMP required by Appendix H" and all deliverables	4.4 b iii	$0	Part of annual report, see No. 50	No
55	Admin	*Assessment of the progress toward meeting the requirements for the 6 minimum control measures (see details)	4.4 b iv	$0	Part of annual report, see No. 50	No
56	Admin	*"All outfall screening and monitoring data" for the reporting term and cumulative for the permit term	4.4 b v	$0	Part of annual report, see No. 50	No
57	Admin	Description of activities for the next reporting cycle	4.4 b vi	$0	Part of annual report, see No. 50	Yes
58	Admin	Description of any changes in identified BMPs or measurable goals	4.4 b vii	$0	Part of annual report, see No. 50	Yes
59	Admin	*Description of activities undertaken by any entity contracted for achieving any requirement of the permit	4.4 b viii	$0	Part of annual report, see No. 50	No

Estimated Annual Costs	$15,168
Estimated One-time Costs	$2,376
Estimated Intermittent Costs	$0

Appendix F

Control Measure	Estimated Annual Costs	Estimated One-time Costs	Estimated Intermittent Costs
Public Education and Outreach	$12,106	$0	$0
Public Involvement and Participation	$0	$0	$0
Illicit Discharge Detection and Elimination Program	$11,347	$306,481	$76,972
Construction Site Stormwater Runoff Control	$350	$858	$0
Post Construction Stormwater Management	$5,280	$1,496	$7,480
Good Housekeeping	$693,578	$6,292	$0
Non-Control Measure			
Miscellaneous	$12,968	$2,376	$0
Totals	**$735,629**	**$317,503**	**$84,452**

KEY:			
Yearly	No. = Reference Number		
Once	BMP/Admin = Is the requirement completed with either a BMP or Administrative work		
As Needed	X Requirement = The short name for a requirement		
	Requirement = Section in the 2014 MS4 permit draft		
	Cost = Cost of completing the requirement		
	Justification = List of methods used to complete the requirement, as well supporting data from sources		
	In Place (Y/N) = Is the requirement listed currently in place		

No.	BMP/Admin	Public Education and Outreach Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	Continue public education program required by 2003 permit	2.3.2 a	$3,176	Art Contest (3000) for materials, 8 hr(s) @ $22/hr	Y
2	Admin	*Define goals, express specific messages define audience for each message	2.3.2 a	$44	2hrs @ $22/hr, a minor administrative cost	N
3	Admin	*Identify parties responsible for each message	2.3.2 a	$44	2hrs @ $22/hr, a minor administrative cost	N
4	Admin	*Develop and send out two separate messages for each of 4 different audiences	2.3.2 c	$22	1hr @ $22/hr, a minor administrative cost, once a year for 8 years	N
5	Admin	*Show evidence that messages are achieving results	2.3.2 e	$8,820	DCR explanation for assessing effectiveness	N
6	Admin	*Identify method used to evaluate effectiveness of messages	2.3.2 e	$0	No significant cost	N
7	Admin	*Put in annual report the methods of distribution and methods to assess effectiveness	2.3.2 g	$0	See Miscellaneous No. 50	N

Estimated Annual Costs	$12,106
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Public Involvement and Participation Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*Comply with state public Notice requirements	2.3.3 a	$0	No significant cost, website hosting	Y
2	Admin	Provide annual opportunity for public to participate in review and implementation of SWMP	2.3.3 b	$0	No significant cost	Y
3	Admin	*Put in annual report these public participation activities	2.3.3 c	$0	See Miscellaneous No. 50	N

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Illicit Discharge Detection and Elimination Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Eliminate any illicit discharge to the stormwater system as expeditiously as possible	2.3.4.2	$25,000	[Varies depending on infraction, ranges from ($0-50,000) provided by DCR Director Larry Pistrang]	Y
2	BMP	*Identify who is responsible for any such discharges	2.3.4.2	$0	See No. 1, part of identification process	Y
3	Admin	*If elimination takes more than 60 days, establish an expeditious schedule for elimination	2.3.4.2	$44	2hrs @ $22/hr, for scheduling	N
4	Admin	*If more than 60 days, report dates of identification and schedules in annual report	2.3.4.2	$0	See Miscellaneous No. 50	N
5	BMP	Implement measures to control non-stormwater discharges if they add significant pollution	2.3.4.3	$25,000	[Varies depending on infraction, ranges from ($0-50,000) provided by DCR Director Larry Pistrang]	Y
6	Admin	*Identify all known locations where SSOs have discharged to the MS4 in last 5 years	2.3.4.4 b	$44	2hrs @ $22/hr, assuming records are easily available	N
7	Admin	*For each such SSO discharge, include date and time, location, volume, suspected cause	2.3.4.4 b	$44	2hrs @ $22/hr, to determine the information	N
8	Admin	*Also include whether each entered any surface water and what corrective actions were taken	2.3.4.4 b	$0	Included under No. 7	N
9	Admin	*Also include corrective measures planned and implementation schedule	2.3.4.4 b	$0	Included under No. 7	N
10	Admin	*Maintain the SSO inventory as part of the SWMP and the Annual Reports	2.3.4.4 b	$0	See Miscellaneous No. 50	N
11	Admin	*Provide oral and written notice to EPA and MassDEP for any SSO occurrence	2.3.4.4 c	$44	2hrs @ $22/hr, informing EPA/MassDEP orally/written	N
12	BMP	*Develop an inventory of each MS4 outfall, including location, interconnections, and condition (different only in that it requires the condition of the outfall)	2.3.4.5	$1,469	2hrs @ $22/hr, about 15min/outfall, 267 outfalls	N
13	Admin	*Update inventory annually to include monitoring program	2.3.4.5 b	$0	See Miscellaneous No. 50	N
14	BMP	*Physically label all MS4 outfall pipes	2.3.4.5 b	$2,003	2hrs @ $22/hr, about 10min/outfall, 267 outfalls, materials included ($2 stick per outfall + spraypaint+sharpie)	N
15	Admin	*For each outfall list unique identifier, receiving water, date of most recent inspection	2.3.4.5 c	$0	Included under No. 14, materials are available from the Coalition	N
16	Admin	*Also include dimensions, shape, material, physical condition and indicators of non-SW discharges	2.3.4.5 c	$0	Included under No. 14, materials are available from the Coalition	N
17	BMP	*Revise existing map of stormwater system within 2 years of effective date of the permit	2.3.4.6	$250,000	Will likely require complete redevelopment of the map system, this numbers based on Millbury estimations for People GIS	N
18	BMP	*Map shall include all outfalls, pipes, manholes, catch basins, interconnections, open channels	2.3.4.6 a i	$0	Included under No. 17	N
19	BMP	*Also include all municipally-owned BMPs (e.g., retention basins, oil/water separators, etc.)	2.3.4.6 a i	$0	Included under No. 17	N
20	BMP	*Also include catchment delineation and all waters listed on the 303(d) or 305 (b) list	2.3.4.6 a i	$0	Included under No. 17	N
21	BMP	*Also include municipal sanitary sewers or combined sewer systems	2.3.4.6 a ii	$0	Included under No. 17	N
22	BMP	*Include various recommended elements	2.3.4.6 a iii	$0	Included under No. 17	N
23	BMP	*Update the map to reflect newly discovered information and corrections or modifications	2.3.4.6 b	$1,144	1hr/week @ $22/hr, for continuous developments and additions to stormwater systems	N
24	Admin	*Report on the progress toward completion of the map in each annual report	2.3.4.6 c	$0	See Miscellaneous No. 50	N
25	BMP	*Write an Illicit Discharge Detection and Elimination (IDDE) program document (Discrete, specifically mentions the document must be written out)	2.3.4.7	$10,000	A complete redevelopment of the program, smaller towns can expect a cost of 10,000	N
26	Admin	Adopt an IDDE ordinance	2.3.4.7 a	$1,430	65hrs @ $22/hr, will have to change ordinance and allow a representative to go to different committees	Y
27	Admin	*Program shall clearly identify IDDE responsibilities and provide description of areas of responsibility	2.3.4.7 b	$0	Included under No. 25	N
28	BMP	*Assess and priority rank each catchment into one of 4 possible categories	2.3.4.7 c i	$13,310	1210 catch basins, about 30min/basin @ $22/hr	N
29	Admin	*Priority rank each catchment within each category (except those "excluded") using 8 factors	2.3.4.7 c ii	$26,620	1210 catch basins, about 1hr/basin @ $22/hr	N
30	Admin	*Gather all information needed for the 8 screening factors (e.g., industrial areas > 40 years old)	2.3.4.7 c ii	$0	Included under No. 29	N
31	Admin	*Complete ranking using existing information within 1 year; update in annual report	2.3.4.7 c iii	$0	See Miscellaneous No. 50	N
32	Admin	*In annual report include summary of evidence of known/suspected illicit discharges by catchment	2.3.4.7 c iii	$0	See Miscellaneous No. 50	N
33	Admin	*Also include corrective measures and schedule for correcting each illicit discharge	2.3.4.7 c iii	$0	See Miscellaneous No. 50	N
34	Admin	*Develop written procedure for screening and sampling of outfalls	2.3.4.7 d	$0	No cost with Coalition Membership	N
35	Admin	*Include procedures for sample collection, use of field kits and storage and conveyance of samples	2.3.4.7 d i	$0	Included under No. 34	N
36	BMP	*If outfall is inaccessible, report the first accessible upstream structure	2.3.4.7 d ii	$0	Minimal cost, possible time extensions to test applicable outfalls	N
37	BMP	*Perform dry weather screening when and how prescribed; identify in annual report any follow-up needed	2.3.4.7 d iii	$979	267 outfalls, about 10min/outfall @ $22/hr	N
38	BMP	*Perform wet weather screening when and how prescribed	2.3.4.7 d iv	$1,469	267 outfalls, about 15min/outfall @ $22/hr	N
39	BMP	*Sample at minimum for 7 listed factors	2.3.4.7 d v	$8,811	267 outfalls, about 1.5hr/outfall @ $22/hr, along with applicable water quality testing kit costs (none with Coalition)	N
40	Admin	*Catchments with specified septic or other results shall be listed as "High Priority" catchments	2.3.4.7 d vi	$44	2hrs @ $22/hr, if files readily available	N
41	BMP	*Develop written Catchment Investigation Procedure including review of maps and historic records	2.3.4.7 e	$352	16hrs @ $22/hr, for development of procedure	N
42	BMP	*Also include manhole investigation methodology and procedures to confirm sources of illicit discharges	2.3.4.7 e	$0	Included under No. 41	N
43	BMP	*For each catchment review sanitary sewer and storm sewer construction plans; prior work on either	2.3.4.7 e i	$26,620	1210 catchments, 1 hr/catchment @ $22/hr	N
44	BMP	*Also review Health department records for septic system or sanitary sewer system failures or complaints	2.3.4.7 e i	$0	Included under No. 43	N
45	Admin	*Identify and record any of the 12 System Vulnerability Factors (e.g., infrastructure > 40 years old)	2.3.4.7 e i	$0	Included under No. 43	N
46	Admin	*Document and annually report presence or absence of the 12 System Vulnerability Factors for each catchment	2.3.4.7 e i	$0	See Miscellaneous No. 50	N
47	Admin	*Include these required elements of written manhole investigation and catchment investigation procedures	2.3.4.7 e ii	$0	No cost with Coalition Membership	N
48	Admin	*Include these required elements in written dry weather investigation procedure	2.3.4.7 e ii a	$0	Included under No. 47	N
49	Admin	*Include these required elements in written wet weather investigation procedure	2.3.4.7 e ii b	$0	Included under No. 47	N
50	Admin	*Develop procedures to isolate and confirm illicit sources (e.g., dye testing, smoke testing, caulk dams, etc.)	2.3.4.7 e iii	$22	1hr @ $22/hr, for scheduling	Y
51	Admin	*In annual report, for each illicit source list the location, its source, description of the discharge	2.3.4.7 f	$88	4hrs @ $22/hr, for scheduling	N
52	Admin	*Also list date and method of discovery, date of elimination, mitigation or enforcement action	2.3.4.7 f	$0	Included under No. 51	N
53	Admin	*And estimate volume of flow reduced	2.3.4.7 f	$0	Included under No. 51	N
54	BMP	*One year after illicit discharge removal, perform confirmatory screening; wet, dry or both	2.3.4.7 f	$132	$22/hr 30min/screening, approximately 1.5hr/illicit, assuming 3 illicit	N
55	BMP	*Schedule follow up screening within 5 years after confirmatory screening	2.3.4.7 g	$132	$22/hr 30min/screening, approximately 1.5hr/illicit, assuming 3 illicit	N
56	BMP	*Develop and implement procedures to prevent illicit discharges and SSOs	2.3.4.7 h	$0	8hrs @ $22/hr, one work day to complete process, no cost with Coalition membership	N
57	Admin	*Complete and report dry weather screening and sampling of High and Low Priority outfalls within 3 years	2.3.4.8 a	$0	Included under No. 37 and No. 38	N
58	Admin	*"All data shall be reported in each annual report . . ."	2.3.4.8 a	$0	See Miscellaneous No. 50	N
59	Admin	*Begin implementation of 2.3.4.7 d work no later than 15 months	2.3.4.8 b	$0	Included under No. 37 and No. 38, deadlines	N
60	Admin	*Implement and report Catchment Investigation Procedure in every catchment . . .	2.3.4.8 c	$0	Included under No. 28, deadlines	N
61	Admin	*In a minimum of 80% of the MS4 area serviced by Problem Catchments within 3 years and 100% within 5 years	2.3.4.8 c i	$0	Included under No. 28, deadlines	N
62	Admin	*For all catchments where sampling indicates sewer input within 5 years	2.3.4.8 c ii	$0	Included under No. 28, deadlines	N
63	Admin	*In 40% of all area served by all MS4 catchments within 5 years and in 100% of 4 area in 10 years	2.3.4.8 c iii	$0	Included under No. 28, deadlines	N
64	Admin	*Track progress toward these milestones in each annual report	2.3.4.8 e	$0	See Miscellaneous No. 50	N
65	Admin	*Define or describe indicators for tracking program success; demonstrate efforts to locate illicit discharges	2.3.4.9	$0	8hrs @ $22/hr, administrative work	N
66	Admin	*Also include percent and area in acres evaluated; volume of sewage removed; place in annual report (more detailed, 2003 only asks to measure progress)	2.3.4.9	$0	See Miscellaneous No. 50	N
67	Admin	provide annual training to employees involved in IDDE program	2.3.4.10	$0	No cost with Coalition membership	Y
68	Admin	*Include type and frequency of training in the annual report (2003 -> The program must include an employee training component)	2.3.4.10	$0	See Miscellaneous No. 50	N

Estimated Annual Costs	$11,347
Estimated One-time Costs	$306,481
Estimated Intermittent Costs	$76,972

No.	BMP/Admin	Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Continue to implement construction ordinance work from 2003 permit; expand to include 1 acre or more	2.3.5 a	$350	Compare to previous cost, Millbury cost provided by Laurie Connors	Y
2	BMP	Develop and implement a construction site runoff program	2.3.5 c	$0	as provided by Laurie Connors, Town planner	Y
3	Admin	An ordinance that requires sediment and erosions controls and for other wastes at construction sites	2.3.5 c i	$22	1hr @ $22/hr, included under No. 2	Y
4	Admin	Adopt written procedures for inspections and enforcement of the ordinance within 1 year (2003 -> (g.) Procedures for inspections and enforcement of control measures at construction sites.)	2.3.5 c ii	$44	2hrs @ $22/hr, for review of the established document included under No. 2	Y
5	Admin	*Document the procedures and responsibilities to implement in the SWMP	2.3.5 c ii	$176	4hrs @ $22/hr, included under No. 2	N
6	Admin	*Include requirements for site operators to implement BMPs (e.g., reduce disturbed area, protect slopes, etc.)	2.3.5 c iii	$88	4hrs @ $22/hr, included under No. 2	N
7	Admin	*Include requirements for site operators to control other wastes	2.3.5 c iv	$88	4hrs @ $22/hr, included under No. 2	N
8	Admin	*Develop written procedures for site plan review and inspection and enforcement within 1 year (003 -> nearly same, now has time requirement)	2.3.5 c v	$88	4hrs @ $22/hr, included under No. 2	N
9	Admin	*Include pre-construction review, consideration for protection of water quality impacts, LID components	2.3.5 c v	$88	4hrs @ $22/hr, included under No. 2	N
10	Admin	*And receipt of information from the public, inspections during and after BMP installation (now covers post construction)	2.3.5 c v	$88	4hrs @ $22/hr, included under No. 2	N
11	Admin	*And "qualifications necessary to perform the inspections"	2.3.5 c v	$88	4hrs @ $22/hr, included under No. 2	N
12	Admin	*And procedure for tracking the number of site reviews, inspections and enforcement actions	2.3.5 c v	$88	4hrs @ $22/hr, included under No. 2	N
13	Admin	*All to be included in the annual report	2.3.5 c v	$0	See Miscellaneous No. 50	N

Estimated Annual Costs	$350
Estimated One-time Costs	$858
Estimated Intermittent Costs	$0

No.	BMP/Admin	Post Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*develop implement and enforce a post-construction SW program for new developments and redevelopments	2.3.6 a	$0	depends on previous program, should already be in place	Y
2	Admin	*adopt or amend a local ordinance to control projects that disturb an acre or more	2.3.6 a ii	$176	Already in place, amendment would be 8 hr(s) @ 22/hr minimum	N
3	BMP	*retain and/or treat first inch of runoff; where technically feasible do retention first	2.3.6 a ii a	$1,760	80hrs @ $22/hr, difficult to assess cost, assumes no controversies or unresolved issues and four people working	N
4	BMP	*"from all impervious surfaces on site"	2.3.6 a ii a	$0	Included under No. 3	N
5	Admin	*sites with soil contamination problems or at industrial sites shall not include any infiltration BMPs	2.3.6 a ii b	$0	Rule, does not require anything to be implemented, Possibly need Attorney	N
6	Admin	*infiltration systems near environmentally sensitive areas must include shutdown and containment systems	2.3.6 a ii c	$0	Rule, does not require anything to be implemented	N
7	Admin	*all BMPs must be constructed in accordance with the MA Sstormwater Handbook	2.3.6 a ii d	$0	Rule, does not require anything to be implemented	N
8	Admin	*this system shall include development of a long term O&M plan to inspect and repair BMPs	2.3.6 a ii e	$0	Rule, does not require anything to be implemented	N
9	Admin	*systems shall be designed "to avoid disturbance of areas susceptible to erosion and sediment loss"	2.3.6 a ii f	$0	Rule, does not require anything to be implemented	N
10	BMP	*systems shall require submittal of as-built drawings that depict all on site controls	2.3.6 a iii	$1,144	52hrs @ $22/hr and submitted by construction company if it is new	N
11	Admin	*shall have procedures to ensure O&M, such as dedicated funds, escrow accounts or management contracts	2.3.6 a iii	$4,576	208hrs @ $22/hr, Submitted by construction company, legal authority and complexity add costs, including maybe 5 people inc/attorney	N
12	Admin	*may include annual self-certification program	2.3.6 a iii	$0	Included under No. 11	N
13	Admin	*annual report shall include measures that the permittee has done to meet these requirements	2.3.6 a iii	$0	See Miscellaneous No. 50	N
14	BMP	*w/in 3 years document current street design and parking rules that affect creation of impervious cover	2.3.6 b	$1,320	60hrs @$22/hr, including fire chief	N
15	BMP	*shall be used by permittee to determine if changes "can be made to support low impact design options"	2.3.6 b	$0	Included under No. 14	N
16	BMP	*if changes can be made, assessment shall include recommendations and proposed schedules to adopt changes	2.3.6 b	$0	Included under No. 14	N
17	BMP	*permitee "shall implement all recommendations . . ."; assessment must be placed in the SWMP	2.3.6 b	$0	Included under No. 14	N
18	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 b	$0	See Miscellaneous No. 50	N
19	BMP	*w/in 4 years assess local rules to determine feasibility of allowing green roofs, water harvesting and LID BMPs	2.3.6 c	$880	40hrs @ $22/hr	N
20	Admin	*assessment shall indicate if and under what circumstances these practices are allowed	2.3.6 c	$0	Included under No. 19	N
21	BMP	*if practices not allowed, determine what hinders use of these practices and what changes can be made	2.3.6 c	$0	Included under No. 19	N
22	BMP	*provide a schedule of implementation of recommendations	2.3.6 c	$0	Included under No. 19	N
23	BMP	*"permittee shall implement all recommendations, in accordance with the schedules . . ."	2.3.6 c	$0	Included under No. 19	N
24	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 c	$0	See Miscellaneous No. 50	N
25	Admin	*estimate the annual increase or decrease in Impervious Area and Directly Connected Impervious Area	2.3.6 d	$1,760	80hrs @ $22/hr, data intensive, devising system and updating yearly, assumes 4 people working	N
26	Admin	*tabulate results by sub-basins delineated per 2.3.4.6 a I	2.3.6 d i	$0	Included in IDDE No. 17	N
27	Admin	*must include conventional pavements, driveways, parking lots and rooftops	2.3.6 d i	$0	Included in IDDE No. 17	N
28	Admin	*starting with second annual report, estimate each sub-basin added or removed each year	2.3.6 d ii	$0	See Miscellaneous No. 50	N
29	Admin	*break out those figures by development, redevelopment or retrofit by permitee, by others voluntarily	2.3.6 d ii	$0	See Miscellaneous No. 50	N
30	Admin	*. . . or in compliance with the permittee's ordinances or bylaws	2.3.6 d ii	$0	See Miscellaneous No. 50	N
31	Admin	*within 4 years complete inventory and ranking of Municipal property suitable for modification or retrofit to . . .	2.3.6 d iii	$2,640	120hrs @ $22/hr, involving schools, DPW, fire, police etc. assume 13 weeks work time	N
32	Admin	*. . .reduce frequency, volume and pollutant loads of stormwater discharges by reduction of impervious area	2.3.6 d iii	$0	Included under No. 31	N
33	Admin	*shall include both on site and off site reduction of IA and DCIA (e.g., parking lots, buildings, etc.)	2.3.6 d iii	$0	Included under No. 31	N
34	Admin	*also include existing rights-of-way,	2.3.6 d iii	$0	Included under No. 31	N
35	Admin	*for suitability the evaluation shall consider factors such as depth to water table; subsurface geology; access	2.3.6 d iii	$0	Included under No. 31	N
36	Admin	*priority ranking shall consider factors such as CIP schedules; current storm sewer level of service, etc.	2.3.6 d iii	$0	Included under No. 31	N
37	Admin	*starting with fifth year annual report, report on status of all such inventoried properties	2.3.6 d iii	$0	See Miscellaneous No. 50	N

Estimated Annual Costs	$5,280
Estimated One-time Costs	$1,496
Estimated Intermittent Costs	$7,480

No.	BMP/Admin	Pollution Prevention and Good Housekeeping Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*W/in 1 year develop or update written O&M procedures for listed municipal facilities	2.3.7 a i	$176	8hrs @ $22/hr,	N
2	Admin	*w/in 1 year inventory all permitee owned facilities in these "good housekeeping" categories	2.3.7 a ii	$0	included under No. 1	N
3	Admin	*For Parks and Open Space: procedures to address the use, storage and minimization of pesticides, fertilizers, etc.	2.3.7 a ii a	$2,640	120hrs @ $22/hr, Large amount of spaces to review plans for	N
4	Admin	*to be reviewed annually and updated as necessary	2.3.7 a ii a	$0	included under No. 3	N
5	Admin	*evaluate lawn maintenance and landscaping activities to be protective of water quality	2.3.7 a ii a	$0	included under No. 3	N
6	Admin	*including reduced mowing, proper disposal of lawn clippings, use of drought resistant plantings	2.3.7 a ii a	$0	included under No. 3	N
7	Admin	*establish pet waste handling collection, disposal and signage at all parks and open spaces	2.3.7 a ii a	$0	included under No. 3	N
8	Admin	*establish procedures for scheduled cleaning and sufficient number of trash containers	2.3.7 a ii a	$0	included under No. 3	N
9	Admin	*For Buildings and Facilities, such as town offices, police and fire stations, municipal pools, etc.	2.3.7 a ii b	$1,760	80hrs @ $22/hr, to write procedures	N
10	Admin	*evaluate the use. Storage and disposal of petroleum products and train employees on proper procedures	2.3.7 a ii b	$0	included under No. 1	N
11	Admin	*ensure that spill prevention is in place and coordinate with fire department	2.3.7 a ii b	$0	included under No. 1	N
12	Admin	*develop management procedures for dumpsters and other waste management equipment	2.3.7 a ii b	$0	included under No. 1	N
13	Admin	*For Vehicles and Equipment: establish procedures for storage of permittee vehicles, including inside storage	2.3.7 a ii c	$176	8hrs @ $22/hr,	N
14	Admin	*establish procedures to ensure that vehicle wash water does not enter the SW system	2.3.7 a ii c	$0	Included under No. 13	N
15	Admin	*evaluate fueling areas to minimize exposure	2.3.7 a ii c	$0	Included under No. 13	N
16	Admin	*Infrastructure O&M: w/in 1 year develop and implement procedures to take care for the MS4 system	2.3.7 a iii a	$0	See Below through No. 22, will likely require significant investment	N
17	Admin	*optimize routine inspections (e.g., prioritize catch basins located near construction sites)	2.3.7 a iii b	$0	See below	N
18	BMP	*ensure that "no catch basin at anytime will be more than 50 percent full"	2.3.7 a iii b	$440	2hrs/catch basin, for example put 10 catch basins assume only 10 more than 50% each year	N
19	BMP	*if more than 50% full during two routine cleanings, investigate the cause for excessive sediment loading	2.3.7 a iii b	$0	See No. 17/Annual Report	N
20	Admin	*describe these actions in the annual report	2.3.7 a iii b	$0	See No. 17/Annual Report	N
21	Admin	*document in annual report the plan for optimizing catch basin cleaning, inspections or scheduling	2.3.7 a iii b	$0	See No. 17/Annual Report	N
22	Admin	*include metrics used to determine that the plan is optimal for the MS4	2.3.7 a iii b	$0	See No. 17/Annual Report	N
23	Admin	*in each annual report list the total number of catch basins, number inspected and/or cleaned	2.3.7 a iii b	$0	See No. 17/Annual Report	N
24	Admin	*and "volume or mass of material removed from each catch basin draining to water quality limited waters"	2.3.7 a iii b	$0	See No. 17/Annual Report	N
25	Admin	*and "total volume or mass of material removed from all catch basins"	2.3.7 a iii b	$0	See No. 17/Annual Report	N
26	BMP	*Sweeping: develop and implement procedures for sweeping streets and municipal-owned lots	2.3.7 a iii c	$0	Included under No. 27, already in place, Based on Estimations for one annual sweep	Y
27	BMP	*sweep all streets (rural exceptions apply) a minimum of once a year in the spring	2.3.7 a iii c	$165,000	Already implemented, Based on Estimations provided by Rob McNeil	Y
28	BMP	*procedures shall include more frequent sweeping of targeted area based on various listed criteria	2.3.7 a iii c	$0	Minimal Developmental cost	N
29	BMP	*criteria include inspections, pollutant loads, catch basin cleanings, land use, TMDL or impaired waters	2.3.7 a iii c	$0	Minimal Developmental cost	N
30	Admin	*Each annual report shall include number of miles cleaned and volume or mass of material removed	2.3.7 a iii c	$0	See Miscellaneous No. 50	N
31	Admin	*for rural exception areas, either sweep per usual or develop specific procedures and place in first annual report	2.3.7 a iii c	$0	Included under No. 28	N
32	BMP	*properly store catch basin cleanings so they do not discharge to receiving waters	2.3.7 a iii d	$33,200	400tons @ $83/ton, based on numbers provided by Rob McNeil	Y
33	BMP	*establish and implement procedures for winter road maintenance including storage of salt and sand	2.3.7 a iii e	$476,449	Properly house materials in municipally owned properties, performed yearly	Y
34	BMP	*minimize use of sodium chloride and other salts; evaluate opportunities for alternative materials	2.3.7 a iii e	$176	8hrs @ $22/hr	N
35	Admin	*ensure that snow is not disposed into surface waters	2.3.7 a iii e	$0	Announcement to DPW workers involved with snow procedures	N
36	Admin	*establish procedures for O&M or all permitee-owned stormwater BMPs (e.g., swales, retention basins etc.)	2.3.7 a iii f	$176	8hrs @ $22/hr,	N
37	BMP	*inspect all such structures at least once annually	2.3.7 a iii f	$11,000	Assuming 2000 per year, 15 minutes per structure	N
38	Admin	*in annual report include status of work required in this part	2.3.7 a iv	$0	See Miscellaneous No. 50	N
39	Admin	*permittees shall keep a written record of all required activities	2.3.7 a v	$2,200	100hrs @ $22/hr,	N
40	BMP	*develop and fully implement a SWPPP for each of the listed facilities no later than 2 years after effective date	2.3.7 b	$1,540	Assume 4 hrs to update existing SWPPPs, 10hrs for new SWPPPS, 70 hr(s) @ 22/hr, assume 5 new facilities a	N
41	BMP	*includes maintenance garages, public works yards, transfer stations, other waste handling facilities	2.3.7 b	$0	Included under No. 40	N
42	BMP	*Identify name and title of staff of the Pollution Prevention Team for each facility	2.3.7 b ii a	$0	Included under No. 40	N
43	BMP	*for each facility: include map, description of activities, outfall locations, receiving waters and structural controls	2.3.7 b ii b	$0	Included under No. 40	N
44	BMP	*select , sign, install and implement the following 9 control measures to prevent or reduce discharge of pollutants	2.3.7 b ii c	$0	Implementation of a number of control measures, cost will depend upon type of enforcement	N
45	BMP	*take all reasonable measure to address quality of discharges that may not originate at the facility	2.3.7 b ii c	$0	extra work, depends on variations of the extent of impaired waters	N
46	Admin	*for areas that discharge to impaired waters, identify the control measures to address that issue	2.3.7 b ii c	$0	Included under No. 44	N
47	BMP	*SWPP Required Elements: Minimize or Prevent Exposure (e.g., move activities or materials under cover)	2.3.7 d 1	$0	Included under No. 44	N
48	BMP	*Good Housekeeping	2.3.7 d 2	$0	Included under No. 44	N
49	BMP	*Preventative Maintenance	2.3.7 d 3	$0	Included under No. 44	N
50	BMP	*Spill Prevention and Response	2.3.7 d 4	$0	Included under No. 44	N
51	BMP	*Erosion and Sediment Control	2.3.7 d 5	$0	Included under No. 44	N
52	BMP	*Management of Runoff	2.3.7 d 6	$0	Included under No. 44	N
53	BMP	*Salt Storage or Piles Containing Salt	2.3.7 d 7	$0	Included under No. 44	N
54	BMP	*Employee Training; document training date, title and duration; attendees; subjects covered during training	2.3.7 d 8	$0	Included under No. 44	N
55	BMP	*Maintenance of Control Measures	2.3.7 d 8	$0	Included under No. 44	N
56	BMP	*Inspect all areas exposed to stormwater and all stormwater control measures at least every calendar quarter	2.3.7 b iii a	$2,000	20hrs @ $100/hr, assume 30min/inspection and 10 facilities with four areas each	N
57	BMP	*at least one inspection shall occur when a stormwater discharge is occurring	2.3.7 b iii a	$2,937	267 outfalls, about 30min/area @ $22/hr	N
58	Admin	*document the date, time, name of inspector, weather, any control measures needing maintenance or repair, etc.	2.3.7 b iii a	$0	Already included as operating costs, should be green	N
59	BMP	*permitee shall repair or replace any control measures needing repair before the next anticipated storm event	2.3.7 b iii a	$0	costs for maintenance procedures	N
60	Admin	*shall report the findings from the Site inspections in the annual report	2.3.7 b iii a	$0	See Miscellaneous No. 50	N
61	Admin	*keep a written record of all required activities required in this section	2.3.7 b iv	$0	Minimal investment for records keeping	N

Estimated Annual Costs	$693,578
Estimated One-time Costs	$6,292
Estimated Intermittent Costs	$0

No.	BMP/Admin	Miscellaneous Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	Submit an NOI	1.7.1	$176	8hrs @ $22/hr, historical properties or endangered species will increase this cost	Y
2	Admin	*Document endangered species status (part of NOI)	1.9.1	$0	Included under No. 1	N
3	BMP	*Implement measures to protect endangered species	1.9.1	$0	cost varies. included under No. 1	N
4	Admin	Document Historic Properties Observation (part of NOI)	1.9.2	$0	minimal cost, Included under No. 50	N
5	BMP	*Describe effect of discharges on Historic properties	1.9.2	$0	Varies, Included under No. 1	N
6	Admin	*Report documents received re: such discharges	1.9.2	$0	Included under No. 1	N
7	Admin	*Provide results of Appendix D historic property screening	1.9.2	$0	Included under No. 1	N
8	BMP	Describe efforts to avoid or minimize impacts on such properties	1.9.2	Varies	Included under No. 1	Y
9	BMP	Develop a SWMP	1.10	$1,760	80hrs @ $22/hr,	Y
10	BMP	Implement a SWMP	1.10	$0	Included under No. 9	Y
11	Admin	*Update/modify SWMP	1.10	$440	20hrs @ $22/hr,	N
12	Admin	Provide SWMP "immediately" to various agencies and public	1.10.1	$0	Included under No. 9	Y
13	Admin	*Post SWMP online	1.10.1	$0	Included under No. 9	Y
14	Admin	Identify Names and titles of people implementing the SWMP	1.10.2	$0	Included under No. 9	N
15	Admin	**Include status of 2003 permit requirements**	1.10.2	$0	Included under No. 9	Y
16	Admin	*List all receiving water bodies, classifications, pollutants of concern	1.10.2	$0	Included under No. 9	N
17	Admin	*list all applicable TMDLs, WLAs	1.10.2	$0	Included under No. 9	N
18	Admin	*List all outfalls that discharge to each water body	1.10.2	$0	Included under No. 9	N
19	Admin	*list all public water sources that may be affected by SW discharges	1.10.2	$0	Included under No. 9	N
20	Admin	*List all interconnected MS4s and receiving water body	1.10.2	$0	Included under No. 9	N
21	Admin	*Include applicable TMDLs, WLAs and pollutants of concern	1.10.2	$0	Included under No. 9	N
22	Admin	*Document all new or increased discharges	1.10.2	$0	Included under No. 9	N
23	Admin	*Include map of separate storm sewer system (Map must be improved)	1.10.2	$0	Included under No. 9	N
24	Admin	List all discharges to impaired water and the response	1.10.2	$0	Included under No. 9	Y
25	Admin	*Describe BMPs proposed to meet TMDL requirements	1.10.2	$0	Included under No. 9	N
26	Admin	For each BMP, list the milestone, timeframe and assessment measure	1.10.2	$0	Included under No. 9	Y
27	Admin	*For each BMP, list person or department responsible for implementation	1.10.2	$0	Included under No. 9	N
28	Admin	*Describe BMPs proposed to meet impaired waters requirements	1.10.2	$0	Included under No. 9	N
29	Admin	Describe BMPs used to meet the 6 minimum control measures	1.10.2	$0	Included under No. 9	Y
30	Admin	*List measures to avoid/minimize impacts to surface drinking waters	1.10.2	$0	Included under No. 9	N
31	BMP	*Ensure that discharges "do not cause or contribute" to an exceedance of WQ standards	2.1	$0	Included under No. 9	N
32	BMP	*For TMDL waters, meet requirements of Appendix F (NB: contains multiple add'l req'ts)	2.1.1 b	Varies	May range into millions of dollars, no one has estimated this yet	N
33	BMP	*For impaired waters meet requirements of Appendix H (NB: contains multiple add'l req'ts)	2.1.1 c	Varies	May range into millions of dollars, no one has estimated this yet	N
34	BMP	*For any exceedances of WQ standards to TMDL or impaired waters, eliminate it within 60 days	2.1.1 d	Varies	May range into millions of dollars, no one has estimated this yet	N
35	BMP	*For any increased discharge, comply with MassDEP's regulations at 314 CMR 4.04	2.1.2 a	Varies	Cost will vary	N
36	BMP	*Demonstrate no net increase in pollutants for discharges to any 303 (d) or 305(b) water (previously only had to identify if 303 d)	2.1.2 b	Varies	Cost will vary	N
37	Admin	*Identify all discharges to waters that are impaired or which have TMDLs (Both in SWMP and Annual report)	2.2	$0	Varies depending on EPA interpretations	N
38	Admin	*Permittee shall annually self-evaluate and maintain the evaluation in its SWMP	4.1 a	$0	Included under No. 9	N
39	Admin	*In evaluating the appropriateness of BMPs, permittees may add BMPs at any time	4.1 b	$88	4hrs @ $22/hr, paperwork for new BMP	N
40	Admin	Subtracting or replacing BMPs may only be done in limited circumstances, after showing the BMP is ineffective	4.1 b	Varies	Cost of replacement will depend on the BMP being used	Y
41	Admin	*Each Annual shall include a brief explanation of any BMP modification	4.1 b	$0	Included under Public Education No. 7	N
42	Admin	EPA or MassDEP may require the permitte to add, modify, etc., any BMP to satisfy conditions of the permit	4.1.c	$0	Minimal cost	Y
43	Admin	*The permittee shall keep all record required by this permit for at least five years	4.2 a	$880	40hrs at $22/hr	N
44	Admin	*"Records" includes "information used in the development of any written program . . . monitoring results, etc."	4.2 a	$0	Record keeping, doesn't cost anything to implement	N
45	Admin	these records all be made available to the public	4.2 c	$0	Record keeping, doesn't cost anything to implement	Y
46	Admin	*the permitee "shall document all monitoring results each year in the annual report"	4.3 b	$0	Included under Public Education No. 7	N
47	Admin	*that shall include the date, outfall identifier, location, weather, precipitation and screening or analysis results	4.3 b	$0	Included under No. 46	N
48	Admin	*include all monitoring results for the current reporting period and for the entire permit term	4.3 b	$0	Included under No. 46	N
49	Admin	*permittee shall include "results from any other stormwater or receiving water quality monitoring or studies . . ."	4.3 c	$0	Included under No. 46	N
50	Admin	The annual report shall include a self-assessment of compliance; an assessment of the appropriateness of BMPs	4.4 b i	$12,000	Consulting fee for annual report, increased from $3000 based on Matt's estimated	Y
51	Admin	*The status of any required plans	4.4 b iii	$0	Included under No. 50	N
52	Admin	*"Identification of all discharges determined to be causing or contributing to an exceedance" of WQ standards	4.4 b iii	$0	Included under No. 50	N
53	Admin	*For discharges to TMDLs, identify specific BMPs used to address those requirements	4.4 b iii	$0	Included under No. 50	N
54	Admin	*For discharges to impaired waters, "a description of each BMP required by Appendix H" and all deliverables	4.4 b iii	$0	Included under No. 50	N
55	Admin	*Assessment of the progress toward meeting the requirements for the 6 minimum control measures (see details)	4.4 b iv	$0	Included under No. 50	N
56	Admin	*"All outfall screening and monitoring data" for the reporting term and cumulative for the permit term	4.4 b v	$0	Included under No. 50	N
57	Admin	Description of activities for the next reporting cycle	4.4 b vi	$0	Included under No. 50	Y
58	Admin	Description of any changes in identified BMPs or measurable goals	4.4 b vii	$0	Included under No. 50	Y
59	Admin	*Description of activities undertaken by any entity contracted for achieving any requirement of the permit	4.4 b viii	$0	Included under No. 50	N

Estimated Annual Costs	$12,968
Estimated One-time Costs	$2,376
Estimated Intermittent Costs	$0

Appendix G

Appendix G

Sample Interview Material

Preamble

We are a group of students from Worcester Polytechnic Institute (WPI). We are conducting this interview in order to learn more about the cost of implementing the new 2014 MS4 permit. By participating in this interview, you will help us assess the total cost of compliance for _____(Town Name). If you want, we are able to keep your responses anonymous so you cannot be identified in this report. Your participation in this interview is completely voluntary and you can abstain from answering any question or stop the interview at any point. If you would like, we can provide you with a copy of the results at the end of our project. This project is a collaboration between the Massachusetts Department of Environmental Protection (MassDEP) and WPI, and all of us appreciate your participation.

Sample Interview Questions

1. Does your municipality use a contractor for stormwater management?
    a. If so, may we have their contact information?
2. How much does your municipality spend on public education?
    a. Does your municipality provide pamphlets?
    b. Does your municipality have public access television programs about stormwater management?
    c. How much do you spend on posting signage?

    d. Do you use social media to provide information? If so, how much does it cost?

3. How much does your municipality spend on public participation?
    a. Do you hold town meetings about stormwater management?
4. How much does your municipality spend on illicit discharge and elimination?
    a. Does your municipality use the database?
    b. How much does it cost you to map your catchment basins?
    c. Does your municipality have retention ponds for stormwater? If so, do you maintain them?
    d. How often does your municipality street sweep?
    e. How much does it cost you to remove illicit discharges?
    f. How much does it cost you to train municipal employees to use the detection equipment?
5. How much does your municipality spend on construction site runoff control?
    a. How much does it cost to notify municipal residents about impending construction projects?
    b. How much does it cost you to inspect construction sites?
6. How much does your municipality spend on post-construction site runoff control?
    a. How much does it cost for you to inspect the construction sites after completion of the construction?
7. How much does your municipality spend on good housekeeping?
    a. How much does it cost your municipality to maintain stormwater management BMPs every year?
    b. How much does it cost to train your employees to maintain BMPs?

c. How much does it cost you to inspect your best management practices?

d. How much does it cost you per year to street sweep?

8. Could you provide us with a cost report for your municipality?

    a. Itemized report stormwater spending?

9. Do you believe that your town effectively implemented the requirements of the 2003 MS4 permit?

10. To what extent do you believe your town is prepared to implement the requirements of the new MS4 permit?

    a. What challenges do you foresee in implementing the new MS4 permit?

    b. How do you plan to provide additional funding for implementing the new permit?

Appendix H

Control Measure	Estimated Annual Costs	Estimated One-time Costs	Estimated Intermittent Costs
Public Education and Outreach	$0	$0	$0
Public Involvement and Participation	$0	$0	$0
Illicit Discharge Detection and Elimination Program	$0	$0	$0
Construction Site Stormwater Runoff Control	$0	$0	$0
Post Construction Stormwater Management	$0	$0	$0
Good Housekeeping	$0	$0	$0
Non-Control Measure			
Miscellaneous	$0	$0	$0
Totals	**$0**	**$0**	**$0**

KEY:

Yearly	No. = Reference Number
Once	BMP/Admin = Is the requirement completed with either a BMP or Administrative work
As Needed	X Requirement = The short name for a requirement
	Requirement = Section in the 2014 MS4 permit draft
	Cost = Cost of completing the requirement
	Justification = List of methods used to complete the requirement, as well supporting data from sources
	In Place (Y/N) = Is the requirement listed currently in place

No.	BMP/Admin	Public Education and Outreach Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	Continue public education program required by 2003 permit	2.3.2 a			
2	Admin	*Define goals, express specific messages define audience for each message	2.3.2 a			
3	Admin	*Identify parties responsible for each message	2.3.2 a			
4	Admin	*Develop and send out two separate messages for each of 4 different audiences	2.3.2 c			
5	Admin	*Show evidence that messages are achieving results	2.3.2 e			
6	Admin	*Identify method used to evaluate effectiveness of messages	2.3.2 e			
7	Admin	*Put in annual report the methods of distribution and methods to assess effectiveness	2.3.2 g			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Public Involvement and Participation Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*Comply with state public Notice requirements	2.3.3 a			
2	Admin	Provide annual opportunity for public to participate in review and implementation of SWMP	2.3.3 b			
3	Admin	*Put in annual report these public participation activities	2.3.3 c			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Illicit Discharge Detection and Elimination Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Eliminate any illicit discharge to the stormwater system as expeditiously as possible	2.3.4.2			
2	BMP	*Identify who is responsible for any such discharges	2.3.4.2			
3	Admin	*If elimination takes more than 60 days, establish an expeditious schedule for elimination	2.3.4.2			
4	Admin	*If more than 60 days, report dates of identification and schedules in annual report	2.3.4.2			
5	BMP	Implement measures to control non-stormwater discharges if they add significant pollution	2.3.4.3			
6	Admin	*Identify all known locations where SSOs have discharged to the MS4 in last 5 years	2.3.4.4 b			
7	Admin	*For each such SSO discharge, include date and time, location, volume, suspected cause	2.3.4.4 b			
8	Admin	*Also include whether each entered any surface water and what corrective actions were taken	2.3.4.4 b			
9	Admin	*Also include corrective measures planned and implementation schedule	2.3.4.4 b			
10	Admin	*Maintain the SSO inventory as part of the SWMP and the Annual Reports	2.3.4.4 b			
11	Admin	*Provide oral and written notice to EPA and MassDEP for any SSO occurrence	2.3.4.4 c			
12	BMP	*Develop an inventory of each MS4 outfall, including location, interconnections, and condition (different only in that it requires the condition of the outfall)	2.3.4.5			
13	Admin	*Update inventory annually to include monitoring program	2.3.4.5 b			
14	BMP	*Physically label all MS4 outfall pipes	2.3.4.5 b			
15	Admin	*For each outfall list unique identifier, receiving water, date of most recent inspection	2.3.4.5 c			
16	Admin	*Also include dimensions, shape, material, physical condition and indicators of non-SW discharges	2.3.4.5 c			
17	BMP	*Revise existing map of stormwater system within 2 years of effective date of the permit	2.3.4.6			
18	BMP	*Map shall include all outfalls, pipes, manholes, catch basins, interconnections, open channels	2.3.4.6 a i			
19	BMP	*Also include all municipally-owned BMPs (e.g., retention basins, oil/water separators, etc.)	2.3.4.6 a i			
20	BMP	*Also include catchment delineation and all waters listed on the 303(d) or 305 (b) list	2.3.4.6 a i			
21	BMP	*Also include municipal sanitary sewers or combined sewer systems	2.3.4.6 a ii			
22	BMP	*Include various recommended elements	2.3.4.6 a iii			
23	BMP	*Update the map to reflect newly discovered information and corrections or modifications	2.3.4.6 b			
24	Admin	*Report on the progress toward completion of the map in each annual report	2.3.4.6 c			
25	BMP	*Write an Illicit Discharge Detection and Elimination (IDDE) program document (Discrete, specifically mentions the document must be written out)	2.3.4.7			
26	Admin	Adopt an IDDE ordinance	2.3.4.7 a			
27	Admin	*Program shall clearly identify IDDE responsibilities and provide description of areas of responsibility	2.3.4.7 b			
28	BMP	*Assess and priority rank each catchment into one of 4 possible categories (soupped up from previous "priority" mark in 2003)	2.3.4.7 c i			
29	Admin	*Priority rank each catchment within each category (except those "excluded") using 8 factors (soupped up from previous "priority" mark in 2003)	2.3.4.7 c ii			
30	Admin	*Gather all information needed for the 8 screening factors (e.g., industrial areas > 40 years old)	2.3.4.7 c ii			
31	Admin	*Complete ranking using existing information within 1 year; update in annual report	2.3.4.7 c iii			
32	Admin	*In annual report include summary of evidence of known/suspected illicit discharges by catchment	2.3.4.7 c iii			
33	Admin	*Also include corrective measures and schedule for correcting each illicit discharge	2.3.4.7 c iii			
34	Admin	*Develop written procedure for screening and sampling of outfalls	2.3.4.7 d			
35	Admin	*Include procedures for sample collection, use of field kits and storage and conveyance of samples	2.3.4.7 d i			
36	BMP	*If outfall is inaccessible, report the first accessible upstream structure	2.3.4.7 d ii			
37	BMP	*Perform dry weather screening when and how prescribed; identify in annual report any follow-up needed	2.3.4.7 d iii			
38	BMP	*Perform wet weather screening when and how prescribed	2.3.4.7 d iv			
39	BMP	*Sample at minimum for 7 listed factors	2.3.4.7 d v			
40	Admin	*Catchments with specified septic or other results shall be listed as "High Priority" catchments	2.3.4.7 d vi			
41	BMP	*Develop written Catchment Investigation Procedure including review of maps and historic records	2.3.4.7 e			
42	BMP	*Also include manhole investigation methodology and procedures to confirm sources of illicit discharges	2.3.4.7 e			
43	BMP	*For each catchment review sanitary sewer and storm sewer construction plans; prior work on either	2.3.4.7 e i			
44	BMP	*Also review Health department records for septic system or sanitary sewer system failures or complaints	2.3.4.7 e i			
45	Admin	*Identify and record any of the 12 System Vulnerability Factors (e.g., infrastructure > 40 years old)	2.3.4.7 e i			
46	Admin	*Document and annually report presence or absence of the 12 System Vulnerability Factors for each catchment	2.3.4.7 e i			
47	Admin	*Include these required elements of written manhole investigation and catchment investigation procedures	2.3.4.7 e ii			
48	Admin	*Include these required elements in written dry weather investigation procedure	2.3.4.7 e ii a			
49	Admin	*Include these required elements in written wet weather investigation procedure	2.3.4.7 e ii b			
50	Admin	*Develop procedures to isolate and confirm illicit sources (e.g., dye testing, smoke testing, caulk dams, etc.)	2.3.4.7 e iii			
51	Admin	*In annual report, for each illicit source list the location, its source, description of the discharge	2.3.4.7 f			
52	Admin	*Also list date and method of discovery, date of elimination, mitigation or enforcement action	2.3.4.7 f			
53	Admin	*And estimate volume of flow reduced	2.3.4.7 f			
54	BMP	*One year after illicit discharge removal, perform confirmatory screening; wet, dry or both	2.3.4.7 f			
55	BMP	*Schedule follow up screening within 5 years after confirmatory screening	2.3.4.7 g			
56	BMP	*Develop and implement procedures to prevent illicit discharges and SSOs	2.3.4.7 h			
57	Admin	*Complete and report dry weather screening and sampling of High and Low Priority outfalls within 3 years	2.3.4.8 a			
58	Admin	*"All data shall be reported in each annual report . . ."	2.3.4.8 a			
59	Admin	*Begin implementation of 2.3.4.7 d work no later than 15 months	2.3.4.8 b			
60	Admin	*Implement and report Catchment Investigation Procedure in every catchment . . .	2.3.4.8 c			
61	Admin	*In a minimum of 80% of the MS4 area serviced by Problem Catchments within 3 years and 100% within 5 years	2.3.4.8 c i			
62	Admin	*For all catchments where sampling indicates sewer input within 5 years	2.3.4.8 c ii			
63	Admin	*In 40% of all area served by all MS4 catchments within 5 years and in 100% of 4 area in 10 years	2.3.4.8 c iii			
64	Admin	*Track progress toward these milestones in each annual report	2.3.4.8 e			
65	Admin	*Define or describe indicators for tracking program success; demonstrate efforts to locate illicit discharges	2.3.4.9			
66	Admin	*Also include percent and area in acres evaluated; volume of sewage removed; place in annual report (more detailed, 2003 only asks to measure progress)	2.3.4.9			
67	Admin	provide annual training to employees involved in IDDE program	2.3.4.10			
68	Admin	*Include type and frequency of training in the annual report (2003 -> The program must include an employee training component)	2.3.4.10			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Continue to implement construction ordinance work from 2003 permit; expand to include 1 acre or more	2.3.5 a			
2	BMP	Develop and implement a construction site runoff program	2.3.5 c			
3	Admin	An ordinance that requires sediment and erosions controls and for other wastes at construction sites	2.3.5 c i			
4	Admin	Adopt written procedures for inspections and enforcement of the ordinance within 1 year (2003 -> (g.) Procedures for inspections and enforcement of control measures at construction sites.)	2.3.5 c ii			
5	Admin	*Document the procedures and responsibilities to implement in the SWMP	2.3.5 c ii			
6	Admin	*Include requirements for site operators to implement BMPs (e.g., reduce disturbed area, protect slopes, etc.)	2.3.5 c iii			
7	Admin	*Include requirements for site operators to control other wastes	2.3.5 c iv			
8	Admin	*Develop written procedures for site plan review and inspection and enforcement within 1 year (003 -> nearly same, now has time requirement)	2.3.5 c v			
9	Admin	*Include pre-construction review, consideration for protection of water quality impacts, LID components	2.3.5 c v			
10	Admin	*And receipt of information from the public, inspections during and after BMP installation (now covers post construction)	2.3.5 c v			
11	Admin	*And "qualifications necessary to perform the inspections"	2.3.5 c v			
12	Admin	*And procedure for tracking the number of site reviews, inspections and enforcement actions	2.3.5 c v			
13	Admin	*All to be included in the annual report	2.3.5 c v			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Post Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*develop implement and enforce a post-construction SW program for new developments and redevelopments	2.3.6 a			
2	Admin	*adopt or amend a local ordinance to control projects that disturb an acre or more	2.3.6 a ii			
3	BMP	*retain and/or treat first inch of runoff; where technically feasible do retention first	2.3.6 a ii a			
4	BMP	*"from all impervious surfaces on site"	2.3.6 a ii a			
5	Admin	*sites with soil contamination problems or at industrial sites shall not include any infiltration BMPs	2.3.6 a ii b			
6	Admin	*infiltration systems near environmentally sensitive areas must include shutdown and containment systems	2.3.6 a ii c			
7	Admin	*all BMPs must be constructed in accordance with the MA Stormwater Handbook	2.3.6 a ii d			
8	Admin	*this system shall include development of a long term O&M plan to inspect and repair BMPs	2.3.6 a ii e			
9	Admin	*systems shall be designed "to avoid disturbance of areas susceptible to erosion and sediment loss"	2.3.6 a ii f			
10	BMP	*systems shall require submittal of as-built drawings that depict all on site controls	2.3.6 a iii			
11	Admin	*shall have procedures to ensure O&M, such as dedicated funds, escrow accounts or management contracts	2.3.6 a iii			
12	Admin	*may include annual self-certification program	2.3.6 a iii			
13	Admin	*annual report shall include measures that the permittee has done to meet these requirements	2.3.6 a iii			
14	BMP	*w/in 3 years document current street design and parking rules that affect creation of impervious cover	2.3.6 b			
15	BMP	*shall be used by permittee to determine if changes "can be made to support low impact design options"	2.3.6 b			
16	BMP	*if changes can be made, assessment shall include recommendations and proposed schedules to adopt changes	2.3.6 b			
17	BMP	*permittee "shall implement all recommendations . . ."; assessment must be placed in the SWMP	2.3.6 b			
18	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 b			
19	BMP	*w/in 4 years assess local rules to determine feasibility of allowing green roofs, water harvesting and LID BMPs	2.3.6 c			
20	Admin	*assessment shall indicate if and under what circumstances these practices are allowed	2.3.6 c			
21	BMP	*if practices not allowed, determine what hinders use of these practices and what changes can be made	2.3.6 c			
22	BMP	*provide a schedule of implementation of recommendations	2.3.6 c			
23	BMP	*"permittee shall implement all recommendations, in accordance with the schedules . . ."	2.3.6 c			
24	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 c			
25	Admin	*estimate the annual increase or decrease in Impervious Area and Directly Connected Impervious Area	2.3.6 d			
26	Admin	*tabulate results by sub-basins delineated per 2.3.4.6 a I	2.3.6 d i			
27	Admin	*must include conventional pavements, driveways, parking lots and rooftops	2.3.6 d i			
28	Admin	*starting with second annual report, estimate each sub-basin added or removed each year	2.3.6 d ii			
29	Admin	*break out those figures by development, redevelopment or retrofit by permittee, by others voluntarily	2.3.6 d ii			
30	Admin	*. . . or in compliance with the permittee's ordinances or bylaws	2.3.6 d ii			
31	Admin	*within 4 years complete inventory and ranking of Municipal property suitable for modification or retrofit to . . .	2.3.6 d iii			
32	Admin	*. . .reduce frequency, volume and pollutant loads of stormwater discharges by reduction of impervious area	2.3.6 d iii			
33	Admin	*shall include both on site and off site reduction of IA and DCIA (e.g., parking lots, buildings, etc.)	2.3.6 d iii			
34	Admin	*also include existing rights-of-way,	2.3.6 d iii			
35	Admin	*for suitability the evaluation shall consider factors such as depth to water table; subsurface geology; access	2.3.6 d iii			
36	Admin	*priority ranking shall consider factors such as CIP schedules; current storm sewer level of service, etc.	2.3.6 d iii			
37	Admin	*starting with fifth year annual report, report on status of all such inventoried properties	2.3.6 d iii			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Pollution Prevention and Good Housekeeping Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*W/in 1 year develop or update written O&M procedures for listed municipal facilities	2.3.7 a i			
2	Admin	*w/in 1 year inventory all permittee owned facilities in these "good housekeeping" categories	2.3.7 a ii			
3	Admin	*For Parks and Open Space: procedures to address the use, storage and minimization of pesticides, fertilizers, etc	2.3.7 a ii a			
4	Admin	*to be reviewed annually and updated as necessary	2.3.7 a ii a			
5	Admin	*evaluate lawn maintenance and landscaping activities to be protective of water quality	2.3.7 a ii a			
6	Admin	*including reduced mowing, proper disposal of lawn clippings, use of drought resistant plantings	2.3.7 a ii a			
7	Admin	*establish pet waste handling collection, disposal and signage at all parks and open spaces	2.3.7 a ii a			
8	Admin	*establish procedures for scheduled cleaning and sufficient number of trash containers	2.3.7 a ii a			
9	Admin	*For Buildings and Facilities, such as town offices, police and fire stations, municipal pools, etc	2.3.7 a ii b			
10	Admin	*evaluate the use. Storage and disposal of petroleum products and train employees on proper procedures	2.3.7 a ii b			
11	Admin	*ensure that spill prevention is in place and coordinate with fire department	2.3.7 a ii b			
12	Admin	*develop management procedures for dumpsters and other waste management equipment	2.3.7 a ii b			
13	Admin	*For Vehicles and Equipment: establish procedures for storage of permittee vehicles, including inside storage	2.3.7 a ii c			
14	Admin	*establish procedures to ensure that vehicle wash water does not enter the SW system	2.3.7 a ii c			
15	Admin	*evaluate fueling areas to minimize exposure	2.3.7 a ii c			
16	Admin	*Infrastructure O&M: w/in 1 year develop and implement procedures to take care for the MS4 system	2.3.7 a iii a			
17	Admin	*optimize routine inspections (e.g., prioritize catch basins located near construction sites)	2.3.7 a iii b			
18	BMP	*ensure that "no catch basin at anytime will be more than 50 percent full"	2.3.7 a iii b			
19	BMP	*if more than 50% full during two routine cleanings, investigate the cause for excessive sediment loading	2.3.7 a iii b			
20	Admin	*describe these actions in the annual report	2.3.7 a iii b			
21	Admin	*document in annual report the plan for optimizing catch basin cleaning, inspections or scheduling	2.3.7 a iii b			
22	Admin	*include metrics used to determine that the plan is optimal for the MS4	2.3.7 a iii b			
23	Admin	*in each annual report list the total number of catch basins, number inspected and/or cleaned	2.3.7 a iii b			
24	Admin	*and "volume or mass of material removed from each catch basin draining to water quality limited waters"	2.3.7 a iii b			
25	Admin	*and "total volume or mass of material removed from all catch basins"	2.3.7 a iii b			
26	BMP	*Sweeping: develop and implement procedures for sweeping streets and municipal-owned lots	2.3.7 a iii c			
27	BMP	*sweep all streets (rural exceptions apply) a minimum of once a year in the spring	2.3.7 a iii c			
28	BMP	*procedures shall include more frequent sweeping of targeted area based on various listed criteria	2.3.7 a iii c			
29	BMP	*criteria include inspections, pollutant loads, catch basin cleanings, land use, TMDL or impaired waters	2.3.7 a iii c			
30	Admin	*Each annual report shall include number of miles cleaned and volume or mass of material removed	2.3.7 a iii c			
31	Admin	*for rural exception areas, either sweep per usual or develop specific procedures and place in first annual report	2.3.7 a iii c			
32	BMP	*properly store catch basin cleanings so they do not discharge to receiving waters	2.3.7 a iii d			
33	BMP	*establish and implement procedures for winter road maintenance including storage of salt and sand	2.3.7 a iii e			
34	BMP	*minimize use of sodium chloride and other salts; evaluate opportunities for alternative materials	2.3.7 a iii e			
35	Admin	*ensure that snow is not disposed into surface waters	2.3.7 a iii e			
36	Admin	*establish procedures for O&M or all permittee-owned stormwater BMPs (e.g., swales, retention basins etc.)	2.3.7 a iii f			
37	BMP	*inspect all such structures at least once annually	2.3.7 a iii f			
38	Admin	*in annual report include status of work required in this part	2.3.7 a iv			
39	Admin	*permittees shall keep a written record of all required activities	2.3.7 a v			
40	BMP	*develop and fully implement a SWPPP for each of the listed facilities no later than 2 years after effective date	2.3.7 b			
41	BMP	*includes maintenance garages, public works yards, transfer stations, other waste handling facilities	2.3.7 b			
42	BMP	*Identify name and title of staff of the Pollution Prevention Team for each facility	2.3.7 b ii a			
43	BMP	*for each facility: include map, description of activities, outfall locations, receiving waters and structural controls	2.3.7 b ii b			
44	BMP	*select , sign, install and implement the following 9 control measures to prevent or reduce discharge of pollutants	2.3.7 b ii c			
45	BMP	*take all reasonable measure to address quality of discharges that may not originate at the facility	2.3.7 b ii c			
46	Admin	*for areas that discharge to impaired waters, identify the control measures to address that issue	2.3.7 b ii c			
47	BMP	*SWPP Required Elements: Minimize or Prevent Exposure (e.g., move activities or materials under cover)	2.3.7 d 1			
48	BMP	*Good Housekeeping	2.3.7 d 2			
49	BMP	*Preventative Maintenance	2.3.7 d 3			
50	BMP	*Spill Prevention and Response	2.3.7 d 4			
51	BMP	*Erosion and Sediment Control	2.3.7 d 5			
52	BMP	*Management of Runoff	2.3.7 d 6			
53	BMP	*Salt Storage or Piles Containing Salt	2.3.7 d 7			
54	BMP	*Employee Training; document training date, title and duration; attendees; subjects covered during training	2.3.7 d 8			
55	BMP	*Maintenance of Control Measures	2.3.7 d 8			
56	BMP	*Inspect all areas exposed to stormwater and all stormwater control measures at least every calendar quarter	2.3.7 b iii a			
57	BMP	*at least one inspection shall occur when a stormwater discharge is occurring	2.3.7 b iii a			
58	Admin	*document the date, time, name of inspector, weather, any control measures needing maintenance or repair, etc	2.3.7 b iii a			
59	BMP	*permittee shall repair or replace any control measures needing repair before the next anticipated storm event	2.3.7 b iii a			
60	Admin	*shall report the findings from the Site inspections in the annual report	2.3.7 b iii a			
61	Admin	*keep a written record of all required activities required in this section	2.3.7 b iv			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Miscellaneous Requirement		Reference	Cost	Justification	In Place (Y/N)
1	BMP	Submit an NOI		1.7.1			
2	Admin	*Document endangered species status (part of NOI)		1.9.1			
3	BMP	*Implement measures to protect endangered species		1.9.1			
4	Admin	Document Historic Properties Observation (part of NOI)		1.9.2			
5	BMP	*Describe effect of discharges on Historic properties		1.9.2			
6	Admin	*Report documents received re: such discharges		1.9.2			
7	Admin	*Provide results of Appendix D historic property screening		1.9.2			
8	BMP	Describe efforts to avoid or minimize impacts on such properties		1.9.2			
9	BMP	Develop a SWMP		1.10			
10	BMP	Implement a SWMP		1.10			
11	Admin	*Update/modify SWMP		1.10			
12	Admin	Provide SWMP "immediately" to various agencies and public		1.10.1			
13	Admin	*Post SWMP online		1.10.1			
14	Admin	Identify Names and titles of people implementing the SWMP		1.10.2			
15	Admin	***Include status of 2003 permit requirements**		1.10.2			
16	Admin	*List all receiving water bodies, classifications, pollutants of concern		1.10.2			
17	Admin	*list all applicable TMDLs, WLAs		1.10.2			
18	Admin	*List all outfalls that discharge to each water body		1.10.2			
19	Admin	*list all public water sources that may be affected by SW discharges		1.10.2			
20	Admin	*List all interconnected MS4s and receiving water body		1.10.2			
21	Admin	*Include applicable TMDLs, WLAs and pollutants of concern		1.10.2			
22	Admin	*Document all new or increased discharges		1.10.2			
23	Admin	*Include map of separate storm sewer system (Map must be improved)		1.10.2			
24	Admin	List all discharges to impaired water and the response		1.10.2			
25	Admin	*Describe BMPs proposed to meet TMDL requirements		1.10.2			
26	Admin	For each BMP, list the milestone, timeframe and assessment measure		1.10.2			
27	Admin	*For each BMP, list person or department responsible for implementation		1.10.2			
28	Admin	*Describe BMPs proposed to meet impaired waters requirements		1.10.2			
29	Admin	Describe BMPs used to meet the 6 minimum control measures		1.10.2			
30	Admin	*List measures to avoid/minimize impacts to surface drinking waters		1.10.2			
31	BMP	*Ensure that discharges "do not cause or contribute" to an exceedance of WQ standards		2.1			
32	BMP	*For TMDL waters, meet requirements of Appendix F (NB: contains multiple add'l req'ts)		2.1.1 b			
33	BMP	*For impaired waters meet requirements of Appendix H (NB: contains multiple add'l req'ts)		2.1.1 c			
34	BMP	*For any exceedances of WQ standards to TMDL or impaired waters, eliminate it within 60 days		2.1.1 d			
35	BMP	*For any increased discharge, comply with MassDEP's regulations at 314 CMR 4.04		2.1.2 a			
36	BMP	*Demonstrate no net increase in pollutants for discharges to any 303 (d) or 305(b) water (previously only had to identify if 303 d)		2.1.2 b			
37	Admin	*Identify all discharges to waters that are impaired or which have TMDLs (Both in SWMP and Annual report)		2.2			
38	Admin	*Permittee shall annually self-evaluate and maintain the evaluation in its SWMP		4.1 a			
39	Admin	*In evaluating the appropriateness of BMPs, permittees may add BMPs at any time		4.1 b			
40	Admin	Subtracting or replacing BMPs may only be done in limited circumstances, after showing the BMP is ineffective		4.1 b			
41	Admin	*Each Annual shall include a brief explanation of any BMP modification		4.1 b			
42	Admin	EPA or MassDEP may require the permittee to add, modify, etc., any BMP to satisfy conditions of the permit		4.1.c			
43	Admin	*The permittee shall keep all record required by this permit for at least five years		4.2 a			
44	Admin	*"Records" includes "information used in the development of any written program . . . monitoring results, etc."		4.2 a			
45	Admin	these records all be made available to the public		4.2 c			
46	Admin	*the permittee "shall document all monitoring results each year in the annual report"		4.3 b			
47	Admin	*that shall include the date, outfall identifier, location, weather, precipitation and screening or analysis results		4.3 b			
48	Admin	*include all monitoring results for the current reporting period and for the entire permit term		4.3 b			
49	Admin	*permittee shall include "results from any other stormwater or receiving water quality monitoring or studies . . ."		4.3 c			
50	Admin	The annual report shall include a self-assessment of compliance; an assessment of the appropriateness of BMPs		4.4 b i			
51	Admin	*The status of any required plans		4.4 b iii			
52	Admin	*"Identification of all discharges determined to be causing or contributing to an exceedance" of WQ standards		4.4 b iii			
53	Admin	*For discharges to TMDLs, identify specific BMPs used to address those requirements		4.4 b iii			
54	Admin	*For discharges to impaired waters, "a description of each BMP required by Appendix H" and all deliverables		4.4 b iii			
55	Admin	*Assessment of the progress toward meeting the requirements for the 6 minimum control measures (see details)		4.4 b iv			
56	Admin	*"All outfall screening and monitoring data" for the reporting term and cumulative for the permit term		4.4 b v			
57	Admin	Description of activities for the next reporting cycle		4.4 b vi			
58	Admin	Description of any changes in identified BMPs or measurable goals		4.4 b vii			
59	Admin	*Description of activities undertaken by any entity contracted for achieving any requirement of the permit		4.4 b viii			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

ATTACHMENT B

EMAIL FROM DEPARTMENT OF CONSERVATION AND RECREATION

REGARDING RECORDED NITROGEN, DATED 1/7/15

Subject: Fwd: nitrogen data
From: Isabel McCauley <imccauley@holdenma.gov>
Date: 2/27/2015 10:57 AM
To: John Woodsmall <jwoodsmall@holdenma.gov>

-------- Forwarded Message --------
Subject:nitrogen data
Date: Wed, 7 Jan 2015 13:04:00 -0500
From: Pistrang, Larry (DCR) <larry.pistrang@state.ma.us>
To:'imccauley@holdenma.gov' <imccauley@holdenma.gov>

I don't know how this will be received, but hope that EPA will realize that watershed communities are very different from the general population. The existence of long-term data and the knowledge that sampling will continue indefinitely WITHOUT the need for town funds should hopefully make them happy and waive the nitrogen specific requirements, especially since all concentrations (dry weather or wet weather) are very low.

DCR Division of Watershed Management staff have collected routine nutrient samples monthly or more frequently from the Quinapoxet River for many years. The sampling station is downstream of all of Holden's stormwater outfalls except for the few that discharge to water resources that flow south into Worcester. From 2007 through 2013 a total of 96 grab samples were collected by DCR staff and analyzed at the MWRA Deer Island Lab for a variety of parameters including NH_3, NO_2, and NO_3. Results are shown below. All concentrations are in mg/L.

Dry weather routine grab samples – Quinapoxet River (2007-2013):

PARAMETER	RANGE OF VALUES	AVERAGE VALUE
NH_3	<0.005 – 0.071	0.013
NO_2	<0.005	<0.005
NO_3	0.020 – 0.640	0.247

Samples were also collected during storm events from 2011 through 2013. Flow-based composite samples were collected during rising limb and falling limb conditions. A total of 34 composite samples were collected by DCR staff and analyzed at the MWRA Deer Island Lab. Results are shown below.

Wet weather flow-based composite samples – Quinapoxet River (2011-2013):

PARAMETER	RANGE OF VALUES	AVERAGE VALUE	AVE OF RISING LIMB ONLY

NH_3	<0.005 – 0.036	0.009	0.010
NO_2	<0.005	<0.005	<0.005
NO_3	0.101 – 0.433	0.231	0.249

I hope this helps. Let me know if there is anything else I can provide to assist you.

Lawrence A. Pistrang
Environmental Analyst IV
DCR Divison of Water Supply Protection
180 Beaman Street, West Boylston, MA 01583
508-792-7423

Isabel McCauley <imccauley@holdenma.gov>
Town Engineer
DPW
Town of Holden

Attachments:

imccauley.vcf 300 bytes

Town of Holden
MASSACHUSETTS

OFFICE OF THE TOWN MANAGER

Jacquelyn M. Kelly
Town Manager

February 19, 2015

Newton Tedder
US EPA Region 1
5 Post Square Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

Re: Comments on the Draft NPDES General Permit for Stormwater Discharges from MS4 in Massachusetts

Dear Mr. Tedder:

As the Town Manager and chief executive officer of Holden, I am pleased to have an opportunity to submit comments to the Environmental Protection Agency (EPA) regarding the National Pollutant Discharge Elimination System (NPDES) Draft General Permit (Draft Permit) for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts. Thank you for the opportunity to provide these comments. I note that the Holden Department of Public Works will be submitting a separate set of comments, and that I hereby incorporate those comments into mine. I am submitting these comments in an effort to bring to light the substantial impacts this draft permit will have on our community.

The Town of Holden is a community of nearly 18,000 people and is host to Massachusetts State Routes 31, 122A, 68 and 190. Approximately one third of the Town is protected open space intended to preserve the water quality of the reservoirs supplying drinking water to the Worcester and Boston metropolitan areas. Holden is a Wachusett Reservoir Watershed community; most of the protected lands are owned or managed by the Massachusetts Department of Conservation and Recreation (DCR). Land use activities on private lands abutting the tributaries to the Wachusett Reservoir are regulated by the DCR through the Massachusetts Watershed Protection Act, in addition to a variety of other local and state land use laws and regulations.

The Town of Holden strongly supports the goal of ensuring that the Waters of the United States are clean and are protected from untreated stormwater runoff. Since the introduction of the original Phase II MS4 General Permit in 2003, the Town has supported the underlying goal of improving the quality of the Waters of the United States located in the Town. The Town has worked diligently and successfully to implement the requirements of the original 2003 Small MS4 Permit. Indeed, the Town was one of the thirteen (13) original members of the Central Massachusetts Regional Stormwater Coalition (CMRSWC). The Town continues

to be a member of the CMRSWC, and works with its partner towns to develop a common message and framework for dealing with stormwater runoff.

I write to you to express our my concerns with the extremely large and overreaching burden that the Draft Permit will inflict upon the Town of Holden, as well as other cities and towns in Massachusetts. The Draft Permit as currently constituted will result in large increases in compliance costs related to administratively focused tasks, studies, and reports that will create no quantifiable increase in water quality in the Town's receiving waters. Other facets of the Draft Permit impose tasks upon the Town that it is wholly unsuitable to perform. Further, the Draft Permit imposes strict conditions on development and redevelopment projects that are in conflict with current Massachusetts Stormwater Standards, as well as existing local bylaws and regulations.

For instance, the Draft Permit requires the Town to craft a number of different stormwater educational messages, each tailored to a specific audience. While not an entirely unreasonable requirement, the Draft Permit then requires the Town to develop and implement ways to measure the effectiveness of those messages on the intended audience. The Draft Permit provides no suggestion as to how this should be done, but it is clear from the Draft Permit language that simply keeping track of the number of pamphlets distributed, or the number of web page views, for instance, will not be considered an adequate way of measuring effectiveness. This requirement will force the Town to hire a public relations company to design the messages, as well as to conduct surveys to determine if they are effective or not. This type of activity is simply not a good way to spend limited money on stormwater cleanup, and will provide no indication of an improvement in water quality. The EPA should remove the requirements for determining the effectiveness of the public education measures. Additionally, the EPA should work to develop a common educational campaign for the State as a whole, either working through the Massachusetts Department of Environmental Protection (MADEP), the DCR, and/or with other environmentally focused non-profit organizations. While regional efforts such as the CMRSWC will certainly help with meeting this condition of the Draft Permit, an overall state wide coordinated stormwater messaging campaign would be much more effective than 100, 200, or more separate stormwater campaigns.

I am also concerned with the impediments to land re-development costs that the Draft Permit appears to impose. In the sections of the permit dealing with new and redevelopment land projects, the Draft Permit appears to require the upgrading of the stormwater management system of an entire site, even if only a portion of the site is actually undergoing redevelopment. Further, the requirement of the Draft Permit to treat the first 1-inch of stormwater runoff is conflict with the MADEP Stormwater Standards, which requires the 1-inch treatment volume only for discharges to critical environmental areas. The imposition of both the 1-inch treatment volume for all new land development projects, as well as the retrofitting of the entirety of a site undergoing land redevelopment activities will greatly increase the cost of construction of both types of projects. For redevelopment projects, this requirement may indeed make a project no longer cost effective. While we certainly do not encourage unchecked land development activities, the added construction costs due to the Draft Permit must be weighed against the general economic harm that may occur from those added costs. Massachusetts already has some of the highest construction costs in the United States, and these costs have had a dramatic impact upon the ability of cities and towns in the State to provide affordable housing for its citizens. We urge the EPA to reassess this requirement to treat the 1-inch stormwater runoff on the entirety of a redevelopment site.

We further urge the EPA to consider the conflict created between the Draft Permit and the existing Massachusetts Stormwater Standards and other local land development bylaws and regulations. The EPA should be working conjointly with the MADEP to determine what is best for Massachusetts in term of stormwater standards for new and redevelopment projects.

The current Draft Permit provides a level of detail of the activities to be completed to achieve permit compliance that has been previously not seen. For instance, there are at least 250 different actionable items that the Town has to demonstrate compliance with. Additionally, the Draft Permit lists criminal penalties for failure to comply with these items. Many of these items are of limited benefit. For instance, requiring the Town to sweep streets a second time in the year, primarily in order to collect leaves is unreasonable. We believe the EPA needs to re-examine this list of activities. We urge the EPA to craft permit requirements that are based on quantifiable improvements in stormwater runoff quality, rather than mandating a set of actions that may or may not result in any appreciable improvement in runoff quality.

There are number of areas within the permit where it appears the EPA is using cities and towns to act as data collection surrogates for the EPA. Collecting data on volume of street sweepings, catch basins cleanings, amount of directly connected impervious areas (DCIA), and wet weather sampling serves little purpose in increasing stormwater runoff quality. While this data may be interesting to collect for research purposes, there is a cost associated with the collection efforts. The cost in money and time to collect this data should not be borne by the Town, as there is no appreciable benefit to runoff quality. It is simply an academic exercise. If the EPA is interested in collecting these types of information for further research and analysis, then it should bear the burden and cost of collecting the information. It should not simply be required of the Town to perform this type of work on the behalf of the EPA.

Finally, of particular concern to us is the overall projected cost of compliance with the Draft Permit. As part of a project performed for the MADEP, a group of Worcester Polytechnic Institute students performed a cost analysis of the Town's current and projected stormwater permit compliance costs. This cost analysis indicated that the Town currently spends approximately $150,000 to $186,000 per year on stormwater related measure. This cost analysis further indicated that the Town could expect new annual costs to be approximately $260,000 per year, or an increase of 40- to 60-percent above current costs. Further, this new annual cost does not include monies necessary to perform structural retrofits on existing Town owned management systems.

The Town has been a strong supporter of improving stormwater quality, and has consistently funded the activities needed to comply with the 2003 MS4 permit. The Town did expect that the Draft Permit would require an increased expenditure of money related to new stormwater compliance costs. However, the amount of the projected increase is unreasonable, especially given the unreasonableness of many of the items that are driving the cost increase, and the lack of quantifiable improvements to runoff quality. The EPA must examine further the cost implications of the Draft Permit, and work to find ways to reduce this additional burden to cities and towns. While the EPA has indicated that it understands that there will be additional permit compliance costs, it has not sought out ways to reduce that burden. Rather, the EPA champions the establishment of stormwater utilities to raise dedicated funding for stormwater management. While a stormwater utility is indeed one way to raise money for stormwater management, such a utility simply represents a way to levy an additional tax or fee on the residents and business owners of the Town. A stormwater utility may raise money, but it does nothing to limit the amount of money that is needed by the Town to comply with the

Draft Permit. We strongly urge the EPA to examine all of the new mandates that it is requiring cities and towns to comply with in the Draft Permit.

In conclusion, I am quite concerned with the large expansion of the EPA's involvement in the Town's stormwater management program. The EPA is mandating a number of activities that will be expensive to implement, are not within the core function of a municipality in Massachusetts, and will have not result in any readily apparent increase in stormwater runoff quality. The Town of Holden is a strong and consistent advocate for clean water, whether it is drinking water, stormwater, or wastewater. However, any increases in costs due to permit compliance must be balanced against the financial capability of Holden, and other cities and towns to absorb those additional costs. The Town of Holden expected that permit compliance costs would go up under the Draft Permit. However, the scale of the cost increases, as well as the reasons for those increases, is not something that can be easily defended or explained to the general public. If the EPA wishes to increase stormwater runoff quality, they must adopt a more cooperative approach to the problem, and work with the cities and towns of Massachusetts to create a permit with more realistic requirements that create measurable improvements in stormwater runoff quality. Until such time that occurs, or until the Federal and/or State governments step forward with the additional funding necessary to gain permit compliance, cities and towns will be stuck in an adversarial relationship with the EPA, and will be unable to adequately fund their stormwater management programs.

We thank the EPA for providing this opportunity to comment on the Draft Permit, and we look forward to working with the EPA in the future to create a more practical and cost effective stormwater permit.

Sincerely,

Jacquelyn M. Kelly
Town Manager

Cc: United States Senator Elizabeth Warren
United States Senator Edward Markey
United States Representative James McGovern
Massachusetts Senator Harriette Chandler
Massachusetts Representative Kimberly Ferguson
Board of Selectmen
John Woodsmall, Director of Public Works
Dennis Lipka, Director of Growth Management
Pam Harding, Town Planner
Holden Planning Board
Holden Conservation Commission
Holden Zoning Board of Appeals

Town of Holden

Board of Selectmen

Anthony Renzoni
Chair

February 27, 2015

Newton Tedder
US EPA Region 1
5 Post Square Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

Re: Comments on the Draft NPDES General Permit for Stormwater Discharges from MS4 in Massachusetts

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We thank the EPA for providing this opportunity to comment on the Draft Permit, and we look forward to working with the EPA in the future to create a more practical and cost effective stormwater permit.

Sincerely,

Anthony Renzoni, Chairman
Holden Board of Selectmen

Cc: United States Senator Elizabeth Warren
United States Senator Edward Markey
United States Representative James McGovern
Massachusetts Senator Harriette Chandler
Massachusetts Representative Kimberly Ferguson
Jacquelyn Kelly, Town Manager
John Woodsmall, Director of Public Works
Dennis Lipka, Director of Growth Management
Pam Harding, Town Planner
Holden Planning Board
Holden Conservation Commission
Holden Zoning Board of Appeals

Hoosic River
REVIVAL
Reclaiming a Community Treasure in North Adams

RECEIVED
12/8/14
MLA

Mr. Newton Tedder
US EPA—Region 1
5 Post Office Square—Suite 100 Mail Code—OEP06-4
Boston, MA 02109-3912

Re: Comments on Draft Massachusetts MS4 Storm Water Permit

Dear Mr. Tedder:

Thank you for this opportunity to comment on EPA's Draft General Permit for Small MS4s in Massachusetts. I am writing on behalf of the Hoosic River Revival, an organization based in North Adams. Our mission is to bring the North Adams section of the Hoosic River back to life . The river is flowing in aging, 15 ' high and 45 ' wide concrete flood chutes; it is inaccessible, unattractive, and 'impaired' due to the flood chutes and to the excessive amount of storm water / sewer overflow leaking through the crumbling, cracked walls into the river.

This permit is an important step in promoting these urgently-needed changes, and we strongly support its promulgation.

- it incorporates **water-quality requirements** that directly address the pollutants that are causing specific Water Quality Standard violations.;
- it provides **more specific requirements and deadlines** than was required under 2003 permit.;
- Important for North Adams, the permit gives towns **adequate time and substantial flexibility** in choosing approaches to compliance that are most appropriate for local conditions;
- **Towns can work regionally** (including through storm water consortiums) to achieve economies of scale, develop and fund storm water utilities, and ensure that private entities assume their share of the responsibility for storm water management.

We appreciate the work EPA has done to improve on the 2003 permit and the 2010 proposals. However, the process has taken a very long time. We **strongly support prompt issuance of the final permit**. We urge EPA to work quickly to respond to comments and complete a final permit at the earliest possible date

Thank you for considering our comments on this very important permit.

Sincerely,

Judith M Grinnell

Judith M. Grinnell, President

P.O. Box 434 • North Adams, MA 01247
HoosicRiverRevival@gmail.com • 413.212.2996 • www.HoosicRiverRevival.org

TOWN OF HOPKINTON
DEPARTMENT OF PUBLIC WORKS
66 Fruit Street
PO Box 209
Hopkinton, Massachusetts 01748
508-497-9740
Fax 508-497-9761
www.hopkintonma.gov

Newton Tedder
US EPA Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

February 27, 2015

Sent via email to Tedder.Newton@epa.gov on February 27, 2015

Attention: Comments on the 2014 Draft Massachusetts MS4 Permit
Docket ID No. FRL-9917-31-Region-1; Document No. 2014-23262

Dear Mr. Tedder:

I am writing on behalf of the Town of Hopkinton, Massachusetts to provide comment on the USEPA's 2014 Draft Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit (the proposed Permit).

The Town of Hopkinton is one of the 28 members of the Central Massachusetts Regional Stormwater Coalition (the CMRSWC), but is unique in that we are subject to a number of impaired water-driven proposed permit provisions that don't apply to other CMRSWC communities. These impairments include:

1. The Charles River Watershed phosphorus Total Maximum Daily Loading (TMDL), described in Part 2.2.1(b)(i) and Appendix F;
2. The Charles River bacteria TMDL (segment 72-01), described in Part 2.2.1(b)(iii) and Appendix F;
3. Water bodies with nitrogen impairments for which no TMDL has yet been developed, described in Part 2.2.2(a)(i) and Appendix H; and
4. Water bodies with phosphorus impairments for which no TMDL has yet been developed, described in Part 2.2.2(b)(i) and Appendix H.

The net impact of these impairment-driven provisions in the proposed Permit is that the Town would be required to develop a Phosphorus Control Plan (for discharges in the Charles River watershed), a Nitrogen Source Identification Report, and a Phosphorus Source Identification Report. We would also be required to implement additional or enhanced Best Management Practices (BMPs) including public education, illicit discharge detection and elimination (IDDE) elements, and controls to be implemented through regulatory mechanisms. Finally, we would be mandated to develop plans to utilize structural BMPs on municipal properties to reduce loadings of the phosphorus and nitrogen impairments from our Urbanized Area.

Beyond the challenge in responding to these multiple parameters and impairments, we are concerned with our ability to utilize structural BMPs in the areas appropriate to respond to those impairments. In many areas, our drainage infrastructure components and easements do not include the physical space required to

install the types of BMPs appropriate to remove nitrogen, for example, even if we were to seek an expanded easement (which has an additional administrative and legal cost beyond the cost of design and construction of the BMP). We are also concerned that many of our soils are not suitable for the use of the infiltration-based structural BMPs that would be needed to comply with these loading reductions.

For the phosphorus impairment to the Charles River, we note that only a small area in the southeast corner of our community is located within this watershed. Nearly all of the land within Hopkinton's small portion of the Charles River watershed was not considered Urbanized Area in the 2003 MS4 Permit (it was added based on 2010 Census data), and we will only be starting to evaluate this new Urbanized Area within the proposed Permit.

We are advocates for the use of green infrastructure where it can be maintained in a cost-effective way in order to provide ongoing stormwater treatment. However, this proposed mandate will exceed our internal capacity as a small community to perform such an inventory, perform a cost/benefit analysis of the BMPs appropriate for each impairment, finance the design and construction of the BMPs, and evaluate the effectiveness of each. Without an approved TMDL outlining a target load for the impairments listed in Part 2.2.2, our efforts would not substantially contribute to improvements in the respective watersheds. Costs to use a third-party to perform these assessments will siphon budget from critical infrastructure operations and maintenance activities that have a strong, direct bearing on water quality improvements.

For these reasons, we support maximizing the use of pollution prevention tools, LID, public education, and other non-structural BMPs to the maximum extent practicable before looking to structural BMPs as the solution. We request the ability to continue to evaluate potential sources of nitrogen and phosphorus discharged to Hopkinton's MS4 and report our progress on mitigating identified sources, in lieu of the proposed stringent and inflexible provisions in Section 2.2.2 (and the associated Appendix H) of the proposed Permit.

We are considering the option of hiring an Environmental Compliance Engineer in FY16 to assist with stormwater management and other regulatory programs. However, compliance with the proposed Permit would exceed that new staff member's available time. We therefore also support an extended timeline for the implementation of some proposed Permit provisions, including activities associated with discharges to water quality-limited water bodies.

The Town of Hopkinton reserves the rights: to submit additional comments to any Response to Comments prepared by the USEPA after the close of the public comment period for proposed Permit; to submit additional comments on the Final Massachusetts MS4 Permit to address any and all changes made by the USEPA based on comments it receives; and/or to appeal any provision of the Final Massachusetts MS4 Permit when it is issued, regardless of whether that provision has been specifically noted in these comments.

We look forward to the requested flexibility and modifications being integrated into the Permit in its final form.

Sincerely,

John Westerling, MPA
Director, Department of Public Works

Cc: Norman Khumalo, Town Manager
Fred Civian (MassDEP Stormwater Coordinator)

Housatonic Valley Association

150 Kent Road
P.O. Box 28
Cornwall Bridge, CT 06754
860-672-6678

1383 Pleasant Street
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19 Furnace Bank Road
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www.hvatoday.org

RECEIVED
3/3/15

February 26, 2015

Newton Tedder
US EPA—Region 1
5 Post Office Square—Suite 100
Boston, MA 02109-3912

Re: Draft Massachusetts Small MS4 Permit

Dear Mr. Tedder:

On behalf of the Housatonic Valley Association (HVA), I would like to thank you for the opportunity to provide comments regarding the draft proposed Massachusetts Small MS4 Permit. HVA is a nonprofit watershed organization representing the three state Housatonic Watershed. As part of our responsibilities, we conduct water quality monitoring and river assessments, educational programs to adult and schools, and work with communities in maintaining or improving the health of the Housatonic River.

As such, we are aware of the seriousness of the impacts of stormwater runoff and applaud the efforts by EPA to address this issue. In particular, we are encouraged that the new permit requirements incorporates water-quality requirements that directly address the pollutants that are actually causing water quality standard violations in each town. The new permit also requires post-construction requirements for new development and redevelopment which should help future projects from continuing the poor stormwater management practices of the past. EPA has also addressed the problem of establishing a high standard for infiltration of stormwater which is a major cause of stormwater contamination. HVA strongly agrees with the present draft requirements for municipalities to conduct better monitoring and planning, improve implementation, raise public awareness of stormwater issues, and to design and maintain better stormwater management measures. We agree that this approach will result in major improvements in the management of stormwater in Massachusetts, and we will see a marked improvement in the Commonwealths waterways

A major improvement with this present draft provides towns with flexibility in choosing approaches to compliance that are most appropriate for local conditions. However we feel that many communities, even those who want to 'do the right thing' in developing effective storm water Best Management Practices (BMP) have a serious financial obstacle in implementing these requirements. There still needs additional discussions and assistance to provide municipal assistance for implementation these BMP requirements.

We believe that many communities in the commonwealth would implement the new requirements, but at the present time do not have the required financial resources to do so. There needs to be a form of assistance. Federal language from the 'Quick Guide to Developing Watershed Plans to Restore and Protect Our Waters', EPA 841-R-13-003, May 2013, states "Due to the complex and diffuse nature of nonpoint source pollution, the substantial costs to address it, and frequent reliance on voluntary action by individual landowners, successfully addressing nonpoint source pollution to achieve water quality standard often requires years of support from a coalition of stakeholders, programs, and funding sources." We feel this same principals need to apply to implementing these vital MS4 requirements.

Finally, while we strongly endorse the overall approach and requirements of this permit, there are some areas where improvements are still needed:

- The stormwater bylaw requirements should apply to projects as small as a quarter or half an acre. Most urbanized towns, especially in eastern Massachusetts, have very few large development and redevelopment projects, and projects under an acre would not be required to employ *any* stormwater management measures unless they are located in wetland resource areas. This will make it exceedingly difficult for many towns to comply with the proposed prohibition against new and increased stormwater discharges from MS4s.

- In addition to conducting an annual evaluation of BMP compliance and effectiveness, permittees should be required to take corrective action where the evaluation shows that goals and objectives are not being met. An effective iterative approach to improving stormwater management requires that problems be addressed, and not simply identified.

- MS4s discharging to waters impaired for bacteria or pathogens should be subject to additional requirements. This includes requiring new development and redevelopment projects and retrofits on town-owned property to implement BMPs that are most effective at reducing bacteria where the waters they discharge to (via an MS4) do not meet bacteria Water Quality Standards. These requirements are consistent with the proposed requirements for other stormwater pollutants.

We appreciate the effort that EPA has done in developing this critical permit process. We feel that if the requirements are implemented, it would make a substantial improvement to the waters of Massachusetts. We strongly urge its implementation. However if it is to reach the full potential, municipalities needs assistance.

Thank you for considering our comments on this very important issue.

Sincerely,

Dennis Regan
Berkshire Director

EarthShare

Town of Hudson

Department of Community Development

78 Main Street, Hudson, MA 01749
Tel: (978) 562-2989 Fax: (978) 568-9641
mciccolo@townofhudson.org

February 13, 2015

Newton Tedder, US EPA – (OEP06-4)
5 Post Office Square – Suite 100
Boston, MA 02109-3912
617.918.1038 / tedder.newton@epa.gov

Re: Draft Regulations for MS4 Permit, public comment

Dear Mr. Tedder,

With a 20+ year career in Community Development, and someone who considers myself an active environmentalist working on sustainability and smart growth issues, I am deeply concerned about the potential unintended consequences of the newly proposed MS4 NPDES Stormwater Regulations. The regulations will seriously impact communities' ability to have multimodal *Complete Streets*, impairing green transportation goals, while also drastically reducing our maintenance capacity as costs are driven upward.

It appears from my reading of the requirements and other analysis provided by WPI that the impact of Section 2.3.6.a.ii.(a).1. will be that we can no longer build sidewalks or bikelanes and routine roadway maintenance costs will be driven up to unacceptable levels. The regulation essentially says that:

> *"new and redeveloped sites shall be designed to either: 1. Retain the first one (1) inch of runoff from all impervious surfaces on site. OR 2. Provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration on the first one (1) inch of runoff from all impervious surfaces on the site."*

If this regulation effectively ends all future sidewalk and bike lane expansions this runs directly counter to our environmental aspirations as green transportation options will be effectively eliminated from future systems. While bike lanes and sidewalks slightly increase pavement area, they add great value to our collective infrastructure systems when people can choose to walk and bike for their health and to reduce their carbon footprint in lieu of using their automobile.

Moreover, having to infiltrate with bio-swales all runoff of rain from a 1" storm along existing roadways is near impossible when water, sewer, gas, and in some cases electricity are directly under our roadways. Where exactly will we have the room to create these earthen drainage depressions? The regulation appears to be triggered when one acre or more of impervious area is created and/or reconstructed. This means that it will prevent communities from using techniques that include reclamation of pavement – a technique

used by communities to stay on top of maintenance while also keeping costs down. Normally, I can understand how we might all be willing to accept some increases in costs from new regulations when they furthers our collective environmental goals. However, this regulation will exponentially increase municipal costs coming from already strained budgets and in many cases may make roadwork technically unfeasible due to Right-of-Way constraints. If we can't afford to maintain our roads, this seems to pose a serious conundrum.

I urge you to consider exempting existing roadways from this requirement when pavement reclamation is being used and when the expansion of impervious area is for GREEN Transportation elements like sidewalks and bike lanes.

Thank you for your consideration of my request.

Sincerely,

Michelle Ciccolo
Director of Community Development

C: Congresswoman Niki Tsongas
Congresswoman Katherine Clark
Secretary Stephanie Pollack, MassDOT
Senator Jamie Eldridge
Representative Kate Hogan
Marc Draisen, Executive Director, MAPC
Tomas Moses, Executive Assistant
Tony Marques, Director of Public Works
Hudson BOS

IPSWICH RIVER WATERSHED ASSOCIATION
The Voice of the River
P.O. Box 576
Ipswich, MA 01938

February 27, 2015

Newton Tedder
US EPA—Region 1
5 Post Office Square—Suite 100
Mail Code—OEP06-4
Boston, MA 02109-3912

By email: **tedder.newton@epa.gov**

Re: Comments on Draft Massachusetts Small MS4 Permit

Dear Mr. Tedder:

Thank you for this opportunity to comment on EPA's Draft General Permit for Small MS4s in Massachusetts. The Ipswich River Watershed Association (IRWA) has been working since 1977 to protect and restore the Ipswich River. The river is the lifeblood of Massachusetts' North Shore providing daily drinking water to 350,000 people and businesses. It supports hundreds of shellfishing jobs in its estuary and is one of the most important recreational resources in the region providing extensive boating, swimming and fishing opportunities. All of these important uses are dependent on high water quality.

Unfortunately, this critical resource is currently at risk due to stormwater pollution. We have been monitoring water quality for over 20 years as part of our state and EPA-approved Riverwatch Program. When coupled with other state and local water quality monitoring programs, these data indicate that water quality remains a significant problem throughout the watershed and nearly all of it is due to contaminated municipal storm drain discharges. These problems have not improved despite implementation of the state's Stormwater Policy and EPA's 2003 MS4 permit clearly indicating that additional regulatory and enforcement measures are needed. **The proposed new permit is a critically needed step in promoting these urgently-needed changes, and we strongly support its promulgation.**

The 2014 permit represents a significant improvement over the 2003 permit, and is likely to be much more effective in reducing pollution caused by stormwater in small MS4 areas. We applaud and agree with the detailed comments provided by the Massachusetts Rivers Alliance, Mass Audubon and our watershed peer groups so will not repeat them here. We strongly urge you to finalize the permit as expeditiously as possible and hope you will strengthen it in the areas identified by our peer groups.

Additionally, I would like to emphasize a few key points that our especially important to our organization.

- We have just been notified that the multi-million dollar shellfishery in our river is at risk of closure **imminently** the Massachusetts Division of Marine Fisheries due to bacterial contamination from municipal stormwater outfalls. We urge you to maintain and strengthen the critical bacterial monitoring and illicit connection requirements in the permit.

- We urge you to reduce the development area of the stormwater bylaw requirements so that they apply to projects as small as a quarter acre. Most urbanized areas subject to the small MS4 have very few large development and redevelopment projects, and most construction today is under an acre. It is these smaller projects that are responsible for the majority stormwater pollution throughout our watershed and they should be adequately regulated.

- We have documented a dramatic increase in conductivity levels throughout our watershed and are aware that the use of highway salt has increased dramatically in our area in recent years. We strongly encourage you apply the proposed new requirements for chloride apply to **all** MS4's, not just to the relatively few water bodies that have been assessed for chloride.

Finally, we would like to address the cost issues of complying with the new proposed permit conditions. While we are certainly sensitive to the issue of increasingly stressed municipal budgets, we feel the financial concerns expressed by municipalities are significantly over estimated. There are a multitude of economically efficient models for complying with the relatively modest requirements of the proposed permit and there are many local and regional stormwater consortiums, organizations and other resources available to help municipalities meet the requirements of the new permit at a very reasonable cost. In our case for example, we helped the town of Ipswich implement a comprehensive stormwater program following the 2003 permit that *exceeded* its requirements at zero cost to the community and estimate that full compliance with the proposed permit will be less than $3,000 per year if the town would avail itself of support services currently available to it.

We appreciate the hard work that the EPA has done and again, strongly urge you to finally implement the final permit as soon as possible. Thank you for considering these comments on this extremely important issue.

Sincerely,

Wayne Castonguay
Executive Director

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Tedder, Newton

From: Doyle-Breen, Jennifer <Jennifer.Doyle-Breen@aecom.com>
Sent: Tuesday, February 24, 2015 2:48 PM
To: Tedder, Newton
Subject: Comment on 2014 Draft MS4 Permit

Hello Newt –

I wanted to make a comment on the Draft MS4 permit. I have noticed that there are Cape Cod municipalities that have a Nitrogen Related Water Quality Impairment (often Estuarine Bioassessments) that have been omitted from the Table in 2.2.2.a.i.1 on page 18. Although the language at the bottom of page 17 and top of page 18 seems to suggest that receiving waters that have impairments associated with elevated Nitrogen but no TMDL would need to comply with Appendix H even if they aren't listed on the Table on page 18, it would be more clear for permittees if the Cape Cod towns with Nitrogen-related impairments and no TMDL were all listed on the table on page 18.

Jennifer Doyle-Breen, Professional Wetland Scientist
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February 27, 2015

Newton Tedder
US EPA – Region 1
5 Post Office Square
Suite 100
Mail Code – OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder,

I appreciate the opportunity to provide the following comments and suggestions on the proposed 2014 Draft Massachusetts Small MS4 Permit MAR041000.

SPECIFIC SECTIONS:

1.4.g Discharge from Potable Water Source.
Add disclaimer in parenthesis "(excluding storage tank cleanout/cleaning residuals and washwaters)" or something to that effect.
Purpose is to clarify the intent of this exemption as much as possible and prevent the discharge of water storage tank cleanout sludges & washwaters into an MS4 system and downstream waterways. Such discharges are extremely high in solids and heavy metal content.

1.10.1 …permittee post SWMP online…
Clarify the following requirements:

a) **That any municipality with a website needs to post the SWMP.**
   This is in order to prevent an individual department of the permittee responsible for maintaining the SWMP from failing to post it online by claiming that they do not have their own departmental website or control of the IT personnel that may be needed to post it to the municipal website. Public availability of the SWMP is critical for its success and if a municipality has a website this needs to be posted and available for review.
b) **Said online posted SWMP shall also include the following key elements:**
   a. **MS4 system Map per 2.3.4.6**
   b. **Outfall Inventory per 2.3.4.5**
   c. **Catchment Areas**

   This information is critical to be easily and immediately available to facilitate full public involvement and participation. In particular this makes it feasible for the permittee to promptly respond to any potential problems or unauthorized discharges identified by all concerned parties.

2.3.1.a …continue to comply with MS42003 requirements…
Add a requirement for a 3rd Party Review/Audit of compliance with existing requirements under the MS4-2003 permit.
The purpose of the 3rd Party Review is to ensure that all previous requirements are still being met. BMPs implemented several years earlier will fail over time (such as catch

basin markings which fade or fall off). Further institutional memories fade and personnel change such that the detailed understanding of the scope of a particular BMP are lost especially among a routine annual status report. A 3rd Party review is necessary to ensure a fresh set of eyes to look at the BMP implementation without any undue influences from competing priorities of the permittee.

2.3.2.c …distribute..Public Education Materials
Require that at least one of the two educational messages to each audience over the permit term is physically & specifically (i.e. actively) delivered/distributed
The purpose is to ensure that the message is specifically received by the intended parties. The % of the target audience receiving is quite small/trivial when any message is passive (i.e. link on a website, handout in a pile at town hall, etc) as for most target audiences they would have no reason to visit the website or handout site in the first place, and thus would never even get a chance to see the message. Further the message needs to be specific or distinct to have any reasonable chance to be received and effective to the highest percentage of the target audience. A stormwater message is lost if it is muddled or simply thrown in or added at the end of an informational document provided for another purpose as the target audience for that document is not looking for information on stormwater.

2.3.3 Public Involvement & Participation
Please see comments for 1.10.1. For this to be truly effective key information needs to be easily available and accessible. Too many times interested parties are discouraged from participation if the relevant information is incomplete, or only accessible and available upon multiple visits and/or with scheduling with the right staff who know where the information might be.

2.3.4 IDDE Program
a) Add a requirement to provide a clear mechanism for public reporting of non-stormwater discharges including following with up to reporter.
b) Add a requirement for a municipal permittee to clearly specify the roles & responsibilities for IDDE of its specific Departments such as the Department of Public Works, Board of Health, and Conservation Commission.
The purpose of these requirements is to minimize illicit discharges. All too often concerned and educated members of the public are turned away or disincentived from doing anything about controlling illicit discharges as they report concerns or conditions and nothing happens (no direct followup with them and no visible improvement in conditions). Members of the public are routinely out on the rivers & streams and are familiar with the watersheds and can easily spot and identify discharges of concern. These are the eyes of the public that should be empowered and are additional no cost resources available to improve conditions.

2.3.4.10 IDDE Training
Add "and make available to members of the public residing within the MS4 service area" after employees.

This serves to help eliminate illicit discharges even more by educating concerned residents of the service area and allows further prescreening of concerns to ensure efficient use of available resources.

2.3.6 Stormwater Management in New Development and Redevelopment
a) Add a section clarifying the requirements and applicability for the permittee in regards to roadway resurfacing activities including the SWMP BMP requirements under both the existing 2003MS4 Permit and the 2014MS4 permit.
This serves to ensure that the SWMP BMP requirements are applied as part of all roadway resurfacing activities as well as the MA DEP Stormwater Management Standards as applicable to the specific type of resurfacing activity. This is important, as for example, a BMP requiring catch basins to be marked would require that all the catch basins are remarked after the roadway is resurfaced.
b) Add a section requiring the responsibilities of the permittee to be understood and implemented by all its specific departments, including Department of Public Works, Conservation Commission, Planning Board, and Zoning Board of Appeals. Further include requirement for each department to annually acknowledge its understanding of its role in implementing and the requirements of the MS4 permit and SWMP.
Most projects do not come under the jurisdiction of the permittee's MS4 implementing department and thus miss opportunities to achieve compliance. For example the DEP Stormwater Standards are only applicable to projects with Wetlands Protection Act jurisdiction. Generally speaking attempts to address MS4 stormwater compliance through permitting opportunities via other Departments are unsuccessful as it is not "their permit" or "specific responsibility or expertise" to maintain. Instead they may or may not be referred back to the implementing Department, but with no jurisdiction, they not surprisingly are never implemented.

2.3.7.a.iii.d Infrastructure Operation & Maintenance – Street Sweepings and Catch Basin Cleanings
Add sentence "These materials must be managed in compliance with current DEP policies: a) http://www.mass.gov/eea/agencies/massdep/recycle/regulations/management-of-catch-basin-cleanings.html and b) #BWP-94-092: Reuse & Disposal of Street Sweepings. Permittee shall certify compliance with these policies annually via the MS4 annual report."
It is critical that these practices are followed to ensure that stormwater & receiving waters are not negatively impacted. The MS4 permit is an opportunity to ensure compliance and raise ongoing awareness of these requirements.

2.3.7.a.iii.e Infrastructure Operation & Maintenance – Snow Disposal
a) Add "including bordering vegetated wetlands and intermittent streams" as the end of the first sentence.
This is to avoid any confusion as to what constitutes "a surface water" as deposition of sediment, trash, and oil laden snow will cause impacts to all waterbodies and will

eventually get downstream. Further this is consistent with MA DEP Policy BRPG01-01 regarding snow disposal.
b) Add additional sentence "Permittee shall certify compliance with MA DEP Snow Disposal Guideline BRPG01-01 annually via the MS4 annual report."
It is critical that these practices are followed to ensure that stormwater & receiving waters are not negatively impacted. The MS4 permit is an opportunity to ensure compliance and raise ongoing awareness of these requirements.

3.0.b Surface Drinking Water Supplies – Additional Requirements
Add additional sentence "At a minimum low cost devices such as outlet hoods should be added to all catch basins within the applicable catchment areas".
This is to minimize contamination from oil & petroleum products into these sensitive areas which can become negatively impacted from only small quantities. All too often "as feasible" becomes never as it is interpreted if it costs any money, even if minor, it is not feasible. The MS4 permit should establish some minimum standard for MEP requirements particularly in sensitive areas such as these.

4.1 Program Evaluation
Add section requiring a 3rd Party evaluation and certification of the implementation of the 2003MS4 BMPs.
Please see comments for 2.3.1.a.

4.1.a Program Evaluation
Add a sentence after the first one. "This compliance evaluation shall be performed by a 3rd Party in Year 4 & Year 8 of the permit term."
Please see comments for 2.3.1.a.

Appendix A Definitions
Add definition "Salt – For purposes of this MS4 Permit, salt shall mean any chloride containing material used to treat paved surfaces for deicing. The term includes sodium chloride, calcium chloride, magnesium chloride, and brine solutions."
This is to clarify and ensure adverse impacts from elevated chloride levels are avoided to the maximum extent practicable.

Appendix F – A.III.1.a.i.1 Bacteria/Pathogen Enhanced Public Education
Appendix H – III.3.a.i.1 Bacteria/Pathogen Enhanced Public Education
Add statement requiring posting of pet waste requirements and provision for pet waste bags, removal, & disposal at any dog parks operated by and/or physically located on land owned by the permittee within impacted catchment areas.
This is to ensure proper management of pet wastes within locations with the highest densities of such waste.

GENERAL:

a) **Enforcement of Permit.**

To truly be effective this MS4 permit must be enforced where conditions warrant particularly where egregious violations are known to have occurred. The permitee will not take the conditions seriously nor appropriate the necessary resources if it knows there is no risk of negative actions. Further the public will not take heed or interest or waste its time trying to improve & address conditions if it knows via lack of action that the MS4 permittee will not be held accountable and thus improvements will not be made.

b) Need for Specific EPA Outreach to Conservation Commissions & Planning Boards on MS4 Requirements.

To truly be effective the Conservation Commissions and Planning Boards of the Permittee's need to be aware of requirements of the MS4 permit and TMDLs. The majority of permittable actions occur under their jurisdictions and as such they have the greatest opportunity to have them properly addressed. The greatest chance to improve conditions during redevelopment & ensure compliance during new development is when an applicant is required to obtain a permit for the project to proceed and obviously have some funding mechanism available to undertake the proposed project.

Thank you again for your consideration and the opportunity to provide comments & suggestions.

Keith Saxon
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781-454-5330
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Submitted @ hearing 11/19/2014

Lawn Horticultural

November 19, 2014

Good Afternoon:

My name is Jim Skillen. I am a consultant for the Lawn and Horticultural Products Work Group (LHWPG). The LHPWG, operating under the auspices of the Consumer Specialty Products Association, Inc., provides a unified voice for companies engaged in the unique market of lawn and horticultural products. Established in 2013, the LHPWG serves as a resource to all government entities engaged in regulating the specialty fertilizer marketplace. LHPWG member companies manufacture more than 75 percent of domestically produced conventional specialty fertilizers utilized in the United States; including consumer household, lawn and garden, golf courses and other professional turf and lawn care. These specialty fertilizer products are licensed; registered and sold to consumers in all 50 states. They also rely on scientific research to guide their product formulations and product decisions. Our members have a vested interest in any regulation of specialty fertilizer, in any jurisdiction.

The brief comments I am making today are based on an analysis of this proposal that is being done by our consultant, Environmental & Turf Services, Inc. (ETS), based in Maryland. ETS is an independent environmental consulting firm that specializes in environmental risk assessment and water quality monitoring of pesticides and fertilizers. Its founder and head, Dr. Stuart Cohen, worked as a scientist for 11 years in the U.S. EPA's Office of Pesticides & Toxic Substances in Washington DC. ETS presents its work at professional scientific society meetings and publishes its work in the peer-reviewed literature.

Our principal concern is with the EPA's proposed reduction factor of 0.50 (i.e., 50% load reduction) ". . . to be applied to the average annual phosphorus load export rate from pervious lawn areas that "previously" received phosphorus-containing fertilizers but will no longer receive unnecessary applications of phosphorus-containing fertilizers" (pp. 32-34 of Attachment 1 – Fact Sheet Massachusetts Small MS4 (US EPA, 2014)).

We are very familiar with the literature on this subject, and we conclude that the true load reduction factor should be much less than 0.5, and in reality it should be closer to zero. Brief highlights of the ETS analysis follow. But first it is important that we acknowledge the overall helpful attitude that Newton Tedder and Mark Voorhees of EPA Region 1 have demonstrated. They have been cordial and very responsive to ETS' request for the supporting information on this topic. We appreciate it.

The Published Literature Supports a Lower Reduction Factor

The main point we'd like to make is that the consensus of published literature does not support the reduction factor that the EPA has proposed. Without scientific support from peer-reviewed studies, the EPA's proposed reduction factor for phosphate loading needs revision.

- The EPA's Key Reference does not support the 50% Reduction Factor. Table 21 of Attachment 1 to the Fact Sheet follows. It was obtained from Schueler (2011), and it is the ultimate basis for the 50% number ([0.2 mg/L]/[0.4 mg/L] x 100 = 50%).

Nutrient	TP (mg/L)	TN (mg/L)
Phosphorus Fertilized	0.4	2.5
Phosphorus-free or Non Fertilized	0.2	1.5

Table 21. Suggested EMCs to Characterize Runoff from Lawns (Schueler, 2011)

The EPA states that this table represents estimates from the Chesapeake Bay watershed model. We could find no information to support this statement. Instead, Schueler (2011) states that the basis for the numbers in his table is explained in Appendix A.2 (p. 79) of his document. But Appendix A.2 is only five sentences long and it focuses more on very limited surveys of fertilizer use (citing Swann [1999] and Law et al. [2004] and a distributional analysis of national TP water quality monitoring results (Pitt et al., 2004). Finally, Schueler (2011) is neither an EPA-produced document, nor was it published in the peer-reviewed literature, counter to the guidance from the President on scientific integrity (http://www.whitehouse.gov/the-press-office/memorandum-heads-executive-departments-and-agencies-3-9-09).

- Studies Published in the Scientific Literature do not Support a 50% Reduction Credit. Three of the studies actually demonstrate no significant differences or an ***increase*** in total phosphorus (TP) in runoff from unfertilized plots in relation to fertilized plots. This phenomenon was observed by Bierman et al. (2010) in year 2 of their study in Minnesota (control plots greater); year 3 of Bierman et al. (2010, no difference), in a 2-year New York study by Soldat et al. (2008; no difference); and greater P in runoff from control plots vs. treated plots in Wisconsin (Kussow 2008 and 1996).

Based on our reviews, there is no scientific basis for a reduction as high as 50%. The data suggest that a 0% reduction would be equally justified.

Minnesota Watershed Analysis

Minnesota was the first state to implement lawn fertilizer phosphorus restrictions (2004-2005). Therefore it is appropriate and informative to evaluate the water quality monitoring data from the state to assess impacts of the restrictions.

Water quality monitoring data collected prior to the statewide restriction (i.e. prior to 2005) were compared with data collected after the statewide restriction (i.e. 2005 and later) at eight watersheds throughout Minnesota to determine if there is a statistically significant difference in

the P concentrations at these stations pre- vs. post-regulatory restriction. The eight monitoring stations were chosen based on a representative range of TP concentrations (i.e., low, medium, and high concentrations).Three of the eight stations showed a statistically significant difference between the pre and post statewide zero phosphorus restriction. Two of these stations are located in the southwest portion of the state in the Redwood River and Chippewa River watersheds and the other is located in the northwest portion of the state in the Clearwater River watershed. The Student's t-test results indicate the phosphorus concentrations before and after the statewide restriction were not statistically significant at the remaining five stations. Residential and mixed residential areas were dominant in four of the eight watersheds analyzed and only one of these four watersheds exhibited a significant decline in total phosphorus. It is possible that a more intensive and extensive analysis might yield a different conclusion, but our analysis of these eight subwatersheds does not indicate that the restriction of P on residential lawns has shown a significant decline in P in surface water.

Hydrologic Modeling

On October 9, 2014, Mark Voorhees sent ETS several documents including modeling output related to the phosphorus reduction credit described in the MA NPDES MS4 permit. The EPA Stormwater Management Model (SWMM) and the P8 Urban Catchment Model were used to estimate runoff yields from various hydrologic soil groups and conditions. However, upon review of the modeling output sent to us by Mr. Voorhees, we noticed a discrepancy between Table 22 of the permit's fact sheet's attachment and the modeling output. Table 22 lists P8 fair condition runoff yields of 0.378 MG/ha/yr and 0.467 MG/ha/yr for hydrologic soil groups (HSG) C and C/D, respectively. The output, however, indicates these runoff yields should be 0.267 MG/ha/yr and 0.407 MG/ha/yr for HSG C and C/D, respectively. This will change the overall average runoff yield and phosphorus load export rate (??) (PLER) for these hydrologic soil conditions. We look forward to the opportunity to work with Mr. Voorhees to determine the reason for the discrepancy and the potential impact on the results.

We plan to use the ETS Report currently in development to explain these conclusions in greater detail. In the meantime, I would be happy to try to answer any questions you have.

Thank you for the opportunity to submit these brief comments.

James M. Skillen
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Attachment

References

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Newton Tedder
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Mail Code- OEP06-4

RECEIVED
JAN 15/15

Reference: Draft MS-4 Permits-Small Municipal
Separate storm sewer systems

January 2, 2015

Dear Mr. Tedder,

This letter is to offer comments on the above NPDES Draft General Permits pertaining to the Upper Blackstone Basin. Being neither a lawyer nor a scientist, my thoughts are based on my 40-plus years of real-life experience with water quality and wetlands issues, including serving on the Worcester Conservation Commission (9 years), the Lake Quinsigamond Commission (8 years) and membership in many environmental organizations, including the Blackstone Headquarters Coalition, Mass COLAP, and Mass Audubon.

Although Worcester will be regulated separately by an MS-4 permit (we are waiting), our local waterways are greatly affected by waters flowing into the city from several adjacent towns, especially Holden and Shrewsbury. For example, Tatnuck Brook, a very clean brook upstream, flows southerly from Holden through wetlands and several Worcester ponds with water quality issues (sedimentation, weeds, urban runoff, hazardous waste, and at last one obsolete dam).

Another example is Lake Quinsigamond, a 1000-plus acre great pond, whose waters abut Shrewsbury, Worcester and Grafton. Millions of public and private dollars have been invested in the restoration and the protection of this extraordinary multi-use resource and its tributaries, at least two of which are designated cold water fisheries. The lake and its aquifer are fed by ponds and wetlands in Boylston north of the lake proper. The southerly portion of the lake in Shrewsbury is heavily infested with weeds and sediment where it flows into the Quinsigamond River in Grafton. The aquifer in the north end of the lake is the public drinking water supply for Shrewsbury (subsurface wells).

Obviously, this interconnection imposes a serious challenge to the regulators and to the local communities to devise and implement plans to protect and preserve these invaluable water resources at reasonable cost. I believe this draft permit accomplishes that objective. It certainly is a significant improvement over the previous permit. Other communities downstream will indirectly benefit from upstream waterway improvements.

In addition to EPA's suggestions for compliance, I would offer other ideas. One: each community should retain a conservation agent, even part-time, or shared, to assist the Conservation Commission in enforcement of its orders and the MS-4 permit. Second: the larger communities should enact a local wetlands protection bylaw, piggy-backing on the state law. Such a bylaw can be more stringent than the state law; it could , for example, specify setbacks, stormwater protection zones, and proscribe a tighter definition of a jurisdictional wetland. Towns could enact earth removal bylaws or zoning regulations, separately, or in combination with the above. In my experience, local bylaws work well when enforced.

Thank you for the opportunity to comment on this most important issue.

Hopefully, the final version will be issued in timely fashion. The sooner the better.

Sincerely,

Lawrence Freed
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Worcester, MA 01613
Larryfreed1@charter.net
508 769 9064

C MASS DEP-Ferris

Town of Leicester
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February 23, 2015

Mr. Newton Tedder
United States Environmental Protection Agency - CIP
One Congress Street – Suite 1100
Boston, MA 02114

Subject: Comments on the 2014 Draft Massachusetts MS4 Permit – Leicester, Massachusetts

Dear Mr. Tedder:

The Town of Leicester appreciates the opportunity to make comments on the 2014 Draft Massachusetts Municipal Separate Storm Sewer System (MS4) Permit. As with many communities in Massachusetts, the Town of Leicester continues to be concerned with the amount of money, manpower, and time that will be required to comply with this draft permit. Over the past several years the Town has taken significant steps towards directing its stormwater program to comply with predicted permit mandates. Some of these steps include upgraded stormwater mapping, a SWPPP for the DPW garage, a fertilizer inventory for Municipal operations, communications meetings with Town Departments, increased street sweeping and catch basin cleaning, and being a standing member of the Central Massachusetts Regional Stormwater Coalition. The Town is currently planning a schedule of activities to continue improving its stormwater management practices.

The Town applauds the notion of there being buffer time between the finalization of the permit and the permit effective date. The Town would like the EPA to consider extending that buffer time to one year from the final permit date to the effective permit date. This will give the Town time to get budgets in line with the requirements of the new permit. This will also give additional time for the Highway Department to educate the Board of Selectman on the importance of the permit and the need to allocate appropriate resources for permit compliance. Finally, the extra time will give groups like the Central Massachusetts Stormwater Coalition the opportunity to strategize the best ways to use its pooled resources to help member Communities comply with the permit.

The EPA has estimated between $78,000 and $829,000 per year increase in municipal budgets just to implement the six minimum control measures. These additional costs alone have the

Town's Highway Department trying to stay ahead of future requirements to lessen future cost burdens. The costs that have the Town most concerned are for compliance with the TMDL and water quality limited waters. No estimates have been provided from EPA for the costs of this compliance.

The Town of Leicester has the following comments regarding the 2014 Draft Massachusetts MS4 Permit. The comments address Permit sections in order as they appear in the Permit.

2.0 Non Numeric Effluent Limitations

Comments in this section cover 2.2.1 Discharges Subject to Requirements Related to an Approved TMDL and 2.2.2 Discharges to Certain Water Quality Limited Waters Subject to Additional Requirements. Concerns over cost for compliance with these sections have been mentioned earlier in these comments and will not be discussed further in this section. The Town of Leicester appears on the following lists in these sections.

- Lake or Pond Phosphorus TMDL
- Long Island Sound Nitrogen TMDL
- Water Quality Limited for Nitrogen
- Water Quality Limited for Phosphorus

The first question the Town has is will the requirements for the phosphorus and nitrogen TMDLs overrule the water quality limited water requirements, and should the Town only be concentrating efforts on the TMDL requirements?

The three phase lake and pond phosphorus control plan extends past the 5 year permit expiration date. Explanation will need to be provided as to how this control plan will be administered following the termination of this proposed permit.

The viability of some of the credits for nutrient removal are questionable. The part that is questionable is the fact that some of these factors including leaf litter collection will be difficult to track and nearly impossible to keep leaves out of shorelines and the waterbodies themselves. The question of waste generated by geese, especially in the vicinity of Rochdale Pond is a concern of the Town and this can most likely be contributed to nutrient impairment. This contributor should not be the responsibility of the Town to regulate.

The equations presented in calculating reductions of nutrient removal are difficult to follow and will most likely involve the need for specialized consultants to perform this work.

Ultimately, these sections in the draft permit need to be reworked so not only the Town of Leicester, but all other MS4 in the Commonwealth of Massachusetts can productively reduce pollutant loads to local waterbodies in a financially sustainable manner.

Control Measures

2.3.2 Public Education and Outreach – The Town has no comment on this control measure.

2.3.3 Public Involvement and Participation – The Town has no comment on this control measure.

2.3.4 Illicit Discharge Detection and Elimination (IDDE) Program – In general, the Town believes this control measure is cumbersome and will require far more resources than the Town can currently provide. The Town currently is taking proactive steps in anticipation of this control measure including upgrading mapping, statement of IDDE responsibilities and the IDDE control plan. The establishment of the initial illicit discharge potential assessment and priority ranking system within one (1) year from the effective date of the permit is an aggressive timeframe and the Town would ask for consideration of extending that timeframe. The Town would ask that any data collected from outfall screening prior to the permit effective date be used in analysis for the IDDE program.

The limitation of wet weather sampling from March through June increases the already difficult task of collecting wet weather samples. The Town asks that wet weather sampling be completed at any time of the year at the discretion of the Town that the storm is of appropriate intensity.

The Town requests that confirmation of removal of illicit discharges require follow up dry weather sampling only and not dry and wet weather follow up sampling.

2.3.5 Construction Site Stormwater Runoff Control – The requirements in this section should correlate with the Massachusetts Stormwater Handbook Standards.

2.3.6 Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management) – The requirements in this section should correlate with the Massachusetts Stormwater Handbook Standards. The requirement to retain the first one (1) inch of runoff from all impervious surfaces from new development and redevelopment will be difficult for developers to attain and may decrease future development in the Town of Leicester.

With all the additional requirements in the previous sections, focusing on reports for street design, parking guidelines, retrofit opportunities, estimates and reductions of directly connected impervious area will be quite cumbersome financially and on manpower within the Town. The

Town requests that these issues are documented as appropriate and as opportunities arrive during construction projects and redevelopment and should be documented as such in Annual Reports. Mandatory yearly reports should not be required under this permit.

2.3.7 Good House Keeping and Pollution Prevention for Permittee Owned Operations – Volume or mass of material removed from catch basins on a yearly basis should not have to be reported.

Finally, the Town of Leicester supports the idea of the EPA providing education opportunities for Administrators, Managers, Selectman, etc. on the importance of the stormwater management and awareness of the MS4 Permit. An important step in the right direction was made at the Massachusetts Municipal Association's Annual Conference in which EPA presented on stormwater catering to the audience mentioned above. The Town of Leicester supports the idea of improved stormwater quality, but also believes that EPA should share in the burden of Municipal and public education.

Sincerely,

Town of Leicester

Town of Leicester –
Town Administrator

Kevin Mizikar

Town of Lexington
Department of Public Works
Engineering

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Town Engineer

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OEP06-4
Boston, MA 02109-3912

Attention: Newton Tedder

February 24, 2015

Re: Comments on the draft NPDES General Permit for Stormwater Discharges from Small MS4s in Massachusetts

Dear Mr. Tedder,

Section 2.3.2.e. states that 'the program shall show evidence of focused messages as well as evidence that progress toward the defined educational goals of the program has been achieved'. Additionally there is guidance on the messages that are suggested to be delivered as well as the four audiences to deliver the messages to.
We believe this section falls short in guidance for measuring of these messages and urge EPA to either provide suggested measurement tools for each of the listed messages or to remove this from the permit. We have thought long and hard about many of these messages and cannot come up with reasonable and practical methods for measuring many of these messages. These measurements could also prove to be very time-consuming with limited benefit. Alternatively and preferably we would suggest that the EPA work with watershed groups and state agencies to evaluate the effectiveness of messages.

Section 2.3.4.5.b. states that 'The permitee shall physically label all MS4 outfall pipes (excluding interconnections) with their unique identifier by the end of the permit term'.
We recommend that this be removed from the permit. There is a reasonably high cost to placing these identifiers at all the outfalls which includes varying types depending on the outfall and what it can be placed on. The labor costs for installing these signs in these areas will be particularly costly. For example a submerged outfall without a headwall will require a sign with sign post to identify its location whereas an outfall with a headwall may allow for a less obtrusive marker such as a stick on label of some sort. Over time these will need to be replaced as they become worn or damaged adding to the burden. In addition they can lead to 'sign pollution' as many of these exist along or near nature trails where installation of a sign may not be appropriate. Finally, there does not appear to be a significant added benefit toward the labeling. With proper mapping of the Stormwater system it is usually a simple process to identify a specific outfall if a report comes in. In addition with the majority of people carrying smartphones with GPS capabilities and technology ever improving the ability to tie a field location to an outfall is readily available without the expense and maintenance burden of signage and labels. We recommend that the reliance on proper mapping and photographic ID records be used in lieu of the signing at each outfall.

Section 2.3.4.7.e. identifies a number of system vulnerability factors.
We agree with the vulnerability factors with the exception of a few. The crossing of storm and sanitary sewer alignments is the first that we are in disagreement with. The reason we do not feel that this factor is valuable is that would essentially identify the entire town for municipalities that have sanitary sewer systems. This adds an extreme burden to the wet-weather sampling program which is very limited in the time of year that these can be performed in. This will likely force towns to go externally for compliance for this sampling which adds an extreme financial burden. We would suggest this system vulnerability factor be adjusted to state 'The crossing of storm and sanitary sewer alignments where the sanitary system is shallower that the storm drain system.' We believe this will capture the problems that the wet-weather sampling is looking to identify.
The second factor that we feel is overly burdensome is where sanitary and storm drain infrastructure is greater than 40 years old. This gain will identify almost the entire system for municipalities creating an overly burdensome wet-weather program. This could be coupled with the above vulnerability factor to read as follows 'The crossing of storm and sanitary sewer alignments where the sanitary system is shallower that the storm drain system and either of the systems is known to be greater than 40 years old.'
On a side note, due to the methods of record-keeping of Municipalities in Massachusetts it is common for municipalities to know the age of their sanitary sewer system but the drainage system records tend to be sparse and the age unknown.

Section 2.3.4.7.e.ii. states that 'Either method must, at a minimum, include an investigation of each key junction manhole even where no evidence of an illicit discharge is observed at the outfall.'
Key junction manhole testing can be erroneous and due to safety issues we currently do not allow our volunteers to sample in manholes. We would recommend that the language be adjusted to read as follows 'Either method must, at a minimum, include an investigation of each key junction manhole ~~even~~ where ~~no~~ evidence of an illicit discharge is observed at the outfall.'

Section 2.3.4.7.e.ii.b. states that wet-weather sampling will be required in areas that meet one or more vulnerability factors.
Based on these factors this will result in at least most of the outfalls being in this category. The limited time-frame that these samples are allowed to be taken (March to June) will essentially put the town in the position of monitoring every storm that occurs and visiting the outfalls during these storms to obtain samples. Even with this it may not be possible to complete all that are required within the time-frame given. We recommend the time period be extended so that wet-weather event sampling can be performed between March and November.

Section 2.3.6.a.ii.(a).1. States that 'new and redeveloped sites shall be designed to either: 1. Retain the first one (1) inch of runoff from all impervious surfaces on site. OR 2. Provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration on the first one (1) inch of runoff from all impervious surfaces on the site.'
We have significant concerns with this requirement as written, which are described below;

1. *There is discrepancy with the Mass DEP Stormwater handbook which is directly referenced in numerous permitee documents as the standard to follow.*
2. *This significantly impacts the town's ability to reclaim, rebuild, or reconstruct a roadway. If we are to reclaim an acre of roadway which is a very common practice it appears that this regulation would be triggered. The ability to conform with this regulation within the confines of the town owned right of way which is already fully-loaded with underground utilities would essentially preclude the town from being able to perform the appropriate maintenance for roadways in the condition that requires reclaim, rebuilding, or reconstructing. It would be precluded based on both the exponential increase in cost as well as the infeasibility of being able to install such a structure that would perform to this standard with the confines of the right-of-*

way. We recommend that the language changed to include on rebuilding of roadways where a significant amount of the roadway subbase is being removed and replaced. This will allow towns to continue the common practice of reclamation which recycles the existing asphalt into the gravel base, and is then regraded and paved.

3. *MassDOT has recently put out a complete streets initiative that promotes the increase in pedestrian and bicycle accommodations. The nature of this initiative will result in widened roadways and the installation of sidewalks to accommodate the mode shift. This mode shift is in an attempt to promote public health and greener forms of transportation. The proposed EPA regulation again would result in an exponential increase in cost and in most cases present an infeasible scenario to municipalities. The ending result would be the inability for the town to promote this initiative which we believe is for the better good. Again, we urge the EPA to exempt municipal linear projects from this requirement.*

Section 2.3.7.a.iii.(a & b) provides detail on the requirements of a municipality to develop a detailed plan of their catch basin cleaning program to ensure that they are never greater than 50% full.
We recommend that an option be given to the municipalities to either comply with the provided detail that could result in more strategic planning at a lesser cleaning rate, or to clean all catch basins under the control of the municipality a minimum of once per year.

***Section 4.0** We recommend that the EPA prepare a table of all reporting requirements and deadlines to assist municipalities in organizing and performing the work within the permit.*

Appendix F (3) states that in order to receive the phosphorus credit for no fertilizers containing phosphorus the permitee must provide written certification to EPA annually that no fertilizers containing phosphorus have been applied to any area in the watershed to earn the credit.
Our concern is that any application at all eliminates the opportunity for a phosphorus credit. We recommend that partial credit be allowable for no phosphorus use. For example a town may build a new field that needs to have phosphorus applied as part of the starter fertilizer until it is established and applies that fertilizer with trained and licensed applicators. A credit will allow the permitee to get credit for the remaining areas that are no phosphorus zones while allowing flexibility in initial establishment of turf.

Appendix F (4) states that a leaf litter credit can be obtained if the town remove all landscaping wastes and organic debris weekly from roadways and parking lots. *This should be clarified to state that all permitee controlled roadways and parking lots as there are many private roads and parking lots that are not within the permitees control.*

Thank you for the opportunity to comment on this draft. Please contact us with any questions or clarifications at 781-274-8305 or via email at jlivsey@lexingtonma.gov or dpavlik@lexingtonma.gov.

Respectfully,

John R. Livsey, P.E.
Lexington Town Engineer

Cc: William Hadley, Public Works Director
Karen Mullins, Community Development Director

Comments on

Draft NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts

submitted to

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by

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Lawn & Horticultural Products Work Group

December 23, 2014

Environmental & Turf Services, Inc.©

EXECUTIVE SUMMARY

FOCUS

Our principal concern is with the EPA's proposed reduction factor of 0.50 (i.e., 50% load reduction) ". . . to be applied to the average annual phosphorus load export rate from pervious lawn areas that "previously" received phosphorus-containing fertilizers but will no longer receive unnecessary applications of phosphorus-containing fertilizers" (pp. 32-34 of Attachment 1 – Fact Sheet Massachusetts Small MS4 (US EPA, 2014a)). [We also provide some comments on stormwater runoff modeling.]

We are very familiar with the literature on this subject, and we conclude that the true load reduction factor should be much less than 0.5, and it should probably be very close to zero. Brief highlights of our analysis follow. But first it is important that we acknowledge the overall helpful attitude that Newton Tedder and Mark Voorhees (US EPA, Region 1) have demonstrated. They have been cordial and very responsive to ETS' request for the supporting information on this topic. We appreciate it.

THE PUBLISHED LITERATURE SUPPORTS A LOWER REDUCTION FACTOR

- The EPA's Key Reference does not support the 50% Load Reduction Factor. Table 21 of Attachment 1 to the EPA Fact Sheet follows. It was obtained from Schueler (2011), and it is the ultimate basis for the 50% number ([0.2 mg/L]/[0.4 mg/L] x 100 = 50%).

Table 21 from the US EPA Fact Sheet Attachment. Suggested EMCs to Characterize Runoff from Lawns (Schueler, 2011)

Nutrient	TP (mg/L)	TN (mg/L)
Phosphorus Fertilized	0.4	2.5
Phosphorus-free or Non Fertilized	0.2	1.5

The EPA states that this table represents estimates from the Chesapeake Bay watershed model. We could find no information to support this statement. Instead, Schueler (2011) states that the basis for the numbers in his table is explained in Appendix A.2 of his document. But Appendix A.2 is only five sentences long and it focuses more on very limited surveys of fertilizer use and a distributional analysis of national TP water quality monitoring results; i.e., it offers no evidence

that total phosphorus (TP) in runoff is reduced 50% when no P is applied compared with typical applications. Finally, Schueler (2011) is not from the Chesapeake Bay watershed model, and it is neither an EPA-produced document, nor was it published in the peer-reviewed literature, counter to the guidance from the President on scientific integrity (http://www.whitehouse.gov/the-press-office/memorandum-heads-executive-departments-and-agencies-3-9-09).

- Studies Published in the Scientific Literature do not Support a 50% Reduction Credit. Phosphorus runoff studies have been done on cool-season turfgrasses in New York, Wisconsin, and Minnesota, at the same or similar latitudes as Massachusetts. Results contained in six of the studies actually demonstrate no significant differences or an ***increase*** in total phosphorus (TP) in runoff from unfertilized plots in relation to fertilized plots.

Based on these results, combined with the issues raised with the Schueler (2011) draft, a reduction credit closer to 0% seems to be more appropriate than 50%.

A MINNESOTA WATERSHED ANALYSIS DOES NOT DEMONSTRATE A REGULATORY BENEFIT

Minnesota was the first state to implement lawn fertilizer phosphorus restrictions (2004-2005). Therefore it is appropriate and informative to evaluate the water quality monitoring data from the state to assess impacts of the restrictions.

Water quality monitoring data collected prior to the statewide restriction (i.e., prior to 2005) were compared with data collected after the statewide restriction (i.e., 2005 and later) at eight watersheds throughout Minnesota to determine if there is a statistically significant difference in the P concentrations at these stations pre- vs. post-regulatory restriction. The eight monitoring stations were chosen based on a representative range of TP concentrations (i.e., low, medium, and high concentrations) and three other criteria. Three of the eight stations showed a statistically significant difference between the pre and post statewide zero phosphorus restriction, i.e., concentrations declined. The Student's t-test results indicate the phosphorus concentrations before and after the statewide restriction were not statistically significant at the remaining five stations. Residential and mixed residential areas were dominant in four of the eight watersheds analyzed. *However, only one of*

these four residential watersheds exhibited a significant decline in total phosphorus. It is possible that a more intensive and extensive analysis might yield a different conclusion, but ***our analysis of these eight subwatersheds does not indicate that the restriction of P on residential lawns has shown a significant decline in P in surface water.***

HYDROLOGIC MODELING INCONSISTENCY

The EPA used its Stormwater Management Model (SWMM) and the P8 Urban Catchment Model to estimate runoff yields from various hydrologic soil groups and conditions. However, upon review of the modeling output sent to us by Mr. Voorhees (US EPA, Region 1), we noticed a discrepancy between Table 22 of the permit's fact sheet's attachment and the modeling output. Table 22 lists P8 fair condition runoff yields of 0.378 MG/ha/yr and 0.467 MG/ha/yr for hydrologic soil groups (HSG) C and C/D, respectively. The output, however, indicates these runoff yields should be 0.267 MG/ha/yr and 0.407 MG/ha/yr for HSG C and C/D, respectively. This will change the overall average runoff yield and phosphorus load export rate (PLER) for these hydrologic soil conditions.

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I. INTRODUCTION AND PURPOSE

On September 30, 2014, the Region 1 office of the US EPA proposed a new regulation relevant to the protection of water resources from excess phosphorus. Specifically, the EPA proposed a draft NPDES general permit for stormwater discharges from small Municipal Separate Storm Sewer Systems (MS4s) to regulated waters in Massachusetts.

This document mostly provides critical comments on one component of the proposal, the 50% phosphorus (P) reduction credit when transitioning from use of lawn fertilizers with P to lawn fertilizers without P. More specifically, "The reduction factor of 0.5 (i.e., 50%) is equal to the anticipated reduction in the annual mean TP concentration in runoff from lawn areas as a result of applying phosphorus-free fertilizer or not applying fertilizer at all to previously fertilized lawn areas." (pp. 33-34 of Attachment 1 – Fact Sheet Massachusetts Small MS4 (US EPA, 2014a)). The main purpose of these comments is to demonstrate that this 50% credit is too high. We also provide comments on the stormwater runoff modeling.

II. THE KEY REFERENCE CITED TO SUPPORT THE 50% CREDIT IS SERIOUSLY FLAWED

The US EPA's P reduction proposal for lawn care relies heavily on a table in a draft report by Schueler (2011) of the Chesapeake Stormwater Network.[*†] This is Table 21 of Attachment 1 of the proposed EPA Fact Sheet (p. 3; US EPA, 2014a), and it follows.

Table 1. Table 21 from the Attachment to the EPA Fact Sheet: Suggested EMCs to Characterize Runoff from Lawns (Schueler, 2011)[**]

Nutrient	TP (mg/L)	TN (mg/L)
Phosphorus Fertilized	0.4	2.5
Phosphorus-free or Non Fertilized	0.2	1.5

The numbers in the table are purported to be event mean concentrations of phosphorus and nitrogen in runoff from lawn turf. Thus the basis for the EPA's 50% P reduction factor is this equation based on the table:

$$[0.4 \text{ mg/L} - 0.2 \text{ mg/L}]/[0.4 \text{ mg}/4] \times 100 = 50\%$$

Although Schueler (2011) claimed the basis for his table was provided in Appendix A.2 of his document, that is not correct. If it were the basis for the table, one would have expected Appendix A.2 to present the results of runoff studies that compared test plots treated with P compared with zero-P treatments. Appendix A.2 did not do that. Instead, information was presented that is only indirectly relevant, as follows.

Schueler's justification for the numbers in Table 2 (above) begins with the following statements.

> "The EMC for residential land uses was split into two categories based on lawn care: high input and low input turf (HI and LO). The EMCs represent the 25th and 75th percentile values in the National Stormwater Quality Database (Pitt et al, 2004), because the distribution of data from residential runoff is approximately a normal distribution."

[*] The EPA states that this table represents estimates from the Chesapeake Bay watershed model. We could find no information to support this statement.
[†] Apparently, this report was only published as a review draft, and a final version was never published.
[**] Table 1 above is identical to Table 21 in the US EPA (2014) attachment, and it is identical to Table 8 in the original source, Schueler (2014).

The purpose stated in the first sentence - - which is appropriate - - is not supported by the second sentence. Thus the attempt to split event mean concentrations (EMCs) into high input and low input should have been supported by concentrations measured in runoff from high input and low input turf plots or lawns. But this was not done. Instead, the author assumed that the distribution of the 25th and 75th percentile concentrations was due to high fertilizer input when, in fact, it was due to an uncharacterized combination of the following runoff-generating factors: the soil type, the vegetation cover, rainfall duration and intensity, temperature, slope, fallen leaves, evapotranspiration, and fertilizer input. Consequently, no linkages were established between the 75th percentile and use of P on lawns nor the 25th percentile and low or zero P.

Schueler (2011) then made the following references to frequency/incidence of fertilizer use.

> "Two estimates of fertilization are available for the area that range between 50% and 65% (Swann, 1999, Law et al, 2004). Making assumptions about past lawn care education and stewardship efforts, it is recommended that the lower 50% rate be used (half of all residential turf cover is high input and the other half is low input)."

This analysis is irrelevant for two reasons. (1) Again, the extent of fertilizer use in a watershed is only one of many factors that determine the amount of P in runoff (see the immediately preceding paragraph above). Therefore this information has little or no relevance to the determination that TP in runoff is reduced by 50% when comparing normal fertilizer application with zero-P fertilizer application. (2) Even if consumer use patterns were relevant to the numbers in Table 1 above, it should be noted that Law et al. (2004) applies to two small subwatersheds within one Maryland County, and Swann (1999) applies to part of the Chesapeake Bay watershed. It is likely that less turf fertilizer is applied annually in Massachusetts due to the shorter growing season.

III. EMPIRICAL RESULTS FROM THE SCIENTIFIC LITERATURE

We reviewed papers based on research at Cornell, the University of Minnesota, and the University of Wisconsin, institutions that have been very active in the investigation of phosphorus fate in turfgrass (section II of the Appendix). All of the studies we reviewed were conducted on cool season turfgrasses in northern climates; i.e., they are relevant to Massachusetts. Our focus was runoff concentrations from P applied at typical rates compared with zero P applications.

It has been demonstrated, in cool season grasses, that significantly more phosphorus runs off from treated fertilized plots than zero-P plots when ***excess*** P is applied, e.g., at 3X normal rates. It has also been demonstrated, in cool season grasses, that, in general, there is no more P runoff from test plots treated at 1X normal rates relative to text plots with zero-applied P. At least six of the studies present results where more P ran off the zero-P plots relative to the 1X plots.

Thus the literature we reviewed does not support the application of a 50% P reduction credit for lawns/turf. Rather, a number closer to 0% would be more appropriate. Key aspects of the studies reviewed in section II of the Appendix are summarized in Table 2 below. See also our comments in section II above on a key reference cited by the EPA (Schueler, 2011).

Table 2. Summary of Literature Review from Section II of the Appendix: Phosphorus in Runoff from Cool Season Turfgrass

Document Title	Author(s), Year	Study Design	Key Conclusions
Fertilizer Source Effect on Ground and Surface Water Quality in Drainage from Turfgrass	Easton and Petrovic, 2004	The authors conducted a two year mass-balance field study to determine the effect of the nutrient source on turfgrass runoff and leachate. The test plots were in central New York on soils ranging from sandy loam to silt loam texture.	They observed that rapid establishment and shoot density from fertilizer applications tended to reduce overall losses of nutrient runoff and leaching. They found that typical P application sources for homeowners applied at typical rates produced an average P runoff concentration during the first year (0.5 mg/L; immediately after establishment) that was slightly higher than the 0.3 mg/L for the control plot using normal P applications (i.e., 0.5 lb P/1000 sq ft). However, the second year average P runoff concentration (0.43 mg/L) was lower than the control plot concentration (0.5 mg/L). They concluded, "in many cases we observed equal or higher overall losses of N and P in runoff and leachate from the unfertilized control, supporting the argument that following the establishment period fertilization can reduce water contamination from N and P."
The Fate and Transport of Phosphorus in Turfgrass Ecosystems	Soldat and Petrovic, 2008	The authors reviewed the literature on the fate and transport of P in turfgrass ecosystems from several sources.	Kelling and Peterson (1975) found that unfertilized lawns in Wisconsin produced P concentrations in runoff of 0.4 mg/L (no P applied), whereas the P concentration on fertilized lawns was only 0.5 mg/L (7.2% loss of applied P). Gaudreau et al. (2002) compared fertilized and unfertilized plots in Texas. They reported P runoff concentrations using inorganic P at normal P applications (i.e., 25 kg/ha or 0.5 lb P/1000 sq ft) in some control plots (2.6 mg/L) were higher than P concentrations in the fertilized plots (1.1 mg/L). Similarly, using two times the normal rate (i.e., 1 lb P/1000 sq ft) the runoff P concentration in some control plots were higher (2.6 mg/L) compared with 1.1 mg/L from some of the fertilized plots using inorganic P.
The Effects of Soil Phosphorus and Nitrogen and Phosphorus Fertilization on Phosphorus Runoff Losses from Turfgrass	Soldat et al., 2008	A two year study was conducted to better understand nutrient runoff losses from turfgrass in order to improve fertilizer recommendations for turfgrass on New York-located experimental test plots. The two objectives were: 1) examine the effects of N and P fertilization of established turfgrass on P runoff losses; and 2) examine the effect of soil P level on P runoff losses from established turfgrass	There was 23% reduction of phosphorus in runoff for dissolved P without P fertilization (2.10 mg/L) and in the plots where P was applied (2.74 mg/L), a significant difference. However, the TP runoff concentrations were was not significantly higher in the P fertilized plots: TP runoff concentrations 3.86 mg/L in no P fertilized plots compared with 3.34 mg/L for the P-applied plots.

Document Title	Author(s), Year	Study Design	Key Conclusions
Management Practices Affecting Nitrogen and Soluble Phosphorus Losses from an Upper Midwest Lawn	Kussow, 2008	This was a six year study of nutrient losses from a Kentucky bluegrass lawn treated with and without phosphorus fertilizers in Madison, WI.	Runoff volume increased by 31-38% and phosphorus losses increased up to 58% at the no fertilizer treatment plot relative to the fertilized plots after two years. In the final two years of the study, runoff soluble phosphorus only decreased by a statistically insignificant 13% when phosphorus was not applied compared with the plots that received phosphorus. In fact, the application of urea, which contained no phosphorus, resulted in the greatest soluble phosphorus loss in runoff (1.29 kg/ha/yr).
Phosphorus Runoff from Turfgrass as Affected by Phosphorus Fertilization and Clipping Management	Bierman et al., 2010	This was a three year study which examined the effects of phosphorus runoff from various fertilizer treatments from turf in Minnesota. Treatments varied from no fertilizer to high P fertilizer (three times the recommended rate of P).	During the second year the total phosphorus runoff from the no-fertilizer treatment exceeded the phosphorus runoff from those plots receiving fertilizer. During the final year, total phosphorus losses increased with an increase in the phosphorus rate used in the fertilizer; however, losses were similar for those plots treated with the recommended rate of P and no-P treatment.
Potential Contributions of Mature prairie and Turfgrass to Phosphorus in Urban Runoff	Steinke et al., 2014	This study compared phosphorus runoff from non-fertilized, native prairie vegetation to phosphorus runoff from fertilized turfgrass plots in Wisconsin.	The average phosphorus load from fertilized turfgrass was significantly less than the average phosphorus load from the prairie vegetation that was not fertilized.
Phosphorus Losses from Turfgrass and the Urban Environment	Soldat (2012)	This is a summary of phosphorus runoff studies in urban environments.	This summary emphasizes the importance of soil tests to determine whether phosphorus is needed and concedes that while turf fertilizer does contribute to phosphorus loss from urban environments, building and road construction contribute a much greater portion of P loss.
Report to the Minnesota Legislature: Effectiveness of the Minnesota Phosphorus Lawn Fertilizer Law	Minnesota Dept. of Agriculture, 2007	This is a review of the Minnesota phosphorus restriction law which was enacted in 2002 and amended in 2004. The law prohibits the use of phosphorus in lawn fertilizers unless soil tests indiciate it is needed.	This review concluded that although the amount of phosphorus applied to lawns in fertilizers decreased by almost half between 2003 and 2006, "changes in water quality resulting from the law have not been documented at this time." Furthermore, the review concedes that sources such as sediment from construction areas, animal waste, and grass clippings all contribute to phosphorus in runoff in urban areas.

IV. AN ANALYSIS OF MINNESOTA WATER QUALITY TRENDS

The following discussion briefly summarizes the data analysis presented in section III (pp. 10-16) of the Appendix.

Minnesota was the first state to enact statewide restrictions on P in lawn fertilizers (Minnesota Statutes, Chapter 18C). Basically, phosphorus-containing fertilizers are prohibited from applications to lawns unless a specific need is established. To our knowledge, there have been no attempts to document statewide improvements in water quality as a result of implementation of the P restriction. Consequently, we conducted a preliminary analysis of this issue as follows.

The State of Minnesota has an extensive surface water monitoring database. A scientifically valid approach, probably the most scientifically valid approach, is to examine the monitoring data in a hydrologic context, i.e., in terms of drainage basins or watersheds. Accordingly, we selected monitoring station locations using four criteria based on HUC (Hydrologic Unit Code) 8 watersheds and TP results, as follows, and as described in the Appendix.

The watershed pollutant load monitoring network (2007-2011) map for TP was used as a starting point to select the surface water monitoring sites based on the range of TP concentrations. For the first criterion, each of the eight monitoring sites selected was located in separate HUC 8 watersheds in various parts of Minnesota (Figure 2). The second criterion was the time frame in which monitoring data was obtained, i.e., the monitoring data sets were required to have data available prior to P restrictions and post-2005. Next, each HUC 8 watershed for each of the surface water monitoring stations was completely within the boundary of the State of Minnesota. Fourth, we selected stations that collectively represent a wide geographic range within the state of Minnesota.

Three of the eight monitoring stations/watersheds demonstrated significant declines in TP concentrations over the period evaluated. All three of those stations are located in watersheds classified as having medium or high TP concentrations. This preliminary conclusion might be sufficient to generate a hypothesis worth testing, i.e., that the new law caused a decline in TP concentrations in the three watersheds. However, the law only targeted residential lawn P use, and the fact that residential land use does not dominate in two of the three watersheds indicates no clear benefit of the law (Minnesota

Statutes, Chapter 18C); i.e., only one of the monitoring stations in a predominantly residential or mixed use area demonstrated a decline in TP.

It is possible that a more intensive and extensive analysis might yield a different conclusion, but our analysis of these eight subwatersheds does not indicate that the restriction of P on residential lawns has shown a significant decline in P in surface water. This conclusion indicates the EPA Region 1 proposed P reduction credit may not significantly help achieve the TMDL goal.

V. HYDROLOGIC MODELING

On October 9, 2014, Mark Voorhees (US EPA, Region 1) sent ETS several documents including modeling output related to the phosphorus reduction credit described in the MA NPDES MS4 permit. The EPA Stormwater Management Model (SWMM) and the Program for Predicting Polluting Particle Passage through Pits, Puddles, & Ponds (P8) Urban Catchment Model were used to estimate runoff yields from various hydrologic soil groups and conditions. SWMM is used worldwide for its applications to drainage system design and sizing for flood control, flood plain mapping, design strategies for combined sewer overflows, waste load allocation studies, and evaluating BMP effectiveness (US EPA, 2014b). P8 was developed in the early 1990s by environmental engineer William W. Walker, Jr., Ph.D, to evaluate runoff from current or potential urban developments (Walker, 2014).

Two P8 simulations of fair and good conditions and one SWMM simulation were modeled at various hydrologic soil conditions (A, B, C, C/D, and D). The average runoff results of these three simulations were used to calculate phosphorus load export rates for soil groups A, B, C, C/D, and D (i.e. average of runoff yields X average annual mean total phosphorus concentration = phosphorus load export rate).

Upon review of the modeling output sent to us by Mr. Voorhees, we noticed a discrepancy between Table 22 (mislabeled as Table 172) of the permit's fact sheet's attachment and the modeling output. Table 22 of the attachment provides annual runoff yields and overall average runoff yields from the model simulations. Results for the P8 fair condition runoff yields in Table 22 are 0.378 MG/ha/yr and 0.467 MG/ha/yr for hydrologic soil groups (HSG) C and C/D, respectively. However, the model output in the Excel spreadsheet titled "Summary runoff and P yield 7 16 13" given to us by Mr. Voorhees indicates these runoff yields should be 0.267 MG/ha/yr and 0.407 MG/ha/yr for HSG C and C/D, respectively. If the P8 fair condition simulation results used in the table are incorrect, the average runoff yield and phosphorus load export rate for soil conditions C and C/D as described above are incorrect.

The EPA should examine this apparent inconsistency and, if an error has been made, determine its significance.

VI. CONCLUSIONS

The Schueler et al. (2011) draft report appears to be the basis for the proposed TP reduction factor of 0.50 (i.e., 50% load reduction) if a transition is made from phosphorus (P)-containing turf fertilizers to zero-P fertilizers. However, there is no valid basis - - and only a minimal explanation - - for how the numbers were derived.

A review of the P-runoff literature for cool season turfgrasses yields the following conclusions:

- When P-runoff concentrations from treated plots exceeded those from control (untreated) plots, the former often received non-typical turfgrass fertilizers and/or fertilizers applied at 2X or 3X normal rates.

- Conversely, most studies conducted with typical turfgrass fertilizers applied at normal rates tend to yield TP-runoff concentrations that are similar or lower for the treated plots compared with the control plots. This is a manifestation of the fact that a well-maintained stand of turfgrass is a good pollution BMP.

An analysis of water quality trends in Minnesota should yield conclusions relevant to this issue, due to its enactment ad implementation of statewide restrictions on the use of P-containing fertilizers on “lawns and turf” (implemented ca. 2004-2005). In a reconnaissance-level analysis, long term monitoring results from a diverse range of eight HUC 8 watersheds yielded no results that indicate a clear environmental benefit of the restrictions.

Regarding the EPA’s SWMM and P8 hydrologic modeling: some inconsistencies between the modeling results in the unpublished spreadsheet and those presented in the proposal package - - the Fact Sheet attachment - - should be resolved.

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APPENDIX. An Analysis of Phosphorus Data from Test Plots and Surface Water Monitoring Relevant to Lawn Care Restrictions

AN ANALYSIS OF PHOSPHORUS DATA FROM TEST PLOTS AND SURFACE WATER MONITORING RELEVANT TO LAWN CARE RESTRICTIONS

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EXECUTIVE SUMMARY

State regulatory agencies and legislatures have been enacting restrictions that limit and eliminate phosphorus (P) in lawn fertilizers. The first state to implement such legislation statewide was Minnesota. In 2004, it passed zero-P legislation that took effect in 2005, following more limited restrictions that had been enacted previously. Since then, at least 10 additional states, and dozens of local governments in Florida, have enacted lawn fertilizer restrictions that target P and/or nitrogen. This is being done in an atmosphere whereby, in many areas of the country, there are perceptions that lawn fertilization is bad for the environment.

P is usually a limiting nutrient in freshwater systems, usually at low concentrations. This consideration is usually the policy driver for statutory and regulatory actions by state legislatures and agencies, frequently in the context of the establishment of Total Maximum Daily Loads (TMDLs) pursuant to §303(d) of the Clean Water Act. The restrictions imposed on P applied to turfgrass are based on the assumption that the runoff from the treated turfgrass will impact water quality. However, test plot and field-scale study results indicate that the irreducible concentrations of P in runoff from control sites are usually not significantly different than the concentrations from sites treated with typical turfgrass fertilizers at typical application rates.

Thus the purpose of this paper is to examine these issues more closely, albeit with a rather limited scope. Specifically, we reviewed the results of test plot and field-scale studies that examined P losses in runoff from turf. Further, we evaluated surface water quality monitoring results from eight watersheds in Minnesota, and compared concentrations before and after the restrictions cited above.

Literature Review

Twelve papers were reviewed relevant to phosphorus runoff from cool season turfgrasses at latitudes equivalent or similar to those that transit Massachusetts.

It has been demonstrated, in cool season grasses, that significantly more phosphorus runoff can occur from treated fertilized plots than zero-P plots when excess P is applied, e.g., at 3X normal rates. It has also been demonstrated, in cool season grasses, that, in general, there is no more TP runoff from

test plots treated at 1X normal fertilizer rates relative to test plots with zero-applied P. At least six studies yielded results whereby more P ran off the zero-P plots relative to the 1X plots.

A multiple subwatershed scale analysis in Minnesota concluded that there was no difference in TP runoff concentrations comparing a Minnesota town with P use restrictions implemented five years prior to similar implementation by another town. An environmental benefit of reduced SRP concentrations in the town with longer-term restrictions was concluded by the authors, but the lower concentrations of TSS was a confounding factor that weakened the conclusion.

Preliminary Trend Analysis of Minnesota Water Quality Monitoring Data

Restrictions on application of P-containing fertilizers began in Minnesota in 2002 at the local level, and statewide implementation of restrictions occurred in 2005. Therefore surface water monitoring sites from the Minnesota dataset at watershed Hydrologic Unit Code (HUC) Level 08 were selected for data analysis of pre- and post-phosphorus restrictions (ca. 2002-2005).

We selected surface water monitoring stations that represent a range of TP concentrations (i.e., low, medium, and high concentrations) and that are located near urban areas to compare the impact of the statewide P restrictions.

Three of the eight monitoring stations/watersheds we evaluated demonstrated significant declines in TP concentrations over the period evaluated. All three of those stations are located in watersheds classified as having medium or high TP concentrations. This preliminary conclusion might be sufficient to generate a hypothesis worth testing. However, the law only targeted residential lawn P use, and the comparisons do not demonstrate a clear benefit of the law (Minnesota Statutes, Chapter 18C); i.e., only one of the monitoring stations in a predominantly residential or mixed use area demonstrated a decline in TP.

It is possible that a more intensive and extensive analysis might yield a different conclusion, but our analysis of these eight subwatersheds does not indicate that the restriction of P on residential lawns has shown a significant decline in P in Minnesota surface water.

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I. INTRODUCTION AND PURPOSE

State regulatory agencies and legislatures have been enacting restrictions that limit and eliminate phosphorus (P) in lawn fertilizers. The first state to implement such legislation statewide was Minnesota. In 2004, it passed zero-P legislation that took effect in 2005 (www.mda.state.mn.us/phoslaw), following more limited restrictions that had been enacted in 2002 and implemented in 2004. Since then, at least 11 additional states (ME, WI, MI, IL, NY, WA, MD, VA, NJ, and VT: http://www.cga.ct.gov/2012/rpt/2012-R-0076.htm; MA is a recent addition to this list: http://www.mass.gov/eea/docs/agr/docs/draft-nutrient-management-regulations.pdf), and dozens of local governments in Florida, have enacted lawn fertilizer restrictions that target P and/or nitrogen. This is being done in an atmosphere whereby, in many areas of the country, there are perceptions that lawn fertilization is bad for the environment.

These statutes, regulations, and ordinances have not been enacted without controversy. For example, Hochmuth (2014) demonstrated that the dozens of local fertilizer ordinances in Florida lacked a scientific basis. Bierman et al. (2010) found that, in year 2 of a three-year study, total annual runoff depths were significantly greater for the *no*-fertilizer treatment compared with all other treatments. Lehmann et al. (2009) chose a title for their paper about the benefits of a P restriction - - "Reduced River Phosphorus Following Implementation of a Lawn Fertilizer Ordinance" - - that implies a more definitive conclusion than stated by the authors in the paper. Finally, Kussow (2008) found that there was no significant decrease in runoff-soluble P when zero-P fertilizers were applied compared with applications of fertilizers with P.

Thus, the purpose of this paper is to examine these issues more closely, albeit with a rather limited scope. Specifically, we reviewed the results of test plot and field-scale studies that examined P losses in runoff from turf. Further, we evaluated surface water quality monitoring results from eight watersheds in Minnesota, and compared concentrations before and after the restrictions cited above.

II. PHOSPHORUS IN RUNOFF FROM TURF IN FIELD RESEARCH PLOTS

This is not a comprehensive review. Rather, its focus is research done at the two institutions that are most active in research on phosphorus in turfgrass. There is also a focus on those papers most relevant to the 50% P reduction credit.

A. Literature

The following studies were all performed on cool season turfgrasses in northern climates, and at the same or similar latitudes as Massachusetts. Thus they are relevant to the Massachusetts MS4 proposal.

Easton and Petrovic (2004) conducted a two year mass-balance field study to determine the effect of nutrient source on turfgrass runoff and leachate. The test plots were in central New York on soils ranging from sandy loam to silt loam texture. They observed that rapid establishment and shoot density from fertilizer applications tended to reduce overall losses of nutrient runoff and leaching.

In many cases, they found that N and P losses in runoff were equal or higher from the unfertilized control than from the treatment plots. This supports the observation that fertilization, following the establishment period, can reduce water contamination from N and P. They found that only one fertilizer source (swine compost – which is not typically applied to turf -- in the first year) produced significantly higher P concentrations (2.4 mg/L) than the unfertilized control (0.3 mg/L). Mass loss of P in the first year of the study for the different fertilizer types under normal applications (23.6 kg P/ha or ~0.5 lb P/1000 sq ft) ranged from 0.2 – 0.8 kg/ha compared with control (unfertilized) at 0.2 kg/ha. The second year of the study showed that the P-mass loss of the unfertilized control (1.3 kg/ha) was significantly ***higher*** than all other fertilizer sources, except for the swine compost (1.2 kg/ha) at twice the normal application rate (i.e., 47.2 kg P/ha or ~0.9 lb/1000 sq ft). The second year showed a range of P-mass loss values for the different fertilizer types ranged from 0.6 - 1.0 kg/ha at normal application rates (23.6 kg P/ha or ~0.5 lb P/1000 sq ft) compared with control (unfertilized) at 1.3 kg/ha.

Table 1 below shows runoff concentrations associated with the typical P application sources for turfgrass. The average P runoff concentration for treated plots in the first year is 0.5 mg/L, compared

with 0.3 mg/L for the control plot. The second year shows an average P runoff concentration of 0.43 mg/L for treated plots, which is lower than the control plot concentration of 0.5 mg/L.

Table 1. Phosphorus Concentrations in Runoff from Easton and Petrovic (2004) - Normal P Use Rate (~0.5 lb P/1000 sqft; 23.6 kg/ha)*

Study Year	Control (mg/L)	Biosolid (mg/L)	Readily Available (mg/L)	Controlled-Release (mg/L)
1	0.3	0.8	0.3	0.4
2	0.5	0.6	0.3	0.4

The study concludes:

> *"It is generally accepted that fertilizer is needed for rapid turfgrass establishment and growth. Increased shoot density, infiltration, and reduced sediment and runoff loss support the argument that fertilization ultimately results in less water contamination. While the initial concentrations and losses were generally higher from the fertilized treatments, rapid establishment and dense growth obtained with fertilizer application tended to reduce overall losses. In many cases we observed equal or higher overall losses of N and P in runoff and leachate from the unfertilized control, supporting the argument that following establishment fertilization can reduce water contamination from N and P."*

Soldat and Petrovic (2008) reviewed the literature on the fate and transport of P in turfgrass ecosystems from several sources. In their review of the Kelling and Peterson (1975) paper, they found that unfertilized lawns in Wisconsin produced a P concentration in runoff of 0.4 mg/L, whereas fertilized lawns yielded a P concentration of only 0.5 mg/L (7.2% loss of applied P). This is only a ***0.1 mg/L increase, albeit insignificant,*** in P concentration from the unfertilized plots relative to the fertilized plots. In general, they found that P losses from fertilized plots ranged from <1 to 18% of the amount of P applied, higher when more was applied and the greatest when twice the normal application of P was used.

Soldat and Petrovic (2008) reported result for Gaudreau et al. (2002), a natural plot-scale study over a 2-yr period. They compared runoff results from fertilized and unfertilized plots. The range of applications on the fertilized plots ranged from normal (i.e., 25 kg/ha or 0.5 lb P/1000 sq ft) to four times the normal rate (i.e., 2 lb P/1000 sq ft or 100 kg/ha). The runoff P concentration for control plots ranged from 1.1 to 2.6 mg/L compared with 1.1 to 16.6 mg/L from the plots with normal applications (i.e., 25 kg/ha) using inorganic P. Additionally, twice the application rate for inorganic P (i.e., 50 kg/ha or

* Swine and dairy compost results are not included because they are not typical turfgrass fertilizers.

1 lb P/1000 sq ft) produced P concentrations in runoff of 1.1 to 30 mg/L. Therefore, these results demonstrate that some of the fertilized plots using normal P application rates produce P runoff concentrations (1.1 mg/L) lower than the control/unfertilized plots (2.6 mg/L).

Soldat et al. (2008) conducted a two year study to better understand nutrient runoff losses from turfgrass in order to improve fertilizer recommendations for turfgrass. This New York-located study included experimental test plots with two objectives: 1) examine the effects of N and P fertilization of established turfgrass on P runoff losses; and 2) examine the effect of soil P level on P runoff losses from established turfgrass. Although the dissolved P concentrations (DP) (2.10 mg/L) from the no-P fertilization plots was significantly less than the plots where P was applied at a rate of 50 kg/ha/yr (2.74 mg/L), the results showed only a 23% reduction of phosphorus in runoff without P fertilization. However, the TP runoff concentrations were not significantly higher in the P fertilized plots. In addition, Soldat et al. (2008) cited the Kussow (1996) study in which there was a 47-59% reduction in runoff P losses from fertilized turf compared with unfertilized control in Wisconsin.

Bierman et al. (2010) researched the effects of various turf fertilizer treatments on phosphorus (P) runoff over the course of three years in Minnesota. Treatments varied from no fertilizer to high P fertilizer (three times the recommended rate of P). In the first year, phosphorus runoff increased with an increase in phosphorus rate. During the second year, however, the total phosphorus runoff from the no-fertilizer treatment exceeded the phosphorus runoff from those plots receiving fertilizer. This was due to a decline of the turf quality and greater runoff depth at the plots not receiving fertilizer. During the final year, total phosphorus losses increased with an increase in the phosphorus rate used in the fertilizer; however, losses were similar for those plots treated with the recommended rate of P and no-P treatment.

Steinke et al. (2014) examined phosphorus runoff from non-fertilized, native prairie vegetation as well as from fertilized turfgrass plots in Wisconsin. The average phosphorus load from fertilized turfgrass was significantly less than the average phosphorus load from the prairie vegetation. Furthermore the study goes on to say that “phosphorus losses from urban areas appeared to be primarily correlated with runoff depth, not vegetation type, because correlation coefficients revealed 86 and 45% of the Year 1 and Year 2 total P loads were directly accounted for by runoff volumes”. As shown

in Bierman et al (2010) a reduction in phosphorus applications to turf can lead to greater runoff depth and ultimately greater phosphorus loss in runoff.

Soldat (2012) emphasizes the importance of soil tests to determine whether phosphorus is needed and concedes that, while turf fertilizer does contribute to phosphorus loss from urban environments, building and road construction contribute a much greater portion of P loss. Therefore, "legislation restricting the use of phosphorus fertilizer is likely to have a limited effect on urban water quality".

Kussow (2008) measured nitrogen and phosphorus loss from turf plots treated with synthetic fertilizer containing phosphorus, organic fertilizer containing phosphorus, and no fertilizer. The test plots were in Wisconsin. The turf plot receiving no fertilizer treatment resulted in more phosphorus loss in runoff than the fertilizer treatments. Runoff volume increased by 31-38% and phosphorus losses increased up to 58% at the no fertilizer treatment plot relative to the fertilized plots after two years. In addition, not fertilizing increased nitrogen runoff losses from mulch mowed plots by 25% compared to fertilized plots, indicating fertilizer plays an important role in maintaining turfgrass stand density. In the final two years of the study, runoff of soluble phosphorus did not decrease significantly when phosphorus was not applied compared to the plots that received phosphorus. Furthermore, the relationship between phosphorus application rate and runoff soluble phosphorus was also not statistically significant.

Vlach et al. (2008) is a case study from the University of Minnesota's Assessment of Stormwater Best Management Practices. (There is no indication it has been peer reviewed.) The authors studied total nitrogen, total suspended solids, total phosphorus and soluble reactive phosphorus in runoff from home lawns in six sub-watersheds in Minnesota from 2001 to 2006. Three of the sub-watersheds were located in Plymouth, Minnesota, where phosphorus in fertilizers was banned in 1999. The other three sub-watersheds were located in Maple Grove, Minnesota, in which phosphorus fertilizer restrictions were not implemented until 2004. The study showed no significant difference between mean total phosphorus and mean total nitrogen concentrations in runoff between the Plymouth and Maple Grove locations despite the use of phosphorus fertilizers in Maple Grove. Mean soluble reactive phosphorus concentrations were significantly higher in runoff from the Maple Grove watersheds compared with the Plymouth watersheds (0.135 mg/L vs 0.112mg/L).

However, there is another confounding factor that must be considered. An inverse relationship was found between soluble reactive phosphorus and total suspended solids concentrations. Runoff from Maple Grove consisted of significantly higher concentrations of soluble reactive phosphorus but significantly lower concentrations of total suspended solids. The study indicated street sweeping only occurred once annually in Plymouth whereas in Maple Grove, street sweeping occurred three to four times each year. Therefore, the lack of street sweeping in Plymouth likely resulted in more particulates in runoff and lower soluble reactive phosphorus concentrations due to sorption to the particulates. This is supported by the significantly higher concentration of total suspended solids in runoff from the Plymouth watersheds compared with Maple Grove.

Finally, in 2007, the Minnesota Department of Agriculture reviewed the effectiveness of the MN phosphorus fertilizer law and concluded that, although the amount of phosphorus applied to lawns in fertilizers decreased by almost half between 2003 and 2006, "changes in water quality resulting from the law have not been documented at this time." (See our analysis of this issue in Section III of this document.) Furthermore, the review concedes that sources such as sediment from construction areas, animal waste, and grass clippings all contribute to phosphorus in runoff in urban areas (MN Department of Agriculture, 2007).

B. Conclusions about Phosphorus in Runoff from Turf

It has been demonstrated, in cool season grasses, that significantly more phosphorus runoff can occur from treated fertilized plots than zero-P plots when excess P is applied, e.g., at 3X normal rates. It has also been demonstrated, in cool season grasses, that, in general, there is no more TP runoff from test plots treated at 1X normal fertilizer rates relative to test plots with zero-applied P. At least six studies yielded results whereby, more P ran off the zero-P plots relative to the 1X plots.

We did not include Schueler (2011) in our literature review because it did not provide a valid basis for Table 8, "Suggested EMCs to Characterize Lawn Management in WTM Model," and it was a draft document.

III. A PRELIMINARY EVALUATION OF THE IMPACT OF MINNESOTA PHOSPHORUS LAWN FERTILIZER RESTRICTIONS ON SURFACE WATER MONITORING RESULTS

As stated in the introduction, Minnesota was the first state to enact statewide restrictions on P in lawn fertilizers (Minnesota Statutes, Chapter 18C; 2004, implemented in 2005). The law technically does not restrict the sale of fertilizer containing phosphorus. Rather, it requires that only zero-P (≤0.67% P_2O_5) be used on "lawns and turf" unless one of the following four exceptions is applicable:

- a soil test or plant tissue test shows a need for phosphorus;
- a new lawn is being established by seeding or laying sod;
- phosphorus fertilizer is being applied on a golf course by trained staff; and
- phosphorus fertilizer is being applied on farms growing sod for sale.

To our knowledge, there have been no attempts to document statewide improvements in water quality as a result of implementation of the P restriction. Consequently, we conducted a preliminary analysis of this issue as follows.

A. Selection of Monitoring Sites and Sampling Periods

The State of Minnesota has an extensive surface water monitoring database. A scientifically valid approach, probably the most scientifically valid approach, is to examine the monitoring data in a hydrologic context, i.e., in terms of drainage basins or watershed. Accordingly, we selected monitoring station locations based on watersheds and TP results, as follows.

A watershed is defined as the land area in which all of the water on that land drains to the same location. The scale of a watershed changes based on the outlet. For example, the amount of land in which water drains to the Mississippi River is much larger than the land area which ultimately drains to the Susquehanna River. The USGS divided the United States into a hierarchy of watersheds or Hydrologic Unit Codes (HUCs) at six levels: 2-digit, 4-digit, 6-digit, 8-digit, 10-digit, and 12-digit HUCs. Each level represents a different resolution. There are 21 HUC 2 regions subdivided into 222 HUC 4 subregions, 352 HUC 6 accounting units, 2,000+ HUC 8 cataloging units, 22,000 HUC 10 units, and 160,000 HUC 12 units. HUC 12 units have the highest spatial resolution and delineate smaller watersheds than those described by the HUC 2 and HUC 4 units (USGS, 2013; http://nhd.usgs.gov/wbd_facts.html). There are 81 HUC 8

watersheds in Minnesota. The average size of the HUC 8 watersheds is 988 square miles, based on the State area of approximately 80,000 square miles.

Surface water monitoring sites from the Minnesota dataset at watershed Hydrologic Unit Code (HUC) Level 08 were selected for data analysis of pre- and post-phosphorus restrictions (ca. 2002-2005). Some of the 81 HUC 8 watersheds in Minnesota also receive drainage from bordering states (see Figure 1). Therefore these were excluded from the analysis.

It was important to select surface water monitoring stations that represent a range of TP concentrations (i.e., low, medium, and high concentrations) and that are located near urban areas to compare the impact of the statewide P restrictions. The Minnesota Pollution Control Agency (MPCA) website was a valuable resource that was used to select the monitoring stations and obtain the results of the monitoring data (*http://www.pca.state.mn.us/index.php/water/water-types-and-programs/surface-water/streams-and-rivers/watershed-pollutant-load-monitoring-network.html#products-data*). The maps and monitoring results were obtained from their website for data comparison.

The watershed pollutant load monitoring network (2007-2011) map for TP (Figure 2) was used as a starting point to select the surface water monitoring sites based on the range of TP concentrations. For the first criterion, each of the eight monitoring sites selected was located in separate HUC 8 watersheds in various parts of Minnesota (Figure 2). The second criterion was the time frame in which monitoring data was obtained, i.e., the monitoring data sets were required to have data available prior to P restrictions and post-2005. Next, each HUC 8 watershed for each of the surface water monitoring stations was completely within the boundary of the State of Minnesota. Fourth, we selected stations that collectively represent a wide geographic range within the state of Minnesota, as evidenced by Figures 1 and 2. See Table 2 for the monitoring stations selected.

Following monitoring site selection, the TP results were isolated from the other water quality results for graphical presentation and statistical analyses (see below). The TP concentrations were used in the statistical comparison pre- and post-phosphorus restrictions. See Appendix A for the graphical presentation and statistical analyses of the TP results for each station.

Figure 1. Selected Monitoring Stations within HUC 8 Watersheds

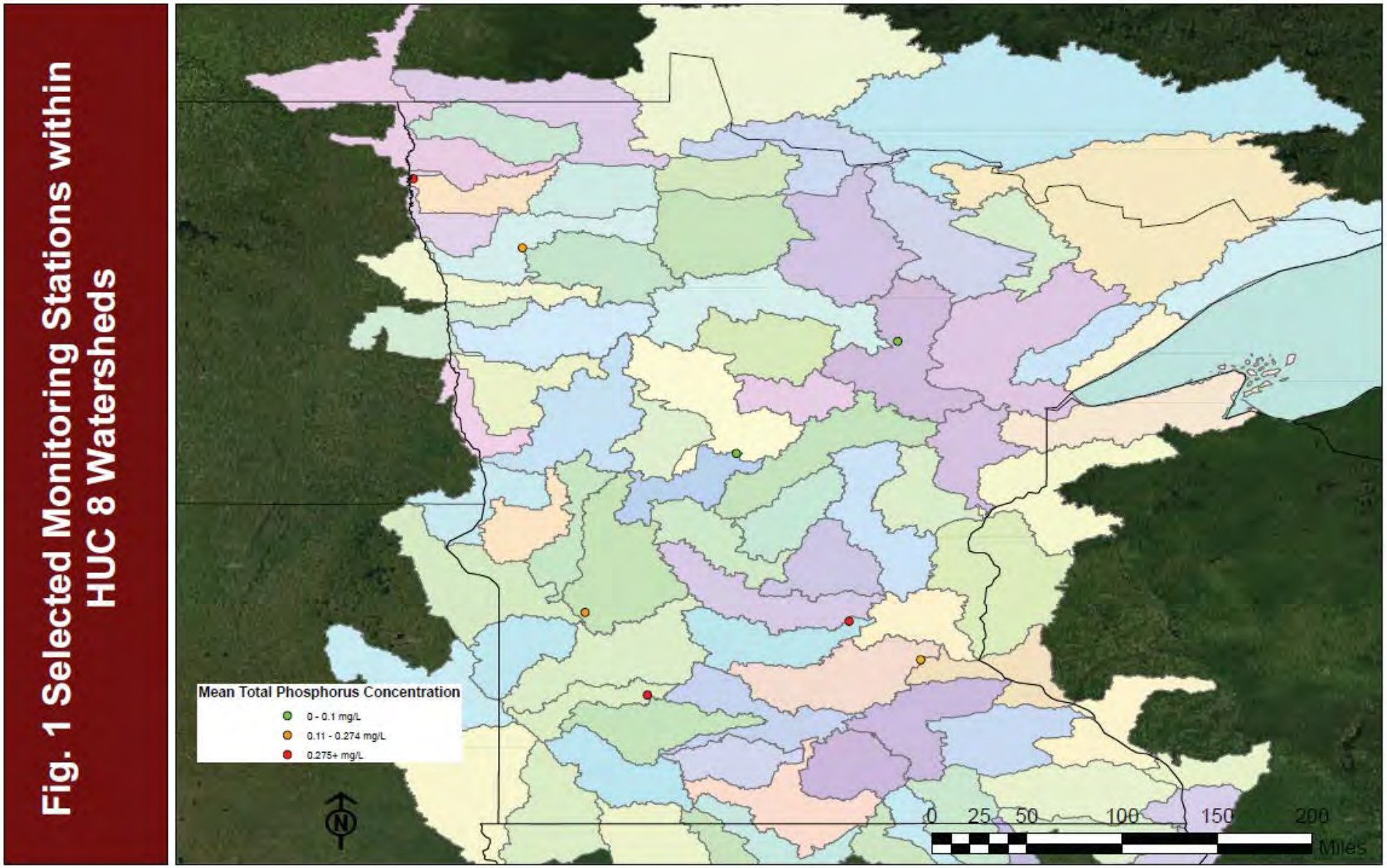

Figure 2. Mean TP Concentrations and Monitoring Station Locations

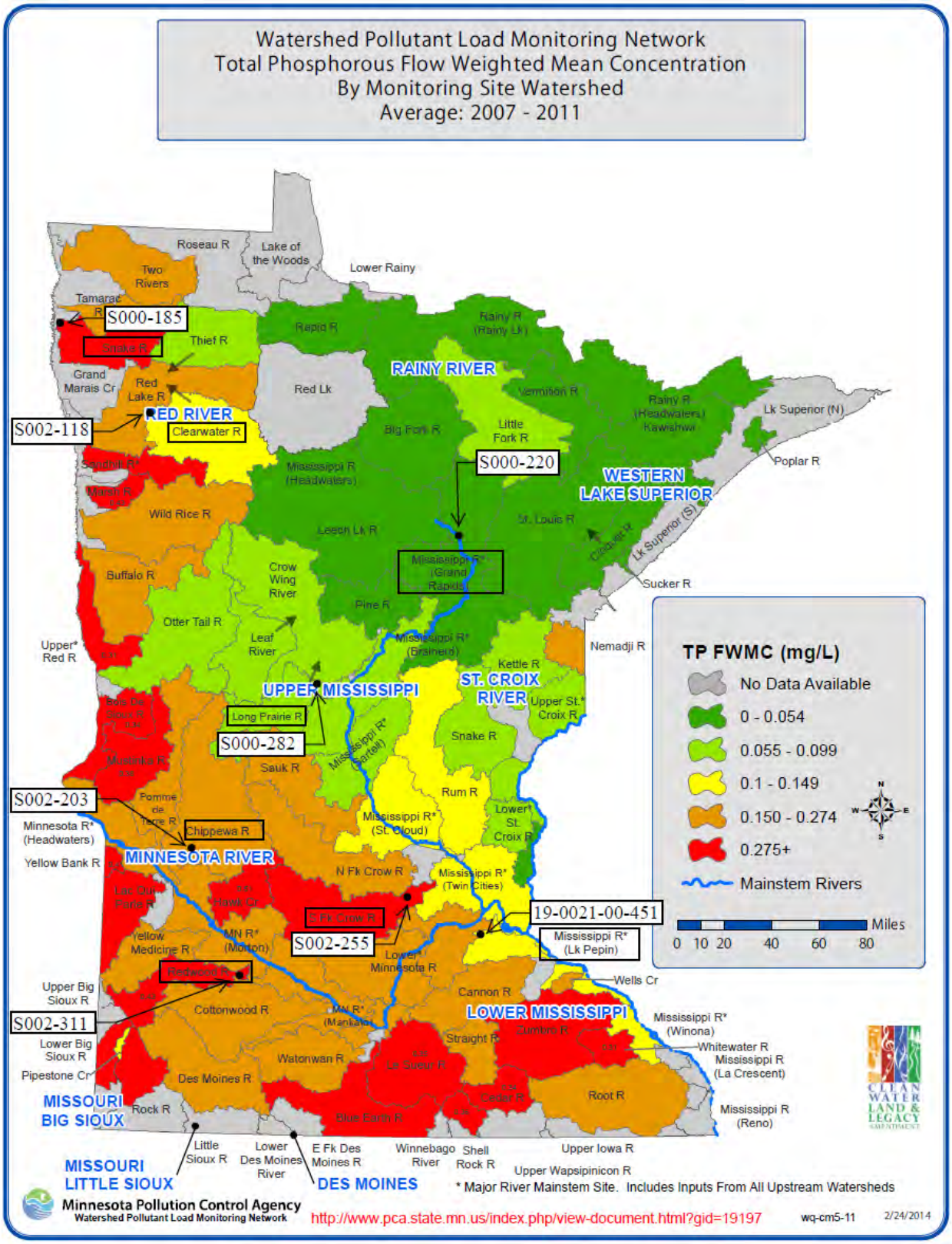

Table 2. Monitoring Stations Selected

Monitoring Station IDs	TP Concentration Rank	Watersheds/Rivers	HUC 8 #	Total Monitoring Dates
S000-282	Low	Long Prairie	07010108	1974-2012
S000-220	Low	Mississippi-Grand Rapids	07010103	1974-2010
19-0021-00-451*	Medium	Mississippi-Lake Pepin	07040001	1995-2011
S002-118	Medium	Clearwater River	09020305	1987-2013
S002-203	Medium	Chippewa	07020005	1974-2013
S001-255	High	South Fork Crow	07010205	1998-2013
S000-185	High	Snake	09020309	1971-2013
S002-311	High	Redwood	07020006	1992-2012

*This station is a lake monitoring station – Alimagnet Lake

B. Statistical Analyses

The Student's t-test (two tailed) was used to analyze surface water monitoring data collected at eight stations throughout Minnesota. Data collected prior to implementation of the statewide restriction (i.e. prior to 2005) were compared with data collected after the statewide restriction (i.e. 2005 and later) to determine if there is a statistically significant difference in the P concentrations at these stations pre- vs. post-regulation restriction. Note that the monitoring data at several stations included data as far back as 1971. We do not know the regulatory environment regarding phosphorus in fertilizers at that time. Including the older data could skew the statistical results by including other unknown variables or influences. Therefore, we chose to compare an equal number of years before and after the statewide zero phosphorus restriction in 2005. For example, if a dataset without any data gaps contained data from 1971 through 2010, our statistical analysis compared data obtained from 1999-2004 and 2005-2010, six years before and six years after the restriction. See Table 2 for monitoring years that were included in the statistical analyses.

C. Results of the Statistical Analyses

Three of the eight stations showed a statistically significant difference between the pre and post statewide zero phosphorus restriction ($p<0.05$; Table 3). Two of these stations are located in the southwest portion of the state in the Redwood River and Chippewa River watersheds and the other is located in the northwest portion of the state in the Clearwater River watershed (see Figure 2). The

Student's t-test results indicate the phosphorus concentrations before and after the statewide restriction were not statistically significant at the remaining five stations.

Table 3. Minnesota Monitoring Stations Student's t-test Results

Station IDs	Data collection year*	p-value	Significantly Lower After Restrictions?
S000-282	1995-1996, 1999-2004 vs. 2005-2012	0.4810	no
S000-220	1996, 1999-2002, 2004 vs. 2005-2010	0.6901	no
19-0021-00-451	1998-2004 vs. 2005-2011	0.1486	no
S002-118	1996-2004 vs. 2005-2013	0.0011	yes
S002-203	1998-1999, 2001-2004 vs. 2005-2010	0.0035	yes
S001-255	1998, 2001-2003 vs. 2007-2010	0.5824	no
S000-185	1992, 1994, 1998-2004 vs. 2005-2013	0.4977	no
S002-311	1997-2004 vs. 2005-2012	0.0130	yes

*t-tests were calculated for equal numbers of years *in which data were collected* prior to 2004 and after 2005 – see text discussion (e.g., data for X years prior to the law and X years after the law were counted if available. If data were not collected in a given year it was *not* counted as a year before or after the law.). QC duplicate sample results were averaged.

D. Discussion

A detailed, GIS-based, quantitative spatial/land use analysis was not done. However, a qualitative analysis was done, as follows. An inspection of each station's location using Google Earth™ (Appendix B) was done. These observations were combined with land use information obtained from the State's watershed website (Minnesota Pollution Control Agency: Minnesota watersheds) to characterize the subwatersheds around the monitoring stations (Appendix C). Table 4 summarizes key findings from Table 3 and Appendix C.

Table 4. Qualitative Relationship of TP Trends and Land Use

Monitoring Station	Significant Decline in TP*	Does Residential Land Use Dominate?
S000-282	No	Mixed
S000-220	No	No
19-0021-00-451	No	Yes
S-002-118	Yes	Yes
S-002-203	Yes	No
S-001-255	No	Mixed
S-000-185	No	No
S-002-311	Yes	No

* See Table 3.

E. Conclusion

Three of the eight monitoring stations/watersheds demonstrated significant declines in TP concentrations over the period evaluated. All three of those stations are located in watersheds classified as having medium or high TP concentrations. This preliminary conclusion might be sufficient to generate a hypothesis worth testing. However, the law only targeted residential lawn P use, and the comparisons in Table 4 do not demonstrate a clear benefit of the law (Minnesota Statutes, Chapter 18C); i.e., only one of the monitoring stations in a predominantly residential or mixed use area demonstrated a decline in TP.

It is possible that a more intensive and extensive analysis might yield a different conclusion, but our analysis of these eight subwatersheds does not indicate that the restriction of P on residential lawns has shown a significant decline in P in Minnesota surface water. Further, a combination of this analysis with the literature review summarized in section II above indicate that the use of lawn fertilizers in Minnesota prior to 2005 was not likely a significant source of phosphorus load to the surface water systems in the MPCA data set.

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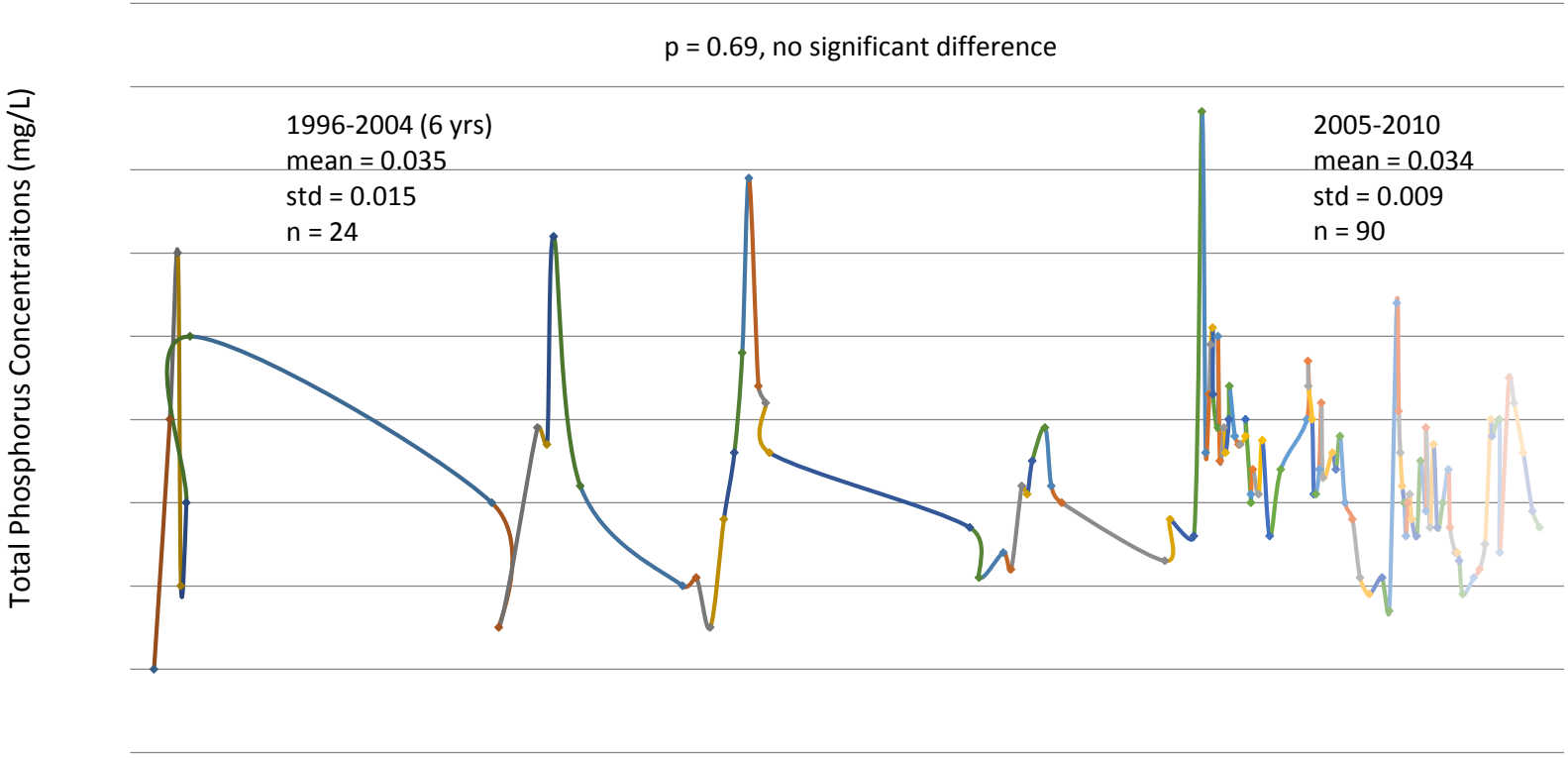
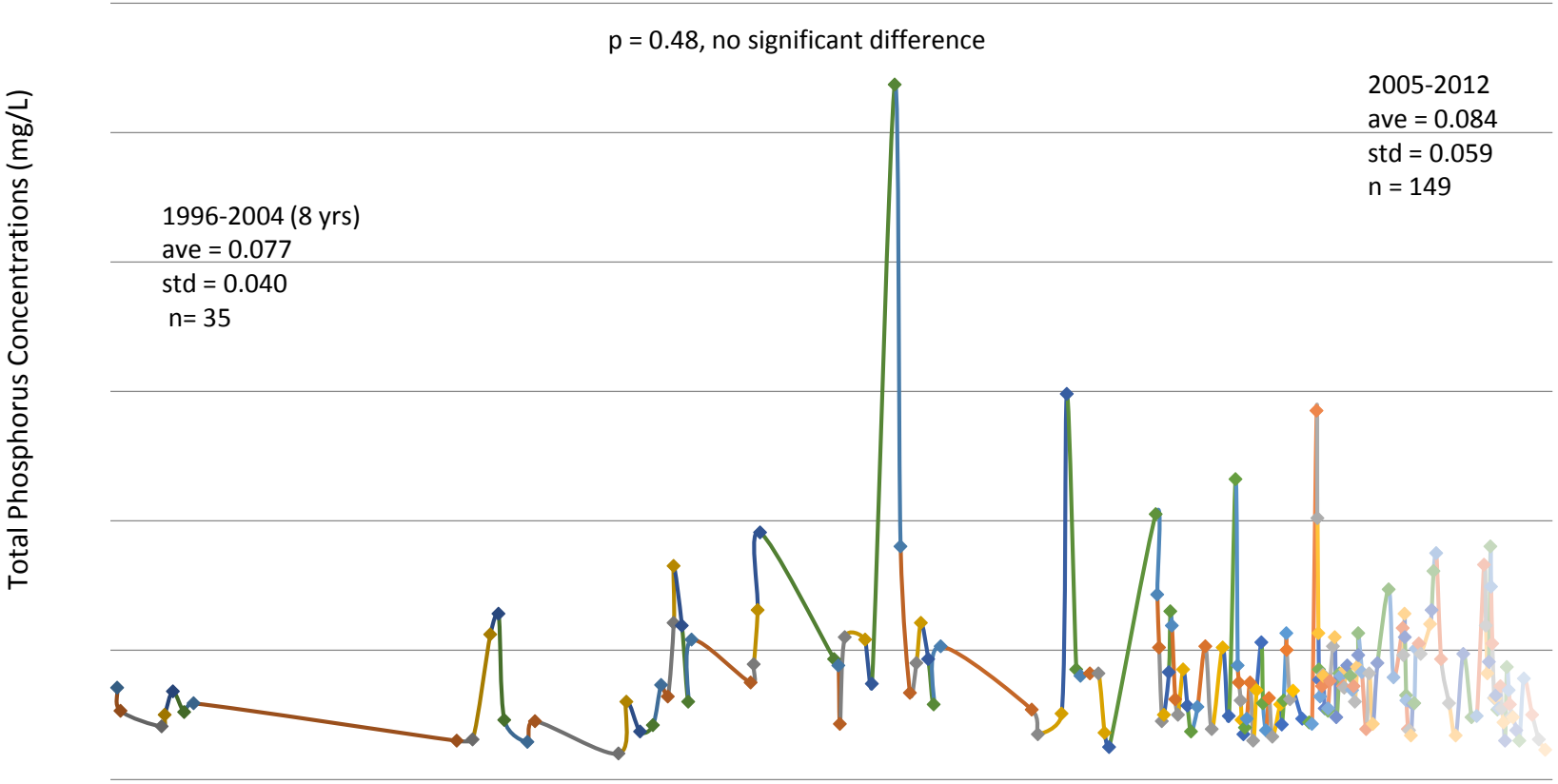
APPENDIX A. Graphical Presentation and Statistical Analysis for Each Monitoring Station

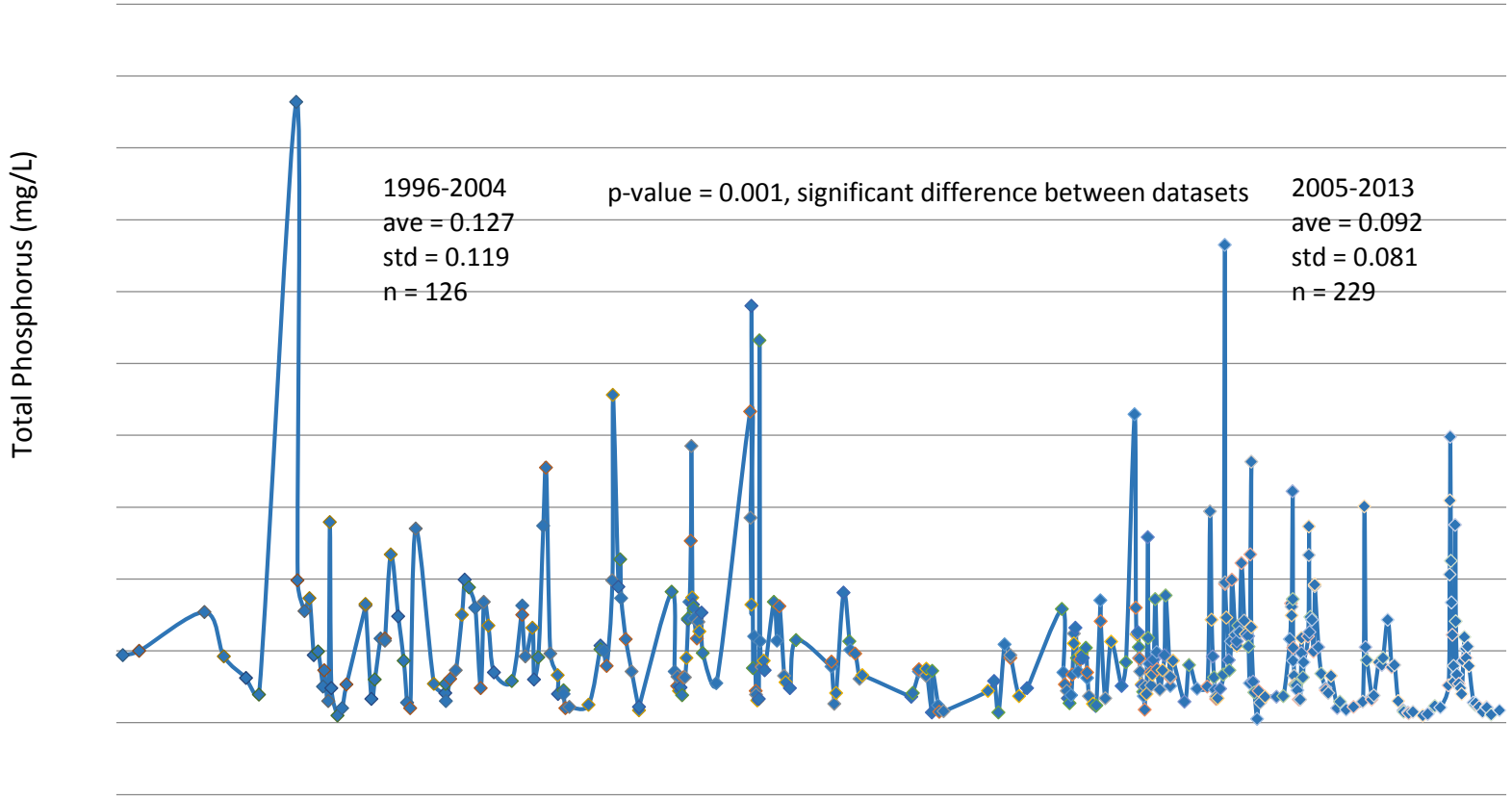
Total Phosphorus - Low
Station S000-220, Mississippi River (Grand Rapids)
HUC 07010103 (1996-2010)



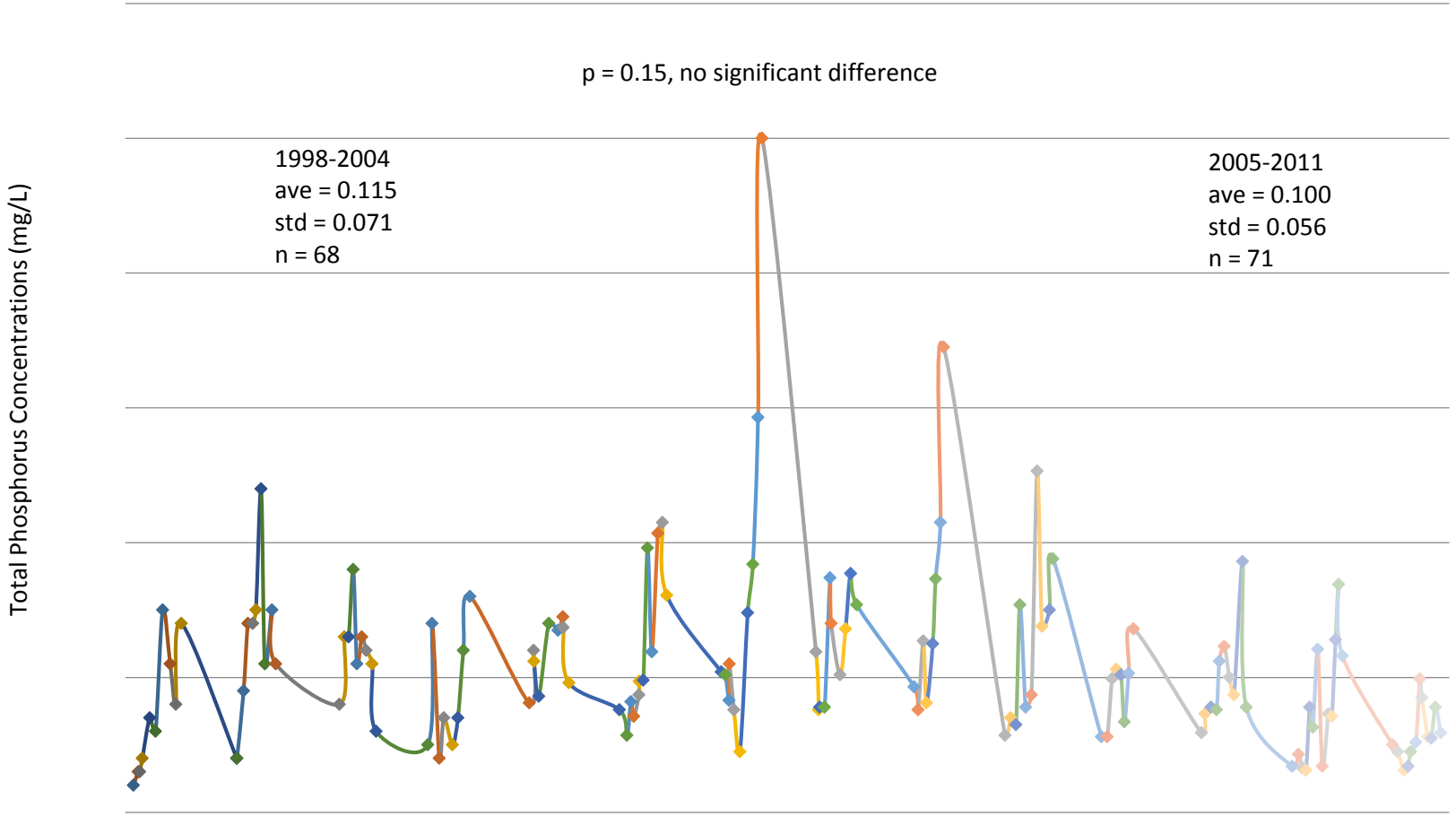
Total Phosphorus - Low
Station S000-282, Long Prairie River
HUC 07010108 (1996-2012)



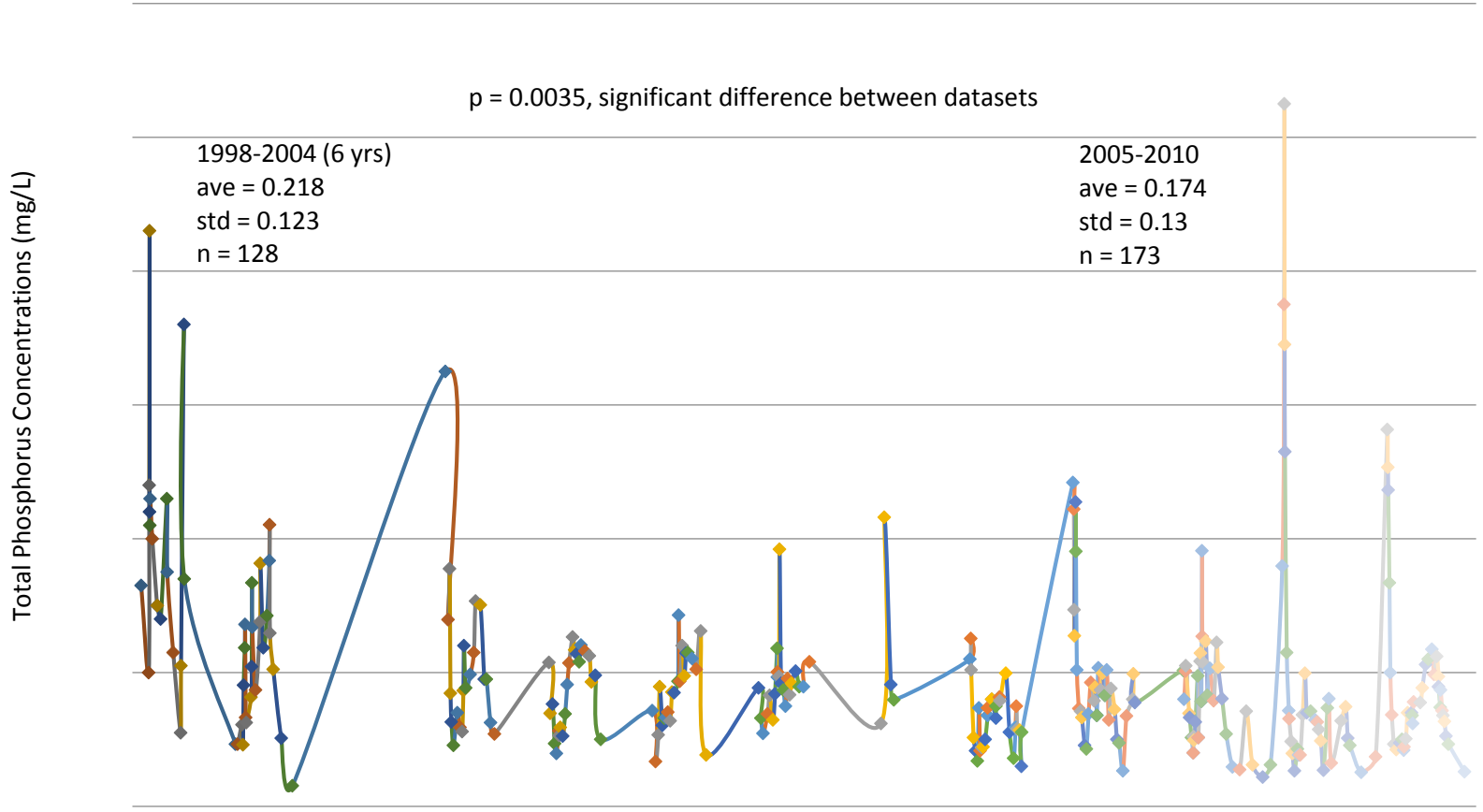
Total Phosphorus - Medium
Station S002-118, Clearwater River
HUC 09020305 (1996-2013)
Residential Location



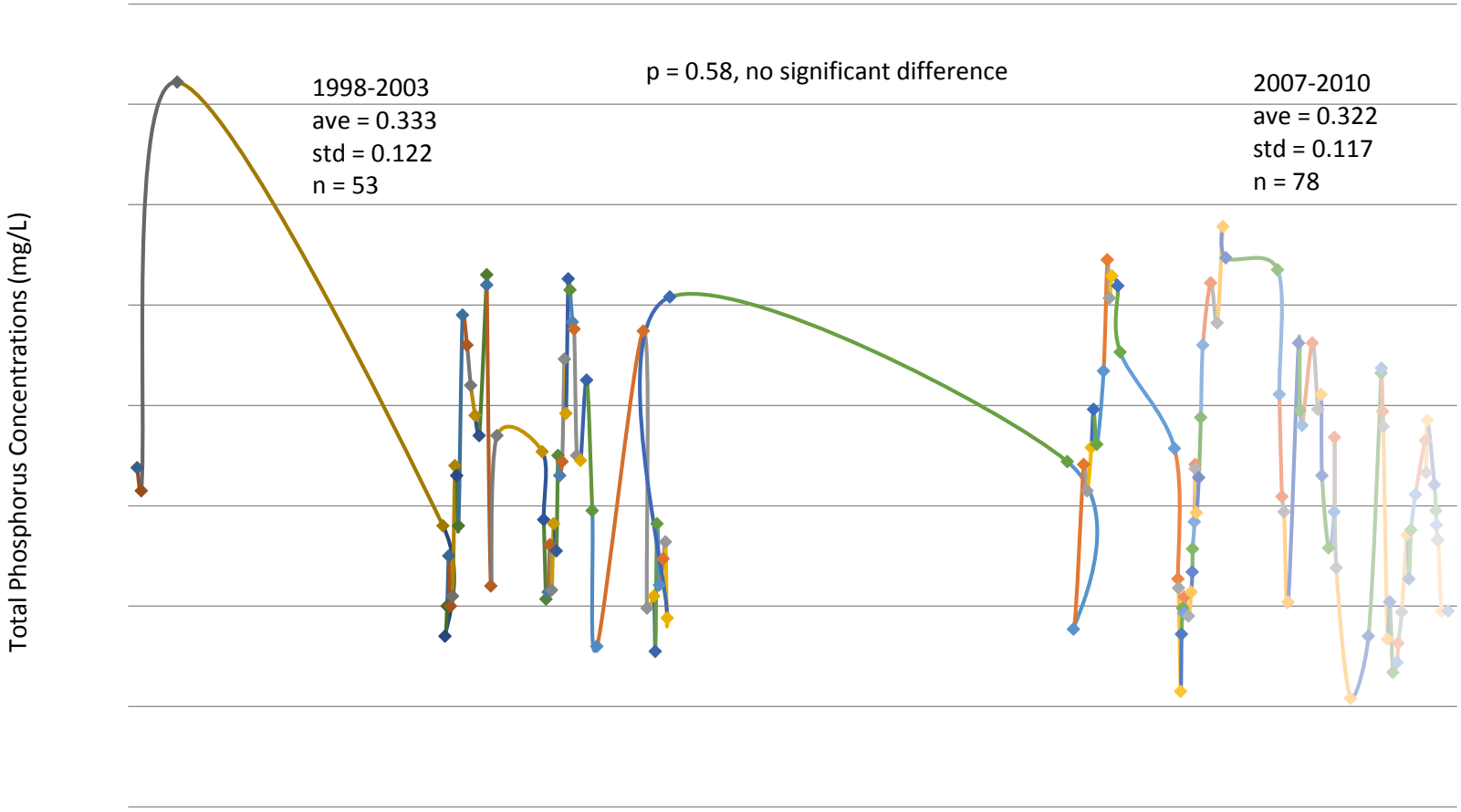
Total Phosphorus - Medium
Station 19-0021-00-451, Mississippi River-Lake Pepin
HUC 07040001 (1995-2011)



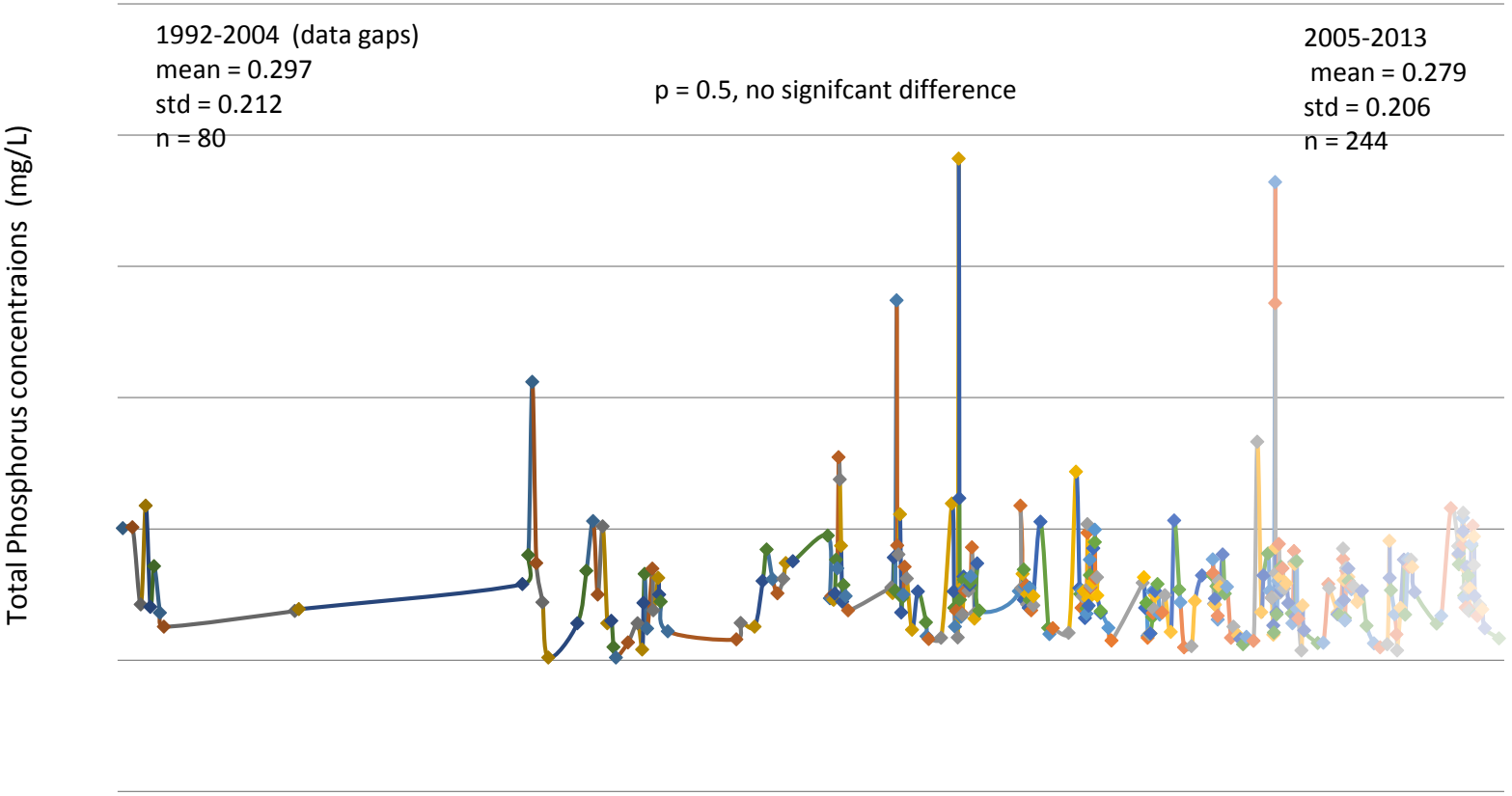
Total Phosphorus - Medium
Station S002-203, Chippawa River
HUC 07020005 (1998-2013)



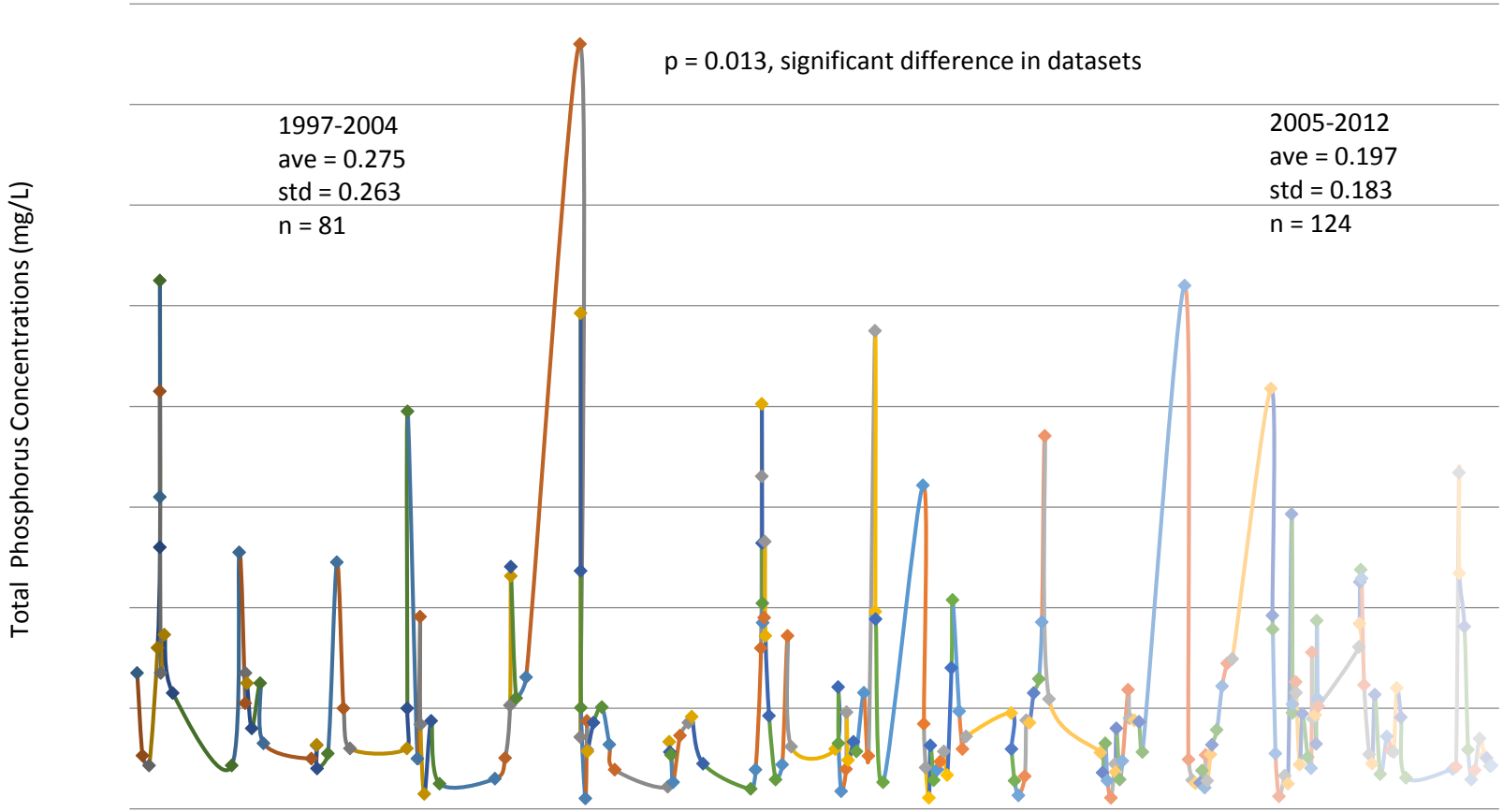
Total Phosphorus - High
Station S001-255, S. Fork Crow River
HUC 07010205



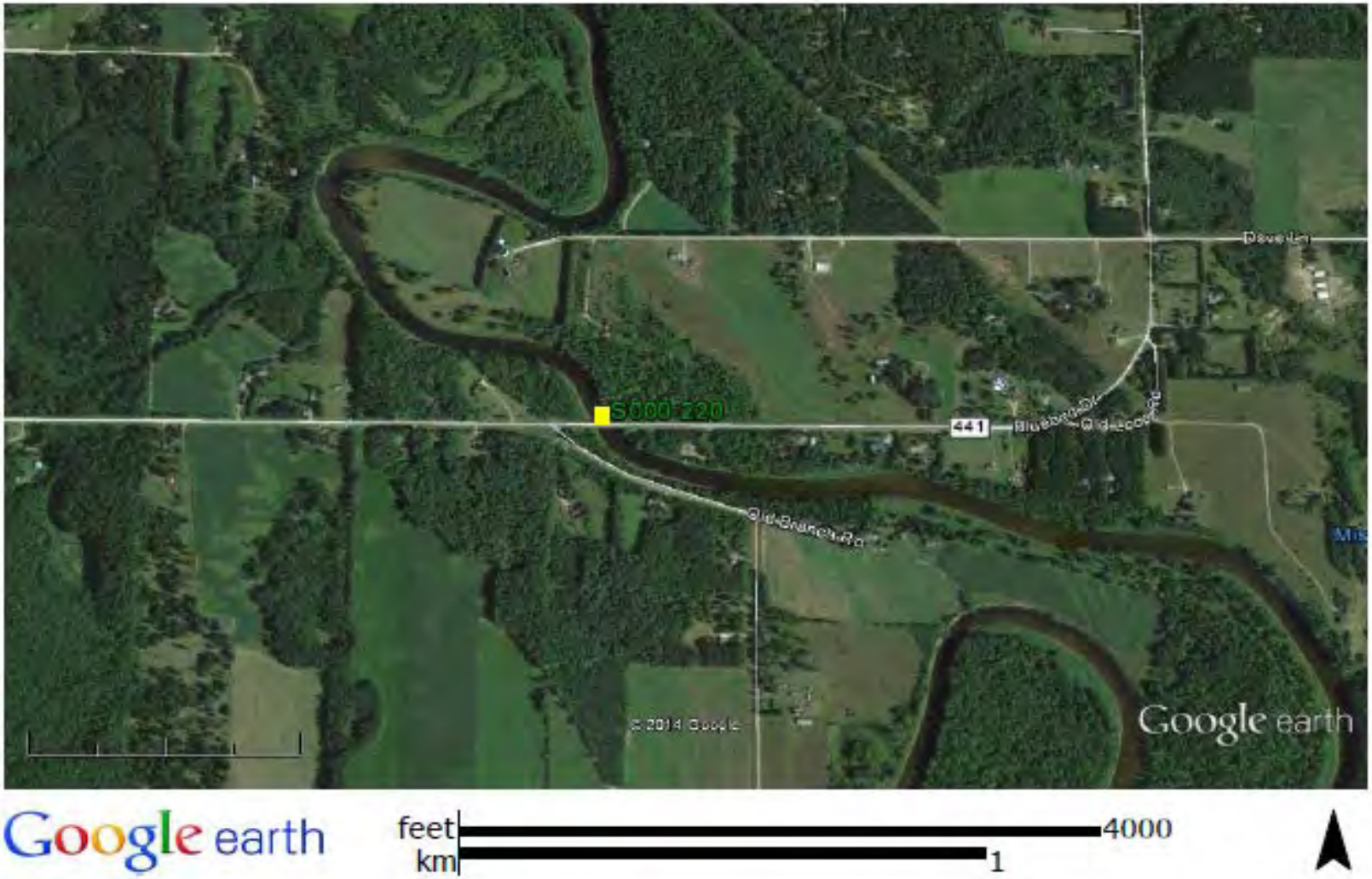
Total Phosphorus - High
Station S000-185, Marshall County, Snake River
HUC 09020309 (1992-2013)



Total Phosphorus - High
Station S002-311, Redwood River
HUC 07020006 (1997-2012)



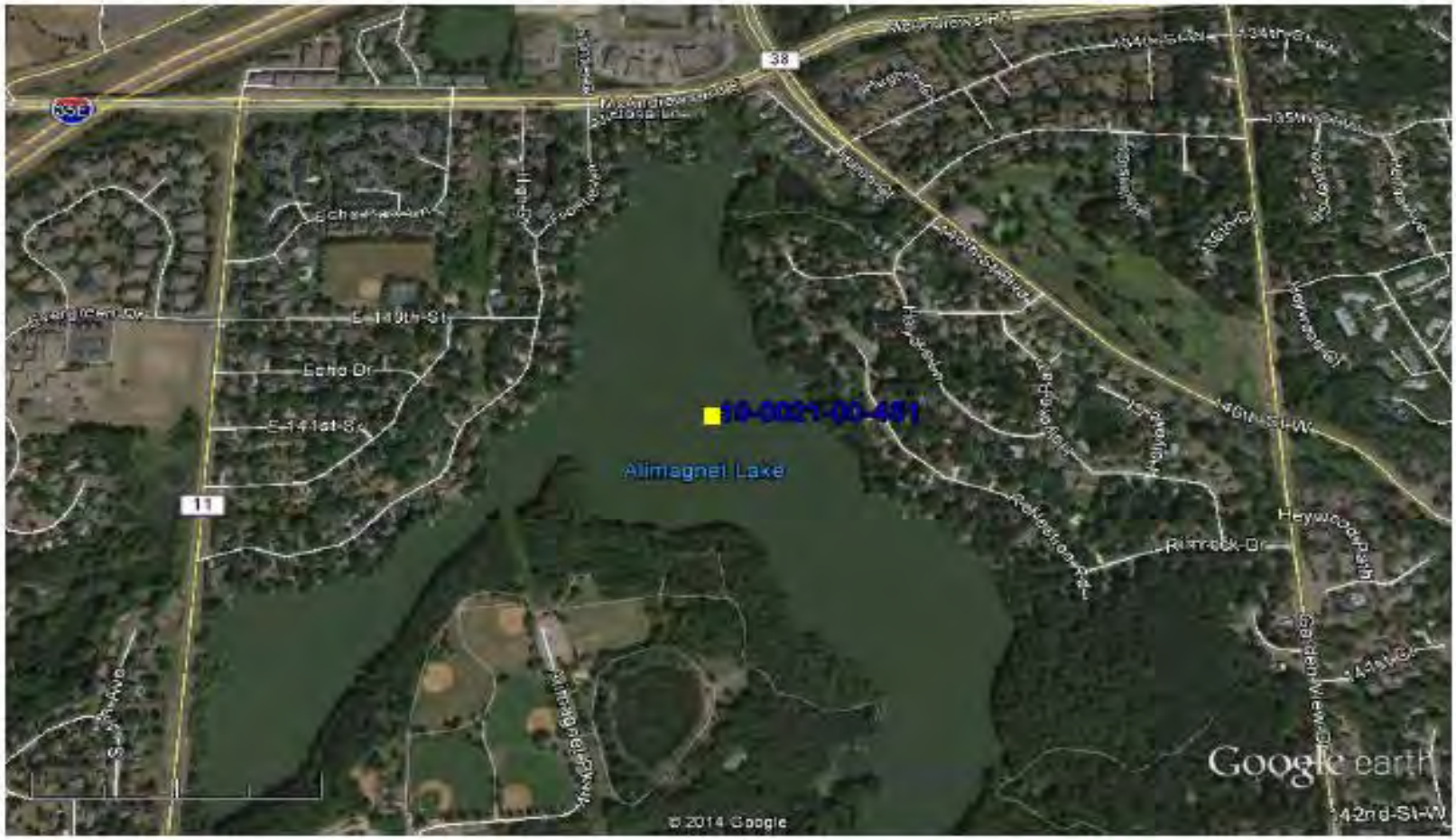
APPENDIX B. GOOGLE EARTH Images of the Monitoring Locations



Total Phosphorus - Low
Station S000-220, Mississippi River (Grand Rapids)
HUC 07010103 (1996-2010)

Total Phosphorus - Low
Station S000-282, Long Prairie River
HUC 07010108 (1996-2012)

Total Phosphorus - Medium
Station S002-118, Clearwater River
HUC 09020305 (1996-2013)
Residential Location



Google earth feet 3000 km 1

Total Phosphorus - Medium
Station 19-0021-00-451, Mississippi River-Lake Pepin
HUC 07040001 (1995-2011)

Google earth

feet 4000
km 1

Total Phosphorus - Medium
Station S002-203, Chippawa River
HUC 07020005 (1998-2013)

Total Phosphorus - High
Station S001-255, S. Fork Crow River
HUC 07010205

Google earth

miles 3
km 5

Total Phosphorus - High
Station S000-185, Marshall County, Snake River
HUC 09020309 (1992-2013)

Total Phosphorus - High
Station S002-311, Redwood River
HUC 07020006 (1997-2012)

APPENDIX C. Monitoring Station and Watershed Descriptions

[The monitoring station ID numbers follow the order in Table 3.]

The 'General Watershed Descriptions' and 'Land Use Characteristics' were copied directly from the Minnesota Pollution Control Agency's website (http://www.pca.state.mn.us/index.php/water/water-types-and-programs/watersheds/watershed-overview-map.html). In addition, we reviewed photos of each station's location (Appendix B) and provided a general observation for each as noted in this appendix.

Appendix C. Watershed Descriptions

Monitoring Station IDs	General Watershed Descriptions*	Land Use Characteristics*
S000-282	The Long Prairie River watershed covers approximately 551,612 acres (862 square miles) and is located in the central part of the Upper Mississippi River Basin in central Minnesota. The watershed encompasses all or parts of Douglas, Otter Tail, Todd, Morrison, and Wadena counties. ETS' description of this station's land use. This sampling site is located less than one mile south of Motley, MN. In addition, there are two residences and a couple of industrial businesses located in close proximity.	The Long Prairie River watershed includes more than 240 lakes greater than 10 acres in size and 884 miles of rivers and streams. The Long Prairie River begins in Douglas County and flows through Todd and Morrison counties before entering the Crow Wing River south of Motley. The dominant land use within the watershed is agricultural (57%), while grasslands and forests make up 17% and 14% respectively, water 8% and 4% is urban. The watershed is within the North Central Hardwood Forest as well as the Northern Lakes and Forests ecoregions. One lake and several stream reaches are currently impaired.
S000-220†	The Mississippi River – Grand Rapids watershed covers 1,316,071 acres and contains 1,908 miles of stream/rivers and 552 lakes greater than 10 acres. The watershed drainage comprises parts of Aitkin, Carlton, Cass, Itasca, and St. Louis Counties. Some of the major cities are Grand Rapids, McGregor, Remer. ETS' description of this station's land use. This sampling site is located in a mostly forested area approximately 6 miles southeast of Grand Rapids, MN.	Land use consists of 56% forested, 27% grass and wetland, 7% agricultural, 7% water, and 3% urban. The watershed has 4 nutrient-impaired lakes and 2 impaired stream reaches (2008). Nearly 89% of the land is privately owned; 4.76% is publicly owned. The watershed contains numerous heavily developed lakes. The majority of the lakes are important recreational resources and economic benefits to the watershed.
19-0021-00-451	The Mississippi River - Lake Pepin watershed includes 205,747 acres that drain several small, coldwater streams in bedrock-dominated bluff country. The largest of these streams is Wells Creek (45,954-acre watershed), which winds through 18 miles of bluff lands and joins the Mississippi near Old Frontenac, southeast of Red Wing. Hay Creek is a popular trout stream (30,405-acre watershed) that flows from south to north, joining the Cannon River bottoms at Red Wing. Three other named streams are all designated trout waters, and drain directly to the Mississippi River: Bullard Creek (10,245-acre watershed), Gilbert Creek (16,007-acre watershed) and Miller Creek (11,168-acre watershed). ETS' description of this station's land use. This sampling site is a lake monitoring station. The samples are pulled from the Alimagnet Lake, which is within the park with the same name and is surrounded by a residential community, Burnsville, MN.	The Mississippi River - Lake Pepin watershed consists of forests, bluff lands, and cultivated lands. The top of the watershed is rolling cropland interspersed by many small tributaries that drop steeply through forested valleys with scattered goat prairies atop cliffs. The tributaries join to form the named streams, which drain directly into the Mississippi River. The watershed is only about 50 miles southeast of downtown St. Paul. As a result, the watershed is subject to development pressures. Agriculture is the primary land use in the watershed (approximately 70%). About 10% of the land is in grass. Corn and soybeans make up over half the tilled acreage of the area, with barley, oats, and pasture land present. Forage production is strong because of the large number of dairy cows in the region. Of the grassland, 90% is in pasture and a small percentage (<10%) is in a management intensive rotational grazing system. Most of the remaining acreage is deciduous forest. Frontenac State Park, Lake Pepin, and the coldwater fisheries are significant natural resources that provide recreation and revenue in the region.

Monitoring Station IDs	General Watershed Descriptions*	Land Use Characteristics*
S002-118	The Clearwater River watershed drains an area of 886,600 acres in the Red River of the North basin. The Clearwater River begins its course in western Clearwater County near the town of Ebro. The river flows to the northwest and southwest, eventually emptying into Red Lake River near Red Lake Falls. The watershed occurs in the Glacial Lake Agassiz Plain, North Central Hardwoods, Northern Lakes and Forests, and Northern Minnesota Wetlands Level III Ecoregions. ETS' description of this station's land use. This station is located near Riverside Park and surrounded by a residential community in Red Lake Falls, MN.	The Clearwater River watershed characteristically has a poorly defined floodplain and low gradient that combine with extensive drainage, widespread conversion of tallgrass prairie to farmland, and urban/suburban development to leave the basin subject to frequent floods that affect urban and rural infrastructure and agricultural production. Precipitation in the watershed ranges from 21 to 25 inches annually. Above-normal amounts of precipitation in the late fall of the year or from May to October lead to high levels of soil moisture, periodically producing the snow-melt and summer floods that are known to affect the further reaches of the overall Red River Basin. The main resource concerns in the watershed are wind and water erosion, nutrient management, wetland management, surface water quality, flood damage reduction, and wildlife habitat. Many of the resource concerns relate directly to flooding and increased sediment and pollutant loadings to surface waters. Predominate land uses / land covers are row crops (33%), forest (24%), grass/pasture/hay (21%), wetlands (14%), and residential/commercial Development (4%). Agricultural land use in the basin accounts for approximately 54% of the overall watershed acres. Development pressure is moderate in most areas, with occasional farms, timberland, and lakeshore being parceled out for recreation, lake or country homes.
S002-203†	The Chippewa River watershed covers 2,085 square miles and drains portions of eight counties in west central Minnesota. The northeast part of the watershed tends to be hillier, wooded, and more easily eroded, while the southwest portion tends to be flatter with more agricultural. The watershed begins in the southern part of Otter Tail County and ends 130 miles south in the flatter agricultural land at Montevideo. ETS' description of this station's land use. This sampling site is located in an agricultural area, approximately 5 and a quarter miles due east of the small town of Milan, MN.	The geology of the Chippewa River watershed includes a complex mixture of moraines and till, lake deposits, and outwash plains. The hilly moraines result in a high potential for erosion of sediment into streams. Nearly 90% of the land is privately owned. Agriculture accounted for approximately 68% of the available acres in 1996. Corn and soybeans make up a majority of raised crops, and small grains, hay, and grasslands make up the majority of the balance.

Monitoring Station IDs	General Watershed Descriptions*	Land Use Characteristics*
S001-255	Generally, the South Fork Crow River watershed covers 818,428 acres. It is located in south-central Minnesota and encompasses parts of Kandiyohi, Renville, Meeker, McLeod, Sibley, Wright, Carver, and Hennepin counties. The South Fork Crow River joins with the North Fork Crow at Rockford, and then joins the Mississippi River near Dayton. The majority of the watershed is within the Western Cornbelt Plains ecoregion, with a small portion extending into the North Central Hardwood Forest ecoregion. Major cities include Willmar, Hutchinson, Delano and Glencoe. ETS' description of this station's land use. This site is located in an area surrounded by industrial businesses and residential housing.	The South Fork Crow River watershed includes many lakes, streams, and wetlands. Buffalo Creek, a major tributary, flows into the South Fork Crow River downstream of Lester Prairie. Land use in the South Fork Crow River watershed is largely agricultural, with row crops and pasture/grass lands accounting for approximately 83% of the overall watershed acres. Several lakes and parts of the South Fork Crow River do not meet water quality standards for beneficial uses such as aquatic recreation, drinking, and swimming. The main lake pollutant is phosphorus, causing algae blooms in summer months, and portions of the South Fork Crow and its tributaries are listed for pollutants such as bacteria, turbidity and low dissolved oxygen.
S000-185†	The Snake River begins its 50-mile course in Marshall County and drains an area of 611,800 acres. The river flows southwest from the headwaters, continuing westward and collecting the South Fork Snake River and passing through the towns of Warren and Alvarado. Downstream of Alvarado, the Snake turns northwest, then collects the Middle River upstream of its confluence with the Red in Fork Township. ETS' description of this station's land use. This sampling site is located in a purely agricultural area in the northwestern portion of MN, near the North Dakota border, and 15 miles due north of the small community of Oslo, MN.	Above-normal amounts of precipitation in the late fall of the year or from May to October lead to high levels of soil moisture, periodically producing the snow-melt and summer floods that are known to affect the further reaches of the overall Red River Basin. Agriculture accounts for approximately 84% of the overall watershed acres. Development pressure is moderate in most areas, with occasional farms, timberland, and shorefront being parceled out for recreation, lake, or country homes. The Red River basin generally has a poorly defined floodplain and low gradient that combine with extensive drainage, widespread conversion of tallgrass prairie to farmland, and urban/suburban development to leave the basin subject to frequent floods that affect urban and rural infrastructure and agricultural production. The main resource concerns in the watershed are wind and water erosion, nutrient management, wetland management, surface water quality, flood damage reduction, and wildlife habitat. Many of the resource concerns relate directly to flooding and increased sediment and pollutant loadings to surface waters.

Monitoring Station IDs	General Watershed Descriptions*	Land Use Characteristics*
S002-311	The Redwood River is located in southwestern Minnesota in the counties of Lincoln, Lyon, Murray, Pipestone, Redwood, and Yellow Medicine. It begins near Ruthton in northeast Pipestone County, and flows about 125 miles northeast through Redwood Lake and to the Minnesota River at North Redwood. The watershed covers 451,250 acres or 705 square miles. There are 11 incorporated communities located within the watershed, including Marshall, Redwood Falls, Tyler, Russell, and Vesta, and three unincorporated communities. <u>ETS' description of this station's land use.</u> This sampling site is located in southwestern portion of MN along Clear Creek, which is heavily tree lined and surrounded by the agricultural community of Seaforth, MN.	The entire Redwood River watershed has 85.5% (approximately 385,665 acres) of the land in cultivation, 7% in grassland, 1.5T in water, and 0.6% in wetlands. Altitudes descend from west to east, with the Coteau des Prairies serving as a watershed divide. Natural drainage patterns in the area were established by valleys formed from glacial meltwaters. End moraines, which were formed during the recession of the last glacier, are the most prominent features.

*http://www.pca.state.mn.us/index.php/water/water-types-and-programs/watersheds/watershed-overview-map.html

† These sites are located in mostly agricultural or forested areas.

February 27, 2015

Mr. Newton Tedder
US EPA Region 1
Suite 100, Mail Code OEP 06-4
5 Post Office Square
Boston, MA 02109

RE: Draft NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts

Dear Mr. Tedder:

The Lawn and Horticultural Products Work Group (LHWPG) on behalf of its members is pleased to submit comments to the Office of Ecosystem Protection, Environmental Protection Agency, Region 1 (EPA), expressing our concerns about specific parts of the Notice of Availability of a Draft National Pollutant Discharge Elimination System (NPDES) general permit for stormwater discharges from small Municipal Separate Storm Sewer Systems (MS4s) to certain waters of the Commonwealth of Massachusetts.

Statement of Interest

The LHPWG, operating under the auspices of the Consumer Specialty Products Association, Inc., (CSPA) provides a unified voice for companies engaged in the unique market of lawn and horticultural products. LHPWG member companies manufacture more than 75 percent of domestically produced conventional specialty fertilizers utilized in the United States; including consumer household, lawn and garden, golf courses and other professional turf and lawn care. These specialty fertilizer products are licensed; registered and sold to consumers and professional applicators in all 50 states. Our members rely on years of their own and independent scientific research to guide their product formulations and product decisions. Our members have a vested interest in any regulation of specialty fertilizer, in any jurisdiction. In order to improve our understanding of the computer modeling utilized by EPA Region 1 in support of the proposed MS4 NPDES permit we contracted with Environmental & Turf Services, Inc. (ETS), based in Maryland to assess the model and provide comments on how it impacts our member's products. ETS is an independent environmental consulting firm that specializes in environmental risk assessment and water quality monitoring of pesticides and fertilizers. Its founder, Stuart Cohen Ph.D., CGWP, worked as a scientist for 11 years in the U.S. EPA's Office of Pesticides & Toxic Substances in Washington DC. A Report with Appendix from ETS entitled "*Comments on Draft NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts*" that details their concerns with the computer model and reviews the most current scientific literature available on nutrient losses from turf grasses is attached.

General Comments:

The use of specialty fertilizer on lawns has been under the microscope for more than a decade. There should be no debate; healthy turf grass protects the environment. It is a fact supported by independent university and government research. Unfortunately, the many universally recognized benefits of turf grass have been summarily dismissed. These are some of the recognized and proven benefits:

1) Turf grasses help cool air temperatures through evapotranspiration.
2) Particles from the atmosphere are trapped by turf grasses.
3) Noise is absorbed by grassed areas.
4) Air pollutants, such as carbon dioxide and sulfur dioxide, are absorbed by turf grass.
5) Turf grass thatch acts as a barrier deterring chemicals from entering the soil.
6) Turf grasses produce oxygen.
7) Turf grasses prevent erosion and loss of soil during heavy rain.
8) Turf grasses increase groundwater infiltration which helps recharge aquifers.
9) Turf grasses reduce the volume of storm water run-off.
10) Turf grasses capture and absorb nutrients.
11) Turf grasses are planted as a BMP to scour nutrients in farm fields after harvest.
12) Turf grasses are planted as a buffer strip around the perimeter of farm fields to reduce soil erosion.
13) Turf grasses buffers are used for fire prevention.
14) Turf grass buffers are used to improve home security via sight lines.
15) Turf grass buffers improve sight lines and safety along roads.
16) Turf grass provides a safe playing surface for a variety of outdoor sports.
17) Turf grass production and maintenance is a multibillion dollar industry which provides jobs and economic growth.

Turf grass and humans are somewhat alike in that both need proper nutrition to remain healthy. Proper application of a fertilizer product formulated for turf will provide the proper amount of primary plant nutrients [(N) Nitrogen, (P) Phosphorus & (K) Potassium] to help maintain plant health. Products are formulated differently to meet the nutritional requirements of different turf grass species. Nutritional requirements are based upon years of careful research. Our members know better than anyone the important role plant nutrients play in helping to protect the environment and the potential problems related to excess use of nutrients. We know, through years of consumer research and sales data collected by our members that consumers do not over apply fertilizer to their lawns; in fact**,** they do not apply enough fertilizer to maintain healthy turf.

Specific Comments:

No Scientific justification of the 50% P Load Reduction Factor.

On March 9, 2009 President Obama issued an Executive Order on Scientific Integrity to all Executive Departments and Agencies which stated…

> "(b) Each agency should have appropriate rules and procedures to **ensure the integrity of the scientific process** within the agency (emphasis added);
>
> (c) When scientific or technological information is considered in policy decisions, the information should be subject to well-established scientific processes, **including peer review where appropriate**, and each agency should appropriately and accurately reflect that information in complying with and applying relevant statutory standards; (emphasis added)"

We were surprised to discover that EPA Region 1 did not rely on peer reviewed sources and instead utilized *CSN Technical Bulletin No. 9* by Tom Schueler (2011) as the foundation for their 50% Load Reduction Factor. We believe there is no scientific justification for this decision. Schueler (2011) is not a peer reviewed publication and often cites other reports/studies that were not subject to the peer review process. The use of the Schueler (2011) publication as a primary source by EPA Region 1 violates the President's Executive Order on Scientific Integrity (2009).

Peer reviewed research documents that nutrient losses (TN & TP) and storm water runoff (gallons) from plots of poorly maintained **un**fertilized turf are **greater than** nutrient losses and storm water runoff from plots of thick, healthy fertilized turf grass. EPA Region 1 should reevaluate the proposed P Load Reduction Factor and should not be engaged in promoting "no fertilization" of turf grass areas.

Members of the LHPWG are very familiar with the peer reviewed literature on run-off from turf grass lawns and would ask EPA Region 1 to review some of the following to ensure compliance with the previously mentioned Presidential Executive Order. In 2005, some of our current members worked with the American Chemistry Society Division of Agrochemicals and sponsored a symposium entitled "The Fate of Nutrients and Pesticides in the Urban Environment" in Arlington, Virginia. In 2008, the American Chemical Society published the proceedings of the Symposium "The Fate of Nutrients and Pesticides in the Urban Environment." The papers published in this publication are without question, directly on point and deal specifically with nutrient runoff from turf grass plots. These research projects actually collected samples of runoff from turf plots that were constructed for that purpose. Samples were collected for several years. This research is directly on point and should be used by EPA or any other agencies as the basis for any modeling of nutrient losses from turf grass via storm water runoff. The Bierman *et al* paper entitled "Phosphorus Runoff from Turfgrass as Affected by Phosphorus Fertilization and Clipping Management" published in 2010 was partially funded by the **Environmental Protection Agency** through Section 319(h) of the Federal Clean Water Act.

The LHPWG believe if the EPA Region 1 office had reviewed peer reviewed literature available (see references in the attached Report) a different conclusion would surely have been reached. We request that EPA Region 1 reevaluate the proposed P Load Reduction Factor and refrain from promoting the non-fertilization of turf grass areas.

Phosphorus Restrictions

EPA Region 1 supports phosphorus restrictions in specialty fertilizers, the agency included a provision in the NPDES MS4 Permit that required the permit holder to pass an ordinance restricting the use of phosphorus in specialty fertilizer. The ordinance was tied to the P Load Reduction Factor.

Minnesota was the first state to restrict the use of phosphorus is specialty fertilizers. The 2004 legislation was based upon "research" conducted by Mr. John Barten, an employee of the Hennepin Regional Park District in Maple Plain, Minnesota. The "study" used to support the legislation was not published in any peer reviewed journal. The legislation was effective on January 1, 2005.

In the last eleven years, fourteen more states have restricted the use of phosphorus in specialty fertilizers. We are not aware of any peer reviewed scientific literature that demonstrates a measureable reduction in phosphorus as a result of these restrictions. The state of Minnesota issued a report in 2007 to the legislature; the report did not document any water quality improvements.

EPA's Office of Water recently cited a study by Lehman *et al* (University of Michigan) that purports to document a 28% reduction in phosphorus levels in the Huron River after the Ann Arbor phosphorus ordinance was adopted from the base years (2003 - 2005).

The following is a quote from the paper entitled "Evidence for Reduced River Phosphorus Following Implementation of a Lawn Fertilizer Ordinance" written by Lehman *et al*:

> "It would be tempting to conclude that the phosphorus reductions were caused by implementation of the ordinance, and that may indeed be the case. However, we must bear in mind that the ordinance was enacted in the context of public education efforts that encourage citizens to be more mindful of yard waste discharges into storm drains, to exert more diligence regarding buffer strips of vegetation along stream banks, and to exhibit more environmental awareness in general."

Dr. Lehman recognized that there are a number of other activities that are ongoing within the City of Ann Arbor, Michigan that may have contributed to the phosphorus reductions that he and his team measured in the Huron River. The Lehman *et al* study uses Huron River average water quality data for total nitrogen and total phosphorus from calendar years 2003-2005 as the baseline for their study which was conducted in 2008 and 2009. We believe the following changes in city practices account for the reduction in the amount of phosphorus entering the Huron River.

1. According to Mr. Kirk Pennington, Field Operations Supervisor, the city of Ann Arbor replaced two of the five ELGIN Pelican sweepers with newer units that are more efficient than the older units. According to Mr. Mark Kinter, Technical Consultant with the Elgin Sweeper Company, an Elgin Whirlwind with vacuum (2005) is 12.5% more efficient and an Elgin Pelican with vacuum assist (2007) that is 10.5% more efficient than the older units. An aggressive street sweeping program is recognized by EPA as one of the most efficient ways

for a municipality to reduce total phosphorus loading to surface waters according to their research.

2. Also in 2005, the city of Ann Arbor, began to actively manage their local resident goose population. According to Ms. Casey M. Reitz, Permit Specialist, Wildlife Division, the city applied for a "nest destruction" permit from the Michigan Department of Natural Resources and Environment to mitigate the environmental impact of resident flocks of geese. The city of Ann Arbor also applied for a "nest destruction" permit in 2007, 2008, 2009 and 2010. According to peer reviewed research a resident flock of geese can be responsible for up to 25 to 38% of the total phosphorus loading within a small watershed. In some extreme cases a resident flock can contribute as much as 50% of the phosphorus loading.

These two important activities undertaken by Ann Arbor during the time of the study cannot be discounted when analyzing any resulting phosphorous reduction. We believe that these activities provided for the phosphorus reductions found by Dr. Lehman and his team. We are not aware of any municipality in the United States with a fertilizer ordinance that has been able to document nutrient reductions as a result of the fertilizer ordinance, which provides further support for our position that lawn fertilizer is not a significant source of nutrient runoff.

We asked ETS to evaluate the effectiveness of the phosphorus restriction enacted in Minnesota. The legislation passed in 2004 and went into effect in 2005. ETS evaluated the water quality monitoring data for 8 subwatersheds [Hydrologic Unit Code (HUC) Level 08] units in Minnesota before the restrictions were enacted and after the restrictions were put into place. The results were as follows:

From page 33 of 58 of the Report.

"These observations were combined with land use information obtained from the State's watershed website (Minnesota Pollution Control Agency: Minnesota watersheds) to characterize the subwatersheds around the monitoring stations (Appendix C). Table 4 summarizes key findings from Table 3 and Appendix C.

Table 4. Qualitative Relationship of TP Trends and Land Use

Monitoring Station	Significant Decline in TP*	Does Residential Land Use Dominate?
S000-282	No	Mixed
S000-220	No	No
19-0021-00-451	No	Yes
S-002-118	Yes	Yes
S-002-203	Yes	No
S-001-255	No	Mixed
S-000-185	No	No
S-002-311	Yes	No

* See Table 3."

From page 34 of 58 of the Report

"Three of the eight monitoring stations/watersheds demonstrated significant declines in TP concentrations over the period evaluated. All three of those stations are located in watersheds classified as having medium or high TP concentrations. This preliminary conclusion might be sufficient to generate a hypothesis worth testing. However, the law only targeted residential lawn P use, and the comparisons in Table 4 do not demonstrate a clear benefit of the law (Minnesota Statutes, Chapter 18C); i.e., **only one of the monitoring stations in a predominantly residential or mixed use area demonstrated a decline in TP** (emphasis added)."

We believe the only conclusion you can draw from this analysis is that nutrient losses of phosphorus to the environment from the use of specialty fertilizers on lawns in Minnesota, whether by over application (applying too much) or misapplication (applying off target) was not a **statistically significant source of phosphorus** to these watersheds. If phosphorus nutrient losses from the use of specialty fertilizers on lawns was a statistically significant source in Minnesota it would be readily apparent in the monitoring results.

We know this is true because thick healthy turf protects the environment and proper fertilization is necessary to maintain healthy turf. EPA region 1's proposal will negatively impact watersheds within Massachusetts. Using P-free specialty fertilizers or promoting no fertilization of turf grass in Massachusetts will result in more pollution and higher volumes of stormwater runoff.

Dr. Wayne R. Kussow from the University of Wisconsin- Madison has done a significant amount of turf grass research on phosphorus losses. He carefully constructed turf plots designed to collect stormwater runoff to evaluate the effects of P fertilization. He collected stormwater runoff from these turf plots for six years. This is the data from a single rainfall event.

June 30, 1997 Rainfall Event [1.43"]

lbs. P 1,000 sq.ft.	Runoff gallons	Conc. lbs. P / Gal	P Load Lbs. P / Acre	% Runoff
0.0	**146.0**	0.0000283	**0.00413**	**63.7**
0.5	67.4	0.0000363	0.00245	29.4
0.8	57.3	0.0000491	0.00282	25.0
1.3	**54.9**	0.0000443	**0.00243**	**24.0**

Notes: All plots are 8' X 32' [0.0059 acres]

1.43"/12.0" * 0.0059 acres * 325,900 gallons/ acre ft. = 229.1 gallons of water fell on each plot of turf. Please note that 63.7 % (146.0 gallons) of the precipitation that fell on the turf plot that did not receive any phosphorus was lost to runoff. Only 29.4 % (67.4 gallons) of the precipitation was lost as runoff from the site that received 0.5 lbs. of P per 1,000 sq. ft. of turf.

Dr. Brian Horgan; an Associate Professor and Extension Turfgrass Specialist at the University of Minnesota was one of the authors of the Bierman *et al* study (see Report references). The University of Minnesota also designed and constructed a turf grass research facility to capture runoff from turf grass plots and their data supports Kussow's data. You can see Dr. Horgan (on video) explain why stormwater runoff and nutrient losses are greater from unhealthy turf as opposed to healthy turf [http://www.gcsaa.tv/view.php?id=179]. The facility in Minnesota was constructed to collect turf grass data after the P restrictions were put into place. The results in Minnesota provided additional validation for Dr. Kussow's research in Wisconsin. Please note the research in Minnesota was partially funded by the **Environmental Protection Agency** through Section 319(h) of the Federal Clean Water Act.

Hydrologic Modeling

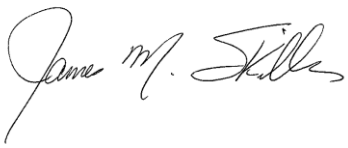
ETS has identified a discrepancy between Table 22 (mislabeled as Table 172) of the NPDES MS4 permit's fact sheet's attachment and the modeling output. Table 22 of the attachment provides annual runoff yields and overall average runoff yields from the model simulations. Results for the P8 fair condition runoff yields in Table 22 are 0.378 MG/ha/yr and 0.467 MG/ha/yr for hydrologic soil groups (HSG) C and C/D, respectively. However, the model output in the Excel spreadsheet titled "Summary runoff and P yield 7 16 13" given to ETS by Mr. Voorhees indicates these runoff yields should be 0.267 MG/ha/yr and 0.407 MG/ha/yr for HSG C and C/D, respectively. The discrepancy needs to be addressed.

Conclusion

There is no scientific justification for the 50% P Load Reduction Factor, because the peer reviewed scientific literature does not support it. The Agency is tasked with using peer reviewed scientific literature when available and it is clearly available. It is our opinion that the 50% P Load Reduction Factor should be deleted. EPA and or EPA Region 1 should not promote fertilizer use recommendations for turf grass, this should be left to State University and Extension Service specialists. Specialty fertilizer use is typically less than 3% of the total nutrient use in most states and is not a statistically significant source of nutrients to the environment.

Thank you for the opportunity to comment on the proposed NPDESMS4 permit. Please do not hesitate to contact me should you require any additional information.

Sincerely,



James M. Skillen on behalf of the LHPWG

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February 27, 2015

Newton Tedder
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OEP06-4
Boston, MA 02109-3912

Re: Comments on the Draft NPDES General Permit for Stormwater Discharges from Small MS4s in Massachusetts

Dear Mr. Tedder:

The Town of East Longmeadow has prepared the following comments and questions, referenced by page (from the copy of the draft permit provided on EPA's website) and by the permit section number. We have focused our comments on sections of the permit where we believe there is a substantial need for improvement to allow feasible, cost effective implementation of the Clean Water Act and NPDES program goals.

Part 1: Introduction

- (Page 3, Part 1.4): The listing of non-stormwater discharges should be expanded to include "uncontaminated discharges from residential sump pumps". For many years the EPA has been pushing communities to reduce infiltration/inflow entering their sanitary sewer systems. Private inflow removal, which includes residential sump pumps, has been a significant component of I/I reduction and a common solution has been to redirect the sump pump discharges to an available stormwater system. This redirection of private inflow has been an important component of a number of EPA Consent Orders, Consent Decrees and other enforcement actions and a number of communities have addressed this issue with full EPA knowledge and disclosure through the addition of stormwater laterals to allow private property owners a location to discharge their sump pumps. To not explicitly allow these discharges in the draft stormwater regulations after endorsing this solution as

an I/I reduction strategy for many years creates a significant contradiction in regulatory approaches between two units of the same federal agency.

- (Page 7, Part 1.10): This section requires permittees to modify or update their existing BMPs and measurable goals in their Stormwater Management Programs (SWMP) to meet the terms and conditions of the new permit. Does that mean that permittees cannot delete ineffective or impractical BMPs from the MS4-2003 SWMP while they are updating the SWMP? Part II.D.2 of the MS4-2003 allowed modification of the SWMP under certain conditions and Part 4.1 of the draft General Permit generally continues these requirements. As written, we interpret these sections to prohibit subtraction (deletion) of components or controls of the SWMP. While we agree communities should be encouraged to build on their current program for the new permit, EPA should recognize it has been over a decade since BMPs were first identified and therefore municipalities should be provided an opportunity to meet the new permit conditions using the most cost-effective, appropriate BMPs for the community in 2015 and beyond. We recommend the final permit be revised to explicitly allow flexibility in deleting ineffective BMPs that were committed to in 2003 during development of the updated SWMP that meets the new General Permit requirements.

Part 2.1: Water Quality Based Effluent Limitations

- (Page 10, Part 2.1.1.b & c): Please clarify the statement "or its tributaries in some cases." Does EPA intend to say that if a discharge from a MS4 to a tributary of a waterbody that is subject to an approved TMDL, or to a tributary of a waterbody that is impaired, that the MS4 is subject to the same requirements as if the MS4 were discharging directly to the impaired waterbody, even if the tributary is not listed in the most recent Massachusetts Integrated List of Waters as impaired or subject to a TMDL?

- (Pages 11-22, Part 2.2): It appears that EPA has applied TMDL and impaired waters requirements to receiving waters that are outside of the Regulated Area by including those municipalities in the watershed-specific list. We request that prior to issuing the final permit, EPA revise the lists provided in the permit (both this section and Appendices F & H) as appropriate to correct this.

    - What documents govern interpretation of TMDL and impaired waters applicability? Is it individual TMDL reports, the 303 (d) list / most recent Final Massachusetts Integrated List of Waters, or the tables provided in Part 2.2? See previous comment regarding applicability to tributaries that are not listed as impaired in the current Massachusetts Integrated List of Waters. Please state the source in the final permit.

- (Page 24, Part 2.3.2.e): It will be a significant challenge for East Longmeadow to measure effectiveness of stormwater educational messages and the overall education program at the local level, and it will be very difficult to determine if efforts provide meaningful results. It may not be an efficient use of funds to individually pay for independent effectiveness measurement programs that could be equally or more effective if done collaboratively. EPA should be measuring effectiveness of MS4 education program at a state or regional level. We recommend removing this requirement from the permit and suggest that EPA work with state agencies, regional stormwater groups, or watershed groups to evaluate the effectiveness of educational efforts. However, if this requirement must be included in the final general permit, we recommend this section be revised to encourage a collaborative effort between communities, regional stormwater groups, and/or watershed groups and clarify that EPA will consider these efforts as meeting permit conditions as long as they are completed in accordance with Part 2.3.1.b . In addition, if this requirement remains in the final permit, we respectfully request EPA provide additional guidance on measuring and tracking effectiveness of MS4 education programs at a local, regional, and state level.

Part 2.3.4 Illicit Discharge Detection and Elimination

- (Page 26, Part 2.3.4.4.b): Developing the inventory of SSOs would typically be completed as part of developing the written SWMP. We recommended EPA extend the timeline for completing the inventory of all SSOs to be within one year of the effective date of the permit.

- (Page 26-27, Part 2.3.4.5.b & c) and (Page 27, Part 2.3.4.5 c): Outfall inventory and dry weather inspections completed under the MS4-2003 should not need to be repeated since the objectives of the regulations have already been addressed through these initial activities. Redoing work is an unnecessary and inappropriate expenditure of limited public funds. We recommend coordinating the timelines of the inventory required by Section 2.3.4.5 and dry weather screening required in 2.3.4.7.d.iii to both be completed within three years. The most costly part of these requirements is the labor, and therefore we recommend revising requirements to allow performing dry weather screening and the outfall inventory concurrently, which will allow communities to reduce the number of time consuming visits to each outfall to save on labor costs.

- (Page 27, Part 2.3.4.5.b): EPA requires permittees to physically label all MS4 outfall pipes and interconnections with others MS4s with a unique identifier by the end of the permit term. With over 300 outfalls, it is prohibitively expensive

to label every outfall with no apparent direct water quality benefit for this effort. In addition, this labeling will have significant negative aesthetic impacts since many of these outfalls are located in rural areas and placing a signpost in these areas will create unnecessary visual pollution. We request that the EPA clarify the goals of the outfall labeling exercise and revise the permit accordingly.

  - Is the purpose of this exercise to provide a visual clue for citizens and businesses, alerting them to the presence of the otherwise unseen stormwater drainage system? If so, this can be easily achieved without labeling every outfall or interconnection. This goal could be more cost-effectively achieved through labeling a small number of "example" high visibility outfalls. To the average citizen a label that says "outfall number X" is alarming without supporting education. These small number of high visibility outfalls could be labeled not only with a unique identifier, but also with more information about stormwater impacts to surface water quality, recreation, public health, etc. The information could also include a website or contact information.

  - Is the purpose of this exercise to make it easier for EPA enforcement and environmental groups to identify outfalls and collect samples separately from the community's effort? If so, this goal could be more cost-effectively achieved by requiring communities to provide GPS coordinates or GIS data to EPA, as communities update their mapping. Because permittees are required to collect GPS locations of outfalls, submitting ether GIS files or latitude and longitude coordinates for each outfall would be adequate to meet this need.

  - Is the purpose of this exercise to make it easier for communities to identify their outfalls in the field as IDDE efforts progress? If so, we recommend this can be achieved more cost-effectively through other MS4 permit requirements, including developing an accurate drainage system map and developing a complete outfall/interconnection inventory including photographs showing each outfall.

  - There are some outfalls that may be impracticable for a municipality to label, as they are not readily accessible due to being located on private property with no easements. Also, due to the location of many outfalls, these markers are easy targets for vandalism or theft, which will add costs to replace.

- (Page 28-36, Part 2.3.4.7 and 2.3.4.8): The IDDE requirements are lengthy, cumbersome, and costly. The requirements are so onerous it will be very difficult to attempt full compliance.

- For example, it is likely that much of our system will be categorized as Problem Catchments. While we will not be required to complete dry weather sampling, we will be required to complete investigations of 100% of the problem catchments within five years, which may not be achievable or feasible. Catchment investigations will include opening manholes in roadways with heavy traffic, thereby necessitating police details and putting the safety of inspectors at jeopardy and causing traffic delays. We need to be able to expend our limited budget on finding and fixing non-stormwater discharge inputs instead of excessive planning.

- (Page 29, Part 2.3.4.7.c): While the IDDE Program has potential for measurable water quality improvements, the elaborate multi-step ranking process will not result in a cost-effective, pragmatic implementation strategy. The prioritizing and ranking process and milestones should be streamlined to reduce the onerous planning effort and result in the same environmental benefit. We request that EPA revise the process as such:

  - Classify each catchment into one of the four categories (excluded, problem, high priority, and low priority).

  - Rank all catchments together (regardless of category) using the criteria presented

  - Determine the total number of dry weather and wet weather inspection points (outfalls, interconnections, and key junction manholes) in each catchment area and schedule catchments for investigation based on category and priority ranking as well as staffing and financial considerations.

    Generally speaking, the goal should be to focus on which catchments are likely to have illicit discharges and which ones are unlikely to have illicit discharges. Then the likely catchments should be prioritized by severity.

- (Page 33 – 35, Part 2.3.4.7.e.ii): The draft General Permit is requiring communities to implement a manhole inspection methodology that "must, at a minimum, include an investigation of each key junction manhole within the MS4, even where no evidence of an illicit discharge is observed at the outfall." This is an onerous requirement with little potential benefit to improve water quality for the amount of effort. Inspecting manholes is valuable only when an outfall has dry weather or wet weather indicators (visual, olfactory, screening) of an illicit discharge. This procedure is ideal to find the problem during the time the discharge is occurring. In addition, there are substantial safety risks associated with inspecting key junction manholes. The majority of these

manholes will be in roadways with heavy traffic, putting staff and contractors at risk during inspections and necessitating police details. These efforts will also cause traffic nuisance conditions. To improve the benefit of the inspections and reduce the overall risk, we request that EPA revise this section of the permit to only apply the manhole inspection methodology when evidence of an illicit discharge is observed at the outfall.

- (Page 32 - 33, Part 2.3.4.7.d iv and vi): EPA has provided benchmarks that "indicate sewer inputs to the MS4", however, these benchmarks have typically been used for comparing results from dry weather sampling. What benchmarks does EPA want permitees to compare to for wet weather sampling results? Please clarify in the final permit.

- (Page 33, Part 2.3.4.7.e.i): EPA has provided "System Vulnerability Factors" for permittees to identify catchments that have a higher potential for illicit connections under wet weather conditions. Almost every catchment in our community will have the presence of these factors. Much of our drainage system is greater than 40 years old. Therefore we will be required to complete wet weather investigations of a high percentage of catchments. We request EPA re-consider the vulnerability factors and revise this list to be simplified and more focused, as there are currently too many factors. For example, remove the factor related to age being 40 years or greater as the other factor related to overall condition is more meaningful. Age is not necessarily an indicator of condition. Crossings of storm and sanitary sewer alignments and possible common trench construction situations can be seen when viewed from a map perspective, but oftentimes sewer lines are many feet below the drainage system, which will not likely result in exfiltrated sewage entering the drain line. The focus should be on situations where the sewer line is at a higher elevation than the drainage system or where it is within a few feet.

- (Page 35, Part 2.3.4.7.e.ii.b): Wet weather monitoring in accordance with the wet weather screening and sampling requirements to meet the deadlines specified in the goals and milestones section will be an all-consuming effort for DPW staff each spring, particularly when nearly all catchment areas have System Vulnerability Factors as described in the previous comment. There are a limited number of storm events that occur between March and June during business days and hours of operation. Field staff would have to monitor weather forecasts daily and attempt to do wet weather outfall monitoring during nearly every spring storm during business hours and beyond. One way to alleviate this burden could be to extend the wet weather monitoring season to include March through November. Recent increases in severity and frequency of storms in New England has been well documented. Extending the monitoring period would enable us to spread staff time over a longer period and also utilize labor from summer interns.

- (Page 37, Part 2.3.4.8.c): We request that EPA simplify this section and limit the IDDE burden by putting an annual cap on implementation of the Catchment Investigation (Part 2.3.4.7.e) equal to 10% of all outfalls with System Vulnerability Factors per permit year and perform the remaining catchment investigation procedure on up to 10% of inspection points (outfalls, interconnections, and key junction manholes). This would accomplish the goal of investigating our entire stormwater system within 10 years of the permit effective date, starting with the highest priority areas. Because the labor and screening cost are driven by the number of "inspection points" not catchments, the cost will be better distributed over multiple permit years. This change provides extra time to spread out the IDDE Program costs and considerable staff commitment.

Part 2.3.6 Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management

- (Page 40, Part 2.3.6.a.ii): We are very concerned that EPA has revised the post-construction stormwater management performance standards to be inconsistent with the Commonwealth's Stormwater Management Handbook (hereafter referred to as the Handbook). This is problematic for a number of reasons:

    - The Handbook was developed through an extensive public process, including receiving stakeholder input from engineers, contractors, communities, and the public, and the provisions were carefully vetted to ensure they are feasible and reasonable. While the MS4 permit has a public comment process and response to comments, this is not the same effect as obtaining stakeholder and expert consensus through numerous meetings and public outreach efforts to develop a state-wide stormwater management handbook with design guidelines and maintenance recommendations. Because comments EPA receives will be focused on the MS4 program, they will lack the substantial input on design details associated with a 1" requirement. We are concerned that EPA may issue a final permit that does not include the necessary technical considerations associated with retaining 1" or providing the equivalent level of pollutant removal.

    - The Handbook provides various considerations for redevelopment projects that recognize stormwater management for redevelopment is much more difficult and costly, and the Handbook allows flexibility for these types of projects. As the draft MS4 general permit is written, these flexibilities are not allowed, and therefore redevelopment projects will be required to expend significant money to comply and, in some cases, this requirement may make redevelopment infeasible and

push projects to green field sites. Additionally, this standard is applied to "the first one (1) inch of runoff from all impervious surfaces on the site" which unfairly applies this new standard to unimproved portions of the site.

- Has EPA considered how this standard will apply to improvements to municipal roadways, even if these improvements do not significant increase the existing impervious area? Roadway projects often exceed one acre of land-disturbing activity and even if they don't are often included in Capital Improvement Plans, which could be considered a "common plan of development" and therefore even though individual projects disturb less than one acre, the combined plan results in a disturbance of one or more acres. These roadway projects may merely be mill and overlay efforts that are necessary for public safety and long-term roadway maintenance. Will municipal roadway projects that don't significantly increase existing impervious area be required to meet this 1" standard?

- Even if mill and overlay projects are allowed without requiring new post construction stormwater management requirement, it is important to also allow communities to complete more extensive roadway improvement projects that do not significantly increase the impervious area to proceed without these new requirements. In many cases, it is much more appropriate to reclaim a road surface to depths of 18-inches or more to create a stable, long lasting pavement base. These projects have more extensive temporary impacts than mill and overlay projects but have no greater post-construction impacts and therefore should not be subject to more stringent post-construction requirements.

- For many roadway improvement projects, complying with post-construction requirements will be infeasible due to limited area for structural BMP installation on right of ways and limitations on installation caused by the existing drainage layout and elevations. Implementation of stormwater management systems within the right of way for the purpose of water quality and/or flow attenuation should be up to the discretion of the permittee and based on the receiving water-specific retrofit feasibility assessment and implementation requirements in Section 2.2 of the Permit. If these changes are not made to the draft regulations, many communities will be forced to significantly scale back their roadway improvement projects due to significantly increased costs or outright inability to comply with the new regulations. This will have a crippling effect on our ability of to properly maintain and improve our ever deteriorating roadways.

- This proposed new requirement is troubling since East Longmeadow has already adopted our local stormwater ordinance per the requirements of the MS4-2003. This bylaw references the ten MA Stormwater Management Standards as local "performance standards". Our bylaw exempts projects regulated by the Massachusetts Wetlands Protection Act to avoid redundant permitting and reduce costs and effort on both the applicant and the community's part. This new MS4 requirement will mean we must update our local code, which will be a costly and laborious effort. An update to our stormwater bylaw and regulation will require a public participation process, with numerous meetings, obtaining and responding to stakeholder comments, and review by Town Counsel followed by Town Meeting approval.

  We strongly recommend that if EPA desires this level of post-construction stormwater management, it work with MassDEP to initiate a public process to vet the technical components of the requirement, feasibility, and revise the Massachusetts Stormwater Handbook instead of adding this requirement to the MS4 general permit. If this is not possible, at a minimum, we strongly urge EPA to revise the requirement to match the Massachusetts Stormwater Handbook's considerations for redevelopment and revise the requirement to exempt municipal roadway projects when they are conducted in accordance with a SWPPP per MCM #4.

- (Page 41, Part 2.3.6 b & c): We recommend EPA revise the compliance timelines for part b and part c to be completed concurrently within four (4) years of the permit effective date. While these are slightly different efforts, review of local code (bylaws, ordinances, regulations, design guidelines, etc.) is time consuming and takes substantial effort, and therefore it is most efficient to review local code only once during the permit term. We recommend requirements relating to review of local code (regulations) be on the same compliance schedule.

- (Page 42, Part 2.3.6.d): We believe the goal of this exercise is to utilize impervious cover percent as a measure of watershed health, as the impervious cover model does. However, tracking annual changes in impervious cover will be significantly difficult, costly, and time consuming with no benefit to water quality. Therefore, we suggest the assessment be done only in the first and last years of the permit term (or every five years) and be supported by statewide GIS mapping initiatives to understand the short-term change and utilize these data to feed into planning impervious cover management under future MS4 permits.

Part 2.3.7 Good House Keeping and Pollution Prevention for Permittee Owned Operations

- (Page 44, Part 2.3.7.a.iii (b)): Because East Longmeadow, like most communities, has not surveyed or measured the distance to the bottom of each catch basin sump, it will be difficult to know when a sump is "50 percent full" and therefore we recommend a revised approach to this requirement. We request EPA allow communities to either annually clean catch basins or, if a community wants to reduce the frequency of cleaning to less than once a year, we request EPA require communities to use an easily measurable benchmark, such as ensure that deposits are no less than 2 feet below the invert of the outlet pipe, as an alternative for catch basins with a total sump depth of at least four (4) feet (i.e., deep sump catch basins). Another consideration for this requirement is that, if a community is sweeping more than once per year, there should be no need for all catch basins to be cleaned annually? More frequent sweeping results in decreased sediment and other loadings to catch basins, and therefore we request that communities that increase their sweeping to at least two times per year be allowed to reduce catch basin cleanings to reflect this.

Part 4: Program Evaluation, Record Keeping, and Reporting

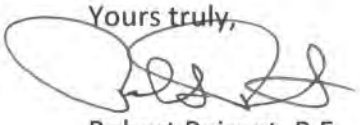
- (Page 51-52, Parts 4.3 and 4.4): There are numerous reporting requirements listed throughout the permit and also listed in these parts. To make it easier for permittees to correctly identify all requirements and timeframes for completion (deadlines), we request EPA prepare a table of all reporting requirements and deadlines to include in this section.

Other/Overall:

- Recordkeeping. The administrative burden of maintaining detailed written records for all permit activities, such as maintenance, inspection and training records should be minimized wherever possible. We suggest that EPA maintain flexibility on the level of detail required for this tracking effort that will be meaningful and yet not detract from the staff time for operation tasks as opposed to administration tasks. Cost efficient approaches to demonstrating compliance with the Good Housekeeping requirements might involve monthly summaries of highlights from staff time cards, employee diaries, and planning calendars.

We thank you for the opportunity to comment on the draft Massachusetts Small MS4 General Permit. Please contact me with any questions at 413-525-5400 ext. 1201 or robert.peirent@eastlongmeadowma.gov.

Yours truly,



Robert Peirent, P.E.
Superintendent

LOWELL REGIONAL WASTEWATER UTILITY

WASTEWATER COLLECTION AND TREATMENT

MARK A. YOUNG
EXECUTIVE DIRECTOR

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LOWELL
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TEWKSBURY
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Newton Tedder

USEPA Region 1

5 Post Office Square

Suite 100, Mail Code OEP06-4

Boston, MA 02109-3912

Subject: Massachusetts Small MS4 Draft General Permit Comments

Dear Mr. Tedder:

The City of Lowell and the Lowell Regional Wastewater Utility (LRWWU) appreciate the opportunity to comment on the above referenced permit. LRWWU shares EPA's goal of waters that meet their designated uses and agree that control of stormwater discharges is important to achieving that goal. However, we disagree with the approach taken by EPA in this draft permit.

The permit poses an undue burden on small Municipal Storm Sewer System (MS4) operators. LRWWU believes that Environmental Protection Agency (EPA) Region 1 has exceeded the authority given by the CWA to regulate municipal stormwater discharges, and has under-estimated the cost of compliance were the permit provisions to be implemented. The new requirements for Illicit Discharge Detection and Elimination (IDDE) and Sanitary Sewer Overflows (SSOs) are of particular concern, as well as the application of water quality-based effluent limitations. Our detailed comments are attached to this cover letter, with our concerns summarized below.

IDDE/SSOs

In the draft MS4 permit, EPA places significant emphasis on SSOs as illicit discharges, the result being that EPA appears to be "double-regulating" SSOs and also delegating Clean Water Act (CWA) authority to MS4s. For example, the draft permit requires the same reporting requirements as those found in the NPDES standard conditions of the individual permits for the POTWs that operate the collection systems. Therefore, this is information that EPA and the Massachusetts Department of Environmental Protection (MassDEP) are already receiving. It would be redundant to require MS4s to report SSOs.

Furthermore, the draft permit is inconsistent with integrated planning approach to municipal wastewater and stormwater management. This approach allows municipality to develop plans to meet CWA requirements that prioritize work so that the most critical public health and environmental protection issues are corrected first, whether they are due to overflows or stormwater discharges. The provisions of the draft permit would require an MS4 to address SSOs more aggressively than other sources of stormwater pollution.

EPA and delegated states have the responsibility under the CWA to take enforcement action to address SSOs. In Massachusetts, where EPA has primacy over the NPDES program, the expectation would be that collection systems with SSOs should be under some type of an enforceable schedule.

In cases where the MS4 is also owner/operator of the collection system and SSOs are already being addressed either through CMOM, permit (reporting), or state/federal enforcement action, then no further regulatory burden should be placed on that municipality. In fact, those circumstances are good candidates for the integrated planning approach. However, the lack of an enforceable schedule does not relieve the municipality of its responsibility to comply with its NPDES permit for wastewater discharge. Nor does it require the municipality to address SSOs through the stormwater program.

In cases where the MS4 is not also the owner/operator of the collection system and SSOs are already being addressed either through CMOM, permit (reporting), or state/federal enforcement action, then there should be no expectation for the MS4 to also require corrective action under the stormwater program. Where no enforceable schedule exists, then a legally defensible response would be for the MS4 to file a citizen's suit under SEC. 505 of the Clean Water Act (CWA) against the collection system operator for violations of the CWA **and** EPA for failure to act to correct those violations. The penalties available under the CWA are typically much greater than most municipal codes allow, so this action would provide more incentive for corrective action than penalties established in an MS4s IDDE ordinance.

The specific requirements related to SSO control should not be included in the final MS4 permit.

Wet-Weather Sampling Requirements for IDDE

The draft permit includes substantial wet weather monitoring requirements to detect illicit discharges, primarily SSOs. Neither the Center for Watershed Protection's IDDE Manual nor EPA's MS4 improvement guide recommend wet-weather sampling to detect illicit discharges. In fact, both documents note that wet-weather sampling is a poor method of identifying illicit discharges, since they are often overwhelmed by high volumes of storm water runoff and thus making it nearly impossible to detect during wet weather. This is especially true for SSOs, since stormwater runoff from dense urban areas often has high bacterial loads making it difficult to distinguish between SSOs and other illicit discharges. Other indicators of sewage – surfactants, ammonia and chlorine – would be very dilute in wet weather SSOs. The wet-weather monitoring requirements under the IDDE program place an unreasonable burden on permittees without providing definitive identification of illicit discharges.

We note that Phase II regulations allow, but do not specifically require monitoring. The MS4 Permit Improvement recommends a comprehensive water monitoring and assessment program to measure the effectiveness of the Stormwater Management Plan (SWMP), assess the quality of receiving waters, characterize stormwater discharges, and identify pollutant sources and illicit discharges. However, the MS4 Permit Improvement Guide acknowledges the different purposes of dry and wet weather sampling.

The wet-weather sampling requirements under the IDDE program should not be included in the final permit.

Cost of Compliance with IDDE Requirements

In the fact sheet, EPA estimates that the cost for compliance with the IDDE requirements of the Draft permit will be between $17,000 and $98,000 per year depending on the size of the MS4 system. However, other than referencing the Sustainable Stormwater Funding Evaluation Final Report (Horsley Witten, 2011), EPA provides no other basis for the estimates. For many MS4s, the mapping and analytical costs alone may exceed the $98,000 estimate. If additional personnel are required, then the costs to the MS4 would be much greater. Considering the unproven benefit of the IDDE requirements, these costs would place an undue burden on MS4s.

Water Quality Based Effluent Limitations (WQBELs)

The CWA requires that permits for MS4s "include a requirement to effectively prohibit non-stormwater discharges into the storm sewers and require controls to reduce the discharge of pollutants to the maximum extent practicable (MEP), including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants."

Unlike industrial stormwater there is not an explicit requirement that MS4 discharges meet water quality standards [Sec. 301(a) (1) (C)]. However, EPA, Region 1 is interpreting the "such other provisions...appropriate for the control of such pollutants" to allow the permitting authority to impose non-numeric water quality-based effluent limits. A careful reading of the CWA would suggest that Region 1's interpretation is incorrect because "such other provisions..." is included in a list of measures related to MEP and not a stand-alone requirement.

The MS4 permitting process is intended to be iterative; that is as control technology and management practices improve, MEP reductions would increase and MS4s would be held to higher standards. The most notable "jump" in MEP has been seen in post-construction stormwater management requirements, where infiltrative and other green infrastructure practices have been required in recent MS4 permits. By continuing to implement improved practices, the impact of municipal stormwater on receiving streams would be reduced.

The narrative Water Quality-Based Effluent Limits (WQBELs) proposed in the draft permit seem to be arbitrary and, in some cases, redundant. Since the CWA does not require that municipal stormwater discharges to meet water quality standards, and the proposed WQBELs do not appear to add significant value, these requirements should not be included in the final permit.

We respectfully request that EPA Region 1 enter our comments in the administrative record for this draft permit and look forward to a final permit that addresses our concerns.

Sincerely,

Michael Stuer

LRWWU Engineering Manager

Copy: Mark Young, LRWWU Executive Director

Carrie Prescott, LRWWU Staff Engineer

Saya Qualls, Hazen & Sawyer Associate

Draft MA MS4 General Permit Comments

1.10. STORMWATER MANAGEMENT PROGRAM (SWMP)

1.10.2. Contents of the Stormwater Management Program

The City of Lowell's and the Lowell Regional Wastewater Utility's comments pertain to a number of items on this list and LRWWU expects that some of those provisions may change based on comments received from all sectors. We request that the contents of the SWMP be modified to reflect any changes to the referenced provisions.

2.1. WATER QUALITY BASED EFFLUENT LIMITATIONS

Sec. 402(p)(3) of the CWA contains the permit requirements for municipal and industrial stormwater discharges. Paragraph (A) clearly states that permits for industrial stormwater discharge meet all of the requirements of both Sec. 402 (National Pollutant Discharge Elimination System) and Sec. 301 (Effluent Limitations) which ultimately requires the application of both technology-based effluent limitations (TBELs) and water quality-based effluent limitations (WQBELs). Conversely, Paragraph (B) specifies the permit requirements for municipal stormwater discharge:

> *(i) may be issued on a system- or jurisdiction-wide basis;*
>
> *(ii) shall include a requirement to effectively prohibit non-stormwater discharges into the storm sewers; and*
>
> *(iii) shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants.*

The CWA clearly makes a distinction between industrial and municipal stormwater discharge permit requirements. Permit requirements and effluent limitations for industrial stormwater discharges are subject to Sec. 301 and Sec 402, while permit requirements for municipal stormwater discharges are subject only to Sec. 402(p)(3)(B).

The draft permit erroneously states, "Pursuant to Clean Water Act 402(p)(3)(B)(iii), this permit includes provisions to ensure that discharges from the permittee's small MS4 do not cause or contribute to an exceedance of water quality standards…" As seen above, sub-paragraph (iii) makes no such reference to "causing or contributing to an exceedance of water quality standards." The fact sheet states, "EPA has determined that §402(p)(3)(B)(iii) allows EPA to include more stringent permit requirements than those established as MEP in order to meet water quality standards." Again, we believe that this interpretation is in error since, as evidenced by the actual language of the CWA, "other such provisions" refers to "control of pollutants" and is included in the list of maximum extent practicable (MEP) controls and practices. Therefore, the CWA does not provide a legal basis for the inclusion of WQBELs in the draft MS4 permit.

2.1.1. Requirement to Meet Water Quality Standards

For the reasons stated above, we believe that this provision should be removed from the final permit.

2.1.2. Increased Discharges

The concept of increased discharge from an MS4 is questionable, since the source of discharge is ultimately precipitation to the watersheds that comprise the MS4. EPA's fact sheet suggests that new impervious area or a new outfall constitute increased discharge. We disagree. First, any new development or re-development (including new impervious area) is subject to the Post-Construction Stormwater Management requirements of Part 2.3.6, which include infiltration standards that are intended to mimic pre-development conditions. As a result, new impervious area would be required to employ best management practices (BMPs) that must minimize any increase in surface runoff. Second, the construction of a new outfall within an existing MS4's jurisdiction does not by itself increase the volume of runoff; thus; it cannot be considered the source of increased discharge.

2.2. DISCHARGES TO CERTAIN IMPAIRED WATERS

2.2.1. Discharges Subject to Requirements Related to an Approved TMDL

The draft permit requires that MS4s subject to an approved TMDL must implement specified provisions to be consistent with the terms of the TMDL. The fact sheet refers to the definition of TMDL in 40 CFR § 130.2 as the sum of all waste load allocations for point and non-point sources. This is certainly inclusive of stormwater discharges. Further, 40 CFR § 122.34 (e)(1) requires compliance with any more stringent effluent limitations that are based on an approved total maximum daily load (TMDL). Therefore, we agree that MS4 discharges subject to TMDLs must meet the TMDL requirements.

2.2.2. Discharges to Certain Water Quality Limited Waters Subject to Additional Requirements

EPA cites CWA § 402(p)(3)(B)(iii) as the basis for the additional requirements placed on MS4s that discharge to impaired waters without an approved TMDL for the pollutants of concern. As explained in our comment on Part 2.1 of the draft permit, we believe that EPA Region 1's interpretation of the CWA is in error and therefore this provision should be removed from the permit.

2.3. REQUIREMENTS TO REDUCE POLLUTANTS TO THE MAXIMUM EXTENT PRACTICABLE (MEP)

2.3.2. Public Education and Outreach

We believe that public education is essential to the long-term success of an MS4's SWMP and we are generally in agreement with the draft permit requirements for Public Education and Outreach.

2.3.4. Illicit Discharge Detection and Elimination (IDDE) Program

The conditions proposed in the draft permit go significantly beyond the elements specified in 40 CFR §122.34(b)(3), including burdensome provisions that are unlikely to identify illicit discharges and include requirements that duplicate existing requirements placed on collection system operators through either NPDES permits or enforcement actions.

2.3.4.4 Sanitary Sewer Overflows

The draft permit requires the MS4 to eliminate an SSO as "expeditiously as possible" and in the interim minimize the discharge of pollutants. An SSO is an unauthorized discharge from a sewer collection system, which is permitted separately from the MS4. Such discharges are violations of the CWA and the legal liability for the violation, as well as the responsibility for corrective action, lies with the collection system operator, with EPA and/or the delegated state having both the authority and the responsibility for CWA enforcement in regard to those violations.

We agree that the MS4 must report any SSOs that it discovers to EPA, the Massachusetts Department of Environmental Protection and the collection system operator. We further agree that the MS4 must be notified of any SSOs that discharge to its system. However we do not agree that it is the MS4's responsibility to maintain the detailed inventory as described in *Paragraph B* of this part. All of that information should be compiled, kept and reported by the collection system operator. The reporting requirements under *Paragraph C* duplicate the reporting that is already required of the collection system operator pursuant to its NPDES permit. EPA is asking for information that it is already receiving; and it is assigning responsibility to manage SSOs to the wrong entity. Collection system operators are responsible for managing SSOs; that arrangement is sufficient.

We recommend that the provisions pertaining to SSOs acknowledge the role of the sewer collection system operator, focus on appropriate notification for SSOs that the MS4 discovers, include reference to EPA's integrated approach to municipal planning, and include appropriate legal remedies for MS4 situations where EPA fails to take adequate enforcement action against the collection system so as to eliminate the SSOs.

2.3.4.5. – Outfall/Interconnection Inventory

The draft permit requires the MS4 to develop an inventory of all outfalls and interconnections within its jurisdiction no later than one year from the effective date of the permit. This is a significant change from the 2003 permit and one year is an insufficient amount of time to develop a comprehensive inventory. Instead we suggest that the permit allow two years to develop the inventory.

The draft permit also requires physically labelling all outfalls by the end of the permit term. This may not be possible for all outfalls due to accessibility. Additionally, most MS4s do not have the resources to complete this task within one permit term. We suggest that the permit require no more than 50 % of the accessible outfalls be labeled within this permit term, with the remainder to be labeled within the term of the next permit.

2.3.4.6 System Mapping

We agree that a map of the MS4 system is an important part of not only the IDDE program but the overall SWMP. However, the two-year compliance schedule is unrealistic for most MS4s, including ours. We suggest that the timeframe for map development be extended to four years.

2.3.4.7 Written Illicit Discharge Detection and Elimination Program

The permit requires that the MS4 complete the written program within one year of the effective date of the permit. This is clearly not enough time given the complexity and detail required by paragraphs (a) through (h). Instead we suggest that MS4s be allowed three years to develop the written program.

2.3.4.7.4.c. Assessment and Priority Ranking of Catchments

Does the priority ranking provision require that the written program include the priority list or rather the method by which the list is derived? The catchments themselves would not be delineated within a year, since they are part of the mapping requirement that allows two years to complete. The permit language should be clarified in this regard.

We understand that an MS4 could have identified problem catchments based on either previous olfactory/visual evidence or previous sampling results. But we disagree with the methodology for using those results. This provision requires that, in the event that sampling results are to be used, then ammonia and surfactants must both exceed the screening level **and** either elevated bacteria level or detectable chlorine must be present in order to characterize a catchment as a "problem." This is somewhat confusing and we recommend a table or chart to simplify. Additionally, some MS4s may have a suite of parameters slightly different than those proposed in this part.

We suggest that such MS4s be allowed the discretion to use parameters that have been proven to be effective in characterizing catchments or identifying illicit discharges. Similarly, with high priority catchments, we suggest a table or chart to simplify, and that MS4s be allowed discretion to use alternative parameters. It is important to recognize that there are several effective methods for identifying illicit discharges; allowing MS4s to use their discretion to select the most effective methods for detection of illicit discharges would be practical and prudent.

The priority ranking factors for catchments (2.3.4.7.c.ii) seem reasonable, however, with regard to dry weather receiving water quality, the concentrations given for the indicator parameters are thresholds. We suggest language that would rank catchments based on actual concentrations of indicator parameters, not just an exceedance of a threshold value.

Part 2.3.4.7.c.iii of the permit requires that the illicit discharge potential assessment and priority ranking be completed within one year of the effective date of the permit. Until the mapping is complete, this data may be associated with outfalls as opposed to catchments and could not be updated based on catchments until the mapping is complete. Note that we've suggested four years instead of two for map development. Therefore, the requirement for assessment and priority ranking of potential illicit discharges should be allowed a four-year implementation period.

2.3.4.7.d. Outfall and Interconnection Screening and Sampling

The draft permit requires both dry and wet weather screening of outfalls for evidence of illicit discharges and SSOs. Dry weather screening is an effective way to identify illicit discharges. However, wet weather screening is not an effective way to identify either illicit discharges or SSOs. The volume of an illicit discharge is likely to be very small compared to the volume of stormwater runoff during a wet weather event. The bacterial concentration found in runoff from urbanized areas is oftentimes very similar to that of dilute sewage. The other indicators of sewage will be significantly diluted by the infiltration and inflow component of the SSO. Requiring wet weather screening is burdensome and ineffective, therefore **all** requirements pertaining to wet weather screening should be removed from the draft permit.

Permittees should be allowed discretion in selecting sampling parameters for screening. The list provided in paragraph 2.3.4.7.d.v. should be referred to as guidance as opposed to required parameters. We note that the IDDE guidance manual suggests that only three to five parameters are necessary to characterize an illicit discharge.

2.3.4.7.e. Catchment Investigation Procedure

The System Vulnerability Factors (SVFs) include several references to collection systems and SSOs. The focus on SSOs diverts an MS4's limited resources away from detection of illicit discharges and towards SSO identification and correction which are responsibilities of the collection system operator. We recommend that MS4s develop specific SVFs that target dry sources of contamination that are not otherwise addressed by the collection system management, operation, and maintenance program.

2.3.4.8 IDDE Program Implementation Goals and Milestones

Requiring dry weather screening of every MS4 outfall and interconnection within three years is an unrealistic requirement, given the number of outfalls that would need to be screened, the time necessary to conduct the screening, and the limited number of days that meet the requirements for dry weather screening. We suggest MS4s be given the entire permit term to meet the dry weather screening requirement.

Requiring the Catchment Investigation Procedure in all catchments regardless of the likelihood of illicit discharges is a "shotgun approach" that dilutes an MS4's effectiveness in finding and eliminating illicit discharges. The procedure should be limited to problem or high priority catchments.

2.3.5. Construction Site Stormwater Runoff Control

The City of Lowell and LRWWU find the requirements for the construction site runoff control program to be reasonable.

2.3.6. Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management)

Part 2.3.6.a.ii.a establishes stormwater management standards for newly developed and re-developed sites. The definition of re-development should be clarified. The current draft states that runoff from all impervious surfaces should be retained or treated. This requirement could effectively impede redevelopment in favor of new development by requiring retrofits for existing developed areas, which may have high costs or limited feasibility, in addition to any new or replaced impervious. The stormwater management standard also focuses heavily on infiltration and provides few feasible options in areas with clay soils or high water tables. We suggest that language be added to the permit that recognizes site limitations and provides MS4s with flexibility in those cases.

Part 2.3.5.a.ii.b precludes infiltration BMPs from industrial sites and those with documented soil contamination. We agree that infiltration should generally not be encouraged in these areas; however, the focus of the performance standard on infiltration and EPA Region 1's BMP Performance Extrapolation Tool used to calculate removal efficiencies includes few BMP options that do not promote infiltration. The permit should provide MS4s flexibility in this regard in order to promote brownfield/greyfield development in lieu of greenfield development.

Part 2.3.6.c requires a feasibility analysis of several green infrastructure practices by Year 4 of the permit; however, many of these practices will be necessary sooner to comply with the stormwater performance standard. The timeframes should be adjusted so that the feasibility of practices is determined prior to required implementation.

2.3.7. Good House Keeping and Pollution Prevention for Permittee Owned Operations

The requirements are generally consistent with the City of Lowell's and LRWWU's existing practices.

Appendix H Requirements related to discharges to certain water quality limited waterbodies

Appendix H, Part II.1.a.i.2 states that post-construction stormwater management in phosphorus impaired waters should focus on infiltration, which seems redundant with a base standard that already focuses heavily on retention and infiltration. Also, compliance with the requirement that BMPs be optimized for phosphorus removal seems to be subjective and intrinsic to other performance standard requirements.

Appendix I – EPA New England Bacterial Source Tracking Protocol

Permittees are required to adopt a screening and sampling protocol that is consistent with *Appendix I*. The purpose of the protocol is to provide a common framework for watershed groups, MS4s and regulatory agencies to conduct bacterial source tracking. Given that the protocol relies primarily on visual observations and the use of field test kits and portable instrumentation, our interpretation is that the MS4 is allowed the flexibility to select the sampling parameters and design a protocol that allows the MS4 to effectively track sources of illicit discharge.

Board of Public Works
The Town of Ludlow, Massachusetts

RECEIVED 12/22/14 NWT

December 17, 2014

Mr. Newton Tedder
U.S. Environmental Protection Agency, Region 1
5 Post Office Square, Suite 100 Code OEPo6-4
Boston, MA 02109-3912

Re: Massachusetts Draft EPA Storm Phase II Regulations

Dear Mr. Tedder,

The Town of Ludlow Board of Public Works has voted at its meeting on Tuesday December 16, 2014, to authorize the Ludlow Director of Public Works to provide our department's concerns regarding the proposed new Stormwater Phase II regulations. The following is a list of the most troubling portions of the proposed new Stormwater Phase II regulations.

1) Pavement maintenance work triggers retaining first inch of stormwater or stormwater treatment. Under the new regulations, when a town disturbs more than one acre in area or phased construction totaling one acre (translates to only ¼ mile of 30' wide pavement) such as road reclamation projects, the new regulations require that the first inch of storm water be retained or all the stormwater must be treated. This essentially means a town now not only has to resurface the road, but has to completely redesign and re-construct the entire stormwater collection system to satisfy this requirement. This will cripple road maintenance budgets. Accordingly, cities and towns will be forced to purchase/take extra land by eminent domain for stormwater storage or pay for the expense of stormwater treatment systems on simple routine maintenance projects. This is a huge expense in downtown business districts and even in rural areas with old roads and narrow town-owned rights-of-way.

   As municipalities are aware, the funds available for pavement maintenance are less than half of what are needed to simply preserve the condition of the current infrastructure. This means that Massachusetts roads are falling apart faster than they can be repaired. The above added costs will compound the problem and create more failing roads and more erosion. Municipalities will be forced to use the lesser pavement rehabilitation techniques which will result in less pavement life, wasting available limited pavement maintenance resources.

   There must be an exemption for pavement maintenance projects. The above regulations should not be applied to maintenance projects. If a new road is being constructed or a lane is being added, these stormwater management upgrades may be able to be accommodated, depending on surrounding conditions like available right-of-way width and/or proximity of buildings to the right-of-way. Simple pavement surface maintenance projects or minor improvements should be allowed without requiring extensive stormwater management upgrades.

198 Sportsmen's Road, Ludlow, Massachusetts 01056 Tel. (413) 583-5625, Fax (413) 589-1488

2) Chloride Reduction. Most municipalities already are trying to limit salt/chloride usage. The cost of road salt and deicers is a large portion of the winter storm budgets. Any responsible DPW director or winter road program manager is looking to reduce the costs in all areas that are practical. There is no objection to installing computers on the truck spreaders and training the operators in best management practices nor do we object to the EPA providing Best Management Practices or guidance suggestions; however, reducing salt usage below what is practical with the current technology is irresponsible and to do this exposes the motorists to hazardous conditions and the municipalities to litigation. **The chloride reduction regulations should be limited to recommending that municipalities follow the latest accepted Best Management Practices.**

3) Requirement for tracking impervious area. The EPA in its permit guidance documents implicitly admits that the simple presence of impervious areas is not a direct correlation to stormwater quality. Tracking the amount of impervious areas does not have a direct correlation to water quality; therefore the MS4's should not have to expend resources tracking changes in impervious area. As long as new development is in compliance with Best Management Practices, control of development should be under the jurisdiction and control of local planning authorities.

4) Cost of implementation. An article published in Construction Outlook a publication of UCANE recently published EPA cost estimates of compliance between $70,000 and $829,000 per year depending on population and size. At the information session on the draft 2014 Stormwater Permit held on October 16, 2014 in Springfield, Newton Tedder from the EPA commented that he believes most cities and towns will have to pass a stormwater utility in order to pay for the costs to comply with the new Storm Phase II regulations. The EPA must be admitting that the new regulations are an undue burden and so costly that the municipalities cannot afford them with existing revenues. It is unconscionable at a time when state and local governments are undergoing staff and budget cuts to raise municipal expenses to comply with the new regulations. The regulations, reporting requirements and the overall implementation costs must be reduced to a sustainable and rational level.

5) Signage at outfalls. Installation of signage at outfalls provides no tangible benefit to water quality. Installation of signs and posts will waste resources. The signs will encourage theft or vandalism and will provide little to no use in management of the storm drain system. All regulated organizations are required to have maps with locations of all outfalls. The availability of low cost GPS devices makes these outfalls easily located by just about anyone.

Thank you for your consideration, if you would like additional information, contact me at jtgaucher@ludlow.ma.us or (413)583-5625.

Very truly yours,

J.T. Gaucher, P.E., Director
Ludlow Department of Public Works

Cc: Ludlow Board of Public Works

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February 26, 2015

Newton Tedder
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5 Post Office Square—Suite 100
Mail Code—OEP06-4
Boston, MA 02109-3912
tedder.newton@epa.gov

Re: Comments on Draft Massachusetts Small MS4 Permit

Dear Mr. Tedder:

Thank you for this opportunity to comment on EPA's Draft General Permit for Small MS4s in Massachusetts. The Massachusetts Rivers Alliance is a private non-profit 501(c)(3) organization dedicated to the protection and restoration of rivers in Massachusetts. We have 57 organizational members, including watershed and conservation groups around the state, as well as a growing membership of about 500 individuals and families. This permit addresses issues of great concern to our members, and we encourage prompt issuance of the final permit.

Stormwater remains a major impediment river health in Massachusetts: Polluted runoff from roads, parking lots and other impervious surfaces is a substantial contributor to violations of water quality standards in most Massachusetts rivers, streams, and lakes. EPA NPDES stormwater programs have been in place for Phase I and Phase II municipalities, construction sites, and industrial stormwater dischargers since the early 2000s. The Phase II MS4 permit took effect in 2003, and covers stormwater impacts from urban land uses and municipal practices covering a large portion of the land area in Massachusetts. However, compliance has been mixed during the extended first permit term, with insufficient progress in reducing impairments of water bodies for stormwater pollutants.

At the same time, Massachusetts has experienced significant flooding and pollution problems associated with stormwater in recent years, and scientists expect the cycles of flooding and drought to become more pronounced as climate change progresses. Massachusetts communities need to take on the difficult task of addressing these problems and upgrading their aging infrastructures to meet this challenge. **This permit is an important step in promoting these urgently-needed changes, and we strongly support its promulgation.**

General Comments

The draft permit represents a significant improvement over the 2003 permit, and is likely to be much more effective in reducing pollution, flooding and erosion caused by stormwater in urbanized areas. The draft permit generally strikes a reasonable balance between prescriptive requirements and flexibility. More specific deadlines and requirements for Illict Discharge Detection and Elimination (IDDE), municipal pollution prevention and good housekeeping, and other requirements clarify what is expected of MS4s and should improve rates of compliance. At the same time, the permit appropriately requires MS4s to develop their own plans for many aspects of the permit. Allowing MS4s to tailor their programs to local circumstances is good practice, given the variation in land use characteristics and current stormwater impacts. This flexibility will encourage communities to prioritize the most urgent problems and the most cost-effective solutions.

- The permit provides **more specific requirements and deadlines** in many cases, which should result in better compliance than was achieved under 2003 permit.

- The permit incorporates **water-quality requirements** that directly address the pollutants discharged in urban stormwater and that will invigorate efforts to correct long-standing exceedances of water quality standards.

- The permit gives permittees **adequate time and substantial flexibility** in choosing approaches to compliance that are most appropriate for local conditions. In response to comments on the 2010 proposed permit, EPA eliminated some requirements that permittees felt were overly prescriptive. In general, the permit emphasizes good planning, implementation and evaluation by permittees, and minimizes the use of rigid, one-size-fits-all approaches.

- **Permit requirements for greater public access and opportunities to comment** on towns' stormwater management programs will increase public support for these programs. Greater public scrutiny will also encourage more effective plans and more consistent implementation.

- **The post-construction requirements will curb land use practices that have led to our current problems in urban areas, and will begin to reverse the effects of many decades of poor stormwater management approaches.** EPA has chosen a balanced and effective strategy, by setting a high standard for infiltration for both new development and redevelopment and providing a safety valve where site conditions make meeting that standard infeasible.

The permit requirements challenge municipalities and their residents and businesses to do better monitoring and planning, to improve implementation, to raise public awareness of stormwater issues, and to design and maintain better stormwater management measures. If communities can meet these challenges, the permit **will result in a sea change in the management of urban stormwater in Massachusetts**.

Ten years into implementation of national stormwater standards, we have now had enough experience with urban stormwater management across the country that the ***costs, difficulty and uncertainty associated with urban stormwater programs have been substantially reduced.***

- **Contractors have gained experience** with stormwater programs under the 2003 permit and the Massachusetts Stormwater Policy, and are better able to support their clients in complying with the new permit.

- Several **regional stormwater consortiums** have been funded by the state under the Community Innovation Challenge Grants program. The Central Massachusetts Regional Stormwater Coalition, for example, has developed numerous shared resources for its member communities that provide training and support compliance with SWPPP, public education and many other permit requirements. These resources are publicly available on their website.

- There have been major investments **in new stormwater approaches** in many cities, including well-documented pilot projects, which have provided valuable information on the effectiveness and costs of various BMPs. These innovative programs have particularly demonstrated the value of Low Impact Development and Green Infrastructure methods in stormwater management.

- There are numerous **professional training programs**, including EPA's webinars, to help permittees understand and comply with the new requirements.

- EPA has also **encouraged or supported a variety of methods to reduce compliance costs** – including guidance, templates, tools, and encouraging collaboration in meeting requirements.

The permit puts **substantial responsibility on permittees to develop, implement and report on plans** for a variety of activities. Many of the requirements simply represent good municipal management practices. Some municipalities' current practices may not be up to these standards, however, and some permittees may therefore struggle to meet all the requirements for plan development and implementation on the proposed schedules. Other municipalities should be able to meet the permit schedules without a problem, especially those that made good efforts to comply with the 2003 permit requirements. **We urge that EPA provide model plans and links to resources for all of the MEP and Water Quality-based planning requirements**, as well as for the Public Outreach and Education requirements, to support compliance with these requirements.

Permittees can take steps to reduce compliance costs and to fund the required investments in stormwater programs and infrastructure. They can take advantage of many support services provided by EPA, MassDEP, local watershed groups and regional planning agencies and others, cooperate with neighboring communities where appropriate, and ensure that developers and other private parties are bearing their fair share of the burden both for preventing and for reducing stormwater pollution. Municipalities can fund their stormwater programs by

establishing stormwater utilities, and by taking advantage of new funding that will be provided by the Water Infrastructure Financing Act.

We applaud the emphasis on LID in the post-construction requirements. The state-of-the-art for LID and Green Infrastructure approaches has advanced significantly, as municipalities, developers, and consultants gain more experience with these techniques. Costs have come down, and practitioners have a better understanding of performance potential and design, build and maintenance practices required to make these techniques effective.[1] The time has come to take advantage of these advances, and strongly encourage use of these more sustainable and cost-effective approaches to achieve stormwater management goals.

While we strongly endorse the overall approach and requirements of this permit, **we have identified some areas where improvements are needed**.

- **The stormwater bylaw requirements should apply to projects as small as a quarter or half an acre.** Most urbanized towns, at least in the Boston area, have very few large development and redevelopment projects, and projects under an acre would not be required to employ *any* stormwater management measures unless they are located in wetland resource areas. This will make it exceedingly difficult for many towns to comply with the proposed prohibition against new and increased stormwater discharges from MS4s. MS4s have the flexibility to provide for simplified permitting where appropriate for smaller projects or projects with lower impacts. Simply excluding all projects less than one acre would allow too much new development and redevelopment to proceed without adequate stormwater management.

- In addition to conducting an annual evaluation of BMP compliance and effectiveness, **permittees should be required to take corrective action** where the evaluation shows that goals and objectives are not being met. An effective iterative approach to improving stormwater management requires that problems be addressed, and not simply identified.

- **MS4s discharging to waters impaired for bacteria or pathogens should be subject to additional requirements**. This includes requiring new development and redevelopment projects as well as retrofits on town-owned properties to implement BMPs that are most effective at reducing bacteria where the waters they discharge to (via an MS4) do not meet bacteria Water Quality Standards. These requirements are consistent with the proposed enhanced BMP requirements for other stormwater pollutants.

- **The compliance schedule for the Charles River Phosphorus TMDL is too long**, requiring only planning during the first five-year permit term. We recommend that the permit require TMDL compliance within 10 years. In addition, some basic pollution prevention, good housekeeping and new development/redevelopment requirements

[1] We believe that the language in the permit Fact Sheet, p. 35, incorrectly suggests that maintenance of LID controls may be more expensive or difficult than maintenance required for traditional stormwater controls.
[2] U.S. EPA, Office of Water, Water Permits Division, Summary of State Stormwater Standards, June 30, 2011 draft.
[3] The 2013 Western Kentucky University Stormwater Utility Survey lists over 1,400 stormwater utilities nationwide. Six states have more than 100 utilities each, and they have been adopted in communities of all sizes. Massachusetts

should be implemented during the first five years, to prevent things getting worse while MS4s develop more extensive plans to reverse problems at existing development.

- **We strongly recommend additional requirements to reduce widespread chloride pollution:** There is a growing body of evidence that widespread and increasing use of salt is contributing to high levels of chloride in our rivers, causing significant ecological harm. We recommend that requirements for development of a Salt Reduction Plan, tracking salt use and addressing application of salt on private development be required of all permittees, and not just for the limited number of waters that have been assessed for chloride impairments.

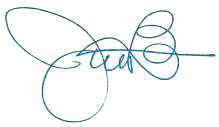
More detailed discussion of these recommendations and additional comments on specific sections of the permit are provided in an Attachment to this letter.

Massachusetts is falling behind many other states in tackling our urban stormwater problems. EPA's 2011 survey of state stormwater standards shows that a number of states have already adopted quantitative retention and treatment standards for all MS4s.[2] Currently, such standards only apply statewide in Massachusetts to sites in wetlands resource areas, through the state's Stormwater Policy. Compared with many other regions, we are only just beginning to adopt stormwater fees and utilities here – an important method for funding the investments required to manage urban stormwater effectively.[3] It is time for Massachusetts to catch up with best practices in its stormwater regulations.

We appreciate the careful work EPA has done to improve on the 2003 permit and the 2010 proposals, based on experience with the 2003 permit and comments on the 2010 proposals. However, the process has taken a very long time. **We strongly support prompt issuance of the final permit**, to end a long period of drift and uncertainty associated with delay in issuing this permit. We urge EPA to work quickly to respond to comments and complete a final permit at the earliest possible date

Thank you for considering our comments on this very important permit.

Sincerely,



Julia Blatt
Executive Director

Cc: Fred Civian, MassDEP

[2] U.S. EPA, Office of Water, Water Permits Division, Summary of State Stormwater Standards, June 30, 2011 draft.
[3] The 2013 Western Kentucky University Stormwater Utility Survey lists over 1,400 stormwater utilities nationwide. Six states have more than 100 utilities each, and they have been adopted in communities of all sizes. Massachusetts currently has only 6 stormwater utilities, despite the passage of state legislation explicitly authorizing local utilities.

Attachment: Comments on Specific Permit Provisions

1.7.2 Notice of Intent

We support the provision for electronic submission and the provision of a standard template. Many NOIs submitted for the 2003 permit were incomplete or uninformative, and did not provide measurable goals.

- We recommend adding a statement that applicants not submitting an NOI using the electronic template be required to use the template for its written NOI or otherwise provide all of the information required by the template, to maintain consistency across permittees in the types of information and level of detail required.
- We support the provision that allows any interested person to petition to have an MS4 be required to submit an individual permit or alternative NPDES general permit.
- An additional section is needed to describe plans for addressing water-quality limited waters without a TMDL, to the extent not covered in the MEP requirements.
- We recognize that some aspects of the SWMP will be difficult to specify within the time allowed for NOI submission. Where components of the SWMP cannot yet be determined, steps to be taken to design those elements should be described in the NOI.

1.10 Stormwater Management Plan (SWMP)

We support the requirement that the SWMP be made readily available to the public, including posting online unless the permittee does not have a website. This requirements should apply to all plans, monitoring results and annual reports as well. Any MS4s that cannot post these documents to a website should be required to make them available at a public library or other easily-accessed place. Requiring that all permit compliance documents be easily accessed by the public is an important factor in making the permit effective. Local environmental groups, watershed groups, and interested citizens can play an important role in encouraging effective plans and monitoring performance.

We support requirements for measurable goals for each BMP, including milestones and timeframes for implementation, defined qualitative or qualitative endpoints, and associated measure of assessment. These specific goals will support more effective monitoring of progress and compliance, by EPA and MassDEP, by the public and by the permittee itself.

We support encouraging permittees to maintain adequate funding sources for implementation of the program. We further r**ecommend that some description of plans for funding be required in SWMP**, including general description of planned or expected funding sources, any plans to develop a stormwater utility, and a schedule for resolving funding uncertainties.

We support the requirement for an annual evaluation of the SWMP, including evaluation of BMP implementation and effectiveness. This evaluation is critical to encouraging an interactive approach to improving stormwater management. **It is also necessary to specify steps to be taken if the evaluations show that some permit goals and objectives are not being achieved.**

Where ambient water quality and outfall monitoring shows persistent problems with bacteria pollution, where tracking Directly Connected Impervious Area and Impervious Area (DCIA and IA) shows little progress or even increased IA, where annual self-evaluations are not informative or persuasive, or there is other evidence of lack of effort or progress, it is critical that permittees be challenged to step up performance. In addition to the annual evaluation, **we recommend that permittees be required to correct any deficiencies identified**. Annual reports should (1) identify permit requirements that the permittee is not currently in compliance with, (2) identify any Best Management Practices (BMPs)that are not achieving the planned outcomes, and (3) describe planned changes in BMPs or other actions to correct course. Clearly, not every BMP will perform as expected, and implementation may fall short for a variety of reasons. The permit needs to encourage honest self-evaluation and iterative improvements, by asking for corrective actions as well as for evaluation. We concur with the permit language changes suggested in comments submitted by the Neponset River Watershed Association, which address the need for such corrective action.

We also recommend that EPA provide detailed guidance on methods for evaluating the effectiveness of each type of BMP, and examples of corrective actions that must be taken where BMPs are not achieving their goals and objectives. The BMPs involved in stormwater management vary widely in their characteristics, from those that have a direct and observable impact on water quality (e.g. IDDE requirements) to those that are very important but less easily evaluated in terms of their ultimate effect on stormwater impacts (e.g. Public Outreach and Education). A catalog of appropriate outcome measures for each BMP requirement, and a checklist of BMP improvements that must be considered where BMPs are not achieving the desired objectives, would be very helpful to permittees in initial development of their SWMPs and in their annual evaluations.

2.1 Water Quality Based Effluent Limitations

2.1.1 Requirement to Meet Water Quality Standards

The current draft permit language provides an overly-broad shield against requirements to comply with water quality standards. Section permit (2.1.1.d) appropriately requires that permittees eliminate conditions found to be causing or contributing to violation of an applicable water quality standard as expeditiously as possible, but no later than 60 days of becoming aware of situation. **This requirement is undermined**, however, by the language in Section 2.1.1 which states that a MS4 is deemed to be in compliance with this general requirement if it is complying with TMDL ***(2.1.1(c), 2.2.2 and Appendix H)*** or impaired waters requirements ***(2.1.1, 2.2.1(b) and Appendix F)*** of the permit. Plans approved to address discharges of stormwater pollutants to waters with a TMDL or impairment may not be sufficient to address a newly-discovered discharge. Instead of being provided a blanket exemption, the permittee should be required to, if feasible, eliminate the condition within 60 days OR review the existing SWMP provisions related to the pollutant of concern, determine whether additional activities or BMPs are required to address the newly-discovered discharge, and revise the relevant SWMP provisions (BMPs and goals) as needed, within 60 days.

2.1 Water Quality-Based Effluent Limitations

We support the addition of the water-quality based requirements to this permit. This approach provides much-needed attention, guidance and clarity to the existing requirement that MS4 discharges not cause or contribute to violations of the Massachusetts Water Quality Standards.

Waters with TMDLs (2.1.1, 2.2.1(b) and Appendix F)

We recommend requiring that these requirements apply to any discharges to waters that become subject to new TMDLs during the permit term. Compliance plans should be developed and SWMPs revised to include the new requirements within the first two years after the effective date of any new TMDL.

We recommend accelerating the schedule for discharges to waters subject to the Charles River TMDL for phosphorus. Appendix F sets a very lengthy compliance period for the Charles River phosphorus TMDL, which requires only *planning* for the entire 5 years of the permit. This means many years would pass before any actual reductions in phosphorus loadings from MS4s would be required. We strongly recommend that the permit require compliance with the TMDL within 10 years and that the milestones for Phases 1 – 3 be adjusted accordingly. Specifically, the Additional Enhanced BMPs described in Appendix H for phosphorus-impaired waters related to Public Outreach and Education, Stormwater Management for New Development and Redevelopment, and Good Housekeeping and Pollution Prevention for Permittee-Owned Operations should be required during the first two years of the permit period for MS4s discharging to waters with phosphorus TMDLs. A lengthy planning period is not required to implement these basic provisions. We concur with recommendations by the Charles River Watershed Association for changes in the Phosphorus Control Plan schedules and milestones.

We recommend strengthening the additional requirements for permittees discharging to waters with a TMDL for bacteria, to include:

- Revising post-construction bylaws or ordinances to require retention of 1" of runoff from all impervious areas for smaller projects, e.g. those disturbing ½ acre or more (or other extension to smaller developments/redevelopments.
- Requiring that new developments and redevelopments prioritize effective BMPs for controlling pathogens in stormwater discharges.
- Emphasizing retrofit opportunities for BMPs that are effective in reducing bacteria in stormwater in inventories of permittee-owned properties.

We concur with comments submitted by the Neponset River Watershed Association that provide detailed recommendations for strengthening the requirements for waters with bacteria/pathogen TMDLs.

Impaired Waters without TMDLs (2.1.1(c), 2.2.2 and App H)

Monitoring of urban stormwater has shown the consistent presence of certain pollutants in urban stormwater, which are targeted in this permit. EPA rightly notes that waters classified as

impaired for a particular pollutant do not have capacity for additional loadings of that pollutant, and that any loadings contributed by the MS4 cannot be authorized under the permit. **We support requiring that extra measures be taken to control individual stormwater pollutants for MS4s discharging to water-quality limited waters**. This is a sensible way to direct efforts at the most serious water pollution problems in individual waterways.

We recommend that the Proposed 2014 MA Integrated List of Waters be used instead of Final 2012 list, if it has been approved by the effective date of the permit.

We support allowing rebuttal of the presumption that specific pollutants are present in MS4 discharges. Where permittees can demonstrate that the target pollutant is not present in their discharges, it is reasonable to provide permittees a mechanism to exempt themselves from the additional requirements of Appendix F.

The specific Appendix F requirements to address each pollutant are generally reasonable. The permit defines additional requirements that are targeted to address the relevant stormwater pollutant of concern. These include additional public outreach and education messages, requirements that the pollutant be prioritized in post-construction stormwater management BMPs and in inventories of retrofit opportunities on permittee-owned properties, and other pollutant-specific practices. In addition, permittees are required in some cases to develop a source identification report and define specific plans to reduce levels of the targeted pollutant in discharges.

We recommend strengthening the additional Appendix H Part III requirements for permittees discharging to waters that are impaired for bacteria/pathogens, to include the additional MEP requirements suggested above for waters with TMDLs for bacteria/pathogens.

We recommend making some requirements for chloride pollutant reduction more broadly applicable. Application of salt in Massachusetts has expanded dramatically during the past two decades – the state now applies a greater tonnage of salt than any other in the United States. There has been no coordinated study on chloride and conductivity in Massachusetts' streams, and the listing of only six streams as impaired for chloride in the Massachusetts Year 2014 Integrated List of Waters vastly underestimates the number of streams impaired by chloride. The few rivers that have long-term records on conductivity (e.g. Charles, Mystic) show significant increases of conductivity associated with salt application during the past decade. Research from outside of Massachusetts is shedding greater light on the problem.[4] Given the broad application and well-documented toxicity of this pollutant, we recommend that all MS4s be subject to the Appendix H chloride requirements, unless they demonstrate the lack of chloride in their discharges through monitoring. Appendix H Part IV requirements for chloride should be included in the standard Good Housekeeping requirements in 2.3.7 and also be incorporated as requirements in post-construction bylaws in 2.3.6. See specific recommendations for Sections 2.3.6 and 2.3.7 below.

[4] Kaushal et al. (2005) highlights that urbanized streams of Baltimore with >35% impervious cover are consistently reaching chronic toxicity levels of 230 mg/l chloride – implications are that cities further north with greater snowfall are likely even more impaired at the same impervious cover. (Corsi et al. 2014) assessed 30 monitoring sites on 19 streams from throughout the United States and found that 29% of sites exceeded the US-EPA chronic water-quality criteria on an average of more than 100 days per year.

2.1.2 Increased discharges

This section notes that any increased discharges must be authorized under the Massachusetts antidegredation regulations 314 CMR 4.04 and that associated conditions must be incorporated in the MS4 permit by reference. **We recommend that any such conditions or requirements also be documented in SWMPs and evaluated in annual reports.**

2.3 Maximum Extent Practicable (MEP) Requirements

We support the provision allowing shared implementation of one or more of the minimum control measures (2.3.1.b), with the stipulation that the permittee remains responsible for compliance with all permit obligations. There are many areas in which collaboration among MS4s can reduce the cost of or improve the effectiveness of stormwater management activities, including joint outreach and education and sharing monitoring equipment.

2.3.2 Public Outreach and Education

We support the more specific requirements for outreach and education for specific target audiences. Requirements for municipalities to begin a public outreach campaign targeting not just their residents, but also commercial businesses, institutions and industries, will help all parties realize the role they can play in reducing stormwater pollution. Requiring evaluation of the effectiveness of specific measures, before subsequent outreach to the same target audience, will encourage permittees to make incremental improvements over the permit period.

2.3.3 Public Participation

We recommend clarifying that there should be opportunities for the public to review and comment on the NOI, on the SWMP and on annual reports, including self-evaluations, as well as opportunities for the public to participate in implementation through volunteer monitoring, clean up days, etc. The permit should require that all permit-related documents be readily available to the public, and should encourage public input on the SWMP, the results of annual self-evaluations, and other components of the annual report. The goal of public participation is to involve residents and local businesses actively in developing and taking a role in implementing the SWMP, which goes beyond occasional involvement in one or more isolated implementation activities. This involvement will encourage more effective programs, better performance, and stronger public support for SWMPs.

2.3.4 Illicit Discharge Detection and Elimination (IDDE)

We support the more detailed IDDE requirements in this permit. Requirements to prioritize, investigate and eliminate the very serious problem of illicit connections to storm drains (such as illegal tie-ins of sanitary sewer pipes) will reduce dangerous pathogen levels and help restore designated uses such as swimming and boating. The draft permit:

- Recognizes that different catchments present different threats to water quality, and reflects the need to prioritize investigations and remedial actions.

- Ultimately requires investigation in every catchment. This ensures that contamination throughout the system is identified and corrected. Some contamination may be contributing to pollution of groundwater or otherwise not showing up in outfall monitoring. Investigations should therefore not be limited to catchments for "problem" outfalls, although outfall monitoring provides valuable information for prioritizing investigations.
- Sets deadlines for investigating catchments. These deadlines will help ensure continued progress.

We recommend requiring that system maps be provided in GIS format (2.3.4.6.b), unless the permittee certifies that they lack access to GIS mapping capability at reasonable cost. Maps provided in GIS format are much more useful to EPA and to outside parties, as well as to the permittee itself, and are easier to update.

We recommend that MS4 managers be encouraged to incorporate water quality data from other agencies and environmental groups in their prioritization of catchments (2.3.4.7.c), as suggested in comments submitted by the Mystic River Watershed Association.

We recommend that permittees be required to provide in annual reports any screening data completed under the 2003 permit that supports request for exemption from 2.3.4.8.a screening/sampling requirements

Where a permittee is currently under an enforcement order from EPA or MassDEP and has an approved IDDE plan under that order, **the permit should clarify that that the permittee is required to meet all the new requirements of Section 2.3.4, or to describe in their SWMP how their current approved plan is as effective or more effective** than the requirements of Section 2.3.4.

2.3.5 Construction

We recommend that permittees be required to update their existing ordinances or regulatory mechanisms or create new ordinances/regulatory mechanisms within 2 years of the permit effective date, as needed to incorporate all of the requirements of this Part.

We endorse the Section 2.3.5(c)v requirement for procedures for receiving and considering information from the public during site plan reviews.

We recommend that some of the requirements of Section 2.3.5(c)v be moved to the Section 2.3.6 requirements for Post-Construction, or be repeated in both Sections 2.3.5 and 2.3.6.. These include requirements for site plan review and evaluation of opportunities to use LID and green infrastructure. These requirements are highly relevant to the design of effective post-construction stormwater management.

2.3.6 Stormwater Management in New Development and Redevelopment

We endorse the requirement for retention of 1" of runoff for all development and redevelopment sites, and the application of that requirement to the entire site area. This provision is critical to preventing future development and redevelopment from making conditions worse. This requirement ensures that the first flush, which contains the highest pollutant levels, is retained. It will increase the rate of infiltration, which will maintain underground water levels and base flow. This approach appropriately encourages redevelopers to evaluate their entire site and to treat site stormwater holistically and comprehensively to improve existing conditions. This is critical if redevelopment is to result in significant reductions in stormwater runoff and pollutant loadings – often the only opportunity for real improvements in many densely-developed areas.

Some concerns have been expressed about differences between the current MA Stormwater Policy Requirements and the 1" retention requirement in the draft permit. Critics note that municipalities and developers are now used to applying the MA Stormwater Policy requirements, and they oppose going beyond those requirements in the MS4 permit. This is not a good argument for halting progress in regulatory requirements. We note that there was substantial opposition to the MA Stormwater Policy at the time it was adopted, with critics arguing that the infiltration and other requirements would be impossible to meet. Yet as is so often the case with new regulations, a new standard of practice was established by the MA Stormwater Policy and the costs of meeting standards came steadily down with experience. The MA Stormwater Policy has played an important role in advancing stormwater management in Massachusetts, but it has not adequately addressed the problem of urban stormwater pollution. The 1" standard is now required by the Boston Water & Sewer Commission and the Town of Franklin, among others, and very few exceptions have been necessary.

We also endorse the provision that allows for treatment equivalent to that provided by retention, where specific site conditions make compliance with the 1" requirement infeasible. Infrequently, it may be infeasible to achieve a 1" retention standard, due to soil conditions, high groundwater levels, or contamination. It makes sense to provide an alternative compliance path for these sites, rather than to preclude new development entirely or discourage redevelopment, thereby freezing in place the poor stormwater management practices of the past. Section 2.3.6.a.ii(a) **should make it clear that treatment in lieu of 1" retention is allowed only if specific site conditions make full 1" retention not feasible, and retention should be used to the maximum extent feasible before relying on treatment.** We concur with the revisions suggested by the Charles River Watershed Association for this section.

We also suggest that EPA allow offsite compliance options for MS4s subject to nutrient TMDLs as alternatives where site conditions make full compliance with the 1" retention standard infeasible. Developing an effective trading system and mitigation provisions will require careful design to ensure true equivalence in the level of pollution and runoff control provided. However, allowing more options for meeting performance standards can result in substantially better environmental results at lower cost. We recommend that EPA develop guidance for offsite mitigation, and for permit requirements that address a single pollutant (e.g. phosphorus) with an aggregate load requirement, watershed-wide trading rules.

EPA has chosen an overall effective approach, by setting a high performance standard and providing offsite alternatives and requiring treatment when site conditions make meeting that standard infeasible. The permit should require 1" retention to the maximum extent feasible; allow for offsite mitigation or trading for the volumes that cannot be feasibly retained onsite; and finally, provide for equivalent treatment only where a combination of onsite retention, offsite mitigation or trading cannot meet the full 1" retention requirement. This is a far better approach than setting a lower standard for all sites where some but not all sites would have difficulty meeting the standard, and simply waiving requirements where site conditions make full compliance with the 1" infeasible.

The Section 2.3.6.a.ii(b) prohibition on infiltration BMPs at industrial sites is too broad. We recommend that this restriction be limited to industrial sites where there is processing or materials storage outdoors that might be exposed to precipitation or result in spills that would be exposed to precipitation.

We recommend a requirement that bylaws include pollution prevention requirements for new development and redevelopment. These should include requirements similar to those specified for permittee-owned facilities in Section 2.3.7. They **should also include source-reduction requirements to reduce chloride pollution**, including descriptions of winter deicing practices, prohibiting disposal of snow in surface waters, and prohibiting exposed (uncovered) storage of salt or deicing chemicals.

We recommend that EPA provide additional guidance on how BMPs should be chosen and constructed. EPA's BMP Performance Extrapolation Tool (PET) covers only some of the pollutants found in stormwater – Total Phosphorus, TSS and Zinc (with Total Nitrogen to be added). Additional guidance is needed on selection of methods for verifying equal to or greater treatment performance for other stormwater-related pollutants (bacteria, oil and grease (hydrocarbons) chloride, and metals). In addition, the permit should allow for use of other resources for demonstrating performance, with the proviso that the applicant verify that any guidelines used that are not consistent with EPA's BMP PET are more up-to-date or relevant to the specific site-conditions than those incorporated in the BMP PET.

We support requiring permittees to assess local practices and requirements that affect impervious cover (2.3.6.b) and use of green roofs, infiltration BMPs, and water capture/reuse (2.3.6.c), as well as opportunities to modify or retrofit the permittee's property and infrastructure to reduce impervious area (2.3.6.d). These requirements will remove local barriers to more cost-effective approaches to stormwater management and will promote more proactive management of municipal stormwater. **We recommend that all assessments, recommendations and schedules be included in the SWMP as well as in the annual reports,** or otherwise be made publicly available. In the current draft permit, only the 2.3.6.b report on local street design and parking lot requirements that affect impervious cover is required to be included in the SWMP.

We request that EPA provide training, technical assistance, guidance or model reports and methodologies for these evaluations, including by working with watershed associations and regional planning agencies. The quality and effectiveness of these assessments will be substantially enhanced by strong technical support.

We also support requiring tracking of IA and DCIA (2.3.6.d)**.** Tracking these aggregate results will help permittees and EPA assess whether their programs are in fact resulting in a decrease in DCIA. The adage that "We manage what we measure" applies to this requirement – without such tracking metrics, it would be difficult to assess the overall effectiveness of a permittee's SWMP.

2.3.7 Good Housekeeping

We support the requirements for enhanced stormwater management and pollution prevention for municipal facilities and operations. Many of the requirements of this section are based on good asset management and operating practices for any municipal function. Where permittees are required by the permit to upgrade their normal infrastructure planning, inspection, maintenance, pollution prevention and other good housekeeping practices, they will experience the improved overall functioning as a side benefit.

We recommend that some of the chloride reduction requirements described in Appendix H be made part of the Good Housekeeping MEPs, rather than being limited to MS4s discharging to waters classified as impaired for chloride. Specifically, the standard Good Housekeeping requirements should include tracking and reporting of types and amounts of salt used for all permittee-owned and maintained surfaces; training for staff and contractors on appropriate application rates and best practices; and preventing exposure of salt storage piles to stormwater.

4.0 Program Evaluation, Record Keeping, and Reporting

See comments on Section 1.10 regarding recommendations for making program evaluations more effective.

Massachusetts Watershed Coalition
PO Box 577, Leominster, MA 01453 978.534.0379 mwc@commonwaters.org

December 26, 2014

Newton Tedder
US EPA – Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

Re: Comments on Draft MS4 Permit

Dear Mr. Tedder:

The Massachusetts Watershed Coalition welcomes the opportunity to comment on the EPA's Draft General Permit for Small MS4s in Massachusetts. We strongly support the proposed rules that can renew the health of streams, lakes and water supplies across the state.

The MWC partners with community groups, municipal officials, state and federal agencies to protect and restore local waters and ecosystems. Our programs focus on stormwater pollution, low impact development and sustainable watersheds. MWC has helped many communities to adopt stormwater bylaws and regulations. We also assist homeowners, schools, churches, businesses, youth groups and town boards to design and install stormwater solutions. MWC is heartened by the EPA draft 2014 MS4 permit that is an essential step forward in the evolution of nonpoint source pollution control.

Community surveys by MWC and others find people are very concerned about water pollution and survey respondents strongly support measures to protect cherished brooks, ponds and lakes. Municipal boards and departments are well-aware of these concerns and are eager to prevent and reduce polluted runoff. Local builders and businesses know clean water is vital and will help communities avoid stormwater damages. As you know, cost and control are central matters for community-wide efforts to improve stormwater management.

The six MCMs required for municipal Stormwater Management Programs (SWMPs) supply a proactive means to reduce stormwater damages. There are constant opportunities to prevent and reduce polluted runoff through the community planning and development process. Many opportunities can be realized as people learn how streets can be disconnected from streams.

We praise the public education and public participation MCMs that can inform and engage more people in stormwater management. Likewise, we strongly support the IDDE, the Construction Site Control, and the Good Housekeeping MCMs, which can enable municipalities to eliminate pollutant sources at minimal expense. We also endorse the Post Construction MCM provisions including:

- Design of BMPs to remove pollutants from the first inch of storm runoff
- Installation of BMPs in accord with MassDEP's excellent Stormwater Handbook
- Long term operation and maintenance plans for structural BMPs
- Permittee review of development guidelines to limit creation of impervious cover
- Encouraging permittees to consider/promote green infrastructure practices

Additionally, we are especially enthusiastic about the provisions of 2.3.6 d regarding Directly Connected Impervious Areas. These requirements can help people know where the sources of polluted runoff occur, thereby enabling communities to select the best places to capture more pollutants for less cost. Since many municipalities are unaware of the DCIA maps and statistics supplied by the EPA stormwater website, it would be helpful to further describe these tools in the final MS4 permit. This description could also explain how communities can use the Simple Method to estimate DCIA pollutant loads. MWC has applied the Simple Method to approximate the loading from street catchment areas. This simple technique can help communities estimate pollutant loads and determine priorities for BMP retrofits of MS4 properties and infrastructure.

Much polluted runoff (not all) can be easily halted at low cost. MS4 guidance could stress use of inexpensive retrofits (i.e., it can be as beneficial to capture TSS for a dollar a pound as it is to pay $100 a pound to capture TSS through expensive BMPs). MS4 guidance can also address BMP maintenance costs and explain how the removal of sources of nonpoint pollution is a win-win for communities and local taxpayers.

We urge more use of plain talk the general public understands. MS4 outreach can shift attention from technical terms to the main point that billions of pounds of pollutants are unknowingly dumped into New England waters by millions of homeowners, businesses and well-intended municipal officials and personnel. The decades-old struggle to halt nonpoint pollution will move forward faster when people know road runoff is killing fish, as well as feeding invasive weeds and toxic algae blooms that pose health risks or spoil water-based recreation for their families.

We applaud MS4 permit provisions and the public benefits to be achieved, but are concerned about delay in permit issuance. We understand there are myriad legal, logistical and political issues that must be resolved to facilitate new rules. Please do not wait until 2016 to explain the working details of the MS4 permits. The coming year can be well-used to better inform people about the intent and positive outcomes from these rules. Clean water advocates are ready to assist EPA to help communities understand and be prepared to implement MS4 permits.

Thank you for your consideration of these comments.

Sincerely,

Ed Himlan

Ed Himlan
Executive Director

Kevin A. Sheppard, P.E.
Public Works Director

Timothy J. Clougherty
Deputy Public Works Director

Frederick J. McNeill, P.E.
Chief Engineer

Commission
Raymond Hebert
Hal Sullivan
Rick Rothwell
Bill Skouteris

CITY OF MANCHESTER

Department of Public Works
Environmental Protection Division

2/25/2015

US EPA – Region 1
Attn: Newton Tedder
5 Post Office Square – Suite 100
Mail Code – OEP06-04,
Boston, MA 02109-3912

#15-05-PS

Re: Comments to the Massachusetts Draft Small Municipal Separate Storm Sewer System (MS4) NPDES

Dear Mr. Tedder:

The City of Manchester has reviewed the Massachusetts Draft Small Municipal Separate Storm Sewer System (MS4) NPDES and offer the following comments,

1. Page 2, section I, Stormwater discharges to the subsurface subject to state Underground Injection Control (UIC) regulations, it refers to structural controls that dispose of Stormwater into the ground. As all of the current BMPs are methods that have been thoroughly tested for removal capacities, none of the BMPs have been evaluated for pollutant transfer through groundwater base-load movement. The UNH Stormwater Center studies have exhaustively reviewed removal capacity of various structures. A range of percentages of nutrients and metals are removed from the Stormwater that enters the treatment unit to the stormwater that exits the treatment unit. What is lacking is the impact the infiltration has on base-load aquifer and the eventual movement and re-entry back into the water way. No down–gradient wells were dug and the groundwater tested before the implementation of these structures and no subsequent measures were made to determine the shift of pollutant concentration from the surface water to the moving groundwater. It appears logical the

surface mitigation “BMPs” transfer the pollutant load into the subsurface, but delay the eventual release of these pollutants due to soil characteristics, particle adsorption, and attenuation principles. It is not out of the realm of possibilities that the pollutant loads concentrated in the aquifer base-load will eventually be re-released back into the very water ways the BMPs were expected to protect in the first place. It could be expected that a slight gradual reduction in water way pollutant is seen in the first few years with a flattening in concentration in subsequent years with an even bigger increase in later years. It is imperative that the UIC regulations take into consideration groundwater movement, pollutant transfer and mass balance of removed pollutants before assuming that BMPs are the answer to current stormwater concerns.

2. Page 3, Section 1.4, Non-Stormwater Discharges outlines a defined category from a. through r. Stormwater concerns are the runoff from streets, the fertilizers from lawns, runoff from buildings and washout of nutrients from stagnant wetlands. When one reviews this list it covers most, if not all, Stormwater concerns. The only difference is the non-stormwater discharge is now created by manmade actions vs. rainfall. Rainfall is a naturally occurring condition. The regulated communities need a listing of Stormwater related discharges as there is definitely confusion between non-stormwater discharge listing and what could potentially be Stormwater.

3. Page 6, Section 1.9.1, Documentation of Endangered Species, is a huge burden to place on small communities. It should be the obligation of the EPA to forward any NOI request to the State and Federal Fish and Wildlife services and they can attach an addenda to the final permit of what the endangered species are in their jurisdiction and where there habitat is located.

4. Page 7, Section 1.10, SWMP refers to Appendix B. Appendix B indicates under B.1, Duty to Comply that the permit holder must comply with the effluent standards and prohibitions established under 307(a) of the CWA. These standards and prohibitions were not established or intended for non-point source discharges such as urban runoff, but made for drainage pipes and manmade ditches. Many Urban Ponds are impacted solely from street

runoff without the contribution of concentrated Stormwater from conveyance drainage pipes or manmade ditches and should be clearly excluded from this requirement.

5. Page 9, Section 2.0, Non-Numeric Effluent Limitations can't be developed until a determination is made as to how much pollutant concentration structural BMPs contribute to the water quality over the long term. These concerns are outlined in Section 1.

6. Page 10, Section 2.1.1, Requirement to Meet WQ Standards does not take into account contribution from adjacent areas outside the jurisdiction of the MS4 Permittee or from non-stormwater classified contributions. The individual parameters may indicate a potential problem, but the reality is that the source of the problem may be an unregulated entity outside the MS4 program. Agriculture and private residences are exempt under stormwater regulations. However through fertilization, car washing activities and general practices associated with each (as outlined in the non-stormwater listing) will show the largest impact to ammonia, potassium, phosphorus, surfactants, metals and pH. Conductivity will also increase because of the salts associated with these exempt stormwater sources. A watershed approach where all communities contribute to the solution via load allocation based on either population or land mass would offset the problem of interjurisdictional contribution. This draft MS4 permit does not account for non-MS4 communities, state and federal highways, and exempt entities. Until all entities are regulated, especially agriculture, it will be impossible to show improvements to water quality criteria on a consistent basis.

7. Page 17, Section 2.2.2, Discharges to certain WQ limited waters. The second paragraph states, *"If the discharge from as MS4 to a water quality limited waterbody where pollutants typically found in Stormwater (nutrients (nitrogen or phosphorus), solids, bacteria/pathogens, chloride… the Permittee shall comply with the provisions in Appendix H."* Shall is a mandatory statement, yet the opening paragraph of Appendix H reads, *"The estimates of nitrogen load reductions resulting from BMP installation are intended for informational purposes only and there is no associated Permittee-specific required nitrogen load reduction in the Draft Permit. Nitrogen load reduction estimates calculated consistent with the methodologies below may be used by the Permittee to comply with future permit*

requirements providing the EPA determines the calculated reductions are appropriate for demonstrating compliance with future permit requirements." These two statements are in total conflict with each other. The draft permit dictates that the Permittee shall comply with Appendix H and Appendix H indicates that the load reductions are intended for information only and not associated with any Permittee-specific load reduction in the draft permit. Appendix H even goes further to indicate that this will only apply to future permit requirements (wording indicates that it only applies to the next issued permit which is at least five-years after from the issuance of this final permit. The draft defined the iterative approach addressing pollution reductions outlined in Appendix H, yet Appendix H indicates the Permittee only need comply with future permit requirements providing the EPA determines the calculated reductions are appropriate for demonstrating compliance with future permit requirements. In all the workshops attended the regulatory community indicates that pollutant reductions are only target values, and if the BMP proves not to meet these values, more reduction will be necessary to meet TMDL goals. This is not consistent with the determined calculated reduction as outlined in Appendix H. The permit lists 75 communities that fall under the Nitrogen impairment. It would be hard for these communities to determine which is the applicable route to take with the conflicting wording regarding compliance.

8. Page 22, Section 2.3.1, Control Measures creates a legal nightmare for communities when looking at inter jurisdictional issues. The second bullet describes control measures from one community to be at least as stringent as the corresponding community. This would require an intermunicipal agreement between the towns with detailed legal wording. Many towns that have had to develop inter-municipal agreements due to regional plants have in cases taken years to come to an agreement. The final bullet indicates if one community fails to fulfill the compliance of its permit obligations that the compliant community now becomes responsible for the non-compliant portion of the non-compliant community's flow that passes through the compliant community. Many urban ponds receive watershed runoff from outside their jurisdictional boundaries and this may be from other MS4, non-MS4, and state and federal roadways. We have seen this in many NH communities and have made comment to the NH MS4 in this regard. There are concerns with naturally occurring metals (aluminum being the biggest), deposition from acid rain that MS4 communities will not be

required to reduce, agricultural discharge from both small and large farms (only cattle feed lots are regulated) and the interstate highway systems. A realistic determination of contribution from state-wide sources should be an appendix to this draft permit. This would encourage MS4 communities to do their part, outline the total contribution by non-MS4 regulated entities, and allow the regulatory agencies to set reasonable targets for MS4 regulated communities that deals with their contribution and not all the extraneous contribution. It may be that a targeted watershed approach with slow and steady progress would be a better solution that targeting a handful of communities and saddling these with the burden of cleaning up all the water that passes through their jurisdiction. There has yet to be an answer to these concerns as voiced in the NH MS4 comments that were submitted over two years ago.

9. Page 22, Section 2.3.2, Public Education works for three out of the four groups. Business, developers and industrial facilities already practice good environmental governance and they will be receptive to this outreach. Residences are generally governed by the educational status of the home owner. The City of Manchester has over 25,000 accounts where outreach has been ongoing for several years. Residents will always choose to use a cheaper fertilizer (usually the less environmental friendly version), will not spend economic resources to do onsite infiltration, do not have the scientific knowledge or want to spend the money on chlorine neutralizing pool chemicals and will continue to work on their vehicles in their driveways to save money from expensive automotive shops. Manchester has expansive kiosks at the four urban ponds and the Crystal Lake swimming area that we have maintained since 2000. A couple of times the City set up a survey booth at the swimming area and one of the urban ponds that has a walking path around the entire pond. The kiosk outlines the types of fish in the pond, the types of vegetation, invasive species, pond facts, history of the pond and a pond map. When the people who frequent the pond on nearly a weekly basis or more throughout the summer were asked what information was contained in the kiosk, few knew more than one item, most knew the kiosk was there, but never stopped to see what it contained for information, and few frequent users didn't even know the kiosk existed. If people who frequent a pond (because they get joy out of it being there) have exposure to an information board over the course of about 26 weeks and with the majority not knowing what the board contains, how can one expect a couple of annual mailings to

home residences to produce any better impact. Item e. of this section to show evidence of progress should only be geared to the three receptive groups. If there are successful programs out there, then EPA needs to include an attachment to demonstrate where it has worked and what the measures that were used that showed progress.

10. Page 26, Section 2.3.4.5 Outfall Inventory is a good step that all communities would like to have completed, however the time frame outlined in item b. and c. are too short in duration. Section b provides for a one-year (two-years for new permittees) to complete. Towns like Taunton, Fall River and Carver all have 40 or more square miles of land to inspect. As these are MS4 communities they have one-year to complete the dry weather screening process to include sensory observations and sampling (if necessary). The process is made more cumbersome by the required Vulnerability System Factors required investigation outlined in 2.3.4.7, Section e(i) also requiring yearly reporting. The City of Manchester, NH has 35 square miles of land mass and we are required to do two inspections every five-year permit cycle and find that to be a burdensome compliance requirement without the vulnerability system factor component. It would be a challenge to find appropriate staff if Manchester had to do this requirement annually. Once every three-years has proven effective here in New Hampshire.

11. Page 32, Section 2.3.4.7, Written IDDE Program Item d(i), refers to the New England Bacterial Source Tracking Protocol. The protocol relies primarily on visual observations and the use of field test kits and portable instrumentation during dry and wet weather screening investigations of Stormwater outfalls. As outlined in comment 10 above, a reference is made to the tracking protocol, but item c. clearly states sensory observations. Unless one has time to dig into sections, cross references and ultimately documents, it is evident that the magnitude of certain requirements is being hidden deep within the appendices. Not only are kits and meters required, but when human sanitary sewage is confirmed a sample must be collected for Pharmaceutical and Personal Care Products. Screen also requires surfactant, ammonia, TRC and bacterial analysis in conjunction with visual assessment. Quantitative analysis is required for acetaminophen, caffeine, cotinine, carbamazepine and 1,7-dimethylexanthine. Also associated QAPP protocols must be developed and used for each compound. This goes far and above the requirements of the 303(d) and 305(b) listings

as none of these parameters are listed for impairment. This whole protocol needs to be revised and conform to the intent of MS4 screening.

Respectfully submitted,

Ricardo Cantu – Superintendent

Cc: Kevin Sheppard, P.E.
Fred McNeill, P.E.
Rob Robinson, P.E.

February 27, 2015

Newton Tedder, US EPA – (OEP06-4)
5 Post Office Square – Suite 100
Boston, MA 02109-3912

RE: Comment on the Draft Massachusetts MS4 Permit

Dear Mr. Tedder:

As the Regional Planning Agency for Metro Boston, MAPC works with municipalities on a broad range of planning issues, including water resources and transportation, with an overall mission to promote smart growth , preserve and enhance our natural resources, and encourage regional collaboration.

In the area of water resources, over the last decade MAPC has provided technical assistance to many communities to support their efforts to implement Stormwater Management Plans under their MS4 permits, with a focus on adopting and implementing local bylaws to manage stormwater sustainably using low-impact development (LID) techniques.

One of our key transportation initiatives focuses on helping municipalities to adopt Complete Streets policies, which promote green transportation by improving accommodation of pedestrians and bicycles. Achieving this goal often involves the addition of bicycle lanes and/or sidewalks within existing roadway rights-of-way. Complete Streets encourage more walking and biking, reduce vehicular trips, cut greenhouse gas emissions and other pollutants, and improve public health.

Although we generally support the improvements to stormwater management that would result from the draft MS4 permit, MAPC is concerned that the permit as proposed could have an unintended detrimental effect on the ability of communities to advance their green transportation goals through implementation of Complete Streets guidelines. Our concern focuses on the draft MS4's requirement that all projects retain or treat one inch of precipitation. This provision is not consistent with Massachusetts Stormwater Standards, which require treatment of varying rainfall amounts in relation to a site's soil conditions. Such a "one size fits all" approach does not take into account the significant constraints to implementing stormwater recharge on sites with poor soils. In addition, rights-of-way have even more space constraints than typical development sites, and usually have other utilities co-located within them. In addition, under the Massachusetts Stormwater Standards, redevelopment projects are required to comply to the "maximum extent practicable," which recognizes these and other site constraints.

To address this potential conflict between two laudable public policy goals – clean water and green transportation infrastructure – we request that EPA revise the MS4 permit requirement to provide more flexibility to accommodate Complete Streets projects. A standard similar to the

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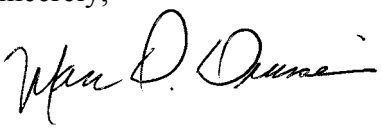
existing redevelopment requirements of the Massachusetts Stormwater Standards would be more appropriate for these projects, and provide a reasonable balance between two important environmental goals.

Thank you for your consideration of these comments.

Sincerely,



Marc D. Draisen
Executive Director

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February 27, 2015

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Via Email: Tedder.Newton@epa.gov

Re: **Comments on Draft Massachusetts Small MS4 General Permit**

Dear Mr. Tedder:

On behalf of Mass Audubon, I submit the following comments on the U.S. Environmental Protection Agency's (EPA) draft General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts. This permit will update authorizations for many communities to discharge stormwater under the National Pollution Discharge Elimination System (NPDES) pursuant to the federal Clean Water Act.

These comments are focused on the important role that Low Impact Development (LID) can play not only in cleaning up stormwater pollution but also for a host of other benefits to our natural and human communities. Mass Audubon is a member of the Massachusetts Rivers Alliance, which is providing more detailed comments on many other aspects of the permit.

Mass Audubon supports the permit overall, while recognizing that room remains for refinements and that flexibility will need to apply in administering the final permit. We also recognize that municipalities are faced with tremendous challenges in addressing not only the needs for upgrading their aging water, wastewater, and stormwater infrastructure but also many other demands on their limited finances. The 2014 draft permit is improved in many respects over previous versions. It includes specific requirements to better address the pollutants that are causing violations of water quality standards, while providing adequate time and substantial flexibility for municipalities to apply approaches most appropriate for local conditions. It also improves public access to information and opportunities for input into their communities' stormwater management programs. This permit is overdue, and Mass Audubon urges EPA to proceed expeditiously with finalizing it.

Context – Stormwater Management Challenges and Climate Change

A great deal of progress has been made in cleaning up waterways nationally and in Massachusetts over the past several decades. This progress has been particularly apparent in regards to point source discharges from industry and wastewater treatment facilities. Progress on cleaning up stormwater-related pollution has been much slower, and in many locations the problem is getting worse rather than better due to runoff from ever increasing amounts of impervious surfaces across the landscape. EPA Region 1 has found that stormwater is implicated in at least 55% of the violations of water quality standards in Massachusetts' waterways.

Meanwhile, climate change is causing an increase in intense storm events, while also leading to more frequent droughts. A new approach is needed to address these challenges.

Low Impact Development

Communities need a cost-effective way to support sustainable economic development. We urge that the final permit and related EPA programs strongly support broad adoption of land use plans and rules that promote the preservation and restoration of green infrastructure and the use of LID techniques[1]. We need to shift our thinking about land and water management. We need to move away from viewing stormwater as a waste product that needs to be funneled downstream as quickly as possible, and instead work with the landscape to capture precipitation, keep it as clean as possible, and recharge our aquifers and streams. Water is too precious a resource to waste, and LID offers tremendous opportunities to take a new approach that works with our natural resources in ways that support our economic as well as environmental health.

First and foremost, more attention needs to be paid to the free ecosystem service functions and values provided by natural green infrastructure such as forests and upland vegetated buffers around wetlands and waterways. These areas provide vital functions for capturing, filtering, and infiltrating precipitation across our watersheds. By planning ahead for growth and development, and modifying local land use rules to support LID designs and techniques, communities can maximize the preservation of this natural infrastructure while minimizing the creation of new impervious surfaces and stormwater outfalls. And LID retrofitting for existing impervious surfaces or on redevelopment sites can help restore some of these functions and capture stormwater for productive uses such as landscape irrigation.

Mass Audubon's *Losing Ground: Planning for Resilience* report (2014, www.massaudubon.org/losingground) found that the rate of land development has slowed in recent years to 13 acres per day compared to over 40 acres per day in the 1980s and 90s. This represents considerable progress, but it also reflects a period of time (2005-13) that included the great recession when development was at a low point. We are already seeing the rate of development picking up, and it is important that this new development be done in a more efficient manner that better preserves natural green infrastructure. If we continue to build sprawling developments that consume large areas of forest while creating lengthy roads and

[1] A new report just issued documents the need for regulatory agencies to further incentivize the use of LID (aka Green Stormwater Infrastructure) and improvements to the compilation of data collection and sharing. *Accelerating Cost-Effective Green Stormwater Infrastructure: Learning From Local Implementation,* February 2015, Nell Green Nylen and Michael Kiparsky, UC Berkeley School of Law.

stormwater outfalls that communities cannot afford to maintain, this is not sustainable environmentally or economically.

Municipalities should be strongly encouraged to adopt conservation subdivision design and other project design regulations that provide more flexibility in dimensional requirements; reduce the length of roads and driveways; allow for narrower roads; minimize parking area requirements; and encourage use of pervious materials rather than regular pavement. Unfortunately, many existing local land use regulations effectively require excessive amounts of land alteration and creation of impervious surfaces, or allow those approaches by-right while making more creative LID designs difficult or uncertain to permit. More needs to be done to encourage and support communities in updating their land use rules to more thoroughly embrace LID as the preferred approach for all new and redevelopment. Local regulations can also require retention of trees and other existing natural vegetation on development sites and minimize the amount of cut and fill that alters natural topography and drainage characteristics.

LID can avoid or at least minimize the creation of new outfalls on many development sites, and for redevelopment or retrofitting can effectively disconnect existing impervious surfaces from the MS4 outfalls system.

LID techniques are not only becoming more cost effective to construct, but they can help the community make progress toward the required water quality improvement targets. Where development proceeds with traditional catch basin and piping systems this creates new outfalls or additional contributions to existing ones, which then often become part of the community's MS4 responsibilities. Full use of LID on new development can avoid and minimize these increased burdens, which otherwise may mean the community is always playing "catch-up," since any improvements to existing systems continue to be offset by new contributions of additional stormwater flows from new development. The fact sheet for the draft permit mentions that LID techniques require maintenance costs. It is true that maintenance is required for LID stormwater BMPs (although not, generally, for retention of natural landscapes). But maintaining traditional piping, catch basins, and detention areas is expensive, and often inadequately funded. In many instances, an LID approach can be cost-effective for the developer, the municipality, and property owners.

LID and Green Infrastructure also have a host of other environmental, community quality of life, health, energy, and property value benefits. There is ample evidence of this, as well as examples from across the nation that municipalities can learn from. The following list is a short selection of the many references, guides, and case studies available:

American Rivers, WEF, American Society of Landscape Architects and ECONorthwest, 2012. *Banking on Green: A Look at How Green Infrastructure Can Save Municipalities Money and Provide Economic Benefits Community-Wide*. http://www.americanrivers.org/assets/pdfs/reports-and-publications/banking-on-green-report.pdf

Center for Neighborhood Technology and American Rivers. 2010. *The Value of Green Infrastructure: A Guide to Recognizing its Economic, Environmental, and Social Benefits*. http://www.cnt.org/repository/gi-values-guide.pdf

University of NH Stormwater Center, 2011. *Forging the Link: Linking the Economic Benefits of Low Impact Development and Community Decisions.* http://www.unh.edu/unhsc/forgingthelink

U.S. Environmental Protection Agency reports and case studies:

Case Studies Analyzing the Economic Benefits of Low Impact Development and Green Infrastructure Programs (2013) http://water.epa.gov/polwaste/green/upload/lid-gi-programs_report_8-6-13_combined.pdf

Getting to the Green: Paying for Green Infrastructure -- Financing Options and Resources for Local Decision Makers (2014) http://www2.epa.gov/sites/production/files/2015-02/documents/gi_financing_options_12-2014_4.pdf

Enhancing Sustainable Communities With Green Infrastructure: A guide to help communities better manage stormwater while achieving other environmental, public health, social, and economic benefits (2014) http://www.epa.gov/smartgrowth/pdf/gi-guidebook/gi-guidebook.pdf

Reducing Stormwater Costs Through LID Practices (2007) http://water.epa.gov/polwaste/green/upload/2008_01_02_NPS_lid_costs07uments_reducingstormwatercosts-2.pdf;fact sheet: http://water.epa.gov/polwaste/green/upload/2008_01_04_NPS_lid_costs07uments_factsheet-reducingstormwatercosts.pdf

Relationship to Massachusetts Stormwater Standards

The Massachusetts Stormwater Standards, while helpful, do not address the full scope of stormwater management needed to achieve water quality standards. The state rules are applied primarily through application of the Massachusetts Wetlands Protection Act, which is limited in jurisdiction to work within state wetlands resource areas or adjoining buffer zones. Projects located outside of these areas, regardless of size or scope, do not require a wetlands permit and therefore the local conservation commission cannot require that stormwater emanating from upland sites meet the standards. This is true even when stormwater from new or redevelopment in uplands will flow into existing local stormwater conveyance systems that discharge to wetlands or waterways. Therefore, it is important that the MS4 permit require communities to more comprehensively regulate stormwater from all new and redevelopment, regardless of whether or not the entire site and scope of work is located within uplands.

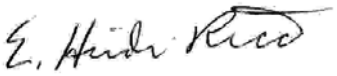
Conclusion

The Massachusetts Water Infrastructure Commission (2012) found that addressing stormwater maintenance and upgrade needs over the next 20 years could cost in the range of $18 billion dollars. At the same time, many communities are facing more frequent, intense flooding events along with potential water supply shortages, and streams are drying up due to excessive water withdrawals and/or loss of infiltration capacity. By using our landscape in a smarter, more efficient way, we can reduce these burdens. Precipitation can be filtered, infiltrated, and used for irrigation and to recharge water supplies and rivers, while the need for expensive engineered structures to treat and convey ever increasing flows from more intense storm events can be minimized. This is not a panacea, but continuing the path of developing larger and larger areas

of impervious surfaces channeled into inadequate storm drainage systems will only increase the challenges communities face. We urge a shift in thinking about land and water management, and a strong embrace of LID principles and techniques.

Thank you for considering these comments.

Sincerely,



E. Heidi Ricci
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Cc: Fred Civian, DEP

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February 27, 2015

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Re: MassDEP Comments on EPA's Draft 2014 MS4 permit

Dear Mr. Tedder,

This letter provides comments and suggestions to EPA on the draft Municipal Separate Storm Sewer permit (MS4) published for review in the Federal Register on September 30, 2014. There are many important and positive elements in this 2014 draft MS4 permit. EPA has solicited considerable input on its draft permit and we believe that such a collaborative approach is warranted and appropriate. EPA should be commended for using the public review process to revise and build upon previous proposals to publish this much improved draft MS4 permit.

In developing these comments, MassDEP has drawn from experiences in addressing stormwater issues and is also taking the views of stakeholders who care about the program and how it is implemented into consideration. Although MassDEP's signature block is on the publicly issued draft permit as a co-issuing authority, the final decision of whether the Commonwealth will co-issue the MS4 permit with EPA will be made when the terms of the final permit are clearer. We are providing EPA these comments in a constructive spirit of seeking changes that will clarify and streamline the permit, to help make it more effective in improving water quality while remaining mindful of how best to assist municipalities in implementation.

Stormwater is the single largest source of pollution to the Commonwealth's rivers, streams, lakes and ponds, and MassDEP appreciates EPA's efforts to improve the effectiveness of the 2003 permit. The changes proposed with our comments will preserve the environmental gains contemplated by the draft permit while doing so in a more achievable, efficient and cost-effective manner. We look forward to working with EPA on the final permit terms.

Costs

As regulators, EPA and MassDEP each must acknowledge that resources at the local level are scarce and focus on actions that will yield the most environmental benefit. Moving toward an integrated and efficient set of federal and state stormwater rules is a key part of meeting those very real challenges. As described in detail below, EPA should consider the permit's requirements in light of this perspective.

The costs to implement the proposed MS4 permit are a major issue to be considered in the specific terms of the permit. Recent work suggests that costs can be both high and can vary significantly based on the activity.

In 2011-2012, EPA's months-long Sustainable Stormwater Funding Project estimated the expenditures at that time of stormwater work to meet the six minimum control measures of the 2003 permit for three Massachusetts Towns:

- Bellingham existing costs: $212,439 per year
- Franklin existing costs: $940,590 per year
- Milford existing costs: $668,241 per year

Next, EPA estimated how those costs would increase if the MS4 program requirements were expanded as proposed in its 2010 draft. Using the 2010 draft of the MS4 permit as a base, and including an additional contingency amount for unanticipated expenditures, EPA estimated the following costs for complying with the six minimum control measures:

- Bellingham proposed 2010 permit costs: from $729,286 per year to $865,563 per year
- Franklin proposed 2010 permit costs: from $1,436,347 per year to $1,704,455 per year
- Milford proposed 2010 permit costs: from $729,286 per year to $1,244,470 per year

In other words, EPA estimated MS4 costs for implementing the 2010 draft permit requirements would increase in these 3 Towns by approximately $60,000 to $760,000 per year. While it is unclear how much those costs will change for implementation of the 2014 permit terms, there are reasons to believe that the increases will be in the same order of magnitude as the estimates from 2010.

In this 2014 draft permit, EPA provided some cost information in the Fact Sheet which is lower than the cost information from 2010, including estimates for implementing each of the six minimum control measures. EPA estimated a range of costs for implementing the 2014 draft permit from $66,000 to $518,000 per year. These figures exclude contingency costs. Adding contingency costs, as EPA did for those 3 Upper Charles Towns in the estimates done for the draft 2010 permit, would represent a more reasonable annual cost estimate.

In addition, EPA's cost estimates do not include work related to meeting impaired waters or TMDL requirements. That work will include both operational expenditures (e.g., tracking pollution loadings for every new development and redevelopment project subject to impaired waters or TMDL permit rules) and the capital cost of BMPs to reduce pollutants to meet impaired water or TMDL goals. Those capital costs will be significant, although they have not been estimated for the 2014 draft permit implementation. Although not a precise correlation, when EPA estimated capital costs associated with implementing the proposed Residual Designation

Authority requirements in the Sustainable Stormwater Funding Project, Bellingham's capital costs were estimated to be over $23 million; Franklin's over $62 million; and Milford's costs over $67 million.

With Massachusetts' Towns facing continual budget pressures for many necessary programs, EPA should recognize that costs will have significant effect on communities and the final permit should be adjusted to eliminate unnecessary requirements and to consider the timing needed for such significant resources.

EPA's Rules Should Harmonize its MS4 rules requirements with the Commonwealth's Stormwater Standards.

The municipalities subject to this proposed permit play a critical role in managing municipal stormwater discharges that flow into our water bodies. MassDEP recognizes the importance of actions such as identifying and eliminating illicit discharges, requiring modern stormwater Best Management Practices (BMPs) for new developments and redevelopment projects, and ensuring proper operation and maintenance of stormwater systems and BMPs. In 2008 MassDEP promulgated more protective stormwater rules as part of the Commonwealth's Wetlands Regulations. Building on the first Massachusetts Stormwater Standards issued as policy in 1997, the 2008 revisions increased infiltration and treatment requirements, mandated consideration of Low Impact Development techniques and made a number of other protective changes for projects within areas of wetlands jurisdiction.

In order to meet EPA's 2003 MS4 requirements for locally enforceable mechanisms to manage construction and post-construction stormwater impacts, some Massachusetts Towns adopted the Massachusetts Stormwater Standards instead of developing a separate set of stormwater rules. That was a wise decision. MassDEP believes that EPA should build on that successful experience by using the Massachusetts Stormwater Standards as the basis for its successor MS4 permit, rather than requiring a second federal-only layer of permit requirements on top of the existing Massachusetts Stormwater Standards.

It is critical for municipalities, developers, and environmental advocates that EPA and MassDEP work together toward our common environmental goals. Uniting together behind the framework of the Massachusetts Stormwater Standards as the tool that all of us in Massachusetts will use to reduce stormwater pollution discharges will make that essential job easier for everyone. MassDEP recommends that EPA move in the direction of harmonizing the federal requirements with the Massachusetts stormwater rules as much as possible, and avoid establishing new and separate stormwater management criteria. MassDEP provides additional comments on the benefits of this harmonization below.

Towns Must Be Given Sufficient Time and an Adaptive Schedule for Implementing Improvements and Pollution Reduction Goals.

The timing of when municipalities must begin to implement pollution reduction goals determined through the TMDL (Total Maximum Daily Load) process is crucial. MassDEP suggests that EPA take into account Towns' comments regarding the time needed to achieve those goals. It took decades to build the Commonwealth's existing impervious areas (such as roadways, rooftops and parking lots that contribute to stormwater pollution). Those areas not only add contaminants to stormwater, they also redirect flow and in some cases prevent recharge through natural percolation to the groundwater. Changing the urban environment in Massachusetts to

mitigate these effects, achieve TMDL load reduction goals and improve water quality in our receiving waters will likewise take years of steady effort.

MassDEP supports EPA's proposal to allow time for Towns to develop plans for stormwater-related water quality improvements recommended in the TMDLs, to implement those plans and thereby achieve TMDL reduction goals. That process should be adaptive and recurring so that as these improvements are being made Towns have the ability to consider pollution reductions from others sources. EPA should assure Towns will have the adaptive flexibility needed to concentrate on the most cost-effective pollution reduction measures, whatever their source.

MassDEP Supports Efficient Implementation: Developing Outreach Materials and Modeling Tools.

MassDEP encourages EPA to create models, templates, and other transferrable tools for cities and towns to use in implementing the permit. Providing standard tools, templates, models, reporting forms and informational brochures will make the implementation of the permit more efficient and cost-effective for Towns. General informational materials or templates that can be customized will facilitate the availability of accurate information from local authorities, as well as reduce costs by each city or town to produce these materials.

In addition to MassDEP's support of the draft permit's elements and the general points outlined above MassDEP has the following additional comments and recommendations for improvements.

The Matrix of Applicable Standards Included in the Draft Permit is Confusing.

There is a significant shift in approach from the BMP-based program envisioned in the 2003 permit to the current draft which includes additional provisions to ensure that discharges from small MS4s do not cause or contribute to an exceedance of water quality standards. These requirements add to the maximum extent practicable reductions required through implementation of BMPs and recast water quality standards as enforceable "effluent limitations" of the permit. This approach moves the MS4 program well away from a BMP-based program with a maximum extent practicable (MEP) standard by adding new "water quality based effluent limitations" to this part of the stormwater program. The Fact Sheet for the draft permit relies on a federal decision, Defenders of Wildlife v. Browner, 191 F.3rd 1159, 1165 (9th Cir. 1999) to support the incorporation of the new water quality based effluent limitations. However, the Defenders of Wildlife case held that reductions to the maximum extent practicable are the standard for MS4 discharges. Id. at 1165. MassDEP requests that EPA clarify that MS4 dischargers must meet the water quality based effluent limitation provisions in the permit to the maximum extent practicable, and also acknowledge feasibility and costs to achieve those reductions as part of that standard.

EPA's choice of applicable standard has cost implications. MassDEP has concerns that water quality-based effluent limitations will ultimately require additional resources to support additional pollution control technologies or other measures beyond the maximum extent practicable standard set forth in the federal Clean Water Act. These measures may be extremely costly and it is possible that they would not make any substantial improvement in water quality. MassDEP urges EPA New England to modify the permit requirements to ensure that its intent is clear and the applicable standards and associated municipal obligations are unambiguous.

Administrative and Reporting Requirements Should Be Streamlined

The permit includes many administrative and reporting requirements. MassDEP has identified 252 actions, reporting and tracking requirements, not including actions, reports and tracking needed for impaired waters and TMDL goals. MassDEP suggests that EPA minimize those that do not have a direct relationship to stormwater pollution reductions. Further, administrative reporting and tracking conditions should be consolidated and streamlined as much as possible, making compliance work easier and less costly for Towns.

Without revisions that address this administrative burden, cities and towns would spend considerable time, energy and resources on reports and other administrative tasks. A permit that focuses municipal resources and efforts on actions that directly reduce stormwater pollution is more likely to achieve sustained environmental benefits.

Detailed below are some specific proposals that are examples of what EPA should consider to reduce the overall administrative burden of compliance with the MS4 permit.

- Tracking TMDL Reductions gained by each project. EPA's proposed method to track TMDL-related pollution reductions is a labor-intensive mathematical calculation of mass reduction down to what appears to be grams per year from every municipally-regulated land use development and redevelopment. Further, monitoring of the receiving waters is a better measure of success for the TMDL-related components of the MS4 permit. A related concern is that the proposal opens up the issue of whether the use of scientifically validated methods for modeling pollution loadings measured in multiple pounds per year over square miles is appropriate for measuring ounces of pollution loadings over sites as small as one acre. Instead, EPA could require Towns to show progress toward meeting the percentage reduction targets commonly used in TMDLs.

- Illicit Discharge Detection and Elimination (IDDE). The proposed IDDE requirements – which include the individual ranking of the catchment for every outfall (except excluded catchments) using 12 different System Vulnerability Criteria, mandating higher rankings for catchments in areas served by a sewer or stormwater system 40 years of age or more – divert monies that could be used to eliminate illicit connections. Instead municipalities are expected to create and maintain a complex tracking and ranking system. EPA could simplify these requirements to concentrate its regulatory attention solely on requiring cities and towns to identify and remove Illicit Discharges from *Problem Catchments* and *High Priority Catchments* and remove requirements for *Low Priority Catchments*. EPA also should refine its definitions of what constitutes *High Priority Catchments*. Since virtually all sewer or stormwater systems in Massachusetts are at least 40 years old, using that age as a determinative criterion results in categorizing entire MS4 systems *High Priority*. That kind of broad requirement does not help Towns to narrow their attention, focus and budgets on areas that need immediate attention.

- Tracking materials removed from each catch basin. The requirement that Towns track and annually report the volume or mass of material removed from each catch basin draining to all water quality limited waters will, in a Town with limited resources, reduce funds available for cleaning catch basins.

- New inspector qualifications; retaining "as built" drawings. Requiring Towns to develop and report the qualifications necessary to perform construction site inspections, or to review and keep "as built" drawings for each BMP constructed, will not necessarily increase inspections or ensure that BMPs are constructed or maintained properly.

- Align MS4 construction conditions with federal Construction General Permit standards and State Stormwater Standards. EPA should consider limiting its changes to the Construction minimum control measure to requiring Towns to adopt by reference the federal Construction General Permit and/or Standard 8 of the Massachusetts Stormwater Standards. Both of those systems are being used routinely throughout the Commonwealth by regulators and developers alike. The imposition of either one provides greater environmental protection than that currently required in the 2003 permit and does it more efficiently.

- Align definitions with State Standards. EPA should use the definitions of development and redevelopment already used in the Massachusetts Stormwater Standards. Among other benefits, that action would ensure that the scope of redevelopment requirements would be limited to the area being redeveloped.

Using the Framework of the Massachusetts Stormwater Standards Will Further Reduce Stormwater Pollution and Reduce the Administrative Burden for Towns and Developers Alike.

MassDEP's strongly urges EPA to use the framework of the Massachusetts Stormwater Standards in the post-construction minimum control measure. Since 1997 all 351 Massachusetts Towns have used the Massachusetts Stormwater Standards to manage stormwater in wetlands jurisdictional areas. Many Towns are already using the Massachusetts Stormwater Standards for their local stormwater bylaws, and this proposed change would require these Towns to abandon their current practices and adopt a new and unfamiliar federal mandate.

Developers, Conservation Commissioners and Agents and other Town officials routinely use these standards, which require on-site infiltration, treatment and various other measures to reduce pollution from stormwater in wetlands jurisdictional areas. Adding this different federal standard creates a cost, time and administrative burden for every for every development and redevelopment project that occurs in both areas of wetlands and subject to MS4 regulation, requiring developers to show that their proposals now meet two different sets of stormwater rules .

In its 2010 and 2011 draft MS4 permits, EPA wisely proposed to build on that solid foundation of expertise and familiarity by requiring Towns to use the MA Stormwater Standards in Urbanized Areas as part of its MS4 requirements. Layering different federal stormwater rules on top of the successful and commonly understood state stormwater standards creates a significant administrative burden for all 260 MS4 Towns.

From a technical standpoint, EPA's proposal to use a different metric for treatment ("Provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration . . ." instead of the Massachusetts requirement to reduce TSS by 80%) creates an additional

technical burden for every Town, developer and practitioner subject to both state and proposed federal stormwater rules.

All MS4 Towns are already using the definitions of new development and redevelopment from the MA Stormwater Standards. Although EPA does not define those terms in its proposed MS4 permit (which itself is a problem), in its MS4 public meetings EPA has used those terms differently than they are used in the MA Stormwater Standards. Explicit or implicit creation of different definitions of those terms will create confusion and inefficiencies. Adoption of the framework of the MA Stormwater Standards will solve that problem.

If EPA believes that the current runoff depth requirements in the Standards are not protective enough (for example, new developments must treat at least ½ inch of runoff) it can simply increase those volumetric numbers used in the Standards. That kind of change (for example, increasing the Massachusetts' Stormwater Standards' required infiltration depths of 0.6" for Class A, 0.4" for Class B, 0.25" for Class C and 0.1" for Class D soils) would be easily understood and could be readily incorporated into Towns' and developers' existing expertise and practice, and does not require a new and overlapping federal mandate to increase environmental protection.

EPA Should Take the Lead in Developing Water Pollution Credit Trading Programs

As Towns face the challenge of meeting EPA's draft MS4 permit requirements for reducing pollutants described in approved TMDLs, MassDEP believes that EPA should take the lead in developing and implementing watershed-wide water pollution credit trading programs. Establishing such programs can allow Towns to reduce pollution reduction costs by creating opportunities and incentives for those pollution reductions to occur at locations where pollution reductions costs are lower. For example, a large commercial or agricultural operation implementing cost-effective nutrient controls for stormwater could "credit" (trade or sell) those reductions to municipalities where further reductions may be more expensive and more difficult to achieve. MassDEP believes that the promise of watershed-wide water pollution credit trading programs is more likely to be fulfilled if EPA takes an active role in developing such a system.

A Number of Corrections to the Impaired Waters and TMDL Sections Are Needed

MassDEP has the following specific recommendations regarding TMDL issues found in the Fact Sheet and Appendix F.

Draft Fact Sheet:

Page 30, pp 2: Lists of the final Bacteria and Nitrogen TMDLs appears to be incorrect.

- Final watershed- wide Bacteria TMDLs are: Neponset, Buzzards Bay, Cape Cod, Charles, Narragansett/Mt Hope Bay, North Coastal, Shawsheen, South Coastal, Taunton. Individual waterbodies with final pathogen TMDLs are: Little Harbor (Cohasett), Palmer River, and Three Bays, Frost Fish Creek and Muddy Creek on Cape Cod
- Final Nitrogen TMDLs are *certain waterbodies* in: Nantucket, Cape Cod and Buzzards Bay watersheds

Page 30, pp 2: It is important to note that the approved Massachusetts Estuary Program (MEP) Nitrogen TMDLs estimated a Nitrogen stormwater waste load allocation (WLA) from impervious areas within 200 feet of the embayment, but that load was not directly measured. EPA should consider how estimated load affects its requirements in Appendix F.

Page 30, pp 3: Currently there are 14 approved pathogen TMDLs, not 15.

Page 31, pp 2: *"Evidence suggests"* should be supported by reference(s).

Page 31, pp 2: The revision of the current (2000) Long Island Sound (LIS) TMDL is not expected to be finalized soon. It is not appropriate to base MS4 nitrogen reduction requirements on an anticipated future, unapproved TMDL. This is particularly important when EPA states in the draft MS4 permit Fact Sheet that Waste Load Allocations for MS4 sources in the LIS TMDL currently in place may already be met. .

Page 34, pp 1: The draft Fact Sheet states that duckweed amounts in the Assabet River are still excessive based on 2012 data. More recent MassDEP and USGS data show a significant reduction in duckweed at all monitoring stations. EPA should update the information in the Fact Sheet to reflect this new information.

Page 34, pp2: The Draft Fact Sheet states that dam removal has not been completed. This is correct, but it also should be acknowledged that the Towns have rejected the dam removal recommendations in the TMDL and removal at a future time is unlikely.

Appendix F:

Page 26, pp 1: Appendix F states *"MassDEP and EPA shall work with the permittee to develop a monitoring plan or other assessment plan the permittee will use to evaluate the effectiveness of the Lake Phosphorus Control Plan (LPCP) or other work the permittee has conducted in restoring the waterbody. The permittee shall work with MassDEP and EPA to develop the alternative analysis plan and keep the written plan as part of their SWMP. Until the production of o written olternative analysis plan with input and assistance from MassDEP and EPA, the permittee remoins subject to the requirements described in Parts II.1-2 above."*

Comment: Due to resources constraints the amount of input and assistance available from MassDEP's monitoring staff to help permittees develop individual alternative analysis plans may be very limited.

Page 27, pp 1: Incorrect list of approved Pathogen TMDLs - Pathogen TMDLs are *not* approved for: Blackstone River Watershed, Concord River Watershed, Ipswich River Watershed, and the Merrimack River Watershed. In addition, there is an approved Pathogen TMDL for the Neponset watershed, but not for the Boston Harbor watershed.

Page 27, pp 1: Appendix F acknowledges *"the goal for these bacteria or pathogen TMDLs is for the bacteria or pathogen concentration in each waterbody to meet the water quality standards for the designated uses of the water body. The WLA for all waters with applicable bacteria or pathogen TMDLs is set at the state water quality standard for the indicator organism for that water body at the time of TMDL development."*

Comment: The water quality standards for pathogens (bacteria) and in some cases the indicator organism has changed since the development of many of the pathogen TMDLs. MassDEP monitors and assesses bacteria impairment based on the current water quality standards and consolidated assessment and listing methodology (CALM). To determine if the waterbody is meeting standards and can be de-listed from the impaired list (i.e., meets the TMDL) MassDEP would not necessarily be assessing the indicator organism listed in the TMDL and this MS4 permit. In addition, EPA has recently requested many states to ensure that their Surface Water Quality Standards comply with recently developed EPA criteria for bacteria; these new criteria, in some cases, are different than those in the MA SWQS. This discrepancy should be spelled out in the MS4 permit so the permittee is monitoring for the correct indicator organism to assure that compliance with current water quality standards can be assessed.

Page 38, pp 1: It should be noted that Cape Cod communities are currently focused on challenging decisions related to complex and expensive nutrient management issues for their estuaries. The source of the overwhelming majority of the nitrogen load on the Cape has been identified as discharges from septic systems. MassDEP, EPA, and the Cape Cod Commission are coordinating on an update to the existing area wide management plan (in accordance with Section 208 of the federal Clean Water Act) in an effort to design options for municipal comprehensive wastewater management planning to address these significant water quality issues. EPA should take care in these communities that the burden of this new MS4 permit does not delay or overshadow this regional effort, particularly when it has been acknowledged in all of the approved MEP TMDLs that the stormwater WLA is insignificant compared to wastewater sources.

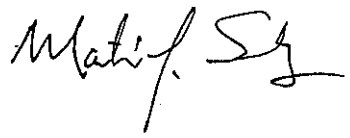
Page 43, pp 1: There is some evidence that the upper basin states that contribute to the Long Island Sound (LIS) watershed may already be complying with the current LIS TMDL requirements for nutrient load reductions. The LIS TMDL workgroup is currently evaluating the status of the TMDL implementation progress and effectiveness. MassDEP questions whether the new MS4 permit's TMDL requirements ought to apply to Massachusetts given the Commonwealth's contribution may already have been sufficiently reduced.

Page 53, pp 1: Appendix F states: *"There are currently five approved metals TMDLs for a waterbody segment in Rhode Island that that identifies urban stormwater discharges in Massachusetts as sources that are contributing metals (Cadmium, Lead, Aluminum, Iron) to the impaired segment. The TMDLs include the Upper Ten Mile River, Lower Ten Mile River, Central Pond, Turner Reservoir and Omega Pond TMDLs[1]. Table F-12 lists municipalities in Massachusetts identified in the TMDLs as containing MS4s contributing metals to the impaired waterbody segments in Rhode Island, the impaired receiving water, the approved TMDL name, and the pollutant of concern. "*

Comment: MassDEP has previously commented on Rhode Island's draft TMDL with regards to metals impairment and concluded the following: Based on the most recent state line data Massachusetts flows would not impair Ten Mile segments for metals (total aluminum, dissolved cadmium, total iron, dissolved lead) and consequently will not move forward with a TMDL. It should also be noted that since the sampling was carried out in 2007 the Attleboro and North Attleboro plants have new NPDES effluent limits for metals. The load reductions for metals in the RIDEM TMDL at the state line are not representative of the current condition with respect to permitted facilities in Massachusetts. As such, it's inappropriate to impose MS4 metals reduction requirements to these Massachusetts communities.

MassDEP thanks EPA Region 1 for the considerable time and energy it put into developing this draft MS4 permit and its willingness to continue to consult with MassDEP. Whether MassDEP ultimately adopts and issues the MS4 permit under the Massachusetts Clean Waters Act will be a matter very carefully considered as the terms of the final permit become clearer. In any case, MassDEP will provide technical assistance to municipalities to support successful permit implementation and water quality improvements. Thank you for your consideration of these comments.

Sincerely,



Martin Suuberg
Commissioner

cc: Curt Spalding, Regional Administrator, EPA Region 1

Charles D. Baker, Governor
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Stephanie Pollack, Secretary & CEO
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February 27, 2015

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Re: NPDES General Permit from Small MS4s Comments

Mr. Tedder,

The following represents a list of comments and/or concerns, from the Massachusetts Department of Transportation's Highway Division (MassDOT) with the ***Draft NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) in Massachusetts***, as noticed by the EPA on September 30, 2014 in the Federal Register. Even though MassDOT is seeking a separate individual permit for stormwater discharges, we would like to take this opportunity to share our comments on the various requirements included in the Draft General Permit as they will ultimately have impacts on municipal roadway projects funded by MassDOT.

1. **Notice of Intent (NOI) Form:** The new electronic NOI Form requires extensive detailed information on the various Best Management Practices (BMPs) that will be used to meet the six minimum control measures and water quality based requirements. In the 2003 permit, this level of detail was provided in the Stormwater Management Plan (SWMP), instead of at the NOI stage. Requiring a detailed description of all the proposed BMPs within 90 days is unrealistic. The NOI submittal should be scaled back to only require basic information relative to the storm sewer system and let the more detailed information be provided in the SWMP instead, thereby allowing up to a year to evaluate and determine the most appropriate and feasible BMPs that will be used to meet the six minimum control measures and water quality based requirements.

2. **First Year Schedule:** The number of major activities and plans that must be completed in the first year of the Permit is impractical. There are at least ten (10) major plans or action items required in the first year or sooner. We suggest that the deadlines for several tasks be extended to at least two years, and especially for the preparation of the Operations and Maintenance (O&M) Plans, Pollutant Source Identification Plans, and Stormwater Pollution Prevention Plans (SWPPPs).

3. **No Net Loading Increase:** Section 2.1.2.b states that there shall be no net increase in discharges from the MS4 to impaired waters listed in Categories 5 or

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4B on the most recent Massachusetts Integrated Report of Waters unless the permittee demonstrates there will be no net increase in loading for the specific impairment and provides documentation in the SWMP.

EPA should better define what level of activity would constitute a meaningful increased load warranting a detailed pollutant load analysis. For example, sidewalk construction or adding a bike lane should not be considered a significant increase in pollutant load. Many minor roadway widening projects are designed to promote intermodal transit and reduce greenhouse gases and these environmental benefits should also be included in the equation along with water quality impacts. If every minor roadway modification throughout the State requires a detailed pollutant load assessment and statement of findings, this will divert our efforts and limited resources away from construction of stormwater BMP retrofits. Also, with minor roadway widening projects, there are often site constraints and limited right-of-way that greatly affect our ability to modify drainage systems and capture and treat roadway runoff in order to meet a no net increased load requirement. We suggest that linear road improvements be allowed a maximum extent practicable threshold or that existing roads be exempt from this requirement.

4. **Section 2.2.1 – Discharges to Impaired Water Bodies with an Approved Total Maximum Daily Load (TMDL):** Tables F-1 and F-2 of Appendix F indicate that various Towns subject to the Charles River (or other lake) phosphorus TMDL, would need to achieve phosphorus reductions as much as 50% or more from existing baseline loads within their MS4 areas or entire Town. Given that only 40-65 percent of the phosphorus in stormwater can be removed utilizing stormwater BMPs, it would seem that nearly all of the existing impervious cover (IC) area would need to be treated to achieve an average existing load reduction of 50% or more. Even though the draft Permit allows up to 15 or 20 years to accomplish the reduction, depending on the watershed, this goal still seems highly unlikely and impractical given the range of site constraints that prevent the implementation of stormwater retrofit BMPs at various locations. We suggest that the phosphorus reduction target should only apply to the permittee-owned property. Also, the draft permit needs to include maximum extent practicable language to address when reduction targets simply cannot be met due to site constraints or the exorbitant costs required to meet these targets.

5. **Section 2.2.2 - Chloride Impaired Water Bodies:** This section does not provide a list of municipalities that are located in chloride impaired watersheds similar to the lists provided for phosphorus and nitrogen related impairments.

6. **Section 2.3.4.7.c.iv. – Written Illicit Discharge Detection and Elimination (IDDE) Program:** This section states that "Wet weather screening and sampling, shall proceed during or after a storm event of sufficient depth or intensity to

produce a stormwater discharge but only during the spring (March to June) when groundwater levels are relatively high." …. "The permit does not require a minimum rainfall event prior to wet weather screening. However, the purpose of wet weather screening and sampling under the IDDE program is to identify illicit discharges that may activate or become evident during wet weather."

Wet weather sampling can be very costly and difficult to implement as it is weather dependent and it appears to be required for every outfall in a catchment that has one or more vulnerability factors (VFs). Essentially any developed area, regardless of density or age, would seem to have at least one vulnerability factor and, thus, wet-weather sampling would be required just about everywhere there is some minimal level of development. We suggest that this requirement be targeted to only those areas with the highest likelihood for wet weather illicit connections. Perhaps only areas that have three or more VFs, or known problem areas, be subject to wet weather sampling and, then, based on these results, the permittee can assess the need to conduct additional wet weather testing in other areas with fewer vulnerability factors. Permittees should be allowed to develop their own vulnerability factors or screening process to identify and target areas where wet weather sampling would seem to be needed the most while focusing on pathogen-impaired waterbodies. Permittees could provide EPA with a dry and wet weather screening program based on those alternative screening and vulnerability factors.

EPA should share the specific data that shows the cost/ benefit of wet weather sampling for the purposes of identifying illicit sources and the level of pollutant reduction that is realized when sampling and possible removal occurs as a result of wet weather sampling so that local officials can justify this significant extravagant use of taxpayer dollars.

7. **Section 2.3.6(a)ii Stormwater Management in New Development and Redevelopment:** In light of recent MassDOT projects (e.g., Casey Overpass and the Longfellow Bridge in Boston), EPA should reconsider imposing a strict standard of "retaining 1-inch of runoff from all impervious area" as it relates to redevelopment activity. This is a very high, and likely impractical, standard for a redevelopment activity to meet given that existing site constraints can limit how much area and what type of treatment can be provided. Towns and MassDOT must be able to continue maintenance of roads, which often includes reclaiming, rebuilding or reconstruction of the road. Given the linear nature of the road and confined right-of-way space, the amount of runoff that can be captured, especially in open drainage situations is often quite limited. The use of infiltration type stormwater treatment BMPs also may not be practical, due to limited space, soil conditions and adjacent resources or properties. The suggested alternative of attaining a pollutant removal efficiency equivalent of treating 1-inch of runoff through bio-infiltration does not seem to make this standard any more feasible.

We suggest an exemption for roadway maintenance activity and a maximum extent practicable standard for roadway reconstruction projects.

As mentioned earlier, to promote public health and greener forms of transportation, MassDOT recently issued a Complete Streets Initiative to increase pedestrian and bicycle modes of transportation. This often requires minor road widening for bike lanes and the installation of sidewalks to accommodate the mode shift. To meet the proposed EPA 1-inch stormwater treatment requirement, the costs for these types of projects would increase exponentially and in most cases would prevent municipalities from attempting to promote greener forms of transportation. In the end, this proposed stormwater treatment requirement may negate any potential public health and environmental benefits that may have resulted from this initiative. Again, we urge the EPA to exempt municipal linear projects from this requirement.

8. **Section 2.3.6(d) – Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management)**: This section states "All BMPs installed as part of the site's stormwater management system shall be constructed consistent with the Massachusetts Stormwater Handbook Volume 2, Chapter 2."

   Certain elements of the Massachusetts Stormwater Handbook, such as BMP design features, are outdated. For example, some often-used BMPs, such as permeable pavements, are not included in the Handbook. Other states, such as Rhode Island and the Chesapeake Bay area states, are developing more updated design handbooks in response to TMDLs and stormwater requirements. The wording should be changed to reference the MA Stormwater Handbook as well as other more recent EPA and state manuals that have updated BMP design guidelines. Making reference to the MA Stormwater Standards is fine, but there should be flexibility to design/construct updated methods and practices. Also, the MS4 must be allowed to build BMPs to the maximum extent practicable which may not fully meet the stormwater handbook design requirements but will still have a positive water quality impact.

9. **Section 6.1 – Public Education and Outreach**: Section 6.1 clarifies for Transportation MS4s that the potential targeted audiences for public education and outreach purposes may be different than that for municipalities and would be limited to the motoring public (users of the road), employees and contractors. We suggest the number of educational messages for each audience over the permit term be limited to two, similar to that required for municipal MS4s.

10. **Section 6.4 New Discharger:** Section 6.4 requires additional clarity in defining what might be considered a "new discharger." Is this referring to a new entity, or a new facility, or both? Does this pertain to only transportation agencies? As

currently written, the draft Permit seems to suggest that any new roadway segment, parking lot or other facility that is not directly adjacent to an existing MassDOT facility might be considered a "new discharger" and subject to its own separate individual permit. Under nearly all cases, any proposed new MassDOT facility would likely be connected and accessed by an existing MassDOT roadway, however, it is conceivable that a scenario could arise where a new depot facility, for example, might be accessed from a municipally maintained roadway and not a MassDOT roadway. We suggest that the language be made clear so as to avoid confusion and eliminate the possibility that any new MassDOT facility or roadway would be considered a "new discharge" and be subject to its own individual separate permit outside of the proposed MassDOT's overall individual permit for its roadway network within urbanized areas.

11. **Appendix H. Attachment 1** describes how nitrogen load reduction credits can be calculated for certain structural BMPs (Table 4-3) and illicit connection removal. Although the draft Permit states that this is for informational purposes only at this stage, EPA should allow municipalities to take credit for other structural and non-structural load reduction activities and BMPs beyond this limited list. Moreover, the pollutant reduction performance curves for the structural BMPs do not seem to relate to a specific design or type of BMP. These BMP treatment curves also only account for treatment of the contributing impervious area and underestimate or ignore the treatment of runoff from pervious areas when runoff from impervious surfaces is comingled with pervious areas (e.g. agricultural areas, lawns, etc.). We recommend that EPA provide more detail on credits for individual BMPs by developing curves for specific treatment BMPs (as provided for phosphorus) and provide a means for accounting of contributing pervious area that does not require the permittee to do iterative calculations.

    In addition, Appendix H should include provisions for the permittee to use alternative methods to calculate BMP performance for nitrogen by developing a long-term simulation modeling approach, similar to what Appendix F does for calculating phosphorus treatment.

12. **Appendix H. Attachment 1** describes how nitrogen loads should be calculated for contributing drainage areas but only accounts for two land cover conditions: pervious and impervious. Similar to the phosphorus load calculation methodology (Appendix F) different land uses also affect nitrogen loads, and not just whether its impervious and pervious land cover. Therefore, we believe this same level of detail should be applied to the nitrogen load calculation methodology. We recommend using water quality data from highway runoff sampling as reported in the U.S. Geological Survey (USGS) and Federal Highway Administration's (FHWA) Highway-Runoff Database (Granato and Cazenas,

2009) that includes stormwater sampling data from different MassDOT roadways to characterize nitrogen loads from highways.

Thank you very much for the opportunity to comment on this critically important permitting program. If you have any questions or comments, please contact Henry Barbaro, Stormwater Program Supervisor, at 857-368-8788.

Sincerely,

Kevin M. Walsh
Director
Environmental Services

Massachusetts Highway Association

P.O. Box 2004, Danvers MA 01923 (*www.masshwy.org*)

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Newton Tedder
U.S. Environmental Protection Agency, Region 1
5 Post Office Square, Suite 100 Code OEPo6-4
Boston, MA 02109-3912

Re: Objections to Proposed draft Massachusetts new EPA Storm Phase 2 regulations

Dear Mr. Tedder

The following is a list of the most troubling portions of the proposed new Storm water Phase Two regulations.

1) Pavement maintenance work triggers retaining first inch of storm water or storm water treatment. Under the new regulations, when one disturbs more than 1 acre in area or phased construction totaling one acre (translates to only ¼ mile of 30' wide pavement) or more which will include road reclamation projects, the new regulations require that the first inch of storm water be retained or all the storm water must be treated. This essentially means one now not only has to resurface the road one has to completely redesign and re-construct the entire storm water collection system to satisfy this requirement. This will cripple road maintenance budgets. Accordingly, cities and towns will be forced to purchase/take extra land by eminent domain for storm water storage or pay for the expense of storm water treatment systems on simple routine maintenance projects. This is a huge expense in downtown business districts and even in rural areas with old roads and narrow town-owned rights-of-way.

As everyone is aware, the funds available for pavement maintenance are less than half of what are needed to simply preserve the condition of the current infrastructure. This means that Massachusetts roads are falling apart faster than they can be repaired. The above added costs will compound the problem and create more failing roads and more erosion.

Municipalities will be forced to use the wrong pavement rehabilitation technique at the wrong time which will squander the available limited pavement maintenance resources.

There must be an exemption for pavement maintenance projects. The above regulations should not be applied to maintenance projects. If a new road is being constructed or a lane is being added, these storm water management upgrades may be able to be accommodated, depending on surrounding conditions like available right-of-way width and/or proximity of buildings to the right-of-way. Simple pavement surface maintenance projects or minor improvements should not trigger rebuilding the world.

2) Chloride Reduction. Most municipalities already are trying to limit salt/chloride usage. The cost of road salt and deicers is a large portion of the winter storm budgets. Any responsible DPW director or winter road program manager is looking to reduce the costs in all areas that are practical. There is no objection to installing computers on the truck spreaders and training the operators in best management practices nor do we object to the EPA providing Best Management Practices or guidance suggestions; however, reducing salt usage below what is practical with the current technology is irresponsible and to do this exposes the motorists to hazardous conditions and the municipalities to legal action. Yes, usage of chlorides could all stop tomorrow, but at what cost to human life. If the EPA will protect an endangered salamander, it should be equally as concerned with the loss of human life. The chloride reduction regulations should be limited to recommending that municipalities follow the latest accepted Best Management Practices.
3) Requirement for tracking impervious area. The EPA in its permit guidance documents implicitly admits that the simple presence of impervious areas is not a direct correlation to storm water quality. Sites with paved areas can store/detain or treat storm water so that the presence of paved areas on storm water quality is mitigated. Similarly, the MADEP considers roof water runoff "clean" and can be infiltrated into the ground without pre treatment. Tracking the amount of impervious areas does not have a direct correlation to water quality; therefore the MS4's should not have to expend resources tracking changes in impervious area. As long as new development is in compliance with Best Management Practices, control of development should be under the jurisdiction and control of local planning authorities. Any attempt at limiting /restricting development through the veiled attempt at controlling impervious area is outside the purview of the Clean Water Act.
4) Cost of implementation. An article published in Construction Outlook a publication of UCANE recently published EPA cost estimates of compliance between $70,000 and $829,000 per year depending on population and size. This is very troubling because they have been known to significantly under-estimate the actual cost. At the meeting, Newton Tedder from the EPA commented that he believes most cities and towns will have to pass a storm water utility in order to pay for the costs to comply with the new Storm Phase Two regulations. Obviously, the EPA is admitting that the new regulations are an undue burden and so costly that the municipalities cannot afford them with existing revenues. It seems unlikely that the intent of Congress in passing the Clean Water Act was to authorize the EPA to mandate additional taxes and create its own hidden tax structure to accomplish its charge of cleaning the water. The EPA was charged with cleaning the water and operating within its budget as set by Congress. The States and local cities and towns must do the same. It is unconscionable at a time when state and local governments are undergoing staff and budget cuts to capriciously raise the cost of compliance with the new regulations. The local governments will be happy to work with the EPA to achieve progress on storm water. However, punishing regulations will not encourage cooperation from state and municipal partners.

The Congress of the United States should act to restrain the EPA from imposing uncontrolled and expensive tax burdens on the subjects it regulates. Taking reasonable actions to improve water quality is one thing, but being mandated to accomplish everything overnight is unfathomable. All levels of government must be cognizant of costs. The regulations, reporting requirements and the overall implementation costs must be reduced to a sustainable and rational level.

5) Signage at outfalls: Installation of signage at outfalls provides no tangible benefit to water quality. Installation of signs and posts will waste resources. The signs will encourage theft or vandalism and will provide little to no use in management of the storm drain system. All regulated organizations are required to have maps with locations of all outfalls. The availability of low cost GPS devices makes these outfalls easily located by just about anyone.

Sincerely,

Gerald Coppola
President
Massachusetts Highway Association

CC: MHA Executive Board
Thomas Philbin, MMA

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Administration | ***Highway Department*** ***WWTP*** | ***Water Department***

February 10, 2015

Newton Tedder
US EPA - Region 1
5 Post Office Square - Suite 100
Mail Code – OEP06-4
Boston, MA 02109-3912

Via Email: Tedder.Newton@epa.gov

Re: September 2014 Draft general Permit

Dear Newton:

The Town of Maynard is currently subject to the Small MS4 permit. We have reviewed EPA's September 2014 draft general permit and have developed the comments below. We anticipate the requirements having significant budget and personnel impacts on the Town and appreciate EPA's careful review of the comments.

The Town of Maynard is entirely within the 2010 US Census Urbanized Area and is therefore subject to the US EPA's National Pollutant Discharge Elimination System (NPDES) Phase II Small Municipal Separate Storm Sewer (MS4) General Permit. The Town's land area is within the Assabet River watershed. A total maximum daily load (TMDL) has been developed for Sudbury Assabet Concord (SuAsCo) watershed to address phosphorus impairments.[1]

The Town has developed the following list of potential comments and/or concerns with the *Draft NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts (Draft MS4 Permit)*, as noticed by the EPA on September 30, 2014. We understand that the EPA is accepting public comments on the Draft MS4 permit until February 27, 2015.

[1]MassDEP, 2004. *Assabet River Total Maximum Daily Load for Total Phosphorus.*
http://www.mass.gov/eea/agencies/massdep/water/watersheds/total-maximum-daily-loads-tmdls.html#20

GENERAL COMMENTS

NOI Form: The amount of detailed information required to complete the new electronic NOI Form is extensive and includes information that, in the previous permit cycle, was provided in the Stormwater Management Plan (SWMP). Having a detailed understanding of all the proposed BMPs that will be used to meet the six minimum measures, as well as those to be used to meet the water quality based effluent limitations, within 90 days is impractical. We recommend that the NOI submittal should be scaled back to provide only basic information relative to storm sewer system and leave the more detailed descriptions of the proposed BMPs to meet the six minimum measures and water quality based requirements for the SWMP, which permittees have up to a year to complete.

Timeline: First Year Requirements: The number of major activities and related plans that need to be completed in the first year of the Permit is impractical. Our review of the permit indicates that there are over ten major plans or action items need to be completed in the first year after issuance of the final permit, or sooner including:

- NOI preparation
- SWMP preparation
- Inventory of municipally-owned parks, buildings, facilities and equipment
- O&M plans for municipal facilities
- Inventory of the Town's infrastructure requiring rehabilitation and/or repair
- Sanitary Sewer Overflow (SSO) inventory
- Outfall/interconnection inventory (including condition assessment)
- Phosphorus Control Plan (PCP)
- Updated Illicit Discharge Detection and Elimination (IDDE) Plan
- Storm Water Pollution Prevention Plans (SWPPPs) for relevant municipal facilities
- Updated written protocols for erosion control inspections and infrastructure maintenance.

Comment: We suggest that the time frame to complete these activities, especially the O&M Plans, outfall/ interconnection inventory and condition assessment, PCP and SWPPP preparation be extended to at least two years from the effective date.

Pollutant Load Calculations - Appendix F and Appendix H: There is a significant amount of work to complete the calculations, tracking and accounting to address impaired waters. It will be difficult for Maynard to prepare all this information and complete the data management relative to pollutant load reductions and credits without a consultant or full time staff member, which the Town of Maynard cannot afford to employ at this time.

Comment: EPA should provide significant support to municipalities if they are to prepare this information on their own. Training sessions and outreach assistance is recommended.

SECTION SPECIFIC COMMENTS

Section 1.9.1 - Documentation Regarding Endangered Species: Before submitting an NOI for coverage, applicants must determine whether they meet the Endangered Species Act (ESA) eligibility criteria for following the steps in Appendix C of the permit.

Comment: Is EPA confident that Fish and Wildlife will have the resources to respond in a timely manner to the many communities that will need this review as part of developing their NOI? Is it reasonable to think that communities can meet this requirement within the 90 day NOI time period?

Section 1.9.2 - Documentation Regarding Historic Properties: It is unclear what documentation will be needed to demonstrate no impact to historic properties. The screening procedure outlined in Appendix D suggests that any subsurface excavation activity related to the stormwater program, which is highly likely as part of any future repair, upgrade or replacement of stormwater infrastructure, will require consultation with State Historic Properties Office (SHPO) to certify that there will no impact to historic properties and the documentation of this consultation/ certification must be included in the NOI and the SWMP in order to be eligible for permit coverage.

Comment: The SHPO certification requirement regarding subsurface excavation activity imposes two major problems: 1) the extent of possible future repairs and related excavation activity will not be fully understood at the time of NOI submittal, and 2) to obtain SHPO certification for each potential excavation activity will result in extensive added coordination time, costs and project delays if field investigations are required to obtain this certification. Also, is EPA confident that SHPO will have the resources to respond in a timely manner to the many communities that will need this review as part of developing their NOI?

Section 2.1.2.b Prohibition for Increased Discharges to Impaired Waters: This section states that there shall be no net increase in discharges from the MS4 to impaired waters listed in Categories 5 or 4B on the most recent Massachusetts Report of Integrated Waters unless the permittee demonstrates there is no net increase in loading for the specific impairment and provides documentation in the SWMP. This requirement is inconsistent with the language in Appendix F Sections IV and V which states that stormwater management for new and redevelopment shall be required to optimize pollutant removal for the pollutant of concern but not necessarily prohibit any additional increase.

Comment: In the absence of a TMDL, we feel that there is not sufficient basis for requiring no net increases and places an unnecessary burden on the MS4.

Section 2.2.1 – Discharges to Impaired Water Bodies with an Approved TMDL: Tables F-1 and F-2 of Appendix F indicate that various towns would have phosphorus reductions targets as high as 50% or more.

Comment: Given that the reported phosphorus removal efficiencies are generally in the range of 40 and 65 percent for structural stormwater BMPs and much lower for non-structural measures, this would essentially mean that nearly all, or a large majority of existing IC area, would need to be treated with structural BMPs. This is not only impractical given the wide range of site constraints that will be encountered in implementing stormwater retrofit BMPs but would also be quite costly. We suggest that EPA provide guidance for municipalities to realistically meet the targets including increased credits for

non-structural measures if they are considered truly worthy actions.

Section 2.3 - Requirements to Reduce Pollutants to the Maximum Extent Practicable (MEP):

Comment: Completing the multitude of requirements included in this section in a 5-year permit cycle is not realistic. We suggest that the number of requirements be reduced substantially and be spread over two permit cycles or allow up to 10 years to complete this section's requirements.

Section 2.3.4.5/6 Outfall Inventory and System Mapping: These sections requires the outfall and interconnection inventory to be completed within the first year and system mapping to be completed within two years of the effective date of the permit.

Comment: This time frame is very short for the undertaking. While Maynard has mapped the majority of the outfalls, developing a plan for mapping entire stormwater systems in a programmatic and efficient way is important. Towns will need to plan for this capital expense and budget for it. The time frame should be expanded to match up with TMDL and Impaired Waters control plans to use tight resources most effectively. Allow staggered mapping by higher priority waters across the town.

Section 2.3.4.7.iii – Priority Ranking: This section states that the initial illicit discharge potential assessment and priority ranking based on existing information shall be complete within one year from the effective date of the permit.

Comment: Since the drainage mapping will not be complete until two years after the permit effective date and since much of the ranking is based on this information, we suggest that a two and a half or three year time frame be required instead to align with the mapping schedule instead of asking the town to develop the ranking once based on current information and then updating it based on the more detailed information one year later.

Section 2.3.4.7.d.iv – Written Illicit Discharge Detection and Elimination Program: This section states that "The permit does not require a minimum rainfall event prior to wet weather screening. However, the purpose of wet weather screening and sampling under the IDDE program is to identify illicit discharges that may activate or become evident during wet weather."

Comment: Wet weather sampling is extremely costly and difficult to implement, especially when limited to 4 months of the year as specified. Unless there is clear evidence that there is a wet weather contamination threat, wet weather sampling should not be mandated. Bacteria levels in stormwater are highly variable and individual samples could easily show a spike which could falsely indicate an illicit connection. This could be extremely costly to try to track down with no results. It is requested that EPA provide: data on past wet weather sampling results that would show the number of outfalls sampled during wet weather for which illicit connections were found that were not also found during the dry weather screening process, cost of the stormwater sampling for all the outfalls sampled, percentage illicit connections that had wet weather contamination, not stormwater contamination found that was not indicated during dry weather sampling, and source of the contaminants found (i.e. one time dumping verses continuous illicit connection).

Section 2.3.4.7.e.ii – Catchment Investigation Procedure: This section describes the manhole inspection methodology.

Comment: We feel that it excessive amount of work to investigate every junction manhole if there is no dry weather flow or indication of any illicit discharges. Investigating upstream of outfalls requires work in the middle of roads, sidewalks, private property and will require police details and substantial field work and disruption. Time and money may be better spent on training municipal staff and contractors during their regular field work and maintenance, as well as the focused educational materials regarding what is an illicit connection for the residents/businesses/property owners. We request that EPA provide data showing that investigating upstream drainage systems when there is no evidence of illicit connections at the outfalls results in the identification of illicit connections worthy of the associated cost.

Section 2.3.4.7.g– Follow-up Screening: This section requires follow up screening (dry weather with additional wet weather where performed previously) once every five years after the initial review.

Comment: We request EPA provide evidence that spending this on-going expense will have a significant water quality impact.

Section 2.3.6(d) – Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management: This section states "All BMPs installed as part of the site's stormwater management system shall be constructed in accordance with the Massachusetts Stormwater Handbook Volume 2, Chapter 2."

Comment: The Massachusetts Stormwater Handbook is outdated for many of the changing BMP design features. Some BMPs such as permeable pavements are not even included in the Handbook. Other states are developing more updated design handbooks in response to TMDLs and stormwater requirements such as Rhode Island and the Chesapeake Bay area states. In addition, limiting designers to meeting the Massachusetts Stormwater Handbook will discourage designers to install BMPs that do not meet the standards but still provide treatment (as indicated by the EPA pollutant treatment curves). The wording should be changed to reference the MA Stormwater Handbook, as well as EPA, and other state manuals with recent updates that provide good BMP design guidelines.

Section 2.3.6.d.: This section requires permittee to track impervious area and disconnected impervious area each year.

Comment: Requiring a municipality to have an accurate database of the impervious cover broken down by what is directly connected or disconnected is an onerous requirement without an explanation of the use or benefit of such detailed data. Statewide and/or regional impervious cover data layers provide a much more cost effective estimate of impervious cover for the purpose planning, understanding trends, and identifying hot spots.

Section 2.3.7.a/b – Operations and Maintenance (O&M) Programs and Stormwater Pollution Prevention Plan (SWPPP): This section requires written O&M procedures for the municipal facilities that have specific activities listed within the first year and SWPPPs within the first two years.

Comment: This requirement includes collecting, organizing and updating information on each facility and will be difficult to effectively complete within one/two years, in addition to the other first years tasks. We suggest extending the time for completion of these documents to three years.

Appendix H, Attachment 1 – Street Sweeping and Catch Basin Cleaning Credits: The credits included in the permit are based on information from Center for Watershed Protection Street Sweeping program in the Chesapeake Basin, dated 2008.

Comment: The credits provided for street sweeping are extremely low and there is not mention in the permit of the extensive benefits of street sweeping for removing extensive amounts of debris and sediment in addition to actual pollutant loads. The credits do not provide incentive to utilize this source control method that not only removes contaminants and trash, it also contribute to the long term longevity of the BMPs that are listed as most valuable for phosphorus removal; infiltration BMPS. We recommend that this be researched further including the region specific USGS street sweeping study completed recently in Cambridge Massachusetts to determine the appropriate credits. If, in fact, the water quality benefit is shown to have such an insignificant impact then these costly practices should not be required.

Appendix F Section 2 Reporting: The equation used to calculate yearly phosphorus loads requires the permittee to estimate the amount of development that has occurred since 2005.

Comment: It is unreasonable to expect a Town to perform this estimate. We suggest that TMDL standards apply to today's level of development or that EPA update Tables F1 and F2 to reflect conditions at the date of the finalize permit.

Appendix F, Attachment 1 and 2: The loading rate Table 2-1 indicates in a footnote to assume Hydrologic Soil Group (HSG) D soils if soils are unknown to estimate pervious loading rates. Attachment 1 text on page 1 says to assume HSG C/D.

Comment: Please clarify. We suggest to assume C soils or use the surrounding soil types as an indicator. HSG D and C/D are too conservative for our region. Suggest only including this table in one location to avoid confusion.

Appendix F Attachment 3 Semi-Structural/Non-structural BMP Performance Credits: The section states that the cumulative runoff reduction is being used to estimate cumulative phosphorus load reduction credit for the semi-structural/non-structural BMPs which have an infiltration benefit by disconnecting IA and providing soil amendments to increase permeability.

Comment: The infiltration BMP curves show that phosphorus reductions are greater than runoff volume reductions. Therefore, it is conservative to use runoff volume as a direct surrogate when in fact

phosphorus reductions are likely higher. We suggest an additional phosphorus treatment factor in addition to solely the runoff reduction.

Appendix F Attachment 3 Table 3-18: The porous pavement BMP performance table gives credits based on the depth of filter course.

Comment: We would expect that the credit would be dependent on the relative watershed size to filter course depth. Please clarify.

Appendix F Attachment 3 Table 3-21: Table 3-21 references a "Grass Swale" when BMP is called a "Water Quality Wet Swale" in the main text.

Comment: The different naming and design descriptions are confusing. Is the BMP meant to be wet or dry swale? Are there results if the swale is not underdrained? This BMP gets very poor performance. A slightly modified swale designs could get much better results and should be included and encouraged.

Thank you very much for allowing us to comment on this 2014 draft general permit

TOWN OF MAYNARD

Christopher I. Okafor
Director of Operations - Public Works

cc: Kevin Sweet, Town Administrator
Andrew Scribner-MacLean, Assistant Town Administrator
Timothy Mullally, Town of Maynard Water & Sewer Forman
Joseph Foster, Town of Maynard Highway Forman
Marie Morando, Maynard DPW
Wayne Amico, Town Engineer

MCWRS Massachusetts Coalition for Water Resources Stewardship

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December 10, 2014

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Joshua Schimmel
Director, Wastewater Operations
Springfield Water and Sewer Commission

Mr. Newton Tedder
US EPA – Region 1
5 Post Office Square – Suite 100
Boston, MA 02109-3912

Re: Request for 90 Day Extension of Comment Period for Draft Massachusetts Small MS4 General Permit

Dear Mr. Tedder,

The Massachusetts Coalition for Water Resources Stewardship (MCWRS) respectfully requests a **90 day extension** of the public comment period for the Draft Massachusetts Small MS4 General Permit.

MCWRS is a non-profit organization dedicated to promoting watershed-based policies and regulations that effectively manage and conserve water resources. Our membership includes municipalities, public agencies that transport and treat drinking water, wastewater and stormwater, quasi-government agencies, environmental engineering firms and legal firms with vested interests in environmental regulation and permitting.

Representatives from our organization attended several of EPA Region 1's informational meetings and the public hearing on the Draft MA MS4 General Permit over the past months. The meetings and the draft permit raised many questions and issues to evaluate. MCWRS feels this complex document requires extensive further analysis. We request that the December 29, 2014 due date be extended to allow for comprehensive and meaningful review and comment. Given that this permit will have a significant impact on our members and the regulated community throughout the Commonwealth we hope you will grant this extension.

Thank you for your consideration in this matter and feel free to contact MCWRS if you have any questions.

Sincerely,

Philip D. Guerin
President

cc: Thelma Murphy
US EPA Region 1 Stormwater Chief

MCWRS Massachusetts Coalition for Water Resources Stewardship

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February 24, 2015

Newton Tedder
USEPA Region 1
5 Post Office Square
Suite 100, Mail Code OEP06-4
Boston, MA 02109-3912

Re: Massachusetts Small MS4 Draft General Permit Comments

Dear Mr. Tedder:

The Massachusetts Coalition for Water Resources Stewardship (the Coalition) appreciates the opportunity to comment on the Small MS4 draft general permit for Massachusetts. The Coalition, and its members, promote the use of scientifically based, fiscally responsible approaches to realize environmental and community goals, as well as watershed-based policies and regulations to effectively manage and conserve water resources. Nearly 40 Coalition members are municipalities and districts[1] who will be among the 200 or so communities charged with implementing the provisions of this permit. In previous comments on the New Hampshire Small MS4 Draft Permit (August 15, 2013) and in the comments that follow, we hope to guide Region 1 in crafting a stormwater permit that addresses water resources issues but remains reasonable, considerate of the realities of municipal operations and finances, and is consistent with statutory limitations on municipal stormwater pollution control stipulated in the Clean Water Act. Unfortunately, many of our concerns expressed in comments on the New Hampshire permit remain unaddressed and the Massachusetts draft permit fails in terms of reasonableness, consideration of municipal realities, and concurrence with the law.

General Comments:

While the goal of the Clean Water Act is laudable and supported by the Coalition, we consider the requirements in the MA Small MS4 general permit to be overly prescriptive, burdensome, and most likely unachievable for most communities.

[1] The following municipalities and districts are members of the Coalition: Charles River Pollution Control District, Cherry Valley Sewer District, City of Attleboro, City of Beverly, City of Chicopee, City of Haverhill, City of Holyoke, City of Marlborough, City of New Bedford, City of Peabody, City of Salem, City of Worcester, Greater Lawrence Sanitary District, Lowell Regional Wastewater Utility, South Essex Sewerage District, Springfield Water and Sewer Commission, Town of Bellingham, Town of Concord, Town of Danvers, Town of Dedham, Town of East Longmeadow, Town of Fairhaven, Town of Framingham, Town of Franklin, Town of Holden, Town of Marblehead, Town of Medway, Town of Milford, Town of Millbury, Town of North Reading, Town of Southbridge, Town of Uxbridge, Town of Wellesley, and Upper Blackstone Water Pollution Abatement District

Schedule Constraints: The schedules set forth in the draft permit are not reasonable or feasible when considered in the context of municipal realities. Schedules for some aspects of the permit may appear reasonable but become unreasonable when the permit is viewed in its entirety and it becomes clear that schedules for most parts of the permit overlap.

Significant Administrative Burden: The permit, as drafted, would create a significant administrative burden for municipalities that would detract from their ability to provide direct benefits to water quality through such concrete activities as increased street sweeping, increased catch basin cleaning, and removal of illicit discharges. The permit goes overboard in terms of monitoring, measuring, and quantifying changes in pollutant loads. More environmental progress would be gained if communities could focus resources on actual, physical improvements to stormwater systems and not on pollutant accounting. Per the Clean Water Act municipalities are obligated to remove pollutants from stormwater to the maximum extent practicable and that should be the objective of the permit. The ongoing assessment of receiving waters is a function of MassDEP, not individual communities.

Funding Challenges: Many of the deadlines provided in the draft permit do not allow sufficient time to allocate funding within set municipal budget cycles to complete the tasks required. No item in the permit should be required to be completed during the first permit year except the preparation of the Stormwater Management Plan (SWMP).

Integrated Planning Opportunities: There should be language within the permit that references EPA's Integrated Planning framework and how integrated planning can be utilized to address a community's stormwater/MS4 requirements. That language should be specific about how an integrated planning approach could be applied through the permit and how permit conditions, including implementation schedules, would be modified under an integrated plan.

Section-Specific Comments:

1. Section 2.1 Water Quality Based Effluent Limitations and 2.1.1-Requirement to Meet Water Quality Standards: Section 2.1 (page 9) states that "Pursuant to Clean Water Act Section 402(p)(3)(B)(iii), this permit includes provisions to ensure that discharges from the permittee's small MS4 do not cause or contribute to exceedances of water quality standards…". Similarly, the Fact Sheet, at page 4, states "Section 402(p)(3)(B)(iii) of the CWA also authorizes EPA to include in an MS4 permit 'such other provisions as [EPA] determines appropriate for the control of … pollutants'" and that "[t]his provision forms a basis for imposing water quality-based effluent limitations (WQBELs)" citing to *Defenders of Wildlife v. Browner.* 191 F.3d 1159 (9th Cir. 1999), and EPA's preamble to the Phase II regulations, 64 Fed. Reg. 68722, 68753, 68788 (Dec 8, 1999); and at page 16, that "EPA interprets this latter clause (i.e. "such other provisions as [EPA] determines appropriate for the control of . . . pollutants" at Section 402(p)(3)(B)(iii) of the CWA) to authorize the imposition of water quality based effluent limitations." This interpretation distorts entirely the meaning of CWA Section 402(p)(3)(B)(iii) and the intent of Congress in enacting this provision, and is incorrect. When Section 402(p) of the CWA was added

in 1987, it established a comprehensive new scheme for regulation of stormwater. It differentiated the technology-based requirements for MS4s relative to the rest of the NPDES program by creating a new "maximum extent practicable standard," in contrast to the traditional BAT/BCT standard that applied to industrial stormwater and other wastewater discharges. The opening clause of CWA § 402(p)(3)(b)(iii) states that, unlike industrial stormwater permits, MS4 permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable . . . ." A subordinate clause states that such controls shall include "management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants." Each of those controls is subject to the limitation in the first clause that they shall be required "to the maximum extent practicable." EPA's interprets this provision contrary to its plain meaning and in a manner which suggests that the final clause referring to "such other provisions as the Administrator or the State determines appropriate" is independent and coequal with the requirement to reduce pollutants to the "maximum extent practicable." Region 1's reading distorts the syntax of § 402(p)(3)(B)(iii) and the intent of Congress in enacting this provision.

The Region also suggests, incorrectly, that the Ninth's Circuit's opinion in *Defenders of Wildlife v. Browner* supports this misreading of the statute. While in dicta at the end of its decision, the court suggested that the "such other provisions" clause allowed EPA the discretion to include "either management practices or numeric limitations" in MS4 permits, the court did not say that the discretion to include numeric limitations or to require compliance with water quality standards could be exercised without regard to the "maximum extent practicable" limitation in the statute. That issue was not presented by the facts of the case before it, and it was not addressed in the court's opinion. Had the court so ruled, it would have been contrary to the plain language of the statute and subject to reversal on appeal.

Federal courts have consistently ruled that the MEP standard is the only standard that MS4 discharges are required to meet. *Natural Resources Defense Council, Inc. v. U.S. EPA*, 966 F.2d 1292, 1308 (9th Cir. 1992) (CWA § 402(p)(3)(B) "retained the existing, stricter controls for industrial stormwater dischargers but prescribed new controls for municipal stormwater discharge); *Defenders of Wildlife v. Browner*, 191 F.3d 1159, 1165 (9th Cir. 1999) (CWA § 402(p)(3)(B) "replaces" the requirements of § 301 with the MEP standard for MS4 discharges, and it creates a "lesser standard" than § 301 imposes on other types of discharges); *Environmental Defense Center v. EPA,* 319 F.3d 398 (9th Cir. 2003), vacated, rehearing denied by, and amended opinion issued at 344 F.3d 832 (9th Cir. 2003) (CWA "requires EPA to ensure that operators of small MS4s 'reduce the discharge of pollutants to the maximum extent practicable'"); *Mississippi River Revival, Inc. v. City of St. Paul,* 2002 U.S. Dist. LEXIS 25384 (N.D. Minn. 2002) ("the CWA specifically exempts municipal stormwater permittees" from the requirement to ensure that water quality standards are met).

In addition, EPA's citation to the Preamble to the Phase II regulations, 64 Fed. Reg. 68722, 68753, 68788 (Dec. 8, 1999) to support its interpretation of Section 402(p)(3)(B)(iii) of the CWA as authorizing the imposition of water quality based effluent limitations is disingenuous. The Preamble to the Phase II rule at 64 Fed. Reg. 68788, states only that EPA disagrees with commentators who challenged EPA's interpretation of the CWA as requiring water quality based effluent limits for MS4s. The Preamble gives no legal rationale. Like the fact sheet, at page 4, the Preamble to the Phase II rule cites to *Defenders of Wildlife*. As noted above, *Defenders of Wildlife* does not support the proposition that EPA can require MS4 operators to comply with WQBELs regardless of practicability.

EPA has taken the position in the defense of the Phase II rule in *Environmental Defense Center* that:

> MS4 requirements… rest on the "maximum extent practicable" ("MEP") standard which CWA Section 402(p)(3)(B)(iii), 33 U.S.C. § 1342(p)(3)(B)(iii), prescribes for Section 402(p) municipal storm sewer permits. 40 CFR § 122.34(b). Thus, while the regulations suggest numerous ways in which small MS4s ought to control their stormwater discharges, *the MS4s are not, in the end, required to do anything that is not "practicable."* 2000 U.S. 9th Cir. briefs 70014, 70020 (June 26, 2001). (Emphasis supplied)

Given the plain language of Section 402(p)(3)(B)(iii), any application of the Phase II rule to require that MS4 discharges need to meet WQBELs regardless of "practicability" would be *ultra vires*.

The cited section of the Clean Water Act makes no mention of water quality standards. Instead, it establishes Maximum Extent Practicable (MEP) as the standard to which pollutants must be removed from municipal MS4s. The language in section 402(p)(3)(B)(iii) of the Act is clear that MEP governs pollution control requirements for municipal stormwater discharges. Section 402(p)(3)(B)(iii) of the Act states that controls to reduce the discharge of pollutants to the MEP include management practices, control techniques and systems, design and engineering methods, and such other provisions as the Administrator determines appropriate for the control of pollutants. The "such other provisions" clause is within the broader context of the MEP standard, not separate from it as EPA tries to imply. The proper wording throughout the permit that would be consistent with the Act would be for the permittee to meet water quality standards to the maximum extent practicable. For Congress to bother to include such language in the Act is clear and unassailable evidence that lawmakers understood that there are limitations in the ability of municipalities to meet water quality standards in stormwater discharges. These limitations are spelled out in the statutory standard of MEP applied only to municipal stormwater discharges. NPDES stormwater permits for municipalities will continue to be contentious as long as EPA refuses to recognize that the MEP standard applies as the only mandate for pollutant removal from MS4s. Water quality standards and TMDL waste load allocations may be goals but are not the required

standards that must be achieved in municipal stormwater.

2. Section 2.1.2 Increased Discharges: New and additional stormwater flow to impaired waters regardless of concentration would be prohibited under this draft permit. This requirement could only be overcome by demonstrating that the pollutant of concern is not present in the new/increased discharge or that the total load of pollutants to the impaired waters will not increase. Even the most innocuous "new discharge," say a new single family home with a driveway and stormwater-minimizing design, will produce some pollution and will add some additional load, be it insignificant, to a receiving water. The language in this section could thus be interpreted to mean no new development in MS4 areas draining to impaired waters. Many urban areas of Massachusetts have nothing but impaired waters. This section could effectively preclude new development in such communities. That is an impact that goes far beyond EPA and federal authority. This language must be modified to stipulate thresholds on new/additional pollutant loads being significant and not merely all new loads.

3. Section 2.2.1.b (pages 11-15) and Appendix F, Part A: The permit requires compliance with TMDL waste load reductions associated with stormwater. It mandates a progressive reduction in pollutant loads with 100% reduction achieved within 15 years. The permit neglects to recognize that most TMDL's developed for Massachusetts waters are lacking in sound science and are instead based on very generic models of watershed loading. In many cases there is a dearth of actual sampling data from the TMDL regulated waters or data may be 25 or more years old. Even in the more rigorous Charles River TMDL for phosphorus, the model used to determine needed phosphorus reduction produced results that are not supported by actual test data. The TMDL's which drive pollutant removal requirements in the draft permit are wholly inadequate for this purpose and cannot legitimately justify specific pollutant load removal for the vast majority of waters. To be consistent with the Clean Water Act and avoid reliance on unsubstantiated pollutant load reductions, municipalities should be required to remove the pollutant of concern to the maximum extent practicable by implementing feasible BMPs, including structural and non-structural measures, that have been demonstrated through generally accepted research to be effective at removing that pollutant. Municipalities cannot do any more than what is feasible and should not be squandering limited resources chasing highly tenuous pollutant "numbers".

4. Section 2.2.1.c (pages 15-17) and Appendix F, Part B: Massachusetts municipalities should not be held to comply with out-of state TMDL requirements. TMDLs are determined by state environmental agencies. While there may be an "open" regulatory process for TMDL development it is highly unlikely that process and its requisite public notification was extended to potentially impacted communities outside of the state. The interests of Massachusetts municipalities were not represented by anyone during TMDL development in Rhode Island, Connecticut, New York, Vermont or New Hampshire. Massachusetts cities and towns are now being subjected through this draft permit to regulatory programs in other states to which they had no opportunity to participate. Even within Massachusetts, the majority of TMDLs were developed in the early 2000's at a

time when their link to future stormwater permits was unknown. Massachusetts TMDLs, with few exceptions, were offered as stand-alone documents with little bearing on anything that a municipality would be required to do. Had it been clear that these documents would have substantial and costly implications for cities and towns the TMDL development process would have fallen under much greater scrutiny and the haphazard, unscientific way they were created would likely have been challenged. The TMDL program in Massachusetts is so hopelessly flawed in terms of science and public process that it should not be utilized for NPDES permitting at all, let alone be the primary focus of a MS4 general permit.

5. Section 2.2.2 Discharges to Certain Water Quality Limited Waters Subject to Additional Requirements (pages 17-22) and Appendix H: This section assumes that there has been sound and defensible science used to determine the cause of impairments of numerous water bodies. That has rarely been the case. State agencies including Massachusetts DEP have rarely had the resources to perform legitimate water quality investigations of lakes, ponds and rivers. Very often an assessment of a water body is based on the most cursory information (visual observation of weeds or algae) and lacks the detailed sampling and analysis needed to truly determine conditions and causes. Yet this unscientific assessment will now result in communities expending significant resources developing nitrogen source identification reports and phosphorus source identification reports along with the planning, implementation and tracking of structural BMPs for removal of these pollutants. For some communities, the "water quality limited waters" driving these added expenses could be 75 miles downstream. It is ludicrous to imagine that stormwater generated in a small community of 5,000 people could have a significant impact on a coastal bay nearly 100 miles distant yet that is what is being described in this section. There needs to be both better science and common sense applied before cities and towns are held to "fix" problems that often do not exist.

6. Section 2.3.2 Public Education and Outreach: While EPA provides more time to conduct the public education program in this draft of the permit, it is important to keep in mind that the majority of the public does not understand how stormwater can become polluted and how it can contribute to water quality issues. Most of the public still believes that catchbasins in their roads transport stormwater to a treatment facility prior to discharge. In addition, most people do not understand the concept of a watershed, or the concepts related to the water cycle (rainfall, runoff, infiltration, and evapotranspiration). A significant amount of awareness-raising must be done across the United States prior to an individual community education/outreach campaign in order to truly stimulate behavior changes in the general public. Many municipalities see a large influx of visitors during the tourist season and thus education must extend well beyond the immediate locality to be truly effective. Stormwater education is a national need and should be spearheaded by EPA nationally through a consistent education campaign and not simply left to municipalities.

7. Section 2.3.4 Illicit Discharge Detection and Elimination (IDDE) Program (pages 25-37): Overall the IDDE program as described is highly prescriptive and very burdensome.

While IDDE is necessary and valuable for a strong stormwater management program, the extent to which a municipality can comply with the edict mandated in the draft permit is questionable. The schedule mandated by the permit is unreasonable for an initiative that constitutes a major capital project requiring significant expenditures and coordination. The described program needs to be tempered by the Maximum Extent Practicable standard and thus subject to that which is feasible.

8. Section 2.3.4.1 Definitions and Prohibitions (page 25): EPA needs to modify its definitions to differentiate illicit discharges caused by mis-connected sewer laterals or direct introduction of contaminants into the MS4 by illegal dumping from those caused by systemic failures within the sanitary sewer or MS4. It is one thing to track, identify, and remove an illicit connection but altogether different to track, identify, and correct a failed sanitary sewer or similar system defect. The former are generally easy to locate and repairable within a relatively short time while the latter are extremely difficult to locate and repair and may involve wholesale replacement of large parts of the sanitary sewer collection system. The language in section 2.3.4 implies a "one size fits all" approach to IDDE and it clearly is not in terms of locating and removing the illicit discharge.

9. Section 2.3.4.4 a through e: This Sanitary Sewer Overflow reporting requirement is redundant and should be removed from the Small MS4 permit. MassDEP already requires SSO reporting through statewide regulations. For purposes of this MS4 permit, the term SSO needs to be defined. Relative to stormwater management and MS4 permitting the only SSO that should be considered are those that discharge through a stormwater outfall into a receiving water. SSOs that enter basements or are contained on street surfaces or upland areas have no link to an MS4.

10. Sections 2.3.4.5 and 2.3.4.6 (page 26-28): Outfall and interconnection inventory and system mapping are necessary and valuable components of stormwater management. However, the timeframe to complete these more detailed studies is likely inadequate, especially for smaller communities that may lack GIS and GPS capabilities. Communities should identify feasible schedules for completing this work within their SWMP.

11. Section 2.3.4.7.d.i (page 32): The Coalition objects to the requirement that the permittee adopt a screening and sampling protocol consistent with a January 2012 draft document (EPA New England Bacterial Source Tracking Protocol). If this protocol is to be used in a regulatory context as proposed for this permit, it should be subject to rule making, peer reviewed, and scrutinized by others outside of the Agency and become a Final, not a draft, before making its use mandatory. Otherwise, the draft document may be useful as a suggested reference only.

12. Section 2.3.5 – Construction Site Stormwater Runoff Control, and 2.3.6 – Stormwater Management and New Development and Redevelopment (Post Construction Stormwater Management). These provisions require permittees to develop, implement, and enforce a

program to reduce pollutants and any stormwater runoff discharge to the MS4. EPA has no authority to make local land-use decisions by compelling permittees to make specific choices with regard to ordinances or other regulatory mechanisms. EPA is exercising federal land-use mandates on a local basis in violation of the 10th Amendment of the Constitution.

These provisions would also apply to public road reclamation and resurfacing projects involving more than ¼ mile of 30 foot wide pavement (approximately 1 acre equivalent). By doing so, this permit would cripple local road maintenance budgets by effectively requiring redesign and construction of entirely new stormwater collection and control systems for all but the smallest road resurfacing project. Maintaining safe, passable roads is among the highest priorities of local government and one that is currently grossly underfunded. Taking limited funds and utilizing them for stormwater improvements for virtually every significant resurfacing project will greatly curtail meaningful improvements to local roads. Resurfacing and pavement maintenance projects should be exempted from this requirement to meet stormwater standards. The standards might be applicable to road reconstruction projects but only to the extent that they are practicable.

13. Section 2.3.6.d (pages 42-43) Directly Connected Impervious Area: The requirement to monitor and track impervious cover is a burdensome and inappropriate requirement for most municipalities. It has the appearance of a research effort and not a tool that will benefit stormwater management by the community. Compiling and tracking impervious area will require manpower and costs that would be better utilized implementing better stormwater control systems. If Region 1 is that interested in tallying impervious cover acreage, the Coalition suggests it directly fund and coordinate with colleges and universities to accomplish the task through graduate and undergraduate GIS projects.

    Region 1's effort to regulate impervious surfaces raises the legal issue on whether such surfaces are "point sources" under the NPDES permit program. Impervious surface, on its own, cannot be subject to regulation under the NPDES permit program because impervious surfaces are neither a "point source" nor a "pollutant." Instead, it is a feature of the landscape that indirectly influences how water is carried on and off land. Congress predicated the stormwater permitting program and Section 402(p) of the CWA on "point source" discharges of "pollutants" from certain categories of dischargers, including MS4s and industrial activities. If Region 1 were to interpret "point source" to include impervious surfaces, it renders that term meaningless and contrary to Congressional intent to define the term and distinguish between "point sources" and "nonpoint sources." In addition, Region 1's authority to control pollutant discharges does not encompass the ability to mandate land-use decision-making. While local authorities can develop a regulation, for example, to limit impervious surfaces or other stormwater flows into the MS4, EPA is limited to regulating the discharge of pollutants from the MS4 and cannot force MS4s to do what EPA is not otherwise authorized to do, including imposing restrictions on local land use decisions. While on November 26, 2014, EPA released a guidance memorandum in which it asserts authority to mandate retention standards based upon the amount of impervious surface at a site, that authority is necessarily limited to

discharges from MS4 storm system (i.e., the ”point source”) into navigable waters. In short, impervious surfaces are not “point sources” under the NPDES permit program. CWA Section 304 prohibits unauthorized point source discharges, but Congress left the regulation of nonpoint source pollution to the states.

The Coalition appreciates the opportunity to comment on Massachusetts Draft Small MS4 General Permit. We urge EPA to consider modifications to the permit that will make it more sustainable and reasonable for municipalities and consistent with the Clean Water Act.

Sincerely,

Philip D. Guerin
President & Chairman

CC: MCWRS Members
Massachusetts Congressional Delegation
Commissioner Martin Suuberg - MassDEP

Tedder, Newton

From: Penny Antonoglou <paburns@medford.org>
Sent: Monday, December 29, 2014 4:21 PM
To: Tedder, Newton; Velez, Glenda
Cc: ckoutalidis@medford.org
Subject: Comment on the 2014 Draft Massachusetts MS4 General Permit

Dear Mr. Tedder and Ms. Velez:

The City of Medford is committed to working towards the improvement of the surface water quality within our boundaries. Since the issuance of the 2003 MS4 stormwater discharge permit we have done extensive work in screening and analytical monitoring of our approximately 111 outfalls along the Mystic and Malden Rivers during both dry and wet weather; and we have investigated, identified and successfully removed illicit discharges. The City is currently under an administrative order, issued by EPA in August 2009.

We have reviewed the new Draft MA MS4 General Permit "General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts" issued by the EPA in 2014. The following are our comments on sections of the draft permit:

- Section 2.3.2 Public Education and Outreach:
Per paragraph e. "The permittee shall identify methods that will use to evaluate the effectiveness of the educational messages and the overall education program." It would be helpful if the EPA had already developed educational messages and methods of distribution that have been proved successful. Communities have been conducting public education and outreach for many years under their MS4 permit which they have been reporting to the EPA. That is plenty of material for the EPA to have evaluated, and present the effective educational messages and outreach methods.
We object to having to evaluate the effectiveness of the educational program, which is an unnecessary burden.

- Section 2.3.4.7.c. Assessment and Priority Ranking of Catchments:
Per 2.3.4.7.c.ii the assessment and priority ranking of catchments shall be performed based on certain screening factors. One of them is "age of surrounding development and infrastructure": " (…) areas where the sanitary sewer system is more than 40 years old will probably have a high illicit discharge potential". Given that the majority of sewer infrastructure in Massachusetts is much older than 40 years old, this "priority" ranking factor is quite ineffectual in the assessing and ranking of catchment areas. In Medford, where 98% of the sewer system is older than 40 years, the permit essentially ranks the whole City as a priority catchment area. Which again defeats the purpose of "ranking" the catchment areas within the City: a citywide blanket ranking of "high priority" does not help to identify the catchment areas more susceptible to illicit discharges.

- Section 2.3.4.7.d. Outfall and Interconnection Screening and Sampling:
The permit should explicitly state that the screening and sampling of interconnections is the responsibility of the upstream municipality.

Per paragraph iii. "If no flow is observed, but evidence of dry weather flow exists, the permittee shall revisit the outfall during dry weather within one week of the initial observation (…)". How does EPA

differentiate between evidence of dry weather flow vs. evidence of wet weather flow? Please explain the phrase "evidence of dry weather flow". This term should be revised to state "evidence of illicit flow". The main function of an outfall is to convey flow in wet weather. Given that outfalls show evidence of flow that is primarily due to wet weather, the persistence of the permit to even suggest that a dry outfall should be revisited is perplexing. An outfall that is found dry in dry weather should not require any kind of follow-up investigation.

Paragraph iv. requires wet weather screening and sampling of all outfalls. Per same section " (…) the purpose of wet weather screening and sampling under the IDDE program is to identify illicit discharges that may activate or become evident during wet weather. " The permit essentially requires that every outfall in the City will be screened and sampled during wet weather. Wet weather analytical monitoring is a difficult and expensive task, which almost always is inconclusive. We have performed wet weather sampling, and the sampling results were never helpful in finding illicit discharges. It is the most inefficient way to conduct IDDE investigations. We have been hearing this from numerous other Massachusetts municipalities. The wet weather sampling requirements will drain our resources without giving us meaningful results.

The question becomes what is the rationale behind wet weather sampling? When the question has come up in public meetings EPA's response was some sort of low probability scenario that in absolutely no way justifies the time and money municipalities are required to invest. Additionally, EPA has told us that wet weather sampling is sought in order to provide some "range" of data to EPA. If EPA is interested in capturing such data for its own research project, then perhaps EPA itself could undertake the sample and analysis.

Perhaps, wet weather screening and sampling should be required in catchment areas that have already exhibited significant problems based on dry weather flows, CCTV work and other investigations. But certainly not in every catchment where problems are not present.

More to the point, what data is there to support the efficiency and effectiveness of wet weather screening and sampling? New England communities have been sharing their wet weather investigations data with EPA. Prior to finalizing the permit, we would like EPA to share this data with us, specifically how much money has been spent on wet weather sampling, how many locations have been sampled, and how many point sources and volume of illicit discharges were found.

- Section 2.3.4.7.e. Catchment Investigation Procedure:

The System Vulnerability Factors that should be used to identify areas with "risk of sanitary inputs to the MS4 under wet weather conditions" are so general and all inclusive that using them would rank the whole city of Medford as high risk. Under our current administrative order, we have performed extensive dry and wet weather screening and sampling, that shows that the majority of catchment areas in the city are low risk.
Incidentally, in the majority of Massachusetts municipalities sewer and drain infrastructure is older than 40 years in medium and densely developed areas. Again, this is a very ineffective tool to rank the different catchments. Based on those, wet weather screening and sampling would be required for every outfall; the results are guaranteed to be inconclusive in identifying illicit discharges and connections.

From what date is the 40 years calculated from? We would like the EPA to explain why "40" years was selected as threshold in the age vulnerability factor. We request that the 40 year old vulnerability factor is removed, or at a minimum the age is increased. We have seen much older pipes that are in perfectly good condition.
We request being allowed to group criteria and develop ranking that allows us to target the most significant issues first.

Furthermore, the key junction manhole inspection methodology is very broad and would essentially require a large number of manholes to be investigated, even though "no evidence of an illicit discharge is observed at the outfall". This is yet another instance where it is difficult to justify the enormous effort municipalities are required to undertake, and the efficiency of the approach is highly questionable.

We have stated our objections to wet weather investigations requirements in a previous comment above.

- Cost:
In a time of budget cuts the requirements of the permit will significantly add to the cost of compliance, and it will not be cost-effective. We estimate that the cost to meet the requirements of the new permit will be approximately $300,000 more than the cost of compliance with the 2003 permit. This is a significant cost increase. We believe EPA should re-evaluate the cost of permit compliance for communities like Medford, and examine if it is cost effective.

Overall we believe that our resources should be better spent and invested in problems we have already identified and need to solve. During regular maintenance and mapping of drain manholes, we have identified areas with potential problems. We will concentrate and work on these known problems. Continuous investigations and sampling should not be our priority at this point. Additionally, SSOs are the major contributor of pollutants to our rivers. Infiltration/ inflow are the major sources of the SSOs. We know where some of the infiltration/inflow problems are; we are and should continue investing our resources on removing these. We should invest our resources in removing catch basins tied to sewer lines, construct drain mains and tie the catch basins to the drain system. Additionally, due to the increased cost required to comply with the new permit, several works planned for the near future will see diverted funds and thus stall.

Sincerely,

_____

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December 22, 2014

Mr. Newton Tedder
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, Massachusetts, 02109-3912

Via E-mail: Tedder.Newton@epa.gov

RE: Draft NPDES General Permit for Stormwater Discharges From Small Municipal Separate Storm Sewer Systems in Massachusetts – Public Comment Letter

Dear Mr. Tedder:

This letter is submitted to you in accordance with public comment procedures related to the proposed NPDES General Permit referenced above. The concerns enumerated below constitute "reasonably ascertainable issues" developed on the basis of review of the draft General Permit, supporting documentation provided by EPA (including fact sheets, appendices, technical guidance and reports), and practical experience implementing the program over the preceding eleven (11) years of the existing permit term. These are significant issues that warrant response by EPA and consideration for modifications in the final General Permit. The initial comments refer to conditions associated with "Requirements to Reduce Pollutants to the Maximum Extent Practicable" (the six Minimum Control Measures [MCM]); the latter comments refer to conditions related to "Water Quality Based Effluent Limitations (WQBELs)." General comments follow thereafter.

Comments

Minimum Control Measures / Maximum Extent Practicable Requirements

1. **MCM 1 – Public Education and Outreach**: Although not explicitly required under the permit, EPA has repeatedly suggested that introducing stormwater quality-related topics in school curricula would be an appropriate and cost-effective means of achieving MCM-1 objectives. Experience has demonstrated that statutory subject requirements within most school systems makes it very difficult to introduce non-mandatory (or non-MCAS related) material. Cost estimates related to achieving the minimum requirements of this MCM appear to be under-representing the broad audience targets and should not assume school programs as the basis for cost estimates.
2. **MCM 3 - IDDE Investigations**: Level of effort to achieve all of the elements of the Illicit Discharge Detection and Elimination (IDDE) Program is significantly higher than currently experienced and not significantly reduced from previous drafts despite prior concerns expressed in this regard. Several specific issues include:
    a. **Catchment Prioritization:** We recognize the value of categorizing and ranking/prioritizing catchments as a means of identifying more likely pollutant

sources early in the program. Protocols for ranking catchments (and continually re-evaluating rankings) require significant knowledge about storm drain and sanitary sewer system condition and characteristics, which are elements drawn from mapping and investigations that are executed after the initial prioritization is completed at the end of year 1. The methods described in the permit provide some latitude based on "existing knowledge," however, it is important that absence of specific information regarding a catchment does not default to "High" categorization or prioritization within a category. We are concerned that "unknown" conditions related to screening factors may result in a disproportionate number of catchments being categorized as Problem or High, which in turn places these catchments on a faster-tracked investigation schedule with implications for labor and costs for communities. *Proposed Modification*: Ranking and prioritization factors are highly specific, and cover a broad spectrum of infrastructure condition, land use, laboratory analytical results and development age/characteristics. We suggest simplifying the procedure and allowing communities to categorize catchments as either "excluded" or "problem" as defined in the permit, with all other catchments falling into "other" to be investigated on a prioritized basis developed through local operator knowledge. Investigations can be performed within the 10-year timeframe currently established in the permit, with documentation on investigation results provided in annual reports. For those communities that have already undertaken a prioritization exercise on the basis of guidance provided in the 2010 Draft Permit, that ranking ought to be allowed as the basis for execution of the plan.

b. **Wet Weather Monitoring:** The Fact Sheet accompanying the general permit indicates that the revised wet weather monitoring requirements were modified to reduce the number of outfalls that would require labor intensive sampling/monitoring. However, the twelve (12) specified "System Vulnerability Factors" provided as the basis for inclusion in a wet weather monitoring program encompass a broad swath of infrastructure system characteristics and the "one or more" threshold trigger for categorizing a catchment as a wet weather monitoring candidate will capture the vast majority of outfalls in many if not most communities. This fails to provide the relief communities requested during the 2010 Draft General Permit comment period, and which the fact sheet accompanying the 2014 Draft General Permit implies has been provided. *Proposed Modification*: Wet weather screening of catchments should be conducted on the basis of observed conditions during physical investigation of catchments rather than the system vulnerability factors presented in the permit. Actual conditions as the trigger for further investigation will mitigate the low threshold ("one or more") and the breadth of the factors that, as proposed, will result in a disproportionate number of outfalls requiring wet weather screening.

c. **Catchment Investigation Procedure:** The storm drain network investigation as proposed, including the physical inspection of all key junction manholes irrespective of evidence of dry weather flow or other illicit connections at the point of outfall discharge, is new, excessive, and will fail to provide environmental benefit for the additional labor and expense required. *Proposed Modification:* Allow local MS4 operators to implement a manhole inspection methodology appropriate to the complexity of their system, to be documented in their IDDE plan, with results reported annually as required in the current permit.

3. **MCM 3 - IDDE Mapping:** New mapping requirements relating to sewer infrastructure under the IDDE MCM are a significant concern, as they not only require mapping of all storm drain components, but now must include sanitary sewer infrastructure "where available" and knowledge of asset conditions relative to both storm and sewer systems in order to implement procedures related to prioritization and execution of catchment investigations on the basis of the System Vulnerability Factors. This level of asset inventory, condition assessment, mapping and documentation represents an effort that could take much longer than the two (2) year deadline in the permit. Based on the dynamic and cumulative documentation relative to investigations and program progress, it is also clear that communities are virtually required to develop this mapping and condition assessment as part of a GIS database. For communities that have not begun or are in early stages of GIS development, two years is certainly an inadequate amount of time. The "where available" language relative to sewer mapping (Section 2.3.4.6 (a) (ii)) is itself problematic because it is not clear to what extent the MS4 operator, who may be different than the sanitary sewer system operator, is required to obtain, develop or update sanitary sewer mapping elements that could influence catchment prioritization or wet weather screening obligations through the course of the permit term. *Proposed Modification:* Extend deadlines for storm system mapping requirements to Years 4 or 5 and make all sanitary sewer mapping voluntary or "recommended" rather than required.
4. **MCM 3 - Sanitary Sewer Overflows**: The inclusion of sanitary sewer infrastructure management or monitoring (such as reflected in Section 2.3.4.4 – Sanitary Sewer Overflows) as a component of MS4 permit compliance is a redundant requirement since communities that operate sanitary sewer systems are already regulated in this regard under existing wastewater NPDES permits. The manner in which the condition is incorporated into the MS4 permit potentially subjects communities to multiple penalties under separate permit programs in the event of an SSO excursion. *Proposed Modification:* Elimination of this requirement.
5. **Affordability; Estimated Program Cost Increases**: EPA directs MS4 owners to the 2011 "*Sustainable Stormwater Funding Evaluation*" Final Report for reference regarding anticipated program cost increases (administrative, operating and capital) under a variety of scenarios. This document, and subsequent evaluations conducted for other Upper Charles River watershed communities including Medway and Millis, indicates that program administrative/operational costs alone will range from double to quadruple

existing expenditures. More recent updates to these figures for the communities that were the subject of EPA's detailed analysis indicate that, if anything, these estimates are under-representing the magnitude of cost increases. Capital costs to comply with the TMDL requirements embedded in the permit are estimated in the tens of millions of dollars. The enormous gains in water quality under the Clean Water Act in the first two decades after passage were achieved through a locally affordable program aimed at primarily wastewater-related point source discharges, and underwritten by state and federal funding equivalent in many cases to 90% of the program capital cost. Stormwater-related pollutant contributions to receiving water bodies are much more difficult to control and will achieve an incremental water quality improvement compared to the wastewater discharges that were the target of initial infrastructure investments. It is inconceivable that the estimated costs of this MS4 program can be affordably sustained by a limited number of property owners within communities subject to the most stringent pollutant reductions. Water quality improvements have local, state and national benefits. A program that EPA and other environmental organizations (regulatory, advocacy/non-profit or commercial) recognize as this important should have some kind of legislative or Congressional support that provides adequate funding to promote programs that can achieve water quality improvements in a more equitable and financially sustainable manner.

6. **Regional or Alternative Implementation Opportunities**: Many of the sustainable funding alternatives explored in the 2011 report refer to opportunities for working with designated dischargers (DD) in some capacity. The Residual Designation Authority (RDA) Draft Permit has not progressed in some time, and there is little information available as to the likelihood of this permit ever becoming final. In addition, under current conditions, it applies to a very small number of communities (Bellingham, Franklin and Milford). Private properties are a major contributor of pollutants to MS4 discharges, however, this RDA mechanism is an unwieldy approach to incorporating private activity into pollutant control. If the permit were to be finalized as it currently stands, these three communities are likely to experience detrimental economic development impacts due to the additional cost of operating in their towns compared to immediately abutting communities. Without passage, however, private property owners have no incentive to collaborate with local authorities regarding operation of sites that were designed and constructed in accordance with local stormwater regulations in place at the time of development. It is unrealistic to include any of the funding scenarios that include cooperation or collaboration with a group of designated dischargers that do not exist today, are unlikely to be designated in the near future, and are unlikely to voluntarily engage in a complex and costly program without measurable benefit to them directly.
7. **Affordability; Integrated Planning (IP):** The water quality protection objectives of the NPDES stormwater and wastewater programs are recognized and supported by the regulated community. However, inclusion of an increasing number of the sanitary sewer

management elements into the MS4 permit program suggests that EPA is migrating towards an integrated planning model as presented in your "Integrated Municipal Stormwater and Wastewater Planning Approach Framework." As provided for in the conditions of this draft permit, however, the effect is to import compliance conditions suitable for wastewater management programs while failing to provide permit relief or incentives to the regulated community for employing an integrated management approach to community water resource assets, including stormwater management infrastructure. The result is the equivalent of "double jeopardy" under dual permits without schedule, affordability or reporting relief. *Proposed Modification*: EPA should integrate an affordability assessment component into the Permit that will allow communities to determine the extent to which they and their constituents can afford to implement Clean Water Act requirements associated with both storm and sanitary sewer permit obligations, including operational and capital costs. If EPA is committed to the IP approach, general permits such as this should be explicitly incorporating elements of the framework on an iterative basis (i.e. every term renewal moving closer to the ideal). Ultimately, a model of risk-based decision making relative to infrastructure investments can recognize greater water quality benefit for the dollars spent without the current regulatory liability associated with multiple permits addressing water quality through different program frameworks.

8. **Definitions – Redevelopment**: The term "redevelopment" is nowhere defined in the permit or appendices. Given that EPA is requiring "redevelopment" projects to meet the new development design guidelines for stormwater management (and particularly in reference to the one-inch retention/treatment provision), it is important to know what constitutes redevelopment versus rehabilitation, restoration, maintenance or repair projects. This is particularly of concern as it relates to transportation-related projects such as pavement programs (full depth reconstruction, pavement overlays, chipping, etc.), and the possibility that routine maintenance could trigger requirements for significant drainage improvements that would not otherwise be appropriate or necessary for operational purposes. *Proposed Modification*: Define redevelopment to exclude roadway projects that do not add significant new paved acreage.
9. **MCM 5 – Roadway Projects:** The revised Stormwater Management in New Development and Redevelopment MCM presents several challenges. Primary among these is the requirement to retain the first inch of runoff (or treat the equivalent pollutant load) from all impervious areas on site. This requirement will pose a significant challenge as it relates to roadway projects (either new or redeveloped) and will contribute to significant escalation of costs associated with drainage and/or treatment from roadways. *Proposed Modification*: Include an exemption or waiver from this permit condition for roadway projects.
10. **MCM 5 - BMP Sizing:** Language in this permit provision states that "all impervious area" is subject to the capture, infiltration or treatment requirements and specifically that flow volumes [for retention or treatment] are calculated based on "multiplying the area of

impervious area on site by one inch." We seek clarification that BMPs on site need not be sized to reduce "calculated" pollutant loads that theoretically are contained in flow from disconnected impervious area on-site that is not otherwise directed to the MS4.

11. **MCM 5 – EPA and DEP Consistency:** With the encouragement of the Massachusetts Department of Environmental Protection (MassDEP) and EPA, many communities have adopted the Massachusetts Stormwater Management Standards either directly or by reference into existing municipal design standards and by-laws. This permit represents a divergence from the MassDEP stormwater standards and complicates compliance for regulated entities. We request EPA and MassDEP develop a consistent set of development standards that ensures that exemptions or waivers provided under federal NPDES permits will ensure similar treatment under MassDEP surface water discharge regulations.
12. **MCM 5 - 1-inch Standard:** EPA has stipulated that the one-inch retention/treatment standard applies to both new and re-development projects. As noted above, this is not consistent with the MassDEP stormwater management standards and creates further confusion relative to application of development standards. See our comment above regarding joint approach.
13. **MCM 5 – Street Design Guidelines:** At Section 2.3.6 (b),the MCM requires development of a report assessing current street design and parking lot guidelines that affect creation of impervious cover to be due within three (3) years of the permit effective date. The intent is to identify opportunities to support low impact design options to be incorporated into local regulation and standards. Under "smartgrowth" principles with comparable environmental impact mitigation interests, the federal government, state and local agencies have promoted a "complete streets" approach to invite multi-modal use of roadways that frequently results in greater impervious area. Given the sometimes contradictory nature of these programs, the regulated community would like assurances that the federal and state government are collaborating to provide adequate guidance that achieves prioritized environmental objectives without potential penalty (either in terms of punitive fines or loss of grant/loan funding, etc.) to the regulated community. *Proposed Modification:* We propose modification of the permit term within this section to provide greater latitude to MS4 owners regarding implementation of recommendations resulting from the report. Where there are competing interests relative to "environmental street design" the MS4 owner should be allowed to make local decisions that are in it's best interest.
14. **MCM 6 – Good Housekeeping Affordability Assumptions:** The Good Housekeeping MCM as proposed will be extremely expensive for most communities to implement. The accompanying permit fact sheet states that while this is the most costly program area for most communities, these are existing functions (e.g. catch basin cleaning and street sweeping) and the costs associated with compliance under the permit will be incremental, or less, such that "these costs are likely not above and beyond what the permittee likely spends on maintenance of permittee owned property currently." The

cost estimate provided fails to appreciate that most communities do not currently collect the data, analyze findings, document and report activities in the manner now required under this permit. For communities that contract these services to outside vendors, procurement of new contracts to include documentation required will undoubtedly impact bids by increasing costs significantly. It is expected that data collection from catch basin sump cleaning efforts will almost double the time per catch basin required. It is reasonable to anticipate, therefore that catch basin cleaning costs will double, regardless of whether the activity is out-sourced or done in house. Program affordability, particularly in light of requirements under Water Quality-Based Effluent Limits (WQBEL's), continues to diminish and timeframes within the permit further compromise a community's ability to meet permit requirements under the MCM's as presented in this draft permit. *Proposed Modification:* Again, we request that EPA include an affordability component into the MS4 Permit, comparable to that provided under CSO Long Term Control Plan programs.

Water Quality Based Effluent Limitations (WQBELs)

15. **New Discharger Definition:** Based on the accompanying fact sheet, the definition of "new discharger" within the permit does not include expansion of an MS4's existing system within its jurisdiction. The distinction is important since increased discharges can be covered under the General Permit, but new discharges must be covered under a separate individual permit. Please confirm that the term "adjacent" or "adjacency" within the context of this definition includes any new drainage element, including an outfall, within an MS4's jurisdiction but not otherwise connected to any other component of the MS4. For instance, the town may accept a private road that includes a "self-contained" drainage system (e.g. a series of connected catch basins discharging to a discrete outfall none of which is connected to or "adjacent to" existing drainage infrastructure) without triggering a requirement to cover that segregated outfall through a separate individual permit. Public management of the streets will generally lead to better pollutant management and on that basis the permit should not dis-incentivize acceptance of private roads.
16. **Phosphorus Load Export Rates – Appropriate Use:** Regarding Appendix F and attachments, the Phosphorus Load Export Rates (PLERs) are general and approximate at best. The composite PLERs are good for screening / planning purposes or comparative purposes. They are not accurate for determining hard design of control measures. For example, they can be used to evaluate whether a proposed change in land use is expected to increase or decrease pollutant loads. But to use a PLER to conclude that the loading rate is actually X lbs/yr, or will change from Y lbs/yr to Z lbs/yr with land use or other changes, is not a recommended technical practice. Loading rates are ordinal rather than cardinal, i.e., they can tell you if one is higher than another, but not exactly how much higher one is than another. It appears that EPA assumes that

over the entire Commonwealth of Massachusetts, using PLERs will represent the average condition. That may be true, but EPA is requiring that the PLERs be used to make decisions on a much smaller watershed and sub watershed scale, which is inappropriate.

17. **PLERs - Derivation:** It is not clear how the values for PLERs in the EPA documents are derived, however, a literature search shows that there is a large range of values for any given land use. For example, the PLER for medium density residential is given as 0.55 lb/ac/yr in Table 1-1 (App. F Attachment 1), but the range of PLERs for medium density residential in the scientific literature can be an order of magnitude around the value. Please provide further information regarding derivation of the PLERs since these values have significant impact on program implementation for regulated communities.
18. **PLERs – Blanket vs. Site Specific:** PLERs found in older literature generally do not reflect the presence of stormwater BMPs, low impact development (LID) planning, etc., and therefore may overestimate pollutant loads for current land uses. In addition, composite PLERs are a particular concern for communities that have previously instituted stricter local development standards for stormwater management many years ago (in some cases, decades) where assumed PLERs may be much greater than actual conditions. *Proposed Modification:* Rather than limiting appeals of assumed baseline watershed phosphorus loading to updates of land use information, allow permittees the option to develop their own alternative methodology for determining baseline phosphorus loads and reduction requirements based on more detailed data and/or site specific information.
19. **Phosphorus Contribution of Illicit Discharge:** It is not clear in either the permit or the fact sheet what method was employed to calculate estimated contribution of phosphorus load through illicit discharges, and consequently the load reduction that would be achieved through elimination of IDDE. Since this calculation figures into the total overall phosphorus load reduction allocated to each Charles River community, it is impossible to comment on how equitable this approach can be. Please provide further documentation regarding the method used to complete this calculation.
20. **Ambiguity in Determining Contributing Drainage Area:** It is not clear in Appendix F and its pertaining attachments whether the permittee will be using the impervious area or the directly connected impervious area (DCIA) in the PLER calculations, which includes factoring in DCIA in determining PCP area. The phosphorous loads should be determined from the DCIA of a target catchment, but this is not explicitly mentioned in either Appendix F or its attachments. The only explicit mention on DCIA is in Appendix F under sections "Phosphorous Source Identification Report" and "Nitrogen Source Identification Report" which simply state that the source identification report should include the "Impervious area and DCIA for the target catchment." There is no mention of how this DCIA information needs to be used, for example, in determining either the PCP area, total development area, impervious area (IA) for calculating phosphorous reduction credits for non-structural BMPs, or in distributing the total drainage area into impervious

area for BMP load and volume calculations. In all the above instances, DCIA should be considered, rather than total impervious area. This needs to be clarified in the new permit.

21. **Determining Infiltration Rate for Structural BMPs:** Attachment 3 of Appendix F specifies identification of infiltration rate for a particular BMP when determining the design volume of a structural BMP to achieve a known phosphorous load reduction target from a contributing drainage area. However, it is not clear how the infiltration rate needs to be determined. It is stated that the infiltration rates represent the saturated hydraulic conductivity of the soils. Since saturated hydraulic conductivity of soils is a function of its hydrologic soil group, it is important to mention how this rate needs to be determined for a combination of soil types. Please provide further guidance to determine infiltration rates for an infiltration type structural BMP, such as an infiltration trench or infiltration basin.
22. **Choosing BMP Performance Curve for Multiple Combination of BMPs:** Attachment 3 of Appendix F provides several BMP performance curves for different types of structural BMPs. However, the permittee may choose a combination of BMPs to achieve a desired phosphorous load reduction. It has been noted through literature search that a combination of BMPs may be more effective in capturing larger storms, and hence will be more effective in providing desired phosphorous load reductions from these storm events. For example, if a bio-retention system is coupled with a secondary spillway to a porous pavement, it has been found from literature that this combination is effective in capturing the first 1" rain (first flush) and higher flows, respectively. In such a situation, it is not clear what BMP performance curve should be referenced and how the curve(s) need to be used by the permittee. Please provide further documentation regarding the method to determine BMP performance curves for a combination of BMPs.
23. **Appendix H. II (1)(a)(i)(3) Additional /Enhanced BMPs for Phosphorus-Impaired Waters:** Under the Good House Keeping requirement, it requires permitees to increase frequency of street sweeping at least twice a year for **all municipal streets and parking lots.** This requirement should be related exclusively to those streets within the impaired catchment, not all streets/ parking lots in the Town. It might be what was intended, but that is not how the language reads and should be modified.

Other Issues

24. **Non-Stormwater Discharges**: At public meetings during which EPA has presented material about the new permit, there has been much discussion about the classification of sump pump discharges as an allowed "non-stormwater discharge." Explicit guidance is necessary regarding local permit programs sufficient to meet documentation of determination standards relative to sump pump discharges as a class of allowed discharges.

25. **Town Administration Outreach**: In most communities responsibility for permit compliance resides with Public Works or similar agency officials. Boards of Selectmen and/or Town Managers are often not involved in program administration outside of procurement or appropriation processes for identified projects. Their lack of understanding and support to local implementing agencies has been a continuing challenge. EPA and/or DEP must increase their involvement in educating Town officials about the extent, costs, operational impacts and policy determinations incumbent on program administrators to ensure continued organizational support, particularly for funding strategies.
26. **Legal Analysis for PCP:** EPA and MassDEP should provide greater guidance related to this requirement. This analysis is likely to have many common components from municipality to municipality and appears to be an appropriate area for regulators to expand upon the examples provided in the fact sheet and a likely topic for model by-laws/ordinances. In addition, the permit and fact sheet regularly cite the cost-benefit of regional or collaborative effort to implement many of the MS4 requirements. As such, model Inter-municipal Agreements or other legal vehicles to achieve mutual objectives should be developed and shared with regulated communities.
27. **Funding Source Assessment for PCP:** The language associated with this required component of the PCP is ambiguous. Although the permit does not require adoption of a stormwater utility, all of the components of this program clearly are driving the regulated community to that EPA-preferred solution. The funding source assessment does not, in fact, make an explicit connection between cost-estimates required elsewhere in the PCP and the manner by which the "funding plan" will meet those costs. This "assessment" only requires a community to identify the means through which they intend to fund the program – adequately funded or not. The "estimated cost for implementing Phase I of the PCP" requirement states that the "estimate can be used to assess the validity of the funding source assessment...." This is a circular reference that doesn't spell out what enforcement mechanism EPA will use to ensure that the "funding plan" and the "cost estimates for implementation" are essentially equivalent. It is disingenuous for EPA's fact sheet to state that "a municipality should choose the option that is right for it" when both EPA and the regulated community have expressed the recognition that traditional funding methods (e.g. General Funds) will not be adequate to meet the program demands. The permit must be definitive around the issue of costs vs. funding so that communities understand the regulatory liability associated with an inadequately funded program.
28. **Floor Drain Inventory:** It is appropriate and appreciated that this requirement has been removed from the Draft Permit.
29. **Errors:** A number of errors in referencing were noted in the document. The ones we noticed are listed below, there may be more. Please carefully check all cross references in the preparation of the Final Permit and correct the following errors:

- Page 12 – change references from Table F-5 to Table F-6

- Page 14 – change references from Table F-6 to Table F-8
- Page 14 lists reference to Buzzards Bay but there is no Nitrogen TMDL for Buzzards Bay watershed on DEP's website
- Page 14 list does not include Wareham although Wareham is in Buzzards Bay watershed
- Page 15 change reference from Table F-7 to F-9
- Page 17 – reference to Table F-10 is incorrect (that is a table of Assabet towns)
- Appendix F page 5 of 53 – footnote No. 4 incorrectly references Table F-2 for PCP area scope inclusive of MS4 only (should be Table F3) and references Table F-1 for jurisdiction-wide PCP area (should be F-2)

Sincerely,

Town of Medway, MA

Michael E. Boynton
Town Administrator

Town of Millis, MA

Charles J. Aspinwall
Town Administrator

Tom Holder 12.22.14
Thomas Holder
Director, Department of Public Services

cc: Rep. Joseph Kennedy P. Kennedy, III
Rep. James P. McGovern
Sen. Edward J. Markey
Sen. Elizabeth Warren
State Sen. Karen E. Spilka
State Rep. Jeffrey N. Roy
State Rep. John V. Fernandes
State Sen. Richard T. Moore
State Rep. Kevin J. Kuros
State Sen. Richard J. Ross
State Rep. David P. Linskey
State Rep. Shawn Dooley
File

Merrimack Valley
Planning Commission
*plan * develop * promote*

February 23, 2015

Mr. Newton Tedder
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Mail Code OEP06-4
Boston, MA 02109-3912

RE: Merrimack Valley Stormwater Collaborative Public Comment on 2014 Draft NPDES General Permit for MS4 Systems in Massachusetts

Dear Mr. Tedder:

On behalf of the Merrimack Valley Stormwater Collaborative, I am writing to provide comments on the draft MS4 permit for Massachusetts, notice of which was published by EPA in the Federal Register on 9/30/2014.

The Merrimack Valley Planning Commission (MVPC) is the facilitating agency for the Collaborative, which is a coalition of the diverse 15 cities and towns in the MVPC region created to coordinate intermunicipal strategies in stormwater management. The Collaborative was formed this past summer to promote more effective and cost efficient implementation of local stormwater management programs. Our efforts are focusing on public education & outreach, staff training and implementation of best management practices, all elements in development of effective and efficient stormwater programs for our communities.

While some members of the Collaborative will be submitting individual community comments on the draft permit, this letter is intended to provide a general sense of issues and concerns raised collectively by Collaborative members in review of the draft permit.

Overall, the Collaborative agrees with the purposes and intent of enhancing water quality. The Merrimack Valley's waterways are among our most cherished resources and we as

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Commonwealth communities must continue the decades-long progress in cleaning up our rivers, lakes, streams, coastal estuaries and bays. Issuance of a new permit updating the 2003 permit is long overdue. The delays and false starts in permit renewal have led to some frustration, cynicism and confusion at the local level about the federal role in MS4 oversight.

However, Collaborative community members also contend that the draft permit with a multitude of administrative requirements, many overly prescriptive and well beyond the scope of the 2003 permit or even current MS4 requirements for other states, stretches the bounds of reasonableness in local application. EPA, in collaboration with MassDEP should reduce the requirements so that implementation can be more affordably and effectively administered by cities and towns.

Municipal Capacity & Budget Constraints

Local officials are operating their departments and agencies with constrained budget resources. They are obligated to implement stormwater management in the most cost effective manner, given the extent of competing local government demands in education, public safety, facilities and infrastructure upgrades and general welfare. Municipal officials will have to make compelling cases for additional resources to wary chief executives and legislative bodies. They cannot risk making major expenditures in anticipation of the new requirements without some sense of confidence in federal EPA and MassDEP follow-through coordination, commitment to implementation and assistance to MS4 permittees.

Many of our communities have small DPW staffs with limited capacity to take on the extensive additional administrative burdens. The magnitude of the draft permit's administrative requirements will inevitably require most communities to engage expensive consultants or hire more full-time staff. Mandates to track and record the volume or mass of material removed from each catch basin (Part 2.3.7 (a) (iii) (b) would create unnecessary paperwork for questionable data collection. Further, the draft permit with the requirement, for example, that communities "shall" adopt a housekeeping metric that catch basins be no more than 50 percent full, seems to put communities at unreasonable risk of non-compliance if even one catch basin exceeds that threshold.

For most communities, the projected costs of compliance for the draft permit administration are overwhelming. One of our larger communities estimates that cost of compliance annually to be an additional $1 million. That is just not feasible given current fiscal circumstances and the trade-offs communities are forced to make in preparing municipal budgets.

EPA should encourage good faith efforts by communities in tailoring stormwater management programs to community conditions and not be overly prescriptive in defining specific steps for

housekeeping, operations and maintenance. For example, mandates of pet waste collection stations at parks (Part 2.3.7 (a)(ii)(a) seem inappropriate for a community that bans dogs from public parks. Similarly, while enhanced mapping and inventory requirements may be well intended, many of our communities could better allocate funding toward priority maintenance or capital improvement projects.

Clarification, State-Federal Regulatory Consistency and Streamlining Needed

Some of the smaller, more rural communities where only portions of the town are within the designated MS4 zone, have questions about how to cost-effectively implement an illicit discharge detection and elimination program in a system with limited infrastructure or where catchment systems cross boundaries. Communities do not have the luxury of spending limited funds unnecessarily and are justifiably insistent in seeking before the permit becomes effective clarity and assurances from EPA regarding MS4 implementation and oversight enforcement. The approximately 250 administrative requirements seem overwhelming to communities and could be reduced enabling limited resources to be focused on implementation action priorities and outcomes in minimizing pollution.

Confusion also lies in the apparent contradiction between MassDEP standards and EPA draft permit about treatment and infiltration threshold definitions and requirements for stormwater management in new developments. Clarification is needed as to the applicability of recharge requirements when only a portion of a site is being redeveloped. Also, EPA should confirm that roadway maintenance projects would not trigger expansion of stormwater treatment. These questions and inconsistencies will certainly result in additional administrative and potential legal expenses. The final permit should provide clarity for communities and consistency with MassDEP in regulatory thresholds and requirements.

Time Line for New Permit

In light of the existing uncertainties and implementation questions and given the level of investment needed for compliance, this draft permit does not allow nearly enough time for municipalities to set up an adequate revenue source to fund a fully compliant program. The Collaborative communities strongly urge EPA to extend the timeline for the MS4 permit effective date, NOI filings and compliance. Cities and towns are finalizing Fiscal Year 2016 budgets. The local budgetary cycle requires Town Meeting or City Council votes to adopt fiscal year budgets in the Spring for the July 1st, 2015 thru June 30th, 2016 year. Any major new expenses generated by a final permit effective as envisioned in Fall 2015 are likely to provoke financial turmoil in City/Town halls. We note that EPA has phased in many of the proposed

requirements including the additional GIS mapping and IDDE implementation. More time, however, will be needed for communities to establish updated programs.

Given the local budget cycle, EPA should establish an effective date of Fiscal Year 2017 for the permit and extend timeframes for municipalities to file the NOI, prepare stormwater management programs and undertake the many administrative mandates. A minimum of two years should be provided from the permit effective date simply to allow municipalities time to plan, staff and budget accordingly, and additional time for implementation beyond five years. Communities will need adequate time to work in determining costs and appropriate funding sources, to obtain the necessary local approvals (City Councils/Town Meetings), to secure funding levels and staffing that can sustain a compliant program, and finally to establish workable intermunicipal Collaborative programs for sharing personnel, equipment and/or testing labs.

Thank you for considering these comments in issuing the final MS4 permit for Massachusetts.

Sincerely,

Dennis A. DiZoglio
Executive Director

MERRIMACK RIVER WATERSHED COUNCIL

The Voice of the Merrimack

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Feb. 27, 2015

Re: Comments on Draft Massachusetts Small MS4 Permit

Dear Mr. Tedder:

Thank you for this opportunity to comment on EPA's Draft General Permit for Small MS4s in Massachusetts. The **Merrimack River Watershed Council** has worked since 1976 to improve the water quality of the Merrimack River, and we are proud to note the improvements that have been made since then, when it was considered among the top ten most polluted in the country. Your agency deserves much credit for your efforts to reduce the point source pollution that was the problem at that time.

But now, polluted stormwater is the most serious water pollution problem in the Merrimack River and indeed, in all of Massachusetts' rivers, today. Improving water quality for the Merrimack is critical, since nearly 600,000 residents in the watershed use the river for drinking water. We have just completed two EPA-funded Urban Waters grants focused on stormwater and water quality, in partnership with the lead agencies NMCOG and Groundwork Lawrence. EPA Region 1 has found that stormwater causes or contributes to at least 55% of the violations of water quality standards in the state's rivers, streams, and lakes. NOAA projects that climate change is only going to exacerbate stormwater concerns due to increased flooding events in New England.

The Combined Sewer (or Sanitary Sewer) Overflow problems in our aging cities causing excessive nutrient loading and pathogens, are a reflection of the need for Massachusetts communities to maintain or upgrade their aging infrastructures, to safeguard both public safety and the environment into the future. **This permit is an important step in promoting these urgently-needed changes, and we strongly support its passage.**

While some may complain that the process for stormwater management is too expensive, evidence shows that the expense lies in ignoring stormwater problems until they are too late. Post-structural engineering fixes are the costliest of all.

The 2014 permit represents a significant improvement over the 2003 permit, and is likely to be much more effective in reducing pollution, flooding and erosion caused by stormwater in urbanized areas.

- The permit incorporates **water-quality requirements** that directly address the pollutants that are actually causing specific Water Quality Standard violations in each town.

- The permit provides **more specific requirements and deadlines** in many cases, which should result in better compliance than was achieved under 2003 permit.

- The permit gives towns **adequate time and substantial flexibility** in choosing approaches to compliance that are most appropriate for local conditions.

- **Permit requirements for greater public access and opportunities to comment** on towns' stormwater management programs will increase public support for these programs, which is essential if towns are to raise the resources necessary to deal with polluted stormwater. Greater public scrutiny will also encourage more effective plans, more consistent implementation, and more enforcement.

- **The post-construction requirements for new development and redevelopment will prevent future projects from continuing the poor stormwater management practices of the past.** EPA has chosen a balanced, effective strategy, setting a high standard for stormwater infiltration (the most cost-effective way of removing pollutants from stormwater), providing a safety valve where site conditions make meeting that standard infeasible.

In short, the permit requirements ask municipalities to do better monitoring and planning, to improve implementation, to raise public awareness of stormwater issues, and to design and maintain better stormwater management measures. If successful, the permit **will result in major improvements in the management of urban stormwater in Massachusetts, and we will see the results in cleaner and healthier rivers, streams, lakes, ponds, and coastal waters**.

We also note that good planning **can help towns reduce compliance costs and fund the required investments in stormwater programs and infrastructure**. Towns can take advantage of help and support from EPA, MassDEP, watershed groups, and regional planning agencies; work regionally (including through stormwater consortiums) to achieve economies of scale, develop and fund stormwater utilities, and ensure that private entities assume their share of the responsibility for stormwater management.

Finally, while we strongly endorse the overall approach and requirements of this permit, we **have identified several areas where improvements are needed:**

- In addition to conducting an annual evaluation of BMP compliance and effectiveness, enforcement must be a requirement of any MS4 holder. Simply, permittees should be required to take corrective action where the evaluation shows that goals and objectives are not being met. An effective iterative approach to improving stormwater management requires that problems be addressed and violations enforced, not simply identified.

- Section 1.5, Permit Compliance, should be rewritten to state that non-compliance 'shall' be grounds for an enforcement action, and 'shall' result in the imposition of injunctive relief and/or penalties.

- Section 1.10.2. should require that the SWMP contains description of the consequences for violations or non-compliance, the process for resolving violations, and the mechanism for enforcement action.

- Section 2.3.2.d.iii. Public Education and Outreach. Developers and Construction. It would be helpful to include information on Construction By Design as well as the benefits of river and wetland setbacks to aid in stormwater management.

- Section 2.3.4.2.a. Elimination of Illicit Discharges. There needs to be a sentence here on the requirement for MS4 enforcement, including penalties, for any illicit discharges.

- Section 4.1. Program Evaluation. The EPA or MassDEP should provide a description of the costs and penalties associated should an MS4 permit-holder not be in compliance.

- MS4s discharging to waters impaired for bacteria or pathogens should be subject to additional requirements. This includes requiring new development and redevelopment projects and retrofits on town-owned property to implement BMPs that are most effective at reducing bacteria where the waters they discharge to (via an MS4) do not meet bacteria Water Quality Standards. These requirements are consistent with the proposed requirements for other stormwater pollutants.

- The new requirements proposed for projects discharging to water impaired for chloride should apply to all MS4s. While relatively few water bodies have been assessed for chloride, evidence suggests that this is a significant problem in most, if not all, urbanized areas.

We appreciate the careful work EPA has done to improve on the 2003 permit and the 2010 proposals, based on experience with the 2003 permit and comments on the 2010 proposals. However, the process has taken a very long time. We **strongly support prompt issuance of the final permit**, to end a long period of drift and uncertainty associated with delay in issuing this permit. We urge EPA to work quickly to respond to comments and complete a final permit at the earliest possible date

Thank you for considering our comments on this very important permit.

Sincerely,

Dr. Caroly Shumway
Executive Director

Tedder, Newton

From: Mike Young <myoung721@comcast.net>
Sent: Tuesday, December 23, 2014 9:12 AM
To: Tedder, Newton
Subject: support for new Stormwater Permit regulations

Dear Mr. Newton,

I'm writing to express my strong support for the new EPA draft stormwater permit regulations that are currently under consideration. As a member of my local watershed organization and an active participant in their storm drain labeling program over the past several years, I'm aware of the need to address in a serious way this source of pollution that affects local streams and other water bodies. While our city implemented a new stormwater management fee several years ago, it's not clear what those funds are being used for and my sense is that they need to be pushed to take this issue seriously.

Among the features of the new regulations that I support are (1) requirements to prioritize, investigate and eliminate possible cross-connections between storm drains and the sanitary sewer system, which there have been indications of in Westfield in the past, (2) the requirement that all new development or redevelopment of over an acre infiltrate the first inch of runoff or provide an equal measure of pollutant reduction, reducing the cost of stormwater management for cities and towns, (3) requirements that would address issues related to the use of road salt in winter, (4) requirements that focus attention on particular pollutants that are causing or contributing to violations of state water quality standards, and (5) requirements for permitees to regularly assess the effectiveness of their practices and to consider alternatives that might be more effective. All of these measures seem to me to be common-sense ways of addressing this issue.

Thanks for your work on these issues and happy holidays!

Mike Young
Westfield, MA

TOWN OF MILFORD

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OFFICE OF PLANNING
AND ENGINEERING

Vonnie M. Reis, P.E.
Town Engineer

December 22, 2014

Mr. Newton Tedder
USEPA Region 1
5 Post Office Square
Suite 100, OEP 06-4
Boston, MA 02109-3912

Sent via email to Tedder.Newton@epa.gov

Re: Draft Small MS4 Permit Comments

Dear Mr. Tedder;

The Town of Milford appreciates the opportunity to comment on the USEPA's Draft Small MS4 Permit. Our comments are the result of many discussions about how the proposed permit requirements will impact the communities in the Charles River Watershed, and in particular Milford, from both an environmental and economic perspective. As you know, most Massachusetts municipalities struggle with limited and competing resources and the requirements of this permit will have far-reaching implications. Our comments are presented below.

1. The Six Minimum Control Measures do not align with the Ten Massachusetts Stormwater Management Standards, which is the uniform standard for development in Massachusetts.
    a. In terms of the municipal review and permitting process, it would be useful to have one overall set of standards.
    b. A waiver for requirements aimed at large developments should be granted if a community incorporates the Mass Stormwater Standards as part of their Planning Board Site Plan Review process. There is redundancy between the two permitting processes.
2. Section 2.3.1 allows for a municipality to share responsibility of meeting the Six Control Measures with another entity, i.e., a Regional Stormwater Utility.
    a. In the case of towns subject to TMDLs and reduction goals who join a Regional Stormwater Utility, will removal goals still be evaluated separately or could an average goal among the communities in the Utility be considered?

    b. If one member of a Utility does not achieve compliance, will all members be penalized?
    c. Regionalization will benefit regulators and permittees alike. Incentives should be provided to permitees who regionalize. Incentive might include the ability for members to trade credits within the Utility, or direct credits to each member of a Utility.
3. Under the IDDE program, re-testing (every 5 years) should not be required if all sources have been identified and confirmed, AND where new development has not occurred since the last IDDE evaluation.
4. Communities with nutrient or bacteria TMDL requirements should be allowed to include sampling for those pollutants as part of the IDDE program in order to demonstrate actual values. This would streamline the sampling requirements, be more efficient, and reduce sampling costs. Additionally, the timeline for the PCP should be adjusted pending the results of the sampling.
5. The requirement under the IDDE program to complete an Outfall Inventory in the first year and system wide mapping by the second year:
    a. The existing outfall inventory should be acceptable for the first year submittal, with updates made annually in conjunction with the system wide mapping.
    b. The system wide mapping is a large task, especially with the documentation of system attributes required. The timeframe for this task should be 5 years.
    c. A time extension should be granted to Towns that do not have full-scale GIS capabilities, to allow for implementation of the technology prior to beginning the mapping effort.
    d. The individual costs to Towns for this mapping effort is very high, and higher for Towns without GIS systems in place. Grants for mapping and technology upgrades should be made available.
6. The Draft Permit, in Section 2.3.4.7.c.i states “Catchments with no potential for illicit discharges may be excluded from the IDDE program.”
    a. Areas without sewer service should be classified as having low or no potential for illicit discharges (especially if systems are Title 5 compliant). However, 2.3.4.7.c.ii identifies septic systems 30 years old or older as having a high IDDE potential. Excluding situations where failure or breakout occurs, an older septic system does not necessarily have high IDDE potential.
    b. With respect to removal of IDDE sources, if privately owned septic systems are identified in a high potential IDDE area, there is no mechanism for the Town to require an upgrade of those systems. How does EPA recommend a Town addresses this issue? Will there be Federal funds available to homeowners to upgrade systems?
    c. With respect to the removal of specific pollutants (e.g., P) for communities with a TMDL, how is the credit for removal of non-compliant septic systems calculated? Is it based on confirmatory sampling or just a straight credit per system?
7. The public education requirement identifies four populations that should be targeted.

a. Does outreach to schools fulfill the requirement of reaching residents? Define the minimum requirements of a school-based outreach program (i.e., number of students, type of presentation, etc.).
b. Most large commercial, industrial, institutional, and construction sites are required to meet the Ten Massachusetts Stormwater Management Standards during development, including an O&M plan. Assuming that they meet their permit requirements, is there a need for the Town to target them with additional outreach? Wouldn't outreach efforts be better used elsewhere? As each community is different, towns should be able to develop individualized outreach plans – keeping the same requirement for 8 messages total over the permit period – to best address the audience in that community.
c. Outreach efforts should allow for televised meetings or stormwater education segments on local radio and TV cable shows.
d. Outreach efforts should include discussion of ALL water resources – wastewater, drinking water, and stormwater - and how they are interrelated.

8. Many of the Towns subject to TMDLs and pollutant reduction goals have been voluntarily implementing BMPs over the years since this conversation started. For example, some towns have worked towards reducing impervious area, made changes to development guidelines, required stricter pre-treatment prior to discharge, and conducted habitat restoration projects. What will be the mechanism for these communities to get credit for these efforts, specifically with respect to estimated pollutant loadings?
9. The Draft permit relies heavily on biofiltration, yet soil conditions in many towns are not conducive to infiltration. Milford, for example, is primarily HSG C and D. The Draft says that retention is permitted, but that will not help with nutrient removal.
    a. It is not practical to expect communities with poor soils or high groundwater to be able to achieve the same results as communities with HSG A and B.
    b. The cost-benefit analysis of removal rates should be part of the PGP for communities in the Charles. At a certain point the costs of structural BMPs will exceed the environmental benefit.
10. The Phosphorous TMDL for the Upper Charles:
    a. The TMDL was back-calculated from the TMDL developed for the Lower Charles, rather than being based on sampling. The accuracy of the TMDL for the Upper Charles should be revisited by EPA. It is not reasonable to expect the individual permittees to conduct independent TMDL studies.
    b. The phosphorous loading for the Upper Charles communities is based on a model that assumed loadings by land use category. These loading are not reflected in sampling results. Sampling data from the CRWA indicates that TP at 35CS (River mile 3.5) in Milford has not exceeded 0.1 mg/L since September 2003. EPA should document (with sampling results) the actual nutrient and bacteria levels in the Upper Charles.
11. The 2009 TMDL report prepared by CRWA identified the target concentration for P as 0.1 mg/L.

a. In the TMDL report, the mean value at all sampling sites in Milford was less than 0.1 mg/L, indicating a P load much less than the modeled value. We disagree with EPAs estimates of P loading to the Charles from Milford.
b. The TMDL report excluded the segment of the Charles from Echo Lake to Main St. in Milford, stating that the water quality impairments in that section were NOT due to nutrients. If this long section is not impaired due to nutrients, then the EPA loading values are definitely over-estimated.
c. Milford requests the EPA revise the phosphorous loading calculation for Milford, in light of actual sampling data and the conclusions in the TMDL report.

12. The Draft Permit allows little flexibility once the SWMP is developed. For communities subject to a TMDL, there should be a way to re-evaluate and make adjustments to the long term plan every 5 years. For example, if the BMPs implemented result in a pollutant removal rate higher than the goal, the permittee should be allowed to request a reduction in their efforts (i.e., reduce number of BMPs from the original plan).
13. There is no TMDL for nitrogen in the Charles, yet there is a requirement for those communities to reduce nitrogen. This requirement unfairly targets these communities. Furthermore, implementation of BMPs for phosphorous and the Mass Stormwater Standards will effectively reduce nitrogen, so this requirement should be removed.
14. Right now a Performance Evaluation is required annually after Year 6 for the Upper Charles communities. Many of these communities are built out and will not have large increases in impervious area over the course of a year. It would preferable to make the Performance Evaluation period every 3 years, so that the permittees' resources can be focused on implementation of the BMPs.
15. Attachment 1 to Appendix F allows for an increase in the required P reduction if the baseline P load established is more than that estimated in the Permit. What methods are acceptable to demonstrate a decrease in the baseline concentrations?
16. EPA has not proposed viable funding alternatives for permittees. The potential costs for many communities to comply with the Permit, especially those in the Charles River Watershed, are in the $50-100 million range.
    a. Using Milford as an example: *The Upper Charles River Stormwater Sustainable Funding Report* (2011) estimated a cost of $75.8 million to comply with the Phosphorous Reduction requirements. EPA Fact Sheet Attachment 1 – Charles River Basin Nutrient (Phosphorous) TMDLs estimates an average cost of $31 million for Milford to comply. Using EPA's estimated $/kg/yr, the cost of the PCP to ALL of the Charles River Communities has been underestimated.
    b. Given the projected costs of implementing this program, communities will be forced to increase square footage of development (increased tax revenue) while maintaining impervious footprints, i.e., building up. For many towns, this will greatly impact the character of the community. This would be an unfortunate, unintended consequence of the Permit.
    c. The way the Draft Permit is written, the ability of communities to attract and keep business is seriously impacted by the potential cost of this program. Additionally, communities with a strong commercial base are penalized by having stricter

discharge requirements (and higher compliance costs), even though surrounding communities with less commercial base also benefit from those businesses.

d. Funding for stormwater is currently limited to small grants (e.g., the 319 grants) or low-interest loans through the State Revolving Fund (SRF). Both programs are highly competitive. As this is a Federal mandate, a Federal program to offer financial assistance to communities should be provided.
e. We propose communities be able to "back-end-load" their PCP in order to evaluate the cost/overall effectiveness of BMPs used before committing to spending a large sum of money.

17. Since this Draft Permit addresses Phosphorous Reduction in the Upper Charles communities, we request EPA not pursue an RDA for Milford, Franklin, and Bellingham. Under the requirements of this permit, in particular the requirements for development and re-development, the nutrient reductions should be achieved under a municipal program.

We appreciate the opportunity to comment on this Draft Permit and thank EPA for your efforts to meet with communities and discuss the impacts of the proposed permit.

Sincerely;

Vonnie M. Reis, P.E.
Town Engineer

cc: Milford Board of Selectmen
Milford Highway Dept.
Representative John Fernandes
Senator Richard Moore
Senator Elect Ryan Fattman
Frederick Civian, MADEP *(Frederick.Civian@state.ma.us)*

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Vonnie M. Reis, P.E.
Town Engineer

February 23, 2015

Mr. Newton Tedder
USEPA Region 1
5 Post Office Square
Suite 100, OEP 06-4
Boston, MA 02109-3912

Re: Town of Milford, MA Comments
Draft MS4 Permit

Dear Mr. Tedder:

The Town of Milford, MA has taken the opportunity offered by the Public Comment period extension on the EPA Draft MS4 permit to compile additional comments. Our original comment letter was submitted on December 23, 2014. Our additional comments are as follows:

1. Comment: Section 2.1 states (and other sections reference) that the "permit includes provisions to ensure that discharges from the permittee's small MS4 do not cause or contribute to an exceedance of water quality standards". Discharges from the MS4 should certainly not be the cause of an exceedance, but simply contributing a measurable concentration of a pollutant does not necessarily constitute a violation of water quality standards. EPA is simply presuming that the MS4 contribution is significant, not rendering a demonstration, as required by federal law and applicable NPDES rules, that the MS4 is a significant contributor.

   Recommendation: All references to contributing to an exceedance of water quality standards should be deleted from the permit, or at least qualified to state that the contribution in the discharge has to be in excess of water quality standards.

2. Comment: Section 2.1 states that "Pursuant to Clean Water Act Section 402(p)(3)(B)(iii), this permit includes provisions to ensure that discharges from the permittee's small MS4 do not cause or contribute to exceedances of water quality standards…". The cited section of the Clean Water Act makes no mention of water quality standards. Instead, it establishes Maximum Extent Practicable (MEP) as the standard to which pollutants must be removed from MS4s. The language in section 402(p)(3)(B)(iii) of the Act is clear that MEP governs pollution control requirements for municipal stormwater discharges. Section 402(p)(3)(B)(iii) of the Act states that controls to reduce the discharge of pollutants to the MEP include management practices, control techniques and systems, design and engineering methods, and such other provisions as the Administrator determines appropriate for the control of pollutants. The "such other provisions" clause is within the broader context of the MEP standard, not separate from it as EPA tries to imply. For Congress to bother to include such language in the Act is clear and unassailable evidence that lawmakers understood that there are limitations in the ability of municipalities to meet water quality standards in stormwater discharges. These limitations are spelled out in the statutory standard of MEP applied only to municipal stormwater discharges. Water quality

standards and TMDL Waste Load Allocations (WLAs) may be goals but are not the required standards that must be achieved in municipal stormwater.

In Milford, the draft permit requires MS4s to implement specific BMPs to meet phosphorous reductions to meet TMDL WLAs, as well as evaluate/implement additional BMPs as needed. Specific percent reductions in phosphorous loads and WLAs are essentially numeric limitations. If EPA's approach to stormwater permitting is indeed an iterative BMP approach to MEP, and one that has been upheld in the courts, then the permit needs to be consistent in its language so that this intent is clear. At present, the draft permit contains conflicting language that first suggests the BMP approach to MEP is sufficient and then requires compliance with water quality standards, including numeric limitations set by TMDLs.

Furthermore, TMDLs are developed with the sole purpose of addressing discharges to impaired waters; therefore, EPA's inclusion of additional requirements/BMPs to address discharges to impaired waters in the MS4 permit is duplicative and inappropriate.

Recommendation: The permit must be revised to be consistent with the Act, which would be for the permittee to be required to use an iterative BMP approach to MEP standards. Requirements related to TMDLs and setting specific numeric limitations must be removed from the permit since these are inconsistent with the Act.

3. Comment: Section 2.2 of the permit sets forth onerous requirements for MS4 discharges to impaired waters, but in most cases, the impairments and TMDLs are based on extremely limited, and even suspect, water quality data. Science tells us that phosphorus can induce the growth of aquatic plants and algae thereby making a water body less suitable for recreation and possibly having negative impacts on fish and aquatic wildlife; therefore, phosphorus reduction is a reasonable goal. However, specific sources of this phosphorus, the ability to cost-effectively reduce phosphorus, and the actual level of reduction needed are not well understood, especially for stormwater. The lack of current and valid data used in TMDLs clearly shows that specific percent reduction requirements for phosphorus called for in these reports are highly suspect. We recognize that comments on a draft permit are not the forum for correcting weak or faulty TMDLs; however, given the questionable nature of these studies, the town should not be held to meeting TMDL reduction requirements through this permit.

   Recommendation: Prior to including requirements related to impaired waters in the MS4 permit, the EPA must provide sufficient scientific data to confirm that:

   - The receiving waters are actually impaired for the pollutant of concern.
   - That the MS4's discharges are causing or are a significant contributor of that pollutant.
   - That there is scientific evidence that the required BMPs will actually result in a reduction of that pollutant.

   Since permit-required sampling of MS4 discharges to impaired waters must include analysis for the pollutant of concern during wet weather, this data can be used (in conjunction with catchment delineation) to produce an outfall-specific estimate of each discharge's pollutant loading. Outfalls with an elevated pollutant loading would then be evaluated, prioritized, and mitigated as part of an iterative BMP approach to MEP standards.

4. Comment: Sections 2.1 and 2.2 of the draft permit set forth requirements that place the responsibility on the permittee to prove that its MS4 is not causing or contributing to a water quality violation. Under 40 CFR Section 122.44(d)(1)(ii), a *permitting authority* determines whether a discharge "causes, has the reasonable potential to cause, or contributes to" an excursion of water quality standards. The "reasonable potential

analysis is required to account for dilution, the various sources of the pollutant of concern and current/proposed treatment improvements affecting pollutant levels in rendering a decision on the need to control a particular facility." Once such a determination is made, the *permitting authority* determines whether a pollutant reduction is required. Likewise, under Section 303(c), the state (or EPA) determines which sources require control under the TMDL program. Neither the CWA nor EPA's regulations provide a basis to presume an impairment contribution or to transfer the assessment procedure to the permittee.

Furthermore, deriving water quality-based limitations for any NPDES permit without an adequate effluent characterization, or an adequate receiving water exposure assessment would result in the imposition of unjustifiable limits on that discharge.

Recommendation: Any and all provisions in the permit that place the responsibility to conduct "reasonable potential" analyses on the permittee must be deleted.

5. Comment: The permit requires Milford to achieve a 43% reduction in phosphorus loading, or an estimated reduction of 708 kilograms per year. The various non-structural BMPs have phosphorus reduction rates that typically range from 1% to 10%; therefore, the remaining % reduction will need to be achieved through structural BMPs. The only structural BMPs capable of achieving the reductions called for in the TMDLs are infiltration trenches/basins. Consequently, in order to comply with the MS4 permit, Milford would have to site, design, and construct hundreds of these BMPs at an incredible capital cost to the Town. In addition, once constructed, Milford would have to maintain these hundreds of BMPs at an equally incredible annual operating cost.

   It is also possible that limitations – such as soil types, depth to groundwater, presence of contaminants, etc. – may prevent the Town from constructing BMPs in locations needed to provide the required reductions. As such, constructing enough BMPs in needed locations may not be even technically feasible.

   Since the permit is based on MEP, and achievement of the required reductions is not "practicable", the proposed permit requirements exceed statutory authority.

   Recommendation: The permit must be revised to provide more "practicable" reductions in phosphorus loadings, or at a minimum, substantially more time for MS4s to comply with the reduction requirements.

6. Comment: The cost to comply with many of the permit mandates is tremendous. In particular, implementation of requirements related to discharges to water quality limited waters with and without approved Total Maximum Daily Loads (TMDLs), as well as requirements and schedule for Illicit Discharge Detection and Elimination (IDDE). These requirements will necessitate significant increases in staff, equipment, and professional services resulting in substantial negative financial impacts on the Town, and tax-payers.

   Recommendation: Additional funding assistance is necessary and should be made available. Without a federal and state financial commitment, it will be difficult to convince local voters, rate payers and decision makers to fund these mandated stormwater programs. We urge EPA to make available a dedicated funding source for all municipalities covered by stormwater permits, as well as remove prohibitions against using available grant and loan programs for stormwater compliance.

7. Comment: The implementation of the draft permit requirements for discharges to impaired waters is costly, overly burdensome, and has questionable direct impact on the improvement water quality. Subject to the Charles River TMDL, very large expenditures are mandated, but even if Milford was to implement every aspect

of this permit, and future permits, our waterbodies could remain impaired. This permit mandates more work than could possibly be funded under any reasonableness standard and, but offers no evidence that these huge expenditures will eliminate the impairments.

Recommendation: The EPA must provide a more defined and reasonable level of effort to comply with requirements associated with discharges to impaired waters. This should include a way for the MS4 to demonstrate that its MS4 discharges are within water quality standards, and be excused from further required actions regardless of whether the receiving water is still impaired.

8. Comment: The requirements for written programs, policies, procedures, and reports do not have direct water quality benefits and should have a lower priority. Significant financial and staff resources will be required to prepare and submit all of the required written documentation. With limited resources, the focus of the permit should be on performance, not documentation. There are over 50 phrases in the main body of the permit and many more in the appendices (not including the actual annual reporting requirements in Section 4.4) that require information be included in the Annual Report.

   Recommendation: An efficiency and effectiveness review should be performed on the entire permit; preferably by an outside party who can assist the EPA in prioritizing those items where written documentation and annual reporting will provide a measurable benefit. The permit should be revised to reflect these improvements.

9. Comment: Once the permit is finalized, the Town will be required to submit a Notice of Intent (NO1) to comply with the permit within 90 days. This requirement is similar to the 2003 permit; however, a significant amount of new information is required to be included in the NOI. Much of that information will not be known until the Town revises its stormwater management program, which is not due until the end of the first year of the permit. It will also be difficult for the Town to adequately respond in its NOI until it completes its stormwater management program assessment, which will also not be done until the end of permit year one.

   Recommendation*:* The NOI requirements should be revised to remove elements of the stormwater management program that will be addressed during the assessment and updating of the existing program. These requirements can be included in the requirements for the written stormwater management plan and/or first Annual Report.

10. Comment: Section 1.7.4. Page 5. The draft permit still does not define the responsibility for addressing comments received in response to EPA's posting of the Notice of Intent for public comment. The permit needs to state whether the Town of Milford or the EPA will be responsible for this task.

    Recommendation: Since EPA is publishing the Public Notice for all MS4s and similar comments are likely to be submitted for many NOIs, it is recommended that the EPA be responsible for addressing public comments.

11. Comment: Section 2.1.2. This requires the Town to obtain authorization from MassDEP for increased discharges. It is not clear what this "authorization" will entail. This provision could also threaten new construction and redevelopment within Milford's impaired watersheds (Category 5 or 4b), because of the prohibition against new discharges to these waters unless it can be demonstrated that there is no net increase in pollutants. Without historic data, it is not possible to measure "increased discharges of pollutants" from new or redeveloped land.

Recommendation: This provision should be modified to allow increased discharges that meet water quality standards regardless of impairments. The permit should also allow compliance with anti-degradation provisions via pollutant load reductions in other areas of the same watershed (instead of prohibiting the increased discharge altogether).

12. Comment: Section 2.3.4.4. Page 26. Sanitary sewer overflows are already prohibited and regulated at both the Federal and State level under existing mechanisms governing wastewater facilities. Including SSOs in the MS4 permit results in the Permittee being regulated by multiple permits for the same issue. This will cause confusion, unnecessary expenditures and potentially conflicting requirements for compliance.

    Recommendation: The MS4 permit should only contain language related to SSOs potentially contributing to illicit discharges and that these potential illicit discharges should be investigated, eliminated, and documented under the IDDE Program.

13. Comment: Section 2.3.4.4b mandates that the Town identify SSOs over the previous five-year period within 120 days and Section 2.3.4.4c requires 24-hour verbal notice and five (5) day written notice of an SSO to EPA and MassDEP. The Town already reports all SSOs to the EPA and MassDEP in accordance with current MassDEP and EPA regulations, which are exactly the same as those stated in these Sections. Adding these requirements to the MS4 permit duplicates an existing effort and, therefore, is unduly burdensome for the permittee.

    Recommendation: This section should be rewritten to simply reference, not duplicate, current EPA/MassDEP requirements for verbal and written SSO reporting.

14. Comment: 2.3.4.5. Page 26. It is unclear whether outfall/interconnection inventories completed prior to the effective date of the new permit will count toward compliance.

    Recommendation: Revise this Section to allow prior inventories to count toward compliance, providing they met the intent of Section 2.3.4.5.

15. Comment: Section 2.3.4.7.c.i & 2.3.4.8.c.i. Pages 30 & 37. The definition of and implementation milestones for "Problem Catchments" significantly disadvantage MS4s that have proactively undertaken outfall sampling in advance of it being required by this permit. Proactive MS4s with sampling data, especially those in urban areas, will have far more outfalls that must be designated as Problem Catchments and given only five years to complete IDDE. Conversely, MS4s that have made no effort to sample their outfalls will have no (or very few) Problem Catchments, but are given 5-10 years to complete IDDE. As written, the permit punishes proactive MS4s by imposing far more stringent IDDE milestones than those for MS4s that have not performed sampling.

    Recommendation: The definition and implementation milestones for “Problem Catchments” need to be revised to remove this inequity.

16. Comment: Section 2.3.4.7.c.iii. Page 31. The draft permit mandates that the initial illicit discharge potential assessment and priority ranking must be completed within one year from the effective date. However, mapping of the MS4 infrastructure and Catchment Delineations will not be completed until two years from the effective date. The mapping requirement contained in the 2003 permit was limited to MS4 outfalls only and, therefore, "existing" mapping is insufficient to complete the required 2.3.4.7.c.iii assessment/ranking.

Recommendation: The required catchment assessment and ranking in 2.3.4.7.c.iii needs to be revised so as to align with the mapping and have a completion date of two years from the effective date.

17. Comment: Section 2.3.4.7.d.iv. Page 32. The limitation on when wet-weather screening should take place ("March to June") does not make sense for IDDE. Although wet-weather screening is intended to identify illicit discharges that only occur during peak flows, whether it should be performed in conjunction with high or low groundwater is determined by the System Vulnerability Factors (SVFs). For example, if the SVFs indicate structural defects and exfiltration potential, high groundwater would actually inhibit the investigation. In this case, sampling should be performed during a heavy rainfall event at low groundwater. Conversely, if the SVFs indicate capacity restrictions and SSO potential, then sampling during high groundwater would be appropriate.

    Recommendation: The permit should be revised to state that wet-weather sampling should be performed during conditions appropriate for the identified SVFs for each catchment area, and provide examples similar to those above to assist MS4s in making an informed decision about when to sample.

18. Comment: Section 2.3.4.7.d.iv. Page 32. The requirements related to wet-weather monitoring are not provided in sufficient detail. Inspection must be performed during wet weather, defined as sufficient intensity to produce a discharge. However, it is not clear whether a discharge must be observed at every outfall to achieve compliance. Does the Permittee have to return to an outfall repeatedly until a discharge is observed, even if it was monitored during a substantial rainfall event? To require the Permittee to mobilize staff, equipment, and laboratory services an unlimited number of times to observe flow at each outfall places an unreasonable burden.

    Recommendation: The permit should be revised to provide specific minimum storm parameters, for both time and rainfall amount. The minimum storm event should be one sufficient to anticipate discharges at all functional outfalls. The requirement for discharges to be observed at every outfall should be eliminated.

19. Comment: Section 2.3.4.7.d.v. Page 32. Based on the response from you at the MS4 Information Session on October 28, 2014, analysis for conductivity is being required as a measure of salinity. Requiring both salinity and conductivity testing for the same purpose is a waste of MS4 resources.

    Recommendation: The permit should be revised to require either salinity or conductivity, but not both. In addition, the permit needs to state the applicable benchmark and required action for the chosen parameter, as is provided for other sampling parameters in Section 2.3.4.7.d.vi.

20. Comment: Section 2.3.4.7.d.v & 2.3.4.7.vi. Pages 32 & 33. The level of accuracy for each required sampling parameter is not provided. For example, at what detection level is chlorine to be considered "detectable" in Section 2.3.4.7.vi.

    Recommendation: The permit must be revised to clarify the required level of accuracy for each sampling parameter.

21. Comment: Section 2.3.4.7.e. Page 34. The System Vulnerability Factor (SVF) for "any sanitary sewer and storm drain infrastructure greater than 40 years old in medium and densely developed areas" is too inclusive. In Milford, where infrastructure is typically in excess of 40 years old, this SVF serves as a "catch all" to require wet-weather sampling in virtually all catchment areas. Infrastructure age, by itself, is not an indicator of illicit potential. For example, some of our oldest sewers are in better condition than those built 40 or more years

later. It is typically other factors, such as poor structural condition, that are the source of elevated illicit potential, not solely the age of the infrastructure.

Recommendation: This SVF should be revised to include only those sewers and drains that are known to have specific concerns, not all sewers/drains older than an arbitrarily selected age.

22. Comment: Section 2.3.4.7.e. Page 33. The SVF for "crossing of storm and sanitary sewer alignments" is too inclusive. On streets with both sanitary sewers and storm drains, the likelihood that a catch basin connection crosses a sanitary sewer or a sanitary sewer service connection crosses a storm drain is extremely high. This would mean that nearly all catchments would trigger this vulnerability factor and therefore require wet weather sampling.

    Recommendation: This SVF should be revised to include only those catchments that are known to have specific concerns, not all catchments where storm and sanitary sewer alignments cross.

23. Comment: Section 2.3.4.7.e. Page 34. The SVF for "any sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken or offset sanitary infrastructure...or other vulnerability factors identified through Infiltration/Inflow Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations" is too inclusive. Again, in Milford, where infrastructure is typically in excess of 40 years old, most sewers have some defects, which again would mean that nearly all catchments would trigger this SVF and therefore require wet weather sampling. In most cases, individual sewer defects do not portend illicit connections.

    Recommendation: This SVF should be revised to include only those catchments known to have specific concerns related to the sewer system, and not all catchments with sewers that have minor defects.

24. Comment: Section 2.3.4.7 f & g. Pages 35 & 36. The second paragraph of Section f contains the same requirements as Section g, except for the timeline.

    Recommendation: The permit should be revised to either delete one of the paragraphs, or clarify the intended difference between the two requirements.

25. Comment: Section 2.3.4.8.c. Page 36. The draft permit requires that the IDDE Catchment Investigation Procedure be implemented in "every catchment of the MS4, even where dry weather screening does not indicate evidence of illicit discharges." If there is no evidence of any sewer input at an outfall, IDDE field investigation is a complete waste of resources.

    Recommendation: This requirement should be changed to say that outfall screening or sampling, whichever is appropriate, should be repeated some number of times at varying times/conditions to confirm there is no sewer input. If no sewer input is confirmed during dry and wet weather screening or sampling, IDDE field investigation will not be required.

26. Comment: Section 2.3.4.8.c.i-iii. Pages 36 & 37. The milestones stated for the IDDE effort in 2.3.4.7 are unrealistic for urban MS4s. For some MS4s with ongoing IDDE programs, it has taken many years to locate and remove illicit connections from even one catchment area, let alone 100% of catchment areas. This is especially burdensome in areas where nearly every outfall will exceed the benchmarks for at least one IDDE sampling parameter or System Vulnerability Factor. The draft permit requires IDDE to be completed for the entire MS4 within ten years. This requirement is both cost-prohibitive and potentially technically unattainable during that limited period of time.

Recommendation: The permit should be revised to allow for additional time to locate illicit discharges. It is recommended that EPA extend the timeframe for completing the Catchment Investigation Procedure in 100% of the area served by all MS4 catchments from within ten years of the permit effective date to within 20 years of the permit effective date. The permit should also indicate that, as long as the MS4 is making reasonable efforts to locate the source of the discharge, the MS4 will be in compliance even if the source is not located within the allotted timeframe.

27. Comment: Section 2.3.6.a.ii.a. Page 40. The requirement to retain/treat the first one inch of rainfall applies to "runoff from all impervious surfaces on site." Without a definition for the term "site" (see comment below), this implies runoff from the entire parcel on which the one acre-or-more disturbance occurs. It is not reasonable or cost-feasible to require a large parcel to treat runoff from "all impervious surfaces" on that parcel when they disturb only a small portion of it. Take, for example, a large user that occupies hundreds or even thousands of acres. If it was to disturb one acre, the draft permit would require the user to retrofit its entire drainage system to retain/treat the first inch of runoff.

    Recommendation: Language in this section needs to be revised to limit the regulated area to all impervious areas within the development or redevelopment area, not the entire parcel. Alternatively (or additionally), the definition of "site" needs to defined so that it refers to the area within the limits of work for a development, redevelopment, or other construction project.

28. Comment: Section 2.3.6. The requirements to have pollutant removal equivalent to that of a bio-filtration system must be removed, as a "one size fits all" model for pollutant removal is too restrictive. A "Maximum Extent Practical" principle is more appropriate. For example, the Town's annual roadway reclamation or re-surfacing projects should not fit into the "one inch recharge" scenario, even though projects are greater than one acre of disturbance.

    Recommendation: EPA should define the words "development" and "redevelopment," which would allow exclusion of lateral projects such as roadway improvements.

29. Comment: Section 2.3.6.a.ii. Page 40. This section sets different standards than those existing in the MassDEP's Stormwater Policy and associated handbooks. Having two different sets of standards will cause conflicts for MS4s and developers and will likely subject communities to legal action. In addition, the ordinances/bylaws of most Massachusetts MS4s reference the MA Stormwater Standards.

    Recommendation: If the EPA wants more stringent standards, this should be done through working with the MassDEP to affect changes to existing State regulations instead of enacting a second, different, and conflicting set of requirements through the MS4 permit.

30. Comment: Section 2.3.6.a.ii. Page 40. The requirement to inventory all Town-owned properties for possible recharge areas is not practical.

    Recommendation: At most, the Town can select five priority sites per year to evaluate, which will also result in a better assessment of viable sites.

31. Comment: Section 2.3.6.b&c. Page 41. Both of these sections require review of local bylaws. It is not cost-effective to perform two separate reviews and prepare two separate "assessments" related to the reduction of impervious area.

Recommendation: Sections b and c should be combined into one assessment report, covering both reviews.

32. Comment: Section 2.3.7.b. Requiring individual Stormwater Pollution Prevention Plan (SWPPP) for each municipal site is repetitive and overly burdensome. The Town has one Hazard Mitigation Plan and one Open Space plan, both of which are renewed every five years. It makes sense to also have one SWPPP renewed every five years. One, single comprehensive SWPPP should be allowed for all municipal operations, with site-specific elements covered as needed.

    Recommendation: The permit should be revised to allow a single SWPPP document with site-specific sections as needed to cover all sources of potential pollution.

33. Comment: Section 4.3. Page 51. Now that outfall monitoring has been incorporated into Section 2.3.4.7, there is no need for a separate Section 4.3.

    Recommendation: Requirements stated in Section 4.3 should be incorporated into Sections 2.3.4.7 or 4.4, as appropriate.

34. Comment: All Appendices. The appendices do not contain proper page numbering.

    Recommendation: Page numbers should include a reference to the Appendix (e.g., "A-21") so as to avoid duplication with the main permit document.

35. Comment: Appendix A. No definition is provided for the following critical terms: Directly Connected Impervious Area, Disturbance, Illicit Discharge, Increased Discharger, Redevelopment, or Site. Interpretation of these terms could be a significant source of controversy, especially for Planning Boards charged with the implementation of the requirements for new development and redevelopment.

    Recommendation: Definitions of these terms should be added to Appendix A.

36. Comment: App. H 1.2, 11.2, 111.4, IV.5, V.5. To require the collection of at least 30 flow-weighted samples over a period of two to three years from each stormwater outfall discharging (or tributary) to an impaired water in order to demonstrate that the discharges meet water quality standards is excessive and cost-prohibitive.

    Recommendation: All sections of the permit with this provision should be revised to require sampling of outfalls during not more than ten rainfall events. The EPA should provide a list of rainfall events of varying volume or intensity during which outfall sampling must be performed.

37. Comment: Appendix I. Multiple Sections. Appendix I should not be included in the permit. It should be provided as a reference/example document only. The protocol presented in the Appendix is not required by the permit and is only one of many methods that could be used to comply with IDDE requirements. Its inclusion as an Appendix to the permit is inappropriate. In addition, because this protocol is specific to a single method, some of the information that is included is incorrect. For example, holding times presented in Appendix I, Attachment 1, Table 1 are listed incorrectly due to an assumption that analyses are being performed onsite (see Specific Conductance, which actually has a holding time of 28 days, not "Immediate").

Information presented in Appendix A, Table 1 and Step V, are also not appropriate for inclusion in a NPDES permit. The parameters and thresholds presented in Table 1 are already included as Section 2.3.4.7.d.vi. The information regarding instrumentation is reference material and should not be included in a permit. Step V should be removed in its entirety because it does not belong in a permit. It should be in a Fact Sheet or reference/example document.

Recommendation: The permit should be revised to delete Appendix I in its entirety. EPA should provide an online source to the IDDE protocol in Section 2.3.4.7.

Thank you again for the opportunity to comment on the Draft MS4 Permit.

Sincerely;

Vonnie M. Reis, P.E.
Town Engineer

Cc via email:
Rick Villani, Town Administrator
Scott Crisafulli, Highway Surveyor
Brutus Cantoreggi, Franklin DPW Director
Donald DiMartino, Bellingham DPW Director
Jessica Strunkin, 495 Partnership
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February 23, 2015

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Re: Massachusetts Small MS4 Draft General Permit Comments

Dear Mr. Tedder:

The Town of Millbury appreciates the opportunity to comment on the Small MS4 draft general permit for Massachusetts. Our Town is a member and active participant in several water-focused organizations such as the Massachusetts Coalition for Water Resources Stewardship (MCWRS), the Central Massachusetts Regional Stormwater Coalition (CMRSWC), and the Massachusetts Water Works Association (MWWA).

Each of these organizations promote the use of scientifically-based, fiscally responsible approaches to realize environmental and community goals, as well as watershed-based policies and regulations to effectively manage and conserve water resources.

In the comments that follow we hope to guide EPA Region 1 in crafting a stormwater permit that addresses water resources issues but remains reasonable, considerate of the realities of municipal operations and finances, and is consistent with statutory limitations on municipal stormwater pollution control stipulated in the Clean Water Act. Unfortunately, many of our concerns expressed previously remain unaddressed and the Massachusetts draft permit fails in terms of reasonableness, consideration of municipal realities, and concurrence with the law.

General Comments:

While the goal of the Clean Water Act is laudable and supported by the Town of Millbury, we consider the requirements in the MA Small MS4 general permit to be overly prescriptive, burdensome, and most likely unachievable for most communities.

Schedule Constraints: The schedules set forth in the draft permit are not reasonable or feasible when considered in the context of municipal realities. Schedules for some aspects of the permit may appear reasonable but become unreasonable when the permit is viewed in its entirety and it becomes clear that schedules for most parts of the permit overlap.

Significant Administrative Burden: The permit, as drafted, would create a significant administrative burden for municipalities that would detract from their ability to provide direct benefits to water quality through such concrete activities as increased street sweeping, increased catch basin cleaning, and removal of illicit discharges. The permit goes overboard in terms of monitoring, measuring, and quantifying changes in pollutant loads. More environmental progress would be gained if communities could focus resources on actual, physical improvements to stormwater systems and not on pollutant accounting. Per

the Clean Water Act municipalities are obligated to remove pollutants from stormwater to the maximum extent practicable (MEP) and that should be the objective of the permit. The ongoing assessment of receiving waters is a function of MassDEP, not individual communities.

Funding Challenges: Many of the deadlines provided in the draft permit do not allow sufficient time to allocate funding within set municipal budget cycles to complete the tasks required. No item in the permit should be required to be completed during the first permit year except the preparation of the Stormwater Management Plan (SWMP).

We encourage the Agency to update its own guidelines about how regulated communities are expected to balance compliance with the Permit (in its final form) with the ability to afford that compliance without experiencing economic hardship. Since 1997, the Agency has generally considered a maximum combined annual water and wastewater bill of 4.5% of mean household income (MHI); that is 2% for drinking water and 2.5% for wastewater services - to be affordable. In their May 2013 *"Affordability Assessment Tool for Federal Water Mandates"* report, the United States Conference of Mayors, the American Water Works Association, and the Water Environment Federation argue that MHI is a poor indicator of economic distress, bears little relationship to poverty within the community, does not capture variation across diverse populations, and does not account "for the historical and future trends of a community's economic, demographic, and/or social conditions", especially during recessions and recovery from them, such as Massachusetts is presently experiencing. Municipal revenues are decreasing, and further restrictions on development or redevelopment are not in the best interest of communities struggling to maintain the level of service expected by residents.

Even so, if we were to use MHI as the basis for evaluating a community's ability to afford a stormwater management program to comply with the proposed Permit, the 4.5% MHI cap would easily be exceeded if stormwater costs were included, along with drinking water and wastewater, in the calculation. This is true whether a community funds its program traditionally through the tax base or has developed a sustainable funding mechanism such as a stormwater utility or stormwater enterprise fund. In some rural Massachusetts towns, the cost of stormwater compliance will exceed the cost of wastewater compliance and the total cost for compliance with water regulations may well be closer to 10% of MHI. Leaders and administrators in these towns will have a difficult task, indeed, to convince their residents and business owners that some of the provisions in this proposed Permit will result in water quality improvements commensurate with the expense.

Finally, several members of our community have calculated (or begun the process of calculating) their increased cost of compliance with the proposed Permit as compared to the 2003 MS4 Permit. In 2014, as part of an ongoing partnership between the CMRSWC, the Massachusetts Department of Environmental Protection (MassDEP), and the Worcester Polytechnic Institute's Integrated Qualifying Project (IQP) program, the communities of Holden, Millbury, and Southbridge participated in a project to quantify current and projected stormwater program costs. The IQP report team assumed that provisions the proposed Permit would be implemented as drafted, and evaluated the cost of new and expanded provisions as well as maintaining compliance with other Permit provisions. Among the conclusions, the IQP report team calculated the annual costs for implementation of the proposed Permit for the towns of Holden ($258,790), Millbury ($753,173), and Southbridge ($343,008). These projected costs represent increases of 39%, 30%, and 28% over current annual stormwater program budgets, respectively, and do not include other one-time or intermittent costs (such as capital expenditures like equipment), or the costs of design and construction of projects that may be required to eliminate illicit discharges. Even allowing for the imprecision inherent in a project of this scale, the consistency in comparative relative increases calculated for three communities tells a story that will be repeated across the Commonwealth.

We agree that clean water supports our communities in many, many ways; notwithstanding this, the absence of guidance on how to best afford the increased costs of stormwater management cannot be ignored.

Integrated Planning Opportunities: There should be language within the permit that references EPA's Integrated Planning framework and how integrated planning can be utilized to address a community's stormwater/MS4 requirements. That language should be specific about how an integrated planning approach could be applied through the permit and how permit conditions, including implementation schedules, would be modified under an integrated plan.

Section-Specific Comments:

1. Section 2.1 Water Quality Based Effluent Limitations and 2.1.1-Requirement to Meet Water Quality Standards: Section 2.1 (page 9) states that "Pursuant to Clean Water Act Section 402(p)(3)(B)(iii), this permit includes provisions to ensure that discharges from the permittee's small MS4 do not cause or contribute to exceedances of water quality standards…". Similarly, the Fact Sheet, at page 4, states "Section 402(p)(3)(B)(iii) of the CWA also authorizes EPA to include in an MS4 permit 'such other provisions as [EPA] determines appropriate for the control of … pollutants'" and that "[t]his provision forms a basis for imposing water quality-based effluent limitations (WQBELs)" citing to *Defenders of Wildlife v. Browner*. 191 F.3d 1159 (9th Cir. 1999), and EPA's preamble to the Phase II regulations, 64 Fed. Reg. 68722, 68753, 68788 (Dec 8, 1999); and at page 16, that "EPA interprets this latter clause (i.e. "such other provisions as [EPA] determines appropriate for the control of . . . pollutants" at Section 402(p)(3)(B)(iii) of the CWA) to authorize the imposition of water quality based effluent limitations." This interpretation distorts entirely the meaning of CWA Section 402(p)(3)(B)(iii) and the intent of Congress in enacting this provision, and is incorrect. When Section 402(p) of the CWA was added in 1987, it established a comprehensive new scheme for regulation of stormwater. It differentiated the technology-based requirements for MS4s relative to the rest of the NPDES program by creating a new "maximum extent practicable standard," in contrast to the traditional BAT/BCT standard that applied to industrial stormwater and other wastewater discharges. The opening clause of CWA § 402(p)(3)(b)(iii) states that, unlike industrial stormwater permits, MS4 permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable . . . ." A subordinate clause states that such controls shall include "management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants." Each of those controls is subject to the limitation in the first clause that they shall be required "to the maximum extent practicable." EPA's interprets this provision contrary to its plain meaning and in a manner which suggests that the final clause referring to "such other provisions as the Administrator or the State determines appropriate" is independent and coequal with the requirement to reduce pollutants to the "maximum extent practicable." EPA Region 1's reading distorts the syntax of § 402(p)(3)(B)(iii) and the intent of Congress in enacting this provision.

   The Region also suggests, incorrectly, that the Ninth's Circuit's opinion in *Defenders of Wildlife v. Browner* supports this misreading of the statute. While in dicta at the end of its decision, the court suggested that the "such other provisions" clause allowed EPA the discretion to include "either management practices or numeric limitations" in MS4 permits, the court did not say that the discretion to include numeric limitations or to require compliance with water quality standards could be exercised without regard to the "maximum extent practicable" limitation in the statute. That issue was not presented by the facts of the case before it, and it was not addressed in the court's opinion. Had the court so ruled, it would have been contrary to the plain language of the statute and subject to reversal on appeal.

   Federal courts have consistently ruled that the MEP standard is the only standard that MS4 discharges are required to meet. *Natural Resources Defense Council, Inc. v. U.S. EPA*, 966 F.2d 1292, 1308 (9th Cir. 1992) (CWA § 402(p)(3)(B) "retained the existing, stricter controls for industrial stormwater dischargers but prescribed new controls for municipal stormwater discharge); *Defenders of Wildlife v. Browner*, 191 F.3d 1159, 1165 (9th Cir. 1999) (CWA § 402(p)(3)(B) "replaces" the requirements of § 301 with the MEP standard for MS4 discharges,

and it creates a "lesser standard" than § 301 imposes on other types of discharges); *Environmental Defense Center v. EPA*, 319 F.3d 398 (9th Cir. 2003), vacated, rehearing denied by, and amended opinion issued at 344 F.3d 832 (9th Cir. 2003) (CWA "requires EPA to ensure that operators of small MS4s 'reduce the discharge of pollutants to the maximum extent practicable'"); *Mississippi River Revival, Inc. v. City of St. Paul*, 2002 U.S. Dist. LEXIS 25384 (N.D. Minn. 2002) ("the CWA specifically exempts municipal stormwater permittees" from the requirement to ensure that water quality standards are met).

In addition, EPA's citation to the Preamble to the Phase II regulations, 64 Fed. Reg. 68722, 68753, 68788 (Dec. 8, 1999) to support its interpretation of Section 402(p)(3)(B)(iii) of the CWA as authorizing the imposition of water quality based effluent limitations is disingenuous. The Preamble to the Phase II rule at 64 Fed. Reg. 68788, states only that EPA disagrees with commentators who challenged EPA's interpretation of the CWA as requiring water quality based effluent limits for MS4s. The Preamble gives no legal rationale. Like the fact sheet, at page 4, the Preamble to the Phase II rule cites to *Defenders of Wildlife*. As noted above, *Defenders of Wildlife* does not support the proposition that EPA can require MS4 operators to comply with WQBELs regardless of practicability.

EPA has taken the position in the defense of the Phase II rule in *Environmental Defense Center* that:

> MS4 requirements… rest on the "maximum extent practicable" ("MEP") standard which CWA Section 402(p)(3)(B)(iii), 33 U.S.C. § 1342(p)(3)(B)(iii), prescribes for Section 402(p) municipal storm sewer permits. 40 CFR § 122.34(b). Thus, while the regulations suggest numerous ways in which small MS4s ought to control their stormwater discharges, *the MS4s are not, in the end, required to do anything that is not "practicable."* 2000 U.S. 9th Cir. briefs 70014, 70020 (June 26, 2001). (Emphasis supplied)

Given the plain language of Section 402(p)(3)(B)(iii), any application of the Phase II rule to require that MS4 discharges need to meet WQBELs regardless of "practicability" would be *ultra vires.*

The cited section of the Clean Water Act makes no mention of water quality standards. Instead, it establishes Maximum Extent Practicable (MEP) as the standard to which pollutants must be removed from municipal MS4s. The language in section 402(p)(3)(B)(iii) of the Act is clear that MEP governs pollution control requirements for municipal stormwater discharges. Section 402(p)(3)(B)(iii) of the Act states that controls to reduce the discharge of pollutants to the MEP include management practices, control techniques and systems, design and engineering methods, and such other provisions as the Administrator determines appropriate for the control of pollutants. The "such other provisions" clause is within the broader context of the MEP standard, not separate from it as EPA tries to imply. The proper wording throughout the permit that would be consistent with the Act would be for the permittee to meet water quality standards to the maximum extent practicable. For Congress to bother to include such language in the Act is clear and unassailable evidence that lawmakers understood that there are limitations in the ability of municipalities to meet water quality standards in stormwater discharges. These limitations are spelled out in the statutory standard of MEP applied only to municipal stormwater discharges. NPDES stormwater permits for municipalities will continue to be contentious as long as EPA refuses to recognize that the MEP standard applies as the only mandate for pollutant removal from MS4s. Water quality standards and TMDL waste load allocations may be goals but are not the required standards that must be achieved in municipal stormwater.

2. Section 2.1.2 Increased Discharges: New and additional stormwater flow to impaired waters regardless of concentration would be prohibited under this draft permit. This requirement could

only be overcome by demonstrating that the pollutant of concern is not present in the new/increased discharge or that the total load of pollutants to the impaired waters will not increase. Even the most innocuous "new discharge," say a new single family home with a driveway and stormwater-minimizing design, will produce some pollution and will add some additional load, be it insignificant, to a receiving water. The language in this section could thus be interpreted to mean no new development in MS4 areas draining to impaired waters. Many urban areas of Massachusetts have nothing but impaired waters. This section could effectively preclude new development in such communities. That is an impact that goes far beyond EPA and federal authority. This language must be modified to stipulate thresholds on new/additional pollutant loads being significant and not merely all new loads.

3. Section 2.2.1.b (pages 11-15) and Appendix F, Part A: The permit requires compliance with TMDL waste load reductions associated with stormwater. It mandates a progressive reduction in pollutant loads with 100% reduction achieved within 15 years. The permit neglects to recognize that most TMDL's developed for Massachusetts waters are lacking in sound science and are instead based on very generic models of watershed loading. In many cases there is a dearth of actual sampling data from the TMDL regulated waters or data may be 25 or more years old. Even in the more rigorous Charles River TMDL for phosphorus, the model used to determine needed phosphorus reduction produced results that are not supported by actual test data. The TMDL's which drive pollutant removal requirements in the draft permit are wholly inadequate for this purpose and cannot legitimately justify specific pollutant load removal for the vast majority of waters. To be consistent with the Clean Water Act and avoid reliance on unsubstantiated pollutant load reductions, municipalities should be required to remove the pollutant of concern to the maximum extent practicable by implementing feasible BMPs, including structural and non-structural measures, that have been demonstrated through generally accepted research to be effective at removing that pollutant. Municipalities cannot do any more than what is feasible and should not be squandering limited resources chasing highly tenuous pollutant "numbers".

4. Section 2.2.1.c (pages 15-17) and Appendix F, Part B: Massachusetts municipalities should not be held to comply with out-of state TMDL requirements. TMDLs are determined by state environmental agencies. While there may be an "open" regulatory process for TMDL development it is highly unlikely that process and its requisite public notification was extended to potentially impacted communities outside of the state. The interests of Massachusetts municipalities were not represented by anyone during TMDL development in Rhode Island, Connecticut, New York, Vermont or New Hampshire. Massachusetts cities and towns are now being subjected through this draft permit to regulatory programs in other states to which they had no opportunity to participate. Even within Massachusetts, the majority of TMDLs were developed in the early 2000's at a time when their link to future stormwater permits was unknown. Massachusetts TMDLs, with few exceptions, were offered as stand-alone documents with little bearing on anything that a municipality would be required to do. Had it been clear that these documents would have substantial and costly implications for cities and towns the TMDL development process would have fallen under much greater scrutiny and the haphazard, unscientific way they were created would likely have been challenged. The TMDL program in Massachusetts is so hopelessly flawed in terms of science and public process that it should not be utilized for NPDES permitting at all, let alone be the primary focus of a MS4 general permit.

5. Section 2.2.2 Discharges to Certain Water Quality Limited Waters Subject to Additional Requirements (pages 17-22) and Appendix H: This section assumes that there has been sound and defensible science used to determine the cause of impairments of numerous water bodies. That has rarely been the case. State agencies including Massachusetts DEP have rarely had the resources to perform legitimate water quality investigations of lakes, ponds and rivers. Very often an assessment of a water body is based on the most cursory information (visual observation of weeds or algae) and lacks the detailed sampling and analysis needed to truly determine conditions and causes. Yet this unscientific assessment will now result in

communities expending significant resources developing nitrogen source identification reports and phosphorus source identification reports along with the planning, implementation and tracking of structural BMPs for removal of these pollutants. For some communities, the "water quality limited waters" driving these added expenses could be 75 miles downstream. It is ludicrous to imagine that stormwater generated in a small community of 5,000 people could have a significant impact on a coastal bay nearly 100 miles distant yet that is what is being described in this section. There needs to be both better science and common sense applied before cities and towns are held to "fix" problems that often do not exist.

6. Section 2.3.2 Public Education and Outreach: While EPA provides more time to conduct the public education program in this draft of the permit, it is important to keep in mind that the majority of the public does not understand how stormwater can become polluted and how it can contribute to water quality issues. Most of the public still believes that catchbasins in their roads transport stormwater to a treatment facility prior to discharge. In addition, most people do not understand the concept of a watershed, or the concepts related to the water cycle (rainfall, runoff, infiltration, and evapotranspiration). A significant amount of awareness-raising must be done across the United States prior to an individual community education/outreach campaign in order to truly stimulate behavior changes in the general public. Many municipalities see a large influx of visitors during the tourist season and thus education must extend well beyond the immediate locality to be truly effective. Stormwater education is a national need and should be spearheaded by EPA nationally through a consistent education campaign and not simply left to municipalities.

7. Section 2.3.4 Illicit Discharge Detection and Elimination (IDDE) Program (pages 25-37): Overall the IDDE program as described is highly prescriptive and very burdensome. While IDDE is necessary and valuable for a strong stormwater management program, the extent to which a municipality can comply with the edict mandated in the draft permit is questionable. The schedule mandated by the permit is unreasonable for an initiative that constitutes a major capital project requiring significant expenditures and coordination. The described program needs to be tempered by the Maximum Extent Practicable standard and thus subject to that which is feasible.

8. Section 2.3.4.1 Definitions and Prohibitions (page 25): EPA needs to modify its definitions to differentiate illicit discharges caused by mis-connected sewer laterals or direct introduction of contaminants into the MS4 by illegal dumping from those caused by systemic failures within the sanitary sewer or MS4. It is one thing to track, identify, and remove an illicit connection but altogether different to track, identify, and correct a failed sanitary sewer or similar system defect. The former are generally easy to locate and repairable within a relatively short time while the latter are extremely difficult to locate and repair and may involve wholesale replacement of large parts of the sanitary sewer collection system. The language in section 2.3.4 implies a "one size fits all" approach to IDDE and it clearly is not in terms of locating and removing the illicit discharge.

9. Section 2.3.4.4 a through e: This Sanitary Sewer Overflow reporting requirement is redundant and should be removed from the Small MS4 permit. MassDEP already requires SSO reporting through statewide regulations. For purposes of this MS4 permit, the term SSO needs to be defined. Relative to stormwater management and MS4 permitting the only SSO that should be considered are those that discharge through a stormwater outfall into a receiving water. SSOs that enter basements or are contained on street surfaces or upland areas have no link to an MS4.

10. Sections 2.3.4.5 and 2.3.4.6 (page 26-28): Outfall and interconnection inventory and system mapping are necessary and valuable components of stormwater management. However, the timeframe to complete these more detailed studies is likely inadequate, especially for smaller communities that may lack GIS and GPS capabilities. Communities should identify feasible schedules for completing this work within their SWMP.

11. Section 2.3.4.7.d.i (page 32): The Town of Millbury objects to the requirement that the permittee adopt a screening and sampling protocol consistent with a January 2012 draft document (EPA New England Bacterial Source Tracking Protocol). If this protocol is to be used in a regulatory context as proposed for this permit, it should be subject to rule making, peer reviewed, and scrutinized by others outside of the Agency and become a Final, not a draft, before making its use mandatory. Otherwise, the draft document may be useful as a suggested reference only.

12. Section 2.3.5 – Construction Site Stormwater Runoff Control, and 2.3.6: Stormwater Management and New Development and Redevelopment (Post Construction Stormwater Management). These provisions require permittees to develop, implement, and enforce a program to reduce pollutants and any stormwater runoff discharge to the MS4. EPA has no authority to make local land-use decisions by compelling permittees to make specific choices with regard to ordinances or other regulatory mechanisms. EPA is exercising federal land-use mandates on a local basis in violation of the 10th Amendment of the Constitution.

    These provisions would also apply to public road reclamation and resurfacing projects involving more than ¼ mile of 30 foot wide pavement (approximately 1 acre equivalent). By doing so, this permit would cripple local road maintenance budgets by effectively requiring redesign and construction of entirely new stormwater collection and control systems for all but the smallest road resurfacing project. Maintaining safe, passable roads is among the highest priorities of local government and one that is currently grossly underfunded. Taking limited funds and utilizing them for stormwater improvements for virtually every significant resurfacing project will greatly curtail meaningful improvements to local roads. Resurfacing and pavement maintenance projects should be exempted from this requirement to meet stormwater standards. The standards might be applicable to road reconstruction projects but only to the extent that they are practicable.

13. Section 2.3.6.d (pages 42-43) Directly Connected Impervious Area: The requirement to monitor and track impervious cover is a burdensome and inappropriate requirement for most municipalities. It has the appearance of a research effort and not a tool that will benefit stormwater management by the community. Compiling and tracking impervious area will require manpower and costs that would be better utilized implementing better stormwater control systems. If EPA Region 1 is that interested in tallying impervious cover acreage, the Town of Millbury suggests it directly fund and coordinate with colleges and universities to accomplish the task through graduate and undergraduate GIS projects.

    Region 1's effort to regulate impervious surfaces raises the legal issue on whether such surfaces are "point sources" under the NPDES permit program. Impervious surface, on its own, cannot be subject to regulation under the NPDES permit program because impervious surfaces are neither a "point source" nor a "pollutant." Instead, it is a feature of the landscape that indirectly influences how water is carried on and off land. Congress predicated the stormwater permitting program and Section 402(p) of the CWA on "point source" discharges of "pollutants" from certain categories of dischargers, including MS4s and industrial activities. If Region 1 were to interpret "point source" to include impervious surfaces, it renders that term meaningless and contrary to Congressional intent to define the term and distinguish between "point sources" and "nonpoint sources." In addition, Region 1's authority to control pollutant discharges does not encompass the ability to mandate land-use decision-making. While local authorities can develop a regulation, for example, to limit impervious surfaces or other stormwater flows into the MS4, EPA is limited to regulating the discharge of pollutants from the MS4 and cannot force MS4s to do what EPA is not otherwise authorized to do, including imposing restrictions on local land use decisions. While on November 26, 2014, EPA released a guidance memorandum in which it asserts authority to mandate retention standards based upon the amount of impervious surface at a site, that authority is necessarily limited to discharges from MS4 storm system (i.e., the "point source") into navigable waters. In short, impervious surfaces are not "point sources" under the

NPDES permit program. CWA Section 304 prohibits unauthorized point source discharges, but Congress left the regulation of nonpoint source pollution to the states.

The Town of Millbury appreciates the opportunity to comment on Massachusetts Draft Small MS4 General Permit. We urge EPA to consider modifications to the permit that will make it more sustainable and reasonable for municipalities and consistent with the Clean Water Act.

Sincerely,

Robert D. McNeil III, P.E.
Director

CC: Massachusetts Congressional Delegation
Commissioner Martin Suuberg – MassDEP
Town of Millbury Board of Selectmen
Bob Spain, Town Manager
Millbury Conservation Commission
Millbury Planning Board
Millbury Board of Health
Millbury Board of Sewer Commissioners
Millbury Roadway Advisory Committee

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February 26, 2015

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Attn: Mr. Newton Tedder

RE: Comments on Draft Stormwater Permit-NPDES Permit

On behalf of the cities and towns of the Commonwealth, the Massachusetts Municipal Association (MMA) is writing to provide testimony on the 2014 draft Massachusetts Small Municipal Separate Storm Sewer System (MS4) General Permit.

Cities and towns understand the need to protect water resources. Our members are committed environmentalists who take their role as stewards of this important natural resource very seriously. Communities throughout Massachusetts began working toward the reduction and elimination of pollutants in municipal stormwater discharges well before the initiation of the NPDES Phase II permit program in 2003. Communities have long understood the need to look holistically at how water resources are managed in the Commonwealth to promote public health, safety and economic growth for our citizens.

In the past, the federal government partnered with communities to the benefit of our health and environment. Today, as evidenced by recent regulatory initiatives and unfunded requirements, that is not the case, and localities are suffering as a result. Strict stormwater standards are placing a financial burden on cities, towns and local taxpayers at a time when local budgets are already stretched to the limit. The MS4 program is certainly one of the most burdensome unfunded mandates imposed on localities by the federal government. The EPA's estimate is that MS4 communities can expect to spend up to $829,000 each year to implement stormwater programs in their communities. These proposed regulations would double or even quadruple many stormwater budgets.

In 2009, the state created a Special Water Infrastructure Finance Commission as a means of developing a long-range plan for the state and its cities and towns to maintain their waterworks. In its report, the commission conservatively estimated that it would cost communities approximately $18 billion over the next 20 years to meet federal stormwater requirements. This is on top of the $10.2 billion gap in the resources needed to adequately maintain drinking water systems, and an $11.2 billion shortfall for resources needed to maintain wastewater infrastructure. The federal government must provide funding opportunities to assist local governments as they struggle to implement the requirements associated with this program.

The new draft of the Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit would require communities to institute more advanced stormwater testing, monitoring and management programs, yet is completely silent on funding or mitigation of the additional costs to communities.

The proposed permit is clearly written in a one-size-fits-all format and provides little or no flexibility. It does not reflect the diversity among MS4 communities. Each of these communities has taken various steps to successfully comply with the original 5-year permit. The steps implemented during the original permit period differ from community to community and vary in intensity. The proposed MS4 permit takes none of this into account and leaves no flexibility in its level of compliance. Communities are grappling with these huge financial challenges and must be permitted to target their limited resources on areas that will have the biggest impact and the largest investment return.

One of the provisions in the 2003 general permit was the ability for cities and town to tailor Best Management Practices (BMPs) to achieve the maximum benefit utilizing available financial resources and manpower. In this draft permit, there is considerably less flexibility. For instance, the requirement to manage the first inch of run-off from all impervious surfaces or provide equivalent pollutant removal (when one disturbs more than one acre) would force communities to redesign and reconstruct roadways and related stormwater systems when they had planned to simply do a road maintenance project or repaving on a 1/4 mile of road of average width. This would dramatically increase the cost of keeping roads in a state of good repair or, more likely, eliminate any road remaining maintenance programs. Currently communities do not have adequate resources to maintain their roads, before considering the onerous mandates envisioned in the new draft permits.

The EPA must exempt road maintenance projects from this requirement because the extraordinary burden imposed by the new permit process would eliminate the capacity to perform important routine maintenance on other local roads. If pavement management projects such as crack sealing and resurfacing require stormwater system redesign, the prohibitive cost would actually increase the number of failing roads, create more erosion and pollution because those maintenance projects will simply become unaffordable, and would, in the long-term, cost taxpayers even more money. According to the U.S. Department of Transportation, once a road is in a state of good repair, every $1 dollar invested to keep it properly maintained saves $6 to $10 dollars in avoided repair costs that become necessary to rebuild the road when it fails. Ironically, the mandates in the draft permit process would consume all of the funds needed to maintain other roads in a state of good repair, and weaken our infrastructure.

We appreciate the agency's moderation of the initial catch basin requirements. However, the requirement to document and clean catch basins which are 50% full, and the proposed permit's vulnerability factor criteria would undermine this change, and would require communities to investigate all catch basins rather just than those with a high potential for illicit connections. Further, the proposed permit would require local personnel to document the amount of mass material removed in each catch basin when this limited staff time would be better spent cleaning catch basins. The paperwork and documentation requirements would likely decrease the catch basin cleaning frequency. Again, the new regulatory approach would result in a higher cost to perform this function.

The requirement to put signage on all outfalls is especially burdensome, given that communities have literally thousands of outfalls and the requirement would do nothing to eliminate illicit discharges. The EPA must also streamline requirements of outfall testing to prioritize catchment samplings or substitute end-of-pipe sampling with strategic in-stream sampling, which can be more effective and efficient. The agency must also provide training and test kits to municipalities, so that communities would not be forced to hire expensive consultants. The EPA recently did this for NGOs and should, at a minimum, provide the same opportunity for the regulated community. The cost to monitor and sample all outfalls is extraordinary, and would place a severe financial burden on our cities and towns.

Another concern is the aggressive schedule that the EPA proposes for implementation of the program. It is unrealistic to provide permitees only 90 days to file their Notice of Intent (NOI) after their permit is finalized, and equally unrealistic to dictate that the NOI the formal Stormwater Management Program must be complete within one year. Communities would be forced to hire expensive environmental consultants for assistance to complete numerous elements of the program because of lack of staff and technical expertise from years of both state and federal cutbacks in grant funding and local aid. Hiring these consultants would require compliance with statutory procurement requirements and could be extremely time consuming.

The initial 5-year permit requirements were accomplished in-house. This would not be possible under the draft permits as proposed, and communities would be forced to cut other services or raise taxes to pay for these new requirements.

These are just a few examples of the significant problems with the proposed MS4 permits.

The draft permit also requires each municipality to distribute educational materials to multiple audiences and to document the method of distribution, the evaluation methodology and the effectiveness of the education program. We all believe education is important, however the draft permit does not provide any guidance on effective messaging or how to measure it. Putting the burden on communities to develop, write, test, and assess educational material is ineffective and wasteful, and is another ill-advised cost-shift. The educational campaign should be the EPA's responsibility, not individual communities – they do not have the in-house capacity or expertise. The EPA should be responsible for messaging and should create assessment tools and downloadable EPA-approved materials that can be individualized to communities. These EPA-approved materials could then be made available in the guidance documents. These materials should also include educational videos from the EPA for delivery to a municipal audience through municipal cable stations.

In the absence of EPA leadership on this issue, a number of Massachusetts communities are already combining messaging by forming stormwater coalitions. There are at least 5 such coalitions in eastern Massachusetts, serving over 85 communities, combining resources and expertise, reducing the individual burden to communities. The EPA should work with the coalitions to provide material, resources and support.

The agency has also increased the number of communities that would be regulated under the proposed permit, while limiting community access to certain federal grants. For example, in the past Water Quality Act, Section 319 has provided stormwater improvement grants. Now those

grants can no longer be used in MS4-regulated communities. This is at least one source of funding that could help communities meet stormwater requirements, yet the funding is unavailable. The agency should change the language in the 319 programs to allow MS4 communities access to those funds.

Preliminary projections indicate that the proposed permit requirements would collectively cost the impacted communities and local taxpayers tens of millions of dollars per year to comply. As noted above, the requirements under the proposed permit are well beyond the normal operating budgets of our cities and towns. Because of Proposition 2½, many communities would be forced seek overrides to increase the local property tax burden, or would be compelled to dramatically reduce funding for existing programs and services – education, public safety, public works. That is the simple reality caused by unfunded mandates in a tax-limited environment.

In short, we express our deep and serious concerns regarding these costly new permit requirements. These requirements would certainly divert scarce resources away from core essential services necessary for the protection of public health, safety and education. The costs of the operational, structural and staffing changes necessary to monitor and meet the requirements of these permit mandates would have a severely negative financial impact on communities across the Commonwealth.

For these reasons, we ask you to defer action on the submission of NOIs until municipalities have had the opportunity to engage the regulatory agencies in an open dialogue regarding these onerous and unaffordable permit requirements. We urge the EPA to amend its approach, and incorporate goals that are more realistically attainable and within the financial constraints of the current economic climate, or wait until adequate federal funding is available to ensure that these requirements do not translate into a harmful unfunded mandate on cities, towns and taxpayers.

If you have additional questions, please do not hesitate to contact MMA Senior Legislative Analyst Thomas Philbin at 617-426-7272 at any time. Thank you very much.

Sincerely,

Geoffrey C. Beckwith
Executive Director & CEO

Mystic River Watershed Association
your community • your watershed

BY EMAIL: tedder.newton@epa.gov

February 27, 2015

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RE: Comments on Draft Massachusetts Small MS4 General Permit

Dear Mr. Tedder:

Thank you for this opportunity to comment on EPA's Draft General Permit for Small MS4s in Massachusetts. This permit involves particularly important issues for the Mystic River Watershed Association (MyRWA) – given the degree to which the waters of the Mystic River and its tributaries are negatively affected by pollution from storm sewers, leaking or improperly connected sanitary sewers, and stormwater runoff.

By way of background, the Mystic River Watershed Association is a 501(c)(3) nonprofit organization founded in 1972 by a group of concerned citizens. MyRWA's mission is to protect and restore clean water and the natural environment to a healthy state in the Mystic basin's 22 communities and to promote responsible stewardship of our natural resources through educational initiatives. As a small organization, MyRWA accomplishes its mission by forging strong links with citizens' groups, universities, businesses and government agencies.

On behalf of our organization's members and supporters, we write to thank you for proposing an amended general permit for Municipal Separate Storm Sewer Systems (MS4s) in towns and smaller cities across the Commonwealth of Massachusetts. We believe that the proposed MS4 permit represents **a significant stride** towards compliance with the federal Clean Water Act (33 U.S.C. § 1251 *et seq.*), its Massachusetts counterpart and related regulations.

I. Background

Polluted stormwater is the most serious water pollution problem in Massachusetts today. EPA Region 1 has found that stormwater causes or contributes to at least 55% of the violations of water quality standards in the state's rivers, streams and lakes. Climate change presents an additional, important reason to improve stormwater management. Most scientists expect the recent cycles of flooding and drought to become more pronounced in coming years. As a result, Massachusetts communities will need to better maintain or upgrade their aging infrastructures – to safeguard both public safety and the environment well into the future.

The conditions in the Mystic River Watershed are representative of urbanized streams throughout Massachusetts. Rivers, streams, lakes and ponds within the watershed have high levels of *E. coli* derived from sewage associated with underground infrastructure that is failing. Recreational users are frequently on water with *E. coli* levels that are above standards of the federal Clean Water Act and the Massachusetts Clean Waters Act. High levels of phosphorus have caused frequent cyanobacteria blooms, accelerated the spread of invasive plants and led to low dissolved oxygen levels. Conductivity levels in the water bodies show significant increase over the past decade – median values at multiple water bodies hover at the chronic toxicity levels.

II. Support for the Permit: General

This permit is an important step in promoting these urgently-needed changes, and we strongly support its promulgation – consistent with the comments below. We'd like to emphasize that, if in fact it is promulgated in 2015, this permit revision will end up being more than five years overdue (and we'd note that the statutory deadline for review and revision is every five years). *See* 33 U.S.C. § 1342(b)(1)(B).

The 2014 permit represents a significant improvement over the 2003 permit. It is likely to be far more effective in reducing pollution, flooding and erosion caused by stormwater in urbanized areas like the cities and towns in the Mystic River Watershed.

- The proposed Draft General Permit for Small MS4s in Massachusetts (the "2014 permit" or the "new permit") incorporates **water-quality requirements** that directly address the pollutants that are actually causing specific Water Quality Standard violations in each affected city and town in the Mystic River Watershed.

- In many cases, the 2014 permit provides **more specific requirements and deadlines**, which should result in more timely and effective compliance than was experienced under 2003 permit.

- The 2014 permit affords to municipalities **adequate time and substantial flexibility** to choose compliance strategies that are best suited to local conditions. We applaud EPA's decision, in response to comments on the proposed 2010 small MS4 permit (which in the end was not issued), to eliminate certain requirements that were overly prescriptive and inflexible.

- The new permit's provisions for **greater public access and opportunities to comment** on cities' and towns' stormwater management programs will increase public knowledge about and support for these programs – an outcome essential to achieving a commitment to allocate the resources needed to deal with polluted stormwater. Greater public scrutiny will also encourage the development of more effective plans and more consistent program implementation.

- The carefully crafted requirements for a permittee's **Illicit Discharge Detection and Elimination (IDDE) programs will help guide MS4s to effectively combat the significant systematic problem of non-stormwater discharges.** We find that the scope, timescales and approach of these rules – in particular, the requirements for system mapping and sampling – to be thoughtful and appropriate.

- **The post-construction requirements for new development and redevelopment will help to prevent future projects from continuing the poor stormwater management practices of the past.** In general, EPA has chosen a balanced and effective strategy, setting a high standard for addressing stormwater infiltration (the most cost-effective way to remove pollutants from stormwater), while providing a safety valve where site conditions make meeting that standard infeasible. (We offer more detailed comments on this below).

In short, the new permit requirements ask municipalities to do better monitoring and planning, to improve implementation, to raise public awareness of stormwater issues and to design and maintain better stormwater management measures. If successful, the new permit **will result in major improvements in the management of urban stormwater in Massachusetts, with the results evident in cleaner and healthier rivers, streams, lakes, ponds and coastal waters**.

Good planning, it needs to be emphasized, **will help cities and towns reduce the cost of funding compliance investment in stormwater programs and infrastructure**. Communities can take advantage of help and support from EPA, the state Department of Environmental Protection (DEP), watershed groups and regional planning agencies. They also can work regionally to achieve economies of scale (for example, by forming and participating in stormwater consortiums); to develop and fund stormwater utilities; and to ensure that private entities assume their share of the responsibility for stormwater management.

III. Areas for Improvement: General

Although we strongly endorse the overall approach and requirements of the new permit, we have identified **some areas where improvements are needed:**

- **The stormwater bylaw requirements should apply to projects of a quarter or half an acre.** Most urbanized cities and towns, including many in the Mystic River basin, host very few large development and redevelopment projects. Indeed, development in these communities generally is sited on parcels smaller than an acre. However, under the new permit, projects of this size would not be required to employ *any* stormwater management measures unless they are located in wetland resource areas. This loophole will make it exceedingly difficult for many communities to comply with the proposed prohibition against new and increased stormwater discharges from MS4s.

- In addition to conducting an annual evaluation of adherence to and effectiveness of best management practices (BMPs), **permittees should be required to take corrective action** where the evaluation shows that goals and objectives are not being met. An effective iterative approach to improving stormwater management requires that problems be addressed, and not simply catalogued, as they are discovered.

- **MS4s discharging to waters impaired for bacteria or pathogens should be subject to additional requirements**. This includes ensuring that new development and redevelopment projects and retrofits implement only those BMPs that are most effective at reducing bacteria, where the waters into which these projects discharge (via an MS4) fail to meet Water Quality Standards for bacteria or pathogens. This is consistent with the requirements that EPA has proposed for other stormwater pollutants.

- **The new requirements proposed for projects discharging to waters impaired for chloride (road salt) should apply to all MS4s.** Field evidence increasingly identifies road salt as a major problem in urban areas like MyRWA's. We strongly recommend that chloride-control measures be included in all of the new permit requirements.

- **The requirement for retention of 1″ of runoff for all development and redevelopment sites should be applied to the entire site area.** This concept is vital to preventing future development and redevelopment from making conditions worse. The language of the new permit should be clarified to achieve this end. This requirement ensures that the first flush, which is likely to contain the highest pollutant levels, is retained or treated. This approach appropriately encourages a developer to evaluate its entire site and to look for opportunities throughout the site for increased infiltration. This is necessary in order to ensure that redevelopment projects significantly reduce stormwater runoff and pollutant loadings. In densely-developed municipalities like those in the Mystic River basin, real improvement in controlling runoff will not happen unless this requirement is applied to the entire site area, and not just to the often very small confines of the redevelopment project itself. Although total retention volume will be higher when the entire site is included, we believe that any challenges that may arise can be **adequately addressed via the "safety valve" provision** of Section 2.3.6.a.ii(a), which covers instances in which specific site conditions make compliance with the 1″ requirement infeasible. The new permit should make it clear that treatment in lieu of 1″ retention will be allowed only if specific site conditions render full 1″ retention impossible or infeasible.

- **We recommend that permittees be required to update their existing ordinances or regulatory mechanisms or create new ordinances/regulatory mechanisms within 2 years of the permit effective date**, as needed, to incorporate all of the requirements of Section 2.3.5.

- **The compliance schedule for the Charles River Phosphorus TMDL is too long.** We support the schedule proposed by the Charles River Watershed Association (CRWA) to require TMDL compliance within 10 years. We believe that, to return the river to a healthy state, it is extremely important to reduce the pollutant input as soon as possible and to provide permittees with a variety of financial instruments that encourage investment in required infrastructure.

IV. Particular Areas of Comment

MyRWA offers the following more detailed comments on areas of the new permit that are of particular concern to its members.

A. Public Involvement and Participation

1. We support the provisions of Section 2.3.1.b, which enable the development and implementation of permit conditions collectively among more than one entity (e.g., among neighboring MS4s) – if certain conditions are satisfied. This flexibility is key to facilitating stormwater management responses on regional and watershed bases. To

further encourage cooperation of this type (and the efficiencies that it engenders), private community stakeholders such as landowners and community organizations could be listed as eligible partners for satisfying permit requirements. In particular, watershed associations can play an important role in the public education and outreach efforts called for in Section 2.3.2.

2. Section 2.3.2 is fundamental to the overall success of MS4s in meeting permit discharge requirements, as widespread education will facilitate the adoption of EPA-recommended stormwater management practices. With this in mind, we suggest that the notification requirement of Section 2.3.2.c be strengthened to (i) require outreach to each audience at least once every two years, rather than a frequency based on the total permit period (as we've seen, the statutorily required five-year permit period in practice may be more than doubled); and (ii) require that the distribution of each educational message be communicated via the Web and by one other distribution mechanism listed (e.g., via news item, brochure, poster).

3. MyRWA strongly supports Section 2.3.3.b, which requires that the permittee provide an annual opportunity for public review of the Storm Water Management Plan (SWMP) and its implementation. We know that the level of public participation this invites will be crucial to the quality of design, support and performance of SWMPs. Although all of the public participation mechanisms listed in Section 2.3.3.c are positive and appropriate, we additionally recommend specifying that the permittee consider public comments on the Notice of Intent (NOI) and SWMP, as well as those relating to annual reports and self-evaluations filed under the new permit. These documents (including annual reports and data) should be made available conveniently online by the permittee and also should be listed in the communications described in Section 2.3.2.

B. <u>Compliance and Reporting</u>

1. The standard permit conditions of Appendix B provide for reasonable non-compliance by permittees under exceptional circumstances, in each case requiring notification to EPA either before or after the incident. We recommend that Section B.12.b (anticipated non-compliance) and B.13.c (bypass notice) be highlighted in the body of the new permit and that permittees be additionally required to notify the public in the event of non-compliance or bypass. These public notifications should be made to the same website as the one in which the SWMP is posted, as specified in Section 1.10.1.b of the new permit. Without this addition, the strong reporting requirements of the new permit could potentially be undermined in cases where the information about

permit compliance being made available to the public is incomplete due to these incidents.

2. We strongly support the provisions of Section 4.4, which require that the reporting and evaluation of permit compliance and SWMP effectiveness be included in permittees' annual reports. We recommend that the significance of this annual reporting as a mechanism for corrective action and iterative improvement of stormwater management be reinforced and highlighted by modification of Section 4.1.c. This section, which provides for EPA to modify permit compliance measures in a written response to annual reports, should be extended to (i) require a written response by EPA to each annual report, whether or not changes are recommended, and (ii) provide for a brief public comment period of 30 days, which would allow community stakeholders to review and propose changes to EPA's response.

3. Section 4.4 outlines the required elements and timing for submission of annual reports. We strongly suggest that this section encourage the submission of the annual report via an electronic format developed by EPA. Development of an electronic template for annual reports – as has been done with the NOI – will dramatically increase the capacity of regulators and the public to review compliance data. An electronic format allows for quick data compilation across many reports, increasing transparency and facilitating review by understaffed agencies.

C. Illicit Discharge Detection and Elimination (IDDE)

1. We recommend that Section 2.3.4.4.b provide a definition for "sanitary sewer overflow" (SSO). The experience of this organization is that permittees are not clear on what is and is not an SSO. Frequently municipal staff will not identify basement backups of sewage as an SSO. Also, if a combined sewer area backs up onto street and fills a parking garage – should this be reported as an SSO? See comment below.

2. We recommend the inclusion of additional language to deal with overflows not considered in this permit. There are multiple areas within the Mystic River Watershed where a section of the community is serviced by a combined sewer. We have now seen multiple incidents where constraints in the system have caused CSOs to flood residential streets. We do not believe that these incidents are being properly reported, have been identified as a public health threat or have received prioritization for correction.

3. We recommend that reports of SSOs be uploaded to the permittee website in a timely manner to keep the public informed. These reports currently are not visible to the

public. It would be natural to place these reports on the same page dedicated to NOI and Annual Reports.

4. We recommend that the requirement in Section 2.3.4.4.b to identify all known locations where SSOs have discharged to the MS4 in the past five years be extended to the past ten years. Research performed by MyRWA has shown that reporting of SSOs is inconsistent across storm events and chronically underreported. Because major rain events are sporadic (indeed, it's not clear that one has occurred in the region since March 2010), a five-year window will be too short for planning purposes, resulting in few SSO locations being catalogued in response to permit requirements. The devastating March 2010 incidents would not be included, for instance.

5. We strongly agree with EPA's recommendation – set forth in reference to Section 2.3.4.6.b in the fact sheet for the new permit – that GIS be the preferred format for permittee system maps. GIS maps prepared using an industry-standard format would be an invaluable resource to the permittee as well as to outside stakeholders, provided that these files are made publicly available (which they should be). Indeed, this provision should be incorporated into the new permit itself – preferably listed as a requirement, except in cases where permittees obtain certification from EPA that to do so would be technically infeasible.

6. Consistent with our comments on Section 2.3.1.b (inter-entity permit conditions), we recommend that the language of Section 2.3.4.7.b. be extended to encourage regional cooperation on IDDE program implementation. Already, the section outlines conditions for multiple departments to jointly execute IDDE programs, requiring that responsibilities be defined and cooperative processes be established. Additionally, we suggest that permittees be allowed to collaborate with nearby MS4s to develop IDDE programs, subject to the same requirements that apply to collaborating departments. Such cooperation could expedite implementation by permittees as well as increase the effectiveness of IDDE programs.

7. We strongly recommend that Section 2.3.4.7.c. include language that encourages MS4 managers to actively seek out data from other agencies and environmental groups to assist with prioritization of catchments (limited reference to outside data is found in Section 4.4.b.v.). Many watershed groups (including MyRWA) have collected water quality data on local water bodies and stormwater outfalls and this data can be extremely useful in prioritizing problem and priority catchments. In the past 15 years, MyRWA has collected 984 bacteria samples from stormwater outfalls and nearly 3,000 bacteria samples from receiving waterbodies. Other parties with significant data resources on water quality include the Massachusetts Department of Public Health,

which has data on swimming beaches, and the Department of Conservation and Recreation. Without some encouragement, we believe that many permittees will rely only on the very modest levels of past monitoring, and will miss the opportunity to prioritize efforts to improve the condition of the water body as quickly as possible.

8. We recommend that the requirement in Section 2.3.4.7.d.v to analyze pollutants identified as contributing to impairments (as specified in Appendix G) be removed. MyRWA's experience in measuring phosphorus levels in stormwater at outfalls and in-stream shows that the results are highly heterogeneous over time. Factors that determine the level of phosphorus include seasonality, intensity of rainfall, timing within the storm (e.g., first flush) and period of dry weather preceding storm (e.g., wash-off dynamics). Our experience would indicate that in the case of phosphorus, results are as likely to be misleading as informative. We expect that the results from measuring other parameters will suffer from the same problem. Unless the permittee installed an autosampler at the site and collected a series of samples or composites, it is not possible to flag or prioritize areas- this is a case where GIS modeling does a much better job.

9. We regard Section 2.3.4.8.a as a particular strength of the new permit, as it requires dry weather sampling of all eligible catchments within a specific timeframe, with sampling data to be made public through the annual report. Although the exemption for permittees already performing monitoring under the 2003 MS4 permit or as a result of an enforcement action is appropriate, we recommend specifying that all data collected under existing monitoring be submitted in the annual report required by the new permit.

10. We recommend that the new regulations explicitly state that all permittees are expected to meet all requirements of Section 2.3.4, even MS4s that are currently under an enforcement or similar order from EPA or a state environmental agency in which an IDDE plan has been approved. An MS4 which, because of such an order, does not follow all requirements of Section 2.3.4 should describe in its SWMP how its current, approved plan is at least as effective as what Section 2.3.4 requires.

11. Section 2.3.4.7.c.i defines specific water sampling criteria for MS4s to follow in identifying "Problem" and "High Priority" catchments for investigation in the IDDE program. The proposed criteria are based on the simultaneous exceedance of certain thresholds in bacteria, surfactants, and ammonia. Our own analysis (see Appendix 1 below) suggests that (i) only a very small fraction of catchments are likely to qualify for prioritization under these criteria, and (ii) ammonia in particular is not significantly associated with clear indicators of sewage discharge concentration. We

believe that a prioritization scheme that requires *all* of these parameters to be exceeded creates an artificially high threshold that will result in the identification of very few storm sewers as "Problem" or "High Priority" catchments. Indeed, if a large stormwater drainage were to have 50,000 *E.coli* mpn/100 ml (i.e., massive contamination) and null values on ammonia, surfactants and chlorine, the current prioritization scheme would not target it.

We therefore suggest that:

a. Problem catchments be identified based on exceeding a bacteria threshold that is in excess of 2,500 *E. coli*/100 ml (or the *Enterococcus equivalent);*

   or

   Problem catchments in freshwater environments be identified based on exceeding the recommended bacterial and surfactant thresholds, regardless of ammonia level. Problem catchments in marine environments should focus solely on *Enterococcus.*

b. High Priority catchments be identified based on exceeding the bacterial threshold, catchment size and public health risk associated with pollution at the receiving body (e.g., drinking water supply, beach).

D. Discharges to Water Quality Limited Bodies with TMDLs

We recommend requiring that the requirements of Sections 2.1.1 and 2.2.1(b) and Appendix F apply to any discharges to waters that become subject to new TMDLs during the permit term – and not simply limited to TMDLs approved prior to the start of that term. There are currently no approved TMDLs in the Mystic River Watershed. Given the extended timelines for revision of the MS4 permit regulations (long past the required five-year interval), efforts to improve conditions in the degraded Mystic River will be inappropriately delayed if deployment of TMDLs must await a (possibly distant) effective date of a future permit. Such an approach will also exacerbate the differences in water quality and invested resources between sites that have received assistance in developing TMDLs and places like the Mystic River that have not benefitted from that attention. Compliance plans should be developed and SWMPs revised to include the new requirements within the first two years after the effective date of any new TMDL.

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E. Discharges to Water Quality Limited Bodies Lacking TMDLs

1. Monitoring of urban stormwater shows consistent presence of certain pollutants that are targeted by EPA's proposed new permit. EPA is correct in pointing out that waters impaired for one or more of these pollutants do not have the capacity for additional loadings of those pollutants, and, therefore, that any loadings contributed by the MS4 cannot be allowed under the new permit. We support requiring that extra measures be taken to control pollutants discharged by MS4s into water-quality limited waters for which a Total Maximum Daily Load (TMDL) has not been established for any such pollutant (see Sections 2.1.1(c) and 2.2.2, and Appendix H). This is a sensible way to ensure that emphasis is placed on addressing the most serious water pollution problems in the Mystic River basin.

2. MyRWA supports EPA's general approach here, which requires specific, additional maximum extent practicable (MEP) requirements for MS4 discharges to water quality-limited waters. And we do not support an alternative approach – requiring permittees to develop a specific plan for each relevant pollutant. Such a requirement would be far too complex, time-consuming and costly. Rather, where necessary to protect impaired waters, EPA should demand specific targeted enhancements to the MEP requirements.

3. MyRWA also recommends the following:

    a. The Proposed 2014 Massachusetts Integrated List of Waters should be used for this assessment, not the Final 2012 list, if the 2014 list has been approved by the effective date of the new permit.

    b. A permittee should be allowed to rebut the presumption that specific pollutants are present in its MS4 discharges. A successful permittee would thus be exempt from the additional requirements of Appendix F.

    c. The additional Appendix H Part III requirements for permittees discharging to waters that are impaired for bacteria/pathogens should be strengthened to include these additional MEP requirements:

        i. Revising post-construction bylaws or ordinances to require retention of one inch (1") of runoff from all impervious areas for smaller projects (e.g., those disturbing one-half acre or more). This is particularly important in heavily-developed, urbanized areas like much of the Mystic River basin;

ii. Requiring that new developments and redevelopments give priority to BMPs that are effective in controlling pathogens in stormwater discharges; and

iii. Emphasizing BMP retrofit opportunities that effectively reduce bacteria in stormwater on permittee-owned properties.

d. Pursuant to Section 2.1.2, any increased discharges must be authorized under the Massachusetts anti-degradation regulations (314 CMR 4.04). Conditions imposed by those regulations should be incorporated by reference in the new permit. Finally, any such conditions or requirements also should be documented in the relevant SWMP and evaluated in the permittee's annual report.

F. Post-Construction Stormwater Management

1. We support EPA's application of the so-called one-inch (1") retention standard for site development or re-development (that is, that the site be engineered to retain – without promoting runoff – the first inch of rain in a storm). As is well known, this "first flush" of runoff is often far more polluted than what follows. If this runoff is not retained, treated or otherwise controlled, it poses a serious threat to the bottom-line goal of achieving clean water.

2. To ensure that the new permit is effective and that we do not inadvertently find ourselves undermining existing progress, we believe that it is important to apply the 1" retention requirement to an entire site, once the determination has been made that it applies to the developed or re-developed area of that site. The reasons for this are several. First, typically, in densely-developed areas like much of the Mystic basin, little possibility for increased infiltration will arise unless the entire site – that is, the area in which much of the development already exists – is treated. Second, this approach will encourage developers to consider additional efficiencies, ones that would not be an option if they were not required to address the entire site. Finally, if the one-inch requirement were to apply only to the confines of a new development/redevelopment, total runoff from the entire site (and thus water pollution) would most likely increase.

3. To address the possibility (infrequently seen) that specific site conditions that render compliance with the 1" retention requirement infeasible – due, for example, to soil conditions, high groundwater levels or existing contamination – we endorse the availability of an alternative compliance path. In this way, development/redevelopment will not be obstructed unnecessarily, with inefficient

and environmentally unsound stormwater management practices frozen in place. Section 2.3.6.a.ii(a) should clarify that this "safety valve" is available only if specific, articulable site conditions make full 1" retention infeasible. It also should make it clear that, where infeasibility is found, the alternative compliance path must apply to the entire site, not simply the area where new development/redevelopment is planned.

4. We also suggest that EPA consider allowing off-site mitigation and trading, but only where an on-site approach covering the entire site is infeasible. Off-site mitigation and trading can encourage cost-effective MS4-wide strategies for reducing pollutant loads, and controlling volume and rates of runoff. However, developing effective mitigation provisions and trading systems is complicated – these require careful attention to design to ensure true equivalence in the level of pollution and runoff control provided, and to avoid the creation of loopholes. Thus, this approach should be considered only if on-site strategies are physically impossible or at least significantly more expensive than off-site mitigation.

G. Chloride (Road Salt)

The new requirements proposed for MS4s should apply to *all* MS4s – not just to MS4s that discharge to waters impaired for chloride (road salt). Although relatively few water bodies have been assessed for chloride, a growing body of evidence points to the conclusion that this is a significant problem in most, if not all, urbanized areas[1] – a problem that so far has been virtually ignored. Research from the northern United States as well as the analysis of water quality data from the Mystic River basin is summarized in Appendix 2 below. Given this data, we strongly recommend that measures to control chloride discharge be moved from Appendix H to the Good Housekeeping section of the new permit.

H. BMPs and LID

1. We support requirements for measurable goals for each BMP, including milestones and timeframes for implementation, defined qualitative or qualitative endpoints, and associated measure of assessment (section 1.10). We support the requirement for an annual evaluation of BMP implementation and recommend that it include an assessment of effectiveness as part of the annual SWMP. This evaluation is critical to encouraging an interactive approach to improving stormwater management. We also recommend that EPA provide detailed guidance on methods for evaluating the effectiveness of each type of BMP, and examples of corrective actions that might be

[1] *See* Robinson, et al. 2003. Water quality trends in New England rivers during the 20th century, Water-Resources Investigations Report No. 03-4012 (USGS: National Water-Quality Assessment Program), 13.

taken where BMPs are not achieving their goals and objectives. The BMPs involved in stormwater management vary widely in their characteristics, from those that have a direct and observable impact on water quality (e.g., IDDE requirements) to those that are very important but less easily evaluated in terms of their ultimate effect on stormwater impacts (e.g., public outreach and education). A catalog of appropriate outcome measures for each BMP requirement and a checklist of BMP improvements that should be considered where BMPs are not achieving the desired objectives would be very helpful to permittees in the initial development of their SWMPs and in their annual evaluations.

2. In the annual evaluation of BMPs as part of the SWMP (section 1.10.2), we recommend that permittees be required to identify any BMPs that are not achieving the planned outcomes. This may include a description of planned changes in BMPs as well as other actions to improve performance – including, if necessary, the evaluation and implementation of alternative BMPs. We also recommend that new regulations enable the public to petition EPA for a declaration that a BMP is ineffective and requires remedial action.

3. EPA's BMP Performance Extrapolation Tool (PET), cited in section 2.3.6.a.ii(a), covers only some of the pollutants often found in stormwater: total phosphorus, total nitrogen, total suspended solids, and zinc. We recommend that EPA provide additional guidance on how it plans to select methods for verifying treatment performance with regard to other stormwater-related pollutants (e.g., bacteria, oil and grease, chloride, metals). The new permit also should allow for use of other resources able to demonstrate performance – but with the proviso that the permittee verify that any guidelines used which are not consistent with EPA's BMP PET be shown to be more relevant to the specific site conditions than those incorporated in the BMP PET.

4. We recommend that EPA provide additional guidance on how BMPs should be chosen, as well as how they should be constructed (section 2.3.6.a.ii(d)). To ensure that BMPs are as effective as possible at removing or treating pollutants of concern, we recommend that BMPs be selected and constructed in accordance with the Massachusetts Stormwater Handbook.

5. We support the emphasis on low-impact development (LID) in the post-construction requirements (section 2.3.6.c). State-of-the-art LID has advanced significantly in recent years, the result of greater experience with these sustainable techniques. Costs have come down and there is a clearer understanding of performance potential, as well as the design, construction and maintenance practices needed to render these techniques effective. We believe that the language in the permit Fact Sheet (at p. 35)

inappropriately suggests that maintenance of LID controls may be more expensive or difficult than that required for traditional stormwater controls. No such implication should be carried over into the final version of the new permit.

6. We agree that permittees should be required to assess local practices and regulations that affect impervious cover and the use of green roofs, infiltration BMPs, and water capture/reuse, as well as to assess opportunities to modify or retrofit their property and infrastructure to reduce impervious area and directly connected impervious area (section 2.3.6.d). These requirements will remove local barriers to more cost-effective approaches to stormwater management and will promote more proactive management of municipal stormwater.

I. Pollution Prevention

We support inclusion of pollution prevention in public education and outreach (Section 2.3.2). In addition, we support the requirements for pollution prevention for municipal facilities and operations, including development of a Stormwater Pollution Prevention Plan (SWPPP) (Section 2.3.7). Finally, as noted above, we recommend that some of the chloride reduction requirements described in Appendix H be made part of the Good Housekeeping requirements in section 2.3.7, rather than being limited to MS4s discharging to waters classified as impaired for chloride. These Good Housekeeping requirements should include tracking and reporting of types and amounts of salt used on all permittee-owned and maintained surfaces; developing a plan to minimize and reduce salt application; annually calibrating municipal and contractor equipment; training for staff and contractors on appropriate application rates and best practices; and preventing the exposure of salt storage piles to stormwater.

We appreciate the careful work EPA has done to improve on the 2003 permit and the 2010 proposal, work that is based on its experience with the 2003 permit and comments on the 2010 proposal. However, this process, as noted, has taken a very long time. We **strongly support prompt issuance of the final 2014 permit**, to end the long period of drift and uncertainty associated with delay in issuing this permit. We urge EPA to work quickly to respond to comments and complete a final permit at the earliest possible date.

Thank you for this opportunity to comment on this critically important set of regulatory revisions and permit. If you have any questions or require additional information please contact me at (781) 316-3438 or at EK@mysticriver.org.

Sincerely,

EkOngKar Singh Khalsa, Executive Director
Mystic River Watershed Association

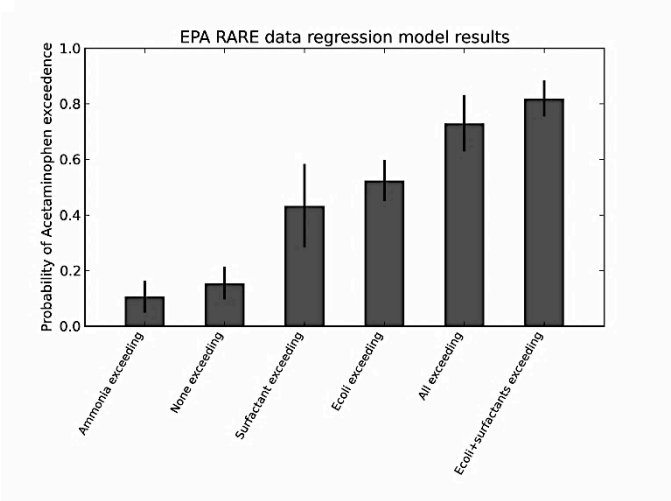
Appendix 1: Catchment prioritization

The catchment prioritization strategy defined in Section 2.3.4.7.c.i of the new permit is designed to focus permittee screening efforts on outfalls and interconnections likely to be affected by illicit discharges. To this end, criteria are established based on three water quality attributes (bacteria, surfactants and ammonia) considered likely indicators of sewage. These criteria demarcate "Problem" and "High Priority" catchment classifications.

However, our analysis of MyRWA's freshwater hotspot sampling data at outfalls in the Mystic River watershed and 2009-2010 data from EPA's Regional Applied Research Effort (RARE) suggests two modifications to the proposed classification scheme.

1. *Problem catchments should be identified on the basis of E. coli and surfactant exceedance alone, regardless of ammonia concentration.*

   In 148 MyRWA samples collected in freshwater environments in which all three of these indicators were measured from 2008-2014, only 5% of samples exceeded the proposed criteria in all three indicators simultaneously. Given that this watershed is known to be impaired and to be afflicted by illicit discharges, this is strong evidence that the proposed prioritization strategy will be too restrictive for most watersheds, leading to the prioritization of few catchments.

   We performed a logistic regression analysis of 88 EPA RARE samples with simultaneous measurements for these three indicators and acetaminophen, which is perhaps the most direct available tracer of sewage discharge. We found that *E. coli* and surfactants are each individually predictive of acetaminophen concentration, and that exceedance of both these criteria simultaneously would be expected to produce an ~80% probability that acetaminophen concentration will be above average. However, the additional finding that ammonia levels are in exceedance of the proposed criterion does not significantly alter the acetaminophen level predicted under the regression model. These results suggest that the additional criteria based on ammonia concentration has the effect of

selecting a random (and overly restrictive) subset of the likely-contaminated catchments. Observe in the above bar graph that the "All exceeding" category is associated with a reduced probability of acetaminophen exceedance than that of "*E. coli* and surfactants exceeding" (~80%).

Moreover, we find in both the MyRWA and EPA data that *E. coli* concentration in the presence of a simultaneous surfactant and ammonia exceedance is actually lower than would be expected based on the exceedance of either individually. This suggests that ammonia, possibly through correlation with antiseptic chemicals like chlorine, may actively counteract or at least anti-correlate with the levels of the key bacterial indicator.

2. *High Priority catchments should be identified based on the E. coli/Enterococcus criteria alone, in combination with catchment size and the public health risk inherent in the receiving population.*

   In 148 MyRWA samples with all three of these indicators measured from 2008-2014, 100 exceeded the proposed bacterial threshold of 235 CF/mL. In 58% of those cases, neither ammonia nor surfactant levels exceeded their proposed thresholds. This indicates that a large fraction of catchments will exhibit problematic bacterial levels, regardless of the status of other salient indicators. Being an urban watershed, there is minimal concern that the bacterial source is agricultural. Given that bacteria is the contaminant that will ultimately pose the greatest public health risk, it makes sense to focus on identifying catchments exceeding this indicator, regardless of their performance on indicators of secondary significance.

We believe that the above recommendations are consistent with the trends indicated by the historical sampling data from both MyRWA and EPA, and will lead to improved prioritization and more efficient IDDE program execution by MS4s.

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Appendix 2: Chloride

Application of salt in Massachusetts has expanded dramatically during the past two decades. Because a coordinated study on chloride and conductivity in Massachusetts streams has never been conducted, it is reasonable to conclude that the listing of only six streams as impaired for chloride in the Massachusetts Year 2014 Integrated List of Waters vastly underestimates the extent of impairment.

Research from outside of Massachusetts suggests that chloride levels in urbanized areas routinely exceed EPA's chronic toxicity levels. Kaushal et al. (2005) points out that urbanized streams in Baltimore with >35% impervious cover consistently reach chronic toxicity levels of 230 mg/l chloride. Corsi et al. (2014) assessed 30 monitoring sites on 19 streams (including 15 in urban areas) throughout the U.S. and found that 29% of the sites exceeded the EPA's chronic water-quality criteria, on average, by more than 100 days per year.

Despite this evidence of widespread impairment at the national level, the new permit would require an affirmative showing that chloride has impaired the Mystic River and its tributaries – backed by significant monitoring – before any remedial measures can be deployed. This imposes the burden of proof on the wrong parties. The result will be a delay in efforts to address a pollutant whose toxicity is well documented that right now is being widely applied to the streets and roads in the Mystic Watershed.

Conditions in the Mystic River Watershed

In order to assess direct evidence of impairment of water bodies in Massachusetts, MyRWA analyzed three sets of conductivity data on the freshwater rivers, streams and lakes collected by our own organization and the Massachusetts Water Resources Authority (MWRA) from 1994 – 2014. Analysis suggests that chloride levels regularly exceed chronic threshold limits identified by EPA (230 mg/l) and have increased significantly in the past two decades in most parts of the watershed.

1. *Analysis of data from MyRWA baseline sites*

The first data set is from the MyRWA baseline monitoring program. It includes monthly samples from 15 years at 10 freshwater sites. MyRWA calculated chloride levels based on specific conductivity measurements and the relationship between conductivity and chloride. We examined two alternative linear regression models describing the relationship between chloride and conductivity – one from Heath and Morse (2013) on chloride in Wilmington, Mass., and another calculated by MyRWA in 2015 using lab results returned for chloride and conductivity in a recent study (discussed later in this Appendix). The MyRWA study applies the most conservative linear regression model (which yields lower estimates of chloride).

Figures 1 and 2 below show the chloride levels calculated for the MyRWA baseline sites. Figure 1 shows estimates for complete years. Figure 2 displays data only from April through October for each year – which more clearly shows the accumulation of chloride in the system.

When analyzing data for months with little or no salt application (Figure 2), we can see that chloride concentrations often reach levels at or above the EPA's chronic toxicity criteria of 230 mg Cl/l for the Aberjona and Malden rivers and for Alewife and Mill brooks. When looking at full-year data (Figure 1), we notice that EPA's acute toxicity criteria of 860 mg Cl/l is even exceeded on several occasions.

But what is more worrying is that chloride levels are increasing at most of the baseline sites. The situation is particularly alarming for the Meetinghouse and the Mill Brooks, where the rate of increase is highest. If these alarming trends continue, chloride levels will be well above chronic toxicity criteria most of the time.

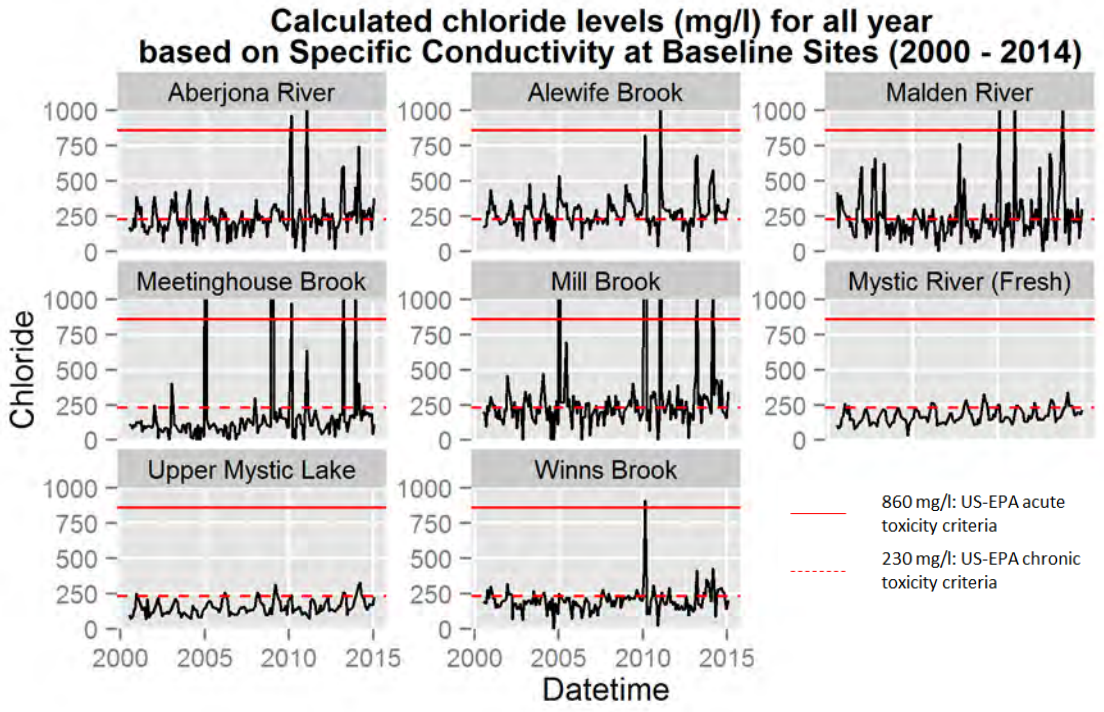

Figure 1: Calculated Chloride levels (mg/l) for complete years based on Specific Conductivity at MyRWA baseline sites (2000 - 2014)

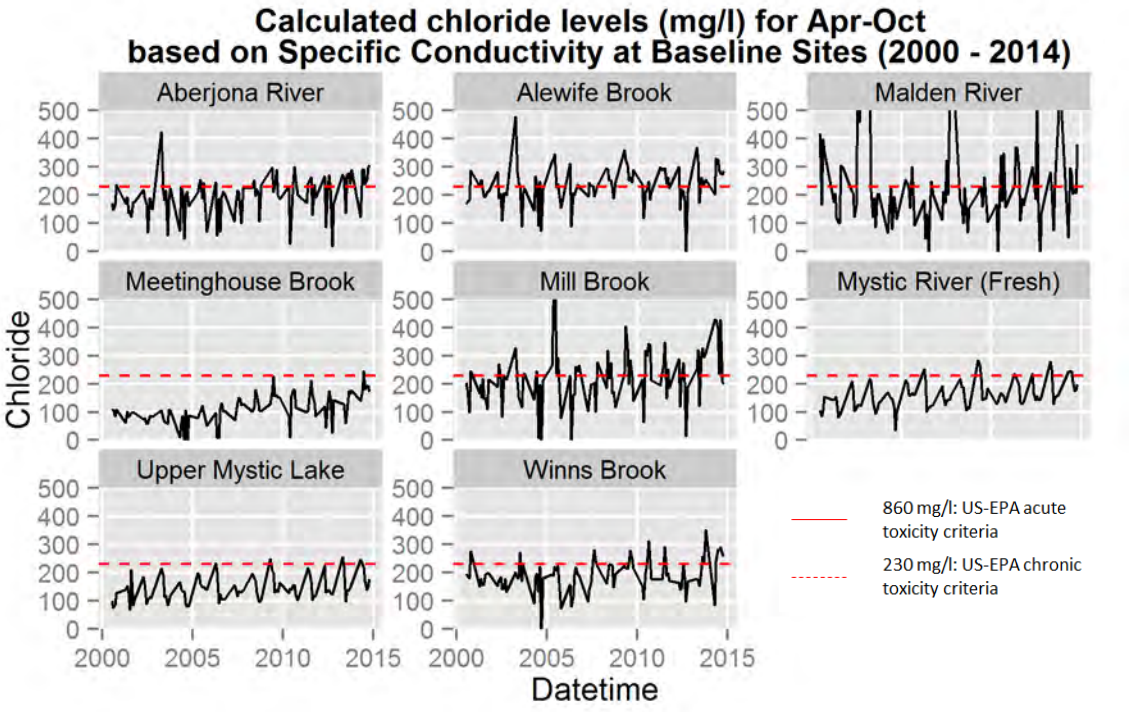

Figure 2: Calculated Chloride levels (mg/l) for April-October based on Specific Conductivity at MyRWA baseline sites (2000 - 2014)

2. *Analysis of data from MWRA sites*

Figures 3 and 4 below display chloride levels calculated for MWRA sites. As with MyRWA's baseline sites, results here also are shown both for complete years (Figure 3) and for the April-through-October period (Figure 4).

MWRA sites are located along the Mystic and Malden rivers and Alewife Brook. Their precise location is shown on the map at the end of this Appendix (Figure 8).

To avoid the possibility that a saltwater wedge from the Amelia Earhart Dam would affect the results, MyRWA analyzed only data collected from surface samples. Likewise, MWRA sites close to the dam have been excluded from the analysis, because they clearly had been influenced by saltwater.

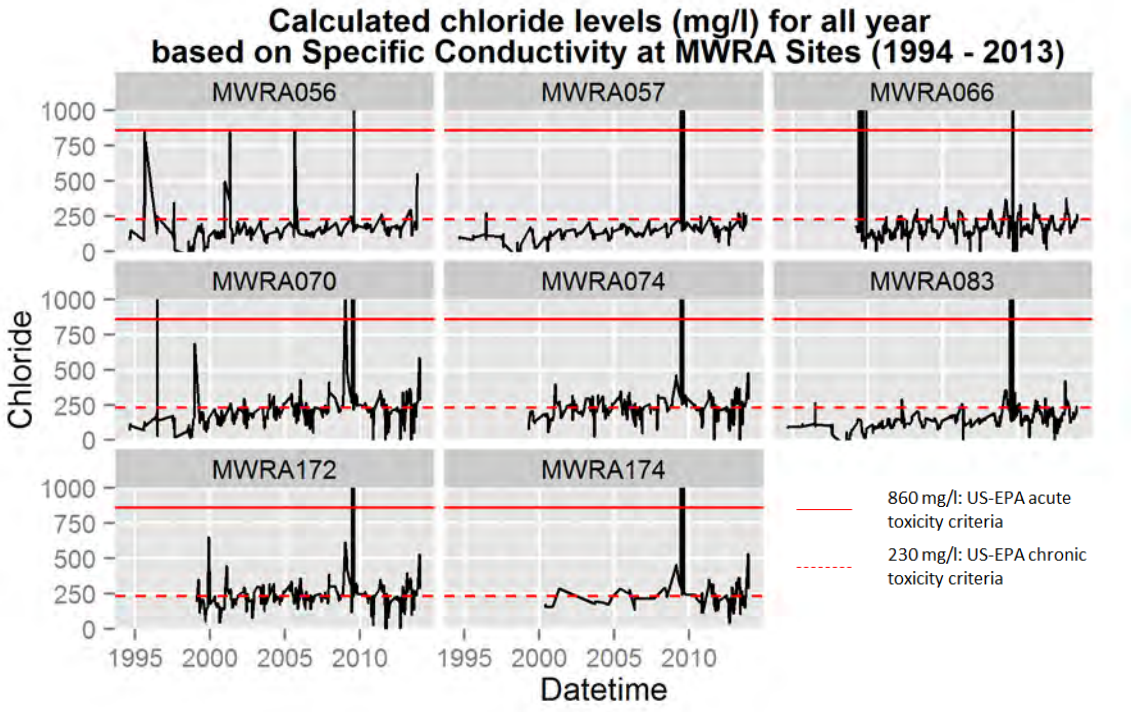

Figure 3: Calculated Chloride levels (mg/l) for complete years based on Specific Conductivity at MWRA sites (1994 - 2013)

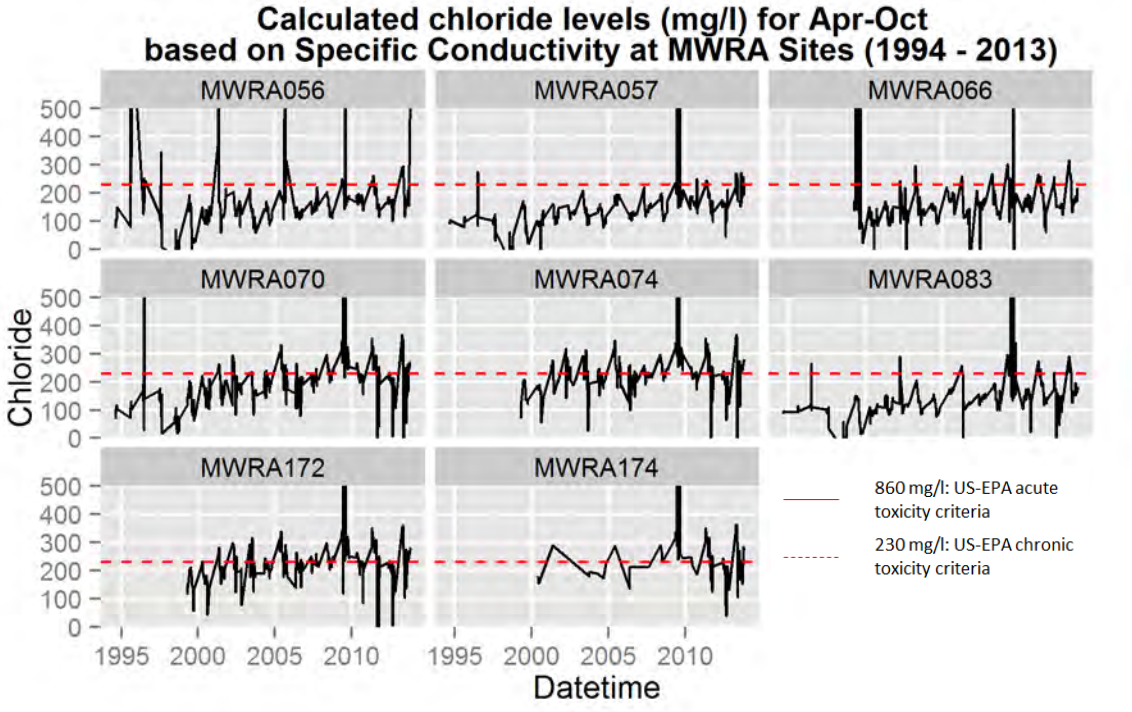

Figure 4: Calculated Chloride levels (mg/l) for April-October based on Specific Conductivity at MWRA sites (1994 - 2013)

The analysis of these chloride levels is also quite alarming, as it shows concentrations at numerous sites regularly reaching EPA's chronic toxicity criteria of 230 mg Cl/l, as well as numerous exceedances of EPA's acute toxicity criteria of 860 mg Cl/l. Data from MWRA's sites is more heterogeneous and thus trends are more difficult to establish than for the baseline sites, but several sites show a steady increase in chloride levels over the years, especially sites MWRA 057 (Mystic River at Alewife Brook) and MWRA083 (Mystic River upstream of Alewife Brook).

It is the combination of these two observed trends that is particularly worrying: (i) chloride levels are increasing at several sampling sites, and (ii) concentrations regularly reach and even exceed chronic toxicity criteria.

3. November 2014 and February 2015 chloride survey and calculation

At the end of 2014, MyRWA collected data on chloride and conductivity in Alewife Brook, slightly downstream of MyRWA station ALB006 (see Figure 8 below). A YSI-EXO sonde was deployed for 10 days and continuously monitored specific conductivity. In addition, 5 surface grab samples were collected and analyzed for chloride and specific conductivity on each of the first 5 days. In February 2015, 8 surface grab samples were collected throughout the watershed and also analyzed for chloride and specific conductivity . These results allowed us to establish a relationship between chloride and specific conductivity (Figure 5):

*Chloride (mg/l) = 0.311 * Specific Conductivity (uS/cm) – 65.279*

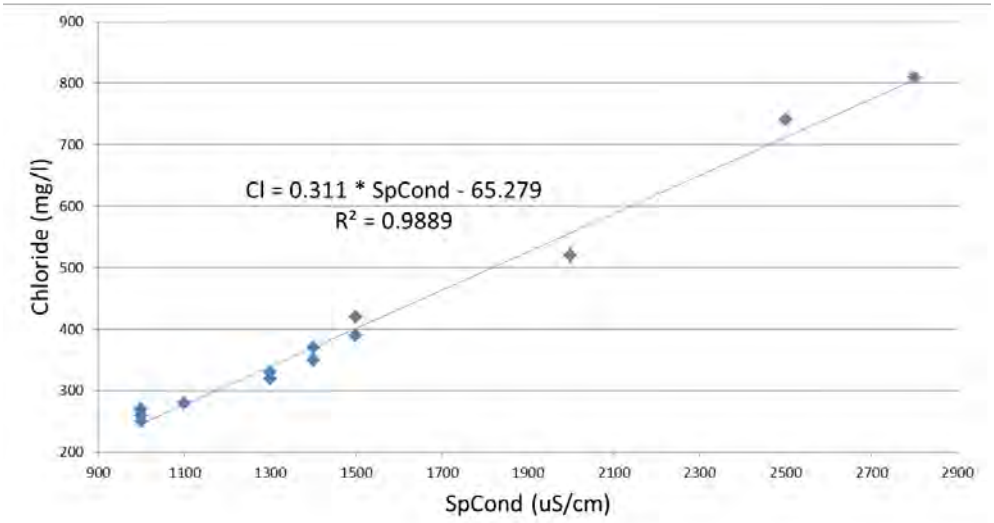

Figure 5: Proposed Chloride / Specific Conductivity relationship based on MyRWA samples (Nov 2014 and Feb 2015)

This relationship was then used to calculate estimated levels of chloride from specific conductivity data from the YSI-EXO sonde, as shown in Figure 6 below. The results clearly show chloride concentrations well above the EPA's chronic toxicity criteria of 230 mg Cl/l for a period of more than four days in November 2014.

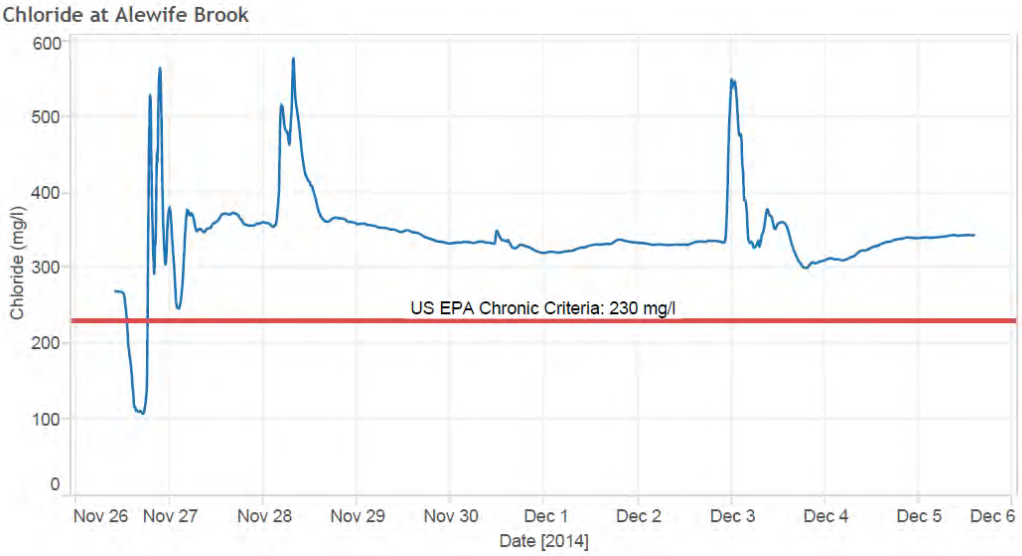

Figure 6: Calculated levels of Chloride (mg/l) in the Alewife Brook - Nov, 26 through Dec, 5 2014

Finally, specific conductivity data converted to chloride levels from the YSI-EXO sonde recorded at Alewife Brook (same station as in November 2014, presented previously) in June 2014, as shown in Figure 7. The result also clearly shows that the US-EPA chronic toxicity criteria is largely exceeded for several days, even when no road salt was applied since March 2014.

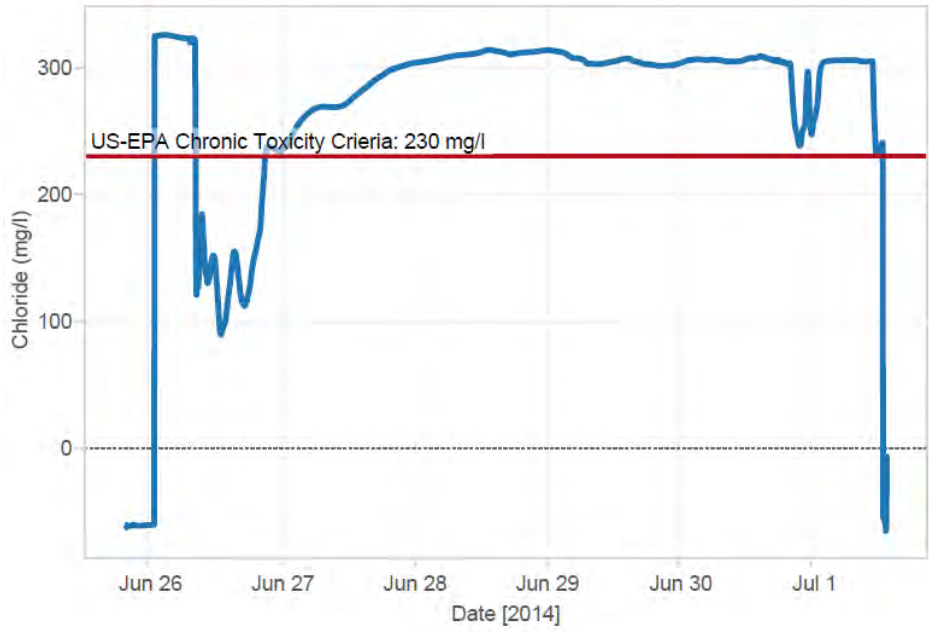

Figure 7: Calculated levels of Chloride (mg/l) in the Alewife Brook - Jun, 25 through Jul,1 2014

MyRWA plans to repeat these studies or conduct similar ones. Recording continuous specific conductivity data over several days will enhance our understanding of the level of chloride contamination throughout the watershed. Additional surface grab samples analyzed for specific conductivity and chloride will help improve the reliability of these two parameters, and the relationship between then, which was described above.

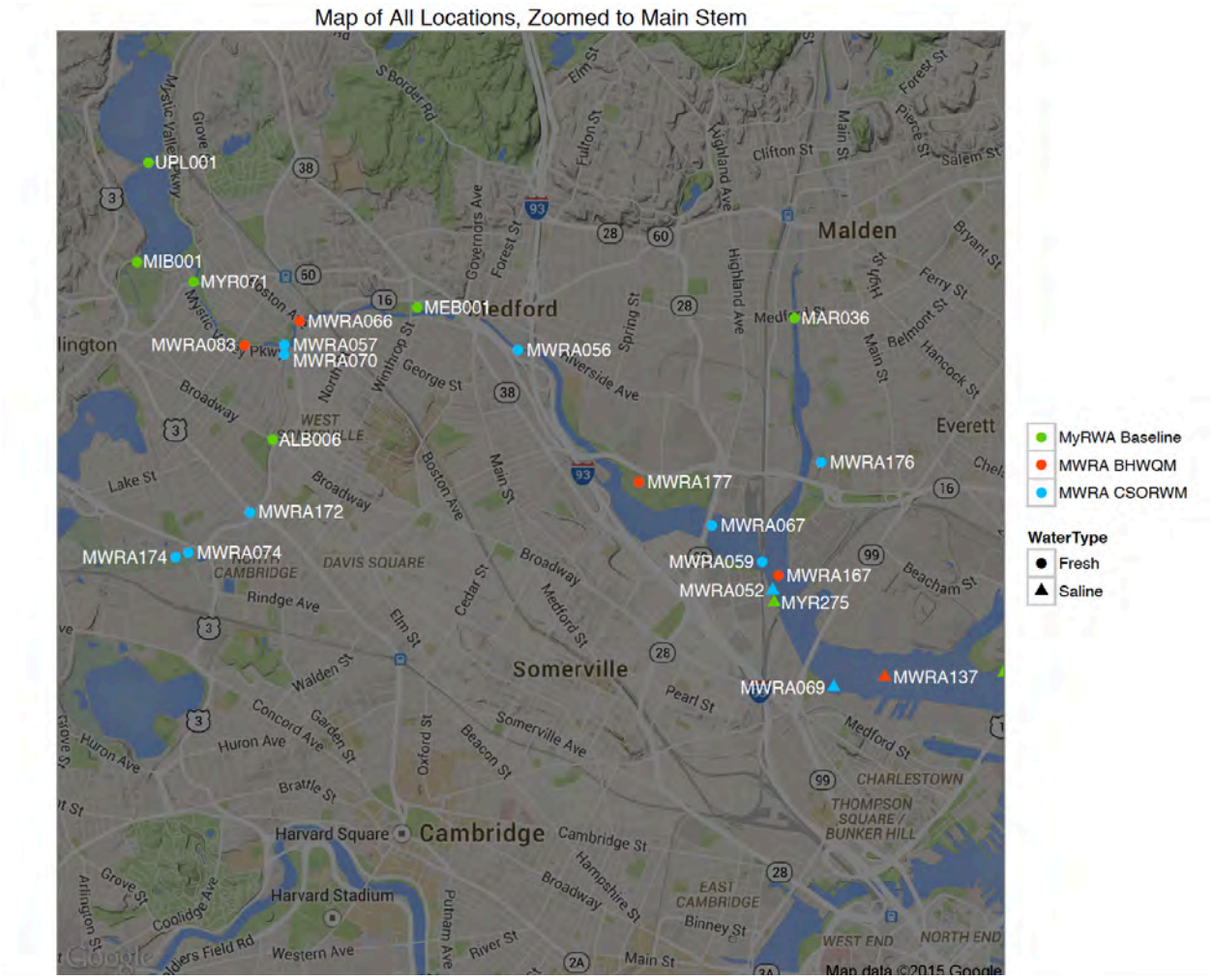

Figure 8: Location of MyRWA and MWRA monitoring sites

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A Clear Commitment to America's Waters

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February 27, 2015

Attention: Docket ID No. FRL-9917-31-Region-1; Document No. 2014-23262
Newton Tedder
U.S. Environmental Protection Agency Region 1
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Mail Code: OEP06-4
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Via Electronic Mail: Tedder.Newton@epa.gov

Re: Comments on 2014 Draft Massachusetts MS4 Permit
Docket ID No. FRL-9917-31-Region-1; Document No. 2014-23262

The National Association of Clean Water Agencies (NACWA) appreciates the opportunity to comment on the U.S. Environmental Protection Agency's (EPA) Draft 2014 Massachusetts General MS4 Permit (permit). NACWA represents the interests of nearly 300 publicly owned wastewater and stormwater utilities nationwide, including eight public agency members in Massachusetts.

NACWA supports the comments on the permit submitted by the Central Massachusetts Regional Stormwater Coalition (CMRSWC). CMRSWC's concerns are representative of those communities that will be most affected by the permit, should it be finalized, and thus should be seriously considered. NACWA especially agrees with CMRSWC's comments regarding the following three issues in the permit:

- **Affordability**: When complying with increased regulatory requirements as outlined in the draft permit, updated affordability guidelines are necessary to help regulated communities achieve compliance without experiencing economic hardship. NACWA has long advocated for changes to EPA's 1997 affordability guidance, and CMRSWC's comments on this point are particularly relevant from a municipal stormwater perspective.

- **Administrative Burden**: The permit, as drafted, would create a significant administrative burden for municipalities that often are unable to access funding for more personnel and technical expertise to implement sophisticated monitoring and reporting requirements. CMRSWC's comments about the need to reduce requirements for "written"

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documentation in recognition of the transition many municipalities are making to electronic documentation is especially relevant. Overly burdensome administrative requirements detract from the ability of municipal stormwater agencies to implement the core functions of their programs which protect water quality.

- **Maximum Extent Practicable (MEP) Standard and Water Quality Based Effluent Limitations**: MEP is the statutory standard that governs the level to which municipalities are responsible for limiting and reducing pollution in stormwater. It is a unique standard designed specifically for municipal stormwater discharges and includes consideration of the limits of technology and cost/benefit analyses. Courts have routinely held that it does not include strict compliance with water quality standards. Any attempt in a federal permit to supersede MEP in favor of water quality based effluent limitations is both illegal and contrary to congressional intent, and would set a troubling precedent if included in the general permit. NACWA fully supports CMRSWC's comments on this issue.

NACWA believes that elements of the draft permit, including the issues specifically identified above, have the potential to set precedent for stormwater permits around the country. Accordingly, NACWA strongly encourages EPA to address the concerns raised by the regulated community over these issues in the final permit.

Again, NACWA appreciates the opportunity to provide input on the draft permit. Please contact me at bmannion@nacwa.org or 202/533-1839 if you have any questions.

Sincerely,

Brenna Mannion
Director, Regulatory Affairs and Outreach

BEFORE THE ENVIRONMENTAL APPEALS BOARD
U.S. ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

In re: JOINT BASE LEWIS-MCCHORD MUNICIPAL SEPARATE STORM SEWER SYSTEM NPDES Permit No. WAS-026638	NPDES Appeal No. 13-09

BRIEF OF *AMICI CURIAE* THE LEADING BUILDERS OF AMERICA, NAIOP-THE COMMERCIAL REAL ESTATE DEVELOPMENT ASSOCIATION, THE NATIONAL ASSOCIATION OF HOME BUILDERS, THE NATIONAL MULTIFAMILY HOUSING COUNCIL, AND THE REAL ESTATE ROUNDTABLE[1]
IN SUPPORT OF THE PETITIONER

[1] The *Amici* listed above filed a motion today to request that the EAB approve the following additional associations' participation as amicus curiae in this filing: Associated Builders and Contractors, Associated General Contractors of America, Building Owners and Managers Association, International Council of Shopping Centers, and The National Association of Realtors.

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I. INTRODUCTION

Pursuant to 40 C.F.R. § 124.19(e), The Leading Builders Of America, NAIOP-The Commercial Real Estate Development Association, The National Association Of Home Builders, The National Multifamily Housing Council, and The Real Estate Roundtable[2] (*Amici*) file this amicus brief in support of Petitioner, the U.S. Department of the Army, Joint Base Lewis McChord (JBLM).

The JBLM petitioned this Environmental Appeals Board (the "Board" or EAB) for review of a National Pollution Discharge Elimination Permit (NPDES) permit (Permit No. WAS-026638) (the Permit) for the JBLM Municipal Separate Storm Sewer System (MS4). Petitioner argues that the Environmental Protection Agency (EPA) lacks authority to include certain prescriptive stormwater management requirements in the Permit, including those relating to post-construction stormwater discharge limitations and EPA's attempt to regulate stormwater flow into the MS4, not the discharge of pollutants from the MS4.

Amici agree with Petitioners arguments and further suggest that the EPA exceeded its authority for several reasons. First, the Clean Water Act (CWA) limits EPA's NPDES authority to regulating the discharge of pollutants from point sources to waters of the United States. Second, EPA cannot regulate post-construction stormwater discharges because it does not have authority under the CWA to regulate "flow" in lieu of pollutants or impervious surfaces in lieu of point source discharges. Furthermore, EPA's authority over discharges of pollutants does not allow it to control land use decisions or to control the facility itself. Finally, EPA did not follow

[2] The *Amici* listed above filed a motion today to request that the EAB approve the following additional associations' participation as amicus curiae in this filing: Associated Builders and Contractors, Associated General Contractors of America, Building Owners and Managers Association, International Council of Shopping Centers, and The National Association of Realtors.

the necessary administrative rulemaking procedures for regulating post-construction stormwater discharges into the JBLM MS4.

II. INTERESTS OF AMICI

Amici and their many members across the country have a long-standing interest in the Clean Water Act's and EPA's NPDES stormwater permitting program. Their interests here include developing, constructing, managing, owning, purchasing and selling newly and redeveloped properties that are located within and discharge stormwater into MS4s, including at military bases such as JBLM.

Since 2009, EPA engaged *Amici* or their members to inform its national strategy for controlling discharges from newly or redeveloped sites. Specifically, EPA has: (1) required many members of the Amici to respond to Information Collection Requests (*see* http://cfpub.epa.gov/npdes/stormwater/rulemaking/icr.cfm); (2) enrolled Amici and/or members to participate as small entity representatives in EPA's Small Business Enforcement Fairness Act review of future regulatory options (*see* EPA Docket No. EPA-HQ-OW-2009-0817 *and* http://cfpub.epa.gov/npdes/stormwater/rulemaking.cfm); and (3) invited Amici and their members to engage in public outreach sessions. But now, in permits such as the JBLM permit before the EAB, EPA is attempting to carry out the objectives of its national rulemaking effort through individual permits, forcing *Amici* to engage in a permit-by-permit review.

Amici and their members would be adversely affected by potentially precedent-setting mandates found in the JBLM NPDES permit. *Amici* have successfully intervened in similar litigation elsewhere to challenge comparable mandates to those raised in this case as contrary to EPA's Clean Water Act and NPDES permitting authority (*see e.g., Va. Dep't of Transp. v. U.S. EPA*, 2013 WL 53741)

Amici support the issues raised in Petitioner's permit challenge, but their interests are not entirely consistent with nor fully represented by Petitioners. If EPA's permit is allowed to stand, MS4 operators (such as Petitioners) must regulate new or redevelopment within the MS4 with direct and significant impacts on *Amici* and their members. Further, the new MS4 mandates in the JBLM Permit would apply to newly or redeveloped properties *ad infinitum* (unaffected by or impacted by the termination of an NPDES construction stormwater permit).

III. STANDARD OF REVIEW

Pursuant to 40 C.F.R. § 124.19(a)(4)(i), Petitioner must demonstrate that the permit decision either is based on a clearly erroneous finding of fact or conclusion of law, or involves a matter of policy or exercise of discretion that warrants review. *In re Guam Waterworks Auth.*, NPDES Appeal Nos. 09-15 & 09-16, slip op. at 9 & n.7 (EAB Nov. 16, 2011).

IV. ARGUMENT

A. EPA'S AUTHORITY OVER JBLM IS LIMITED TO THE DISCHARGE OF POLLUTANTS ONLY.

Congress enacted the Clean Water Act "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. §1251(a). CWA § 301(a) prohibits "the discharge of any pollutant" by any person, except as authorized by the Act. 33 U.S.C. § 1311(a). To regulate these discharges, CWA Sections 301 and 304 authorize EPA to establish "effluent limitations," defined as restrictions placed upon pollutants that "are discharged from *point sources* into navigable waters." *Id.* §§ 1311, 1314(b), 1362(11) (emphasis added); *see also id.* § 1342(a)(1).

Under CWA § 301, EPA must develop effluent limitations for "pollutants." 33 U.S.C. § 1311. "'[P]ollutant' means dredged spoil, solid waste,… chemical wastes, biological materials,… heat,… rock, sand, cellar dirt and industrial… waste discharged into water." 33 U.S.C. § 1362(6).

The Supreme Court has held that the term "means" in a definition is restrictive; it excludes anything unstated. *Colautti v. Franklin*, 439 U.S. 379, 393 n.10 (1978); *National Wildlife Federation v. Gorsuch*, 693 F.2d 156, 172 (D.C. Cir. 1982). Therefore, EPA cannot add to the list.

CWA Section 402 provides an exception to CWA Section 301's prohibition by allowing pollutant discharges to be authorized by a National Pollutant Discharge Elimination System (NPDES) permit. 33 U.S.C. § 1342(a). Thus, the Clean Water Act, through the NPDES permit program, limits the discharge of pollutants into waters of the United States based upon the capabilities of the practices or technologies available to control such discharges. 33 U.S.C. §§ 1311(b)(2), 1314(b), 1316(b)(1)(B).

The Clean Water Act and related Supreme Court decisions make clear that the permitting authority granted to EPA under Section 402 is limited solely to the discharge of pollutants. As explained below, several permit conditions imposed by EPA Region 10 through the JBLM MS4 permit at issue exceed the Agency's Clean Water Act authority because they are not directly related to the "discharge of pollutants from an MS4" but rather focus on other unregulated characteristics of stormwater – such as its quantity, flow, or velocity – or on the amount of impervious surface area for new or redeveloped properties that may drain into the MS4.

1. The Clean Water Act Clearly Limits EPA's Authority to the Discharge of Pollutants.

EPA's NPDES permitting authority over MS4s is limited to controlling the *discharge of pollutants from* the MS4 system to the maximum extent practicable (MEP). The limits of this authority does not stretch to encompass any agency role to independently regulate stormwater flow or volume absent pollutants, or to mandate that the MS4 establish new laws to achieve an end that EPA itself cannot independently achieve.

EPA properly identifies the statutory limitation on its powers:

> CWA Section 402(p)(3)(B), 33 U.S.C. § 1342(p)(3)(B)(iii), *requires* the Region to issue permits for stormwater discharges from regulated MS4s that contain controls designed to "reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, *and* such other provisions that [the permitting authority] determines appropriate for *the control of such pollutants.*" 33 U.S.C. § 1342(p)(3)(B)(iii). (Response Brief at 11) (emphasis supplied).

However, EPA then attempts to expand its authority beyond the discharge of pollutants from a point source by maintaining that Congress also provided authority for the agency to "control and regulate stormwater itself." In attempt to support its reasoning, EPA (gratuitously) asserts "that all stormwater contains pollutants." *Id*. This assertion is irrelevant. Even if all stormwater contains pollutants, Congress did not give EPA authority to regulate rainfall before it picks up pollutants, is channelized into a point source, and is discharged to a water of the U.S. Congress specifically limited EPA's MS4 permitting powers to "reduce the discharge of pollutants from the MS4" to the MEP. As the CWA further states, Congress reiterated that all such methods of MEP must be to "control of such pollutants." 33 U.S.C. § 1342(p)(3)(B)(iii).

Congress' mandate to EPA to focus on the discharge of pollutants is not unique to the MS4 program, but is inherent in the overarching NPDES permit program within which the MS4 provisions fit. CWA § 402(a) authorizes the "issu[ance of] permit[s] for the discharge of any pollutant, or combination of pollutants." 33. U.S.C. § 1342(a). Section 402(p)(3)(B) then sets forth specific conditions applicable to discharges from MS4s. 33 U.S.C. § 1342(p)(3). The language Congress used in CWA § 402(p)(3)(B) is important because it only prohibits "non-stormwater" discharges *into* storm sewers while then directing EPA to develop "controls to reduce the discharge of pollutants" *from* MS4s "to the maximum extent practicable." *Id.*

In addition, Congress did not require MS4 discharges to comply strictly with state water quality standards (33 U.S.C. § 1311(b)(1)(C). In *Defenders of Wildlife v. Browner,* 191 F.3d

1159, 1165 (9th Cir. 1999), the Ninth Circuit Court of Appeals found that Congress did not mandate strict compliance with state water quality standards, but that Congress provided EPA with limited discretionary authority contained in 33 U.S.C. § 1342(p)(3)(B)(iii), to require such other provisions that the Administrator determines are appropriate "for the control of such pollutants." *Id.* at 1166 (emphasis added). Hence, Congress delegated to EPA the authority to regulate pollutant discharges from MS4s through a combination of the MEP technology standard and limited discretionary authority to impose additional limitations on pollutants being discharged from the MS4.

Congress did not provide EPA with unbridled authority. Rather, the CWA "authorizes the EPA to regulate, through the NPDES permitting system, *only* the discharge of pollutants." *Waterkeeper Alliance, Inc. v. EPA*, 399 F.3d 486, 504 (2d Cir. 2005) (emphasis added)." As the D.C. Circuit has explained, "[t]he statute is clear" and contains no language that "undercuts the plain meaning of the statutory text;" EPA may not "meddl[e] inside a facility" because it only has authority over the discharge of pollutants from a point source, and "Congress clearly intended to allow the permittee to choose its own control strategy." *American Iron and Steel Institute v. EPA*., 115 F.3d 979, 996 (D.C. Cir. 1997).

In short, EPA "is powerless to impose conditions unrelated to the discharge itself." *N.R.D.C. v. EPA.,* 859 F.2d 156, 170 (D.C. Cir. 1988) (EPA cannot regulate point sources themselves, only the discharge of pollutants); *Service Oil, Inc. v. EPA*, 590 F.3d 545, 551 (8th Cir 2009) ("the Clean Water Act gives EPA jurisdiction to regulate… only *actual* discharges—not potential discharges, and certainly not point sources themselves.")(emphasis in original).

2. The Clean Water Act's Definition of Pollution and Pollutant Demonstrate the Limits of EPA's Authority Over Discharges of Pollutants.

The definition of "*pollution*" underscores that Congress only provided EPA with authority over the discharge of pollutants. Congress defined "pollution" as "the man-made or man-induced alteration of the chemical physical, biological and radiological integrity of water." 33 U.S.C. § 1362(19). The Supreme Court of Washington, in a case affirmed by the U.S. Supreme Court, succinctly provided that under CWA § 1362(19) "man-induced alteration of streamflow level is 'pollution.'" *State of Washington, Dept. of Ecology v. PUD No. 1 of Jefferson County*, 121 Wash.2d 179, 187 (1993), *aff'd* 511 U.S. 700 (1994); *see also United States v. Tennessee Water Quality Control Board*, 717 F.2d 992, 998-99 (6th Cir. 1983) ("Although alterations in the properties of the water are 'pollution'… all alterations do not fit the narrower definition of 'pollutants'… ."). Hence, EPA's efforts to restrict volume and flow from the JBLM MS4 to protect against down-stream erosion and "pollution" are go beyond the Agency's authority to control the discharge of pollutants through the NPDES permit program.

The Supreme Court has affirmed the importance of the distinction between "pollutants" added to a waterbody versus "pollution" already contained therein. In *Los Angeles County Flood Control District v. Natural Resources Defense Council, Inc.,* the Supreme Court described the difference between the discharge (addition) of pollutants to a water body and the movement of pollutants within a waterbody. 568 U.S. ___ (2013)(Slip Opinion at 3)(further explaining the Court's decision in *South Florida Water Management Dist. v. Miccosukee Tribe* 541 U.S. 95, 109-112 (2004)). Quoting the Second Circuit, the Court explained that "[i]f one takes a ladle of

soup from a pot, lifts it above the pot, and pours it back into the pot, one has not 'added' soup or anything else to the pot*." Id.* (internal quotations omitted).[3]

Thus, when substances redistribute within a waterbody, that substance is not being "added" to the waterbody under the CWA. In light of the Court's holding that the movement of pollutants within a waterbody does not constitute an "addition" or discharge, the EPA cannot now credibly take the position that it can regulate flow to prevent streambank erosion down-stream or the impacts of sediment already contained in the streambanks.

3. Flow is Not a Pollutant.

Petitioners properly reference (Petition at 35) *Virginia Department of Transportation v. U.S. Environmental Protection Agency*, 2013 U.S. Dist. LEXIS 981 (E.D.Va. Jan. 3, 2013) (hereafter referred to as "*Accotink,*" the name of the creek at issue in that case). In that case, the federal district court held that the Clean Water Act did not confer authority to regulate stormwater flow because stormwater is not a "pollutant," under that term's statutory definition. *Id.* at 5. The court rejected EPA's argument that stormwater flow could be regulated as "proxy" or "surrogate" to effect levels of pollutants already present within a waterbody, while acknowledging that it may be appropriate, in different circumstances, to impose stormwater flow restrictions as a means to regulate *specific pollutant levels demonstrated to be discharged into a waterway within the stormwater flow*. *Id.* at 5-6.

In its Response Brief (at 10), EPA improperly attempts to limit the applicability of *Accotink* to the development of Total Maximum Daily Loads (TMDLs) under CWA §303(d), but this argument is unavailing. The *Accotink* court's logic – based upon the Act's explicit focus on

[3] *See also National Wildlife Federation v. Gorsuch*, 693 F.2d 156, 174-75 (D.C. Cir. 1982) (upholding EPA's interpretation of "addition" that required pollutants be introduced "from the outside world."); *but see AES Sparrows Point LNG v. Wilson*, 589 F.3d 721, 731-32 (4th Cir. 2009) (explaining that under CWA section 401(a)(1), the word "discharge" does encompass water flowing into areas where dredging was to occur.)

controlling pollutant discharges into waters of the U.S. – applies with equal force in the context of the NPDES permitting program, because both the NPDES permit program and TMDLs that are incorporated into NPDES permits are expressly limited to the authority conferred by the CWA to regulate the "discharge of pollutants." After citing a line of cases – all of which focus on the "discharge of pollutants" (*see* Response Brief at 12) – EPA attempts to confuse that central issue by concluding that the mere fact that *Accotink* was framed as a TMDL controversy somehow eliminates its applicability to NPDES permitting cases even though the limitation on statutory authority at issue in *Accotink* over the discharge of pollutants is equally and directly applicable to NPDES permitting as it is to setting TMDLs that must be implemented through effluent limitations in those permits. 33 U.S.C. §§ 1311(a), 1313(d), 1314, 1342(a).

After failing to distinguish *Accotink's* applicability to the discharge of pollutants in NPDES permits, EPA's Response Brief proceeds to discuss performance standards relating to post-construction without relating those standards to the actual discharge of pollutants. *See* Response Brief Section IV.B. The word "pollutant" appears to vanish from EPA's effort to regulate stormwater flow, other than a passing and unsupported gratuitous statement that preventing stormwater flows will avoid the discharge of pollutants. Response Brief at 14. Nowhere does EPA explain its legal authority for preventing stormwater discharges from occurring or the specific relationship between the discharges it would allow and any need to control any specific pollutants contained therein. CWA §402(p)(3)(B)(iii) does not authorize EPA to eliminate or control stormwater flow or mandate the prevention of stormwater discharges, but rather requires the pollutants in the discharge to be reduced to the MEP standard.

Further, EPA freely admits that the entire purpose of the post-construction-related flow restrictions is not to limit pollutant discharges, but to "regulate the rate at which stormwater flows off the site to prevent large scale impairment of water quality and aquatic habitat through streambank erosion." *Id.* at 15. That requirement does not relate to the discharge of pollutants and raises again the central issue in *Accotink* – the limits of EPA's Clean Water Act authority.

While EPA may argue that limiting stormwater flows helps it to achieve the goals of the Clean Water Act, it is still bound by the specific limitations in the Act that require it to focus on the discharge of pollutants from point sources to waters of the U.S. Executive agencies may not sidestep specific legislative requirements in their zeal to achieve a statute's overall objective. *See Rodriguez v. United States*, 480 U.S. 522, 525-26 (1987)("No legislation pursues its purposes at all costs. Deciding what competing values will or will not be sacrificed to the achievement of a particular objective is the very essence of legislative choice – and it frustrates rather than effectuates legislative intent simplistically to assume that whatever furthers the statute's primary objective must be the law."); *Nat'l. Mining Assoc. v. U.S. Army Corps of Engineers,* 145 F.3d 1399 (D.C. Cir. 1998)("In a press release accompanying the adoption of the Tulloch Rule, the White House announced: "Congress should amend the Clean Water Act to make it consistent with the agencies' rulemaking." White House Office on Environmental Policy, Protecting America's Wetlands: A Fair, Flexible, and Effective Approach (Aug. 24, 1993). While remarkable in its candor, the announcement contained a kernel of truth. If the agencies and NWF believe that the Clean Water Act inadequately protects wetlands and other natural resources by insisting upon the presence of an "addition" to trigger permit requirements, the appropriate body to turn to is Congress. Without such an amendment, the Act simply will not accommodate the Tulloch Rule.").

B. EPA'S CLEAN WATER ACT AUTHORITY OVER DISCHARGES OF POLLUTANTS APPLIES TO POINT SOURCES ONLY.

Under the Clean Water Act, the term "discharge of a pollutant" means "the addition of any pollutant to navigable waters from any *point source*." 33 U.S.C. § 1362(12) (emphasis added). In the JBLM MS4 permit, EPA has attempted to regulate everything from the discharges of pollutants from point sources over which it has authority, to specific land use decisions (*e.g.,* requiring cluster development) over which the Clean Water Act grants no authority. EPA's authority to control pollutant discharges does not encompass the ability to mandate land use decision-making. This is not to say that JBLM could not develop a standard or regulation to, for instance, limit impervious surfaces or other stormwater flows into the MS4. But EPA is limited to regulating the discharge of pollutants from the MS4 and cannot force JBLM to do what EPA is not otherwise authorized to do, including imposing restrictions on local land use decisions.

1. EPA Has No Authority To Regulate The "Facility."

The Petitioner has challenged certain provisions of the permit as exceeding EPA's authority. (Petitioner's Brief at 5). One provision provides that the Permittee must "manage stormwater from developed areas in a manner that preserves and restores the area's predevelopment hydrology," and another "requires site design that minimizes the project's roadway surfaces and parking areas, incorporates cluster development, and ensures that vegetated areas are designed to receive stormwater dispersion from all developed project areas." (Petitioner's Brief at 5-6).

In this matter, the "facility" is the Joint Base. However, EPA's authority is necessarily limited to the discharges from the base's storm sewer system (the point source) into navigable waters. The permit provisions above fail to recognize this limitation; they meddle inside the facility itself. Managing stormwater to restore the area to its predevelopment hydrology exceeds

EPA's Clean Water Act authority because it goes beyond the regulation of a point source to regulate activities on the land and "flow." Moreover, EPA has failed to show any relationship between pre- or post-development stormwater flows or the relationship of those flows to any actual pollutant discharges. Similarly, regulating "site design," and requiring "cluster development" well exceeds EPA's jurisdiction over the point source "discharge itself." *N.R.D.C.,* 859 at 170.

2. EPA Has No Authority To Make Local Land Use Decisions.

The Supreme Court has repeatedly rejected assertions of federal authority under the CWA that usurp the "quintessential state and local power" found in the "[r]egulation of land use." *Rapanos v. U.S.*, 547 U.S. 715, 738 (2006) (Scalia, J. plurality) (citations omitted). *See also Solid Waste Agency* v. *U.S. Army Corps of Eng'rs,* 531 U.S. 159, 174 (2001) (rejecting expansive reading of CWA jurisdiction because of "significant constitutional questions raised" by "impingement of the States' traditional and primary power over land and water use"). These cases turned on the interpretation of the jurisdictional phrases "the waters of the United States" and "navigable waters," and held that even by using those terms to broadly define the proper subject matter of federal jurisdiction under the CWA, Congress did not authorize federal regulators to supplant local land use decision-making. *Rapanos*, 547 U.S. at 738-39 ("We ordinarily expect a 'clear and manifest' statement from Congress to authorize an unprecedented intrusion into traditional state authority. The phrase 'the waters of the United States' hardly qualifies." (citation omitted)); *Solid Waste Agency*, 531 U.S. at 174 ("We thus read the statute as written to avoid the significant constitutional and federalism questions raised by respondents' interpretation.").

The JBLM Permit goes even further than the "*de facto*" federal regulation of land use prohibited under Supreme Court precedent. *Rapanos*, 547 U.S. at 738 ("The extensive federal jurisdiction urged by the Government would authorize the Corps to function as a *de facto* regulator of immense stretches of intrastate land—an authority the agency has shown its willingness to exercise with the scope of discretion that would befit a local zoning board.") By compelling the permittees to make specific choices with regard to post-construction performance standards, EPA is exercising federal land use mandates on a local basis. The Permit is issued under the auspices of the NPDES permitting program that relates to the "discharge of pollutants," a term that is statutorily defined as the "addition of any pollutant to navigable waters." 33. U.S.C. § 1362(12). Thus, the NPDES permitting program is – as it must be – directly limited in its reach by the jurisdictional limits applicable to the CWA as a whole, which bar the federal regulation of local land use.

3. EPA Has No Authority To Regulate Impervious Surfaces.

In the JBLM permit (at pages 16-20), EPA is attempting to regulate impervious surfaces even though such surfaces are not "point sources" under the NPDES permit program. CWA Section 301 prohibits unauthorized point source discharges, but Congress left the "regulation of nonpoint source pollution to the states." *Cordiano v. Metacon Gun Club, Inc*. 575 F.3d 199, 219 (2d Cir. 2009); *Defenders of Wildlife v. U.S. Envtl. Prot. Agency*, 415 F.3d 1121, 1124 (10th Cir. 2005) (explaining that the CWA deals with nonpoint source pollution merely by "requir[ing] states to develop water quality standards for intrastate waters."); *U.S. v. Plaza Health Labs, Inc*. 3 F.3d 643, 647 (2d Cir. 1993) (providing that the "control of pollutants from runoff is applied pursuant to section 209 and the authority resides in the State or other local agency.") (quoting S. Rep. No. 92-414, 972 U.S.C.C.A.N. 3668, 3744). The CWA focuses on point sources rather than

nonpoint sources because "differences in climate and geography make nationwide uniformity in controlling non-point source pollution virtually impossible. Also, the control of non-point source pollution often depends on land use controls, which are traditionally state or local in nature." *Oregon Natural Desert Assoc. v. United States Forest Service*, 550 F.3d 778, 785 (9th Cir. 2008) (quoting Poirier, *Non-point Source Pollution*, § 18.13); *see also Rapanos v. United States*, 547 U.S. 715, 738 (2006) (recognizing that the "[r]egulation of land use . . . is a quintessential state and local power.").

The CWA defines "point source" as "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged." 33 U.S.C. § 1362(14). Impervious surfaces such as roofs, parking lots, and roads are not point sources. Impervious surfaces do not channelize water. Instead, sheet flow that travels across impervious surfaces is considered non-point runoff, which is not regulated under the stormwater permitting program.

If EPA now interprets "point source" to include impervious surfaces, it renders that term meaningless and clearly contradicts congressional intent to define the term and differentiate "point sources" from "non-point sources." As noted by the Second Circuit Court of Appeals, "the phrase 'discernible, confined, and discrete conveyance' cannot be interpreted so broadly as to read the point source requirement out of the statute." *Cordiano v. Metacon Gun Club, Inc.,* 575 F.3d 199, 219 (2d Cir. 2009). Such a broad interpretation would be contrary to the text and structure of the CWA. The Act defines the term "point source," and leaves all other flows of water to be considered "nonpoint sources," the regulation of which is left to the states. *Id*. at 219-220. EPA's NPDES regulations define the extent to which surface runoff can in certain circumstances

constitute point source pollution. The definition of "[d]ischarge of a pollutant" includes "additions of pollutants into waters of the United States from: surface runoff *which is collected or channeled by man.*" 40 CFR § 122.2 (emphasis added). By implication, surface water runoff which is neither collected nor channeled constitutes nonpoint source pollution and, consequentially, is not subject to the CWA permit requirement. *See Hardy v. N.Y. City Health & Hosps. Corp.,* 164 F.3d 789, 794 (2d Cir. 1999) (relying on "the familiar principle of *expressio unius est exclusio alterius,* the mention of one thing implies the exclusion of the other").

C. EPA HAS FAILED TO FOLLOW THE NECESSARY PROCEDURES TO REGULATE POST-CONSTRUCTION STORMWATER AT JBLM.

EPA's attempt to regulate broadly through the JBLM Permit must fail because the Agency cannot point to any grant of authority for such actions. MS4s cannot be coerced to adopt EPA's six minimum control measures, which include the post-construction controls. EPA also cannot require new or redeveloped properties to meet stormwater discharge standards because EPA has not expanded its stormwater program to include such sites. Finally, EPA cannot manipulate the state certification process found in CWA Section 401 to transform a flexible stormwater guide into federally enforceable law. This manipulation has the added effect of violating both state and federal administrative law principles by using guidance that was never intended by its author to be imposed uniformly on all dischargers to circumvent the rulemaking process and the statutory limits on EPA's authority.

1. EPA Cannot Coerce MS4s into Implementing the Six Minimum Control Measures.

EPA's Phase II regulation established six minimum control measures that the Agency believed would provide a flexible, iterative mechanism for MS4s to meet the MEP standard.[4] 40 CFR § 122.34(b). The post-construction minimum control measure in particular contemplates that the MS4 operator will "use an ordinance or other regulatory mechanism to address post-construction runoff from new and redevelopment projects." 40 CFR § 122.34(b)(5). Even assuming EPA has the authority to mandate the passage of local ordinances (which would violate the 10th Amendment to the Constitution), it certainly does not follow from any such grant of authority from Congress in CWA § 402(p)(3)(B)(iii) that EPA can dictate the contents of that local ordinance to establish stormwater retention, flow and velocity mandates that it does not otherwise have authority to develop on its own. [5]

The six minimum control measures faced legal challenges from regulated MS4s in *Environmental Defense Center, Inc. v. EPA,* 344 F.3d 832 (9th Cir. 2003)(*EDC*). In *EDC*, the municipal petitioners argued that the federal government could not force them to regulate third parties in furtherance of a federal program. *Id.* at 847. The Ninth Circuit Court of Appeals rejected the municipal petitioners' challenge by concluding that EPA was not coercing small MS4s into general permits with the six minimum control measures because such permittees could, instead, request an individual permit pursuant to 40 CFR § 122.26(d). *Id.* ("Therefore, by presenting the option of seeking a permit under § 122.26(d), the Phase II Rule avoids any

[4] The six minimum control measures are: (1) public education and outreach; (2) public participation/involvement; (3) illicit discharge detection and elimination; (4) construction site runoff control; (5) post-construction runoff control; and (6) pollution prevention/good housekeeping. *See* 40 CFR § 122.34(b)

[5] The Supreme Court has held that Congress may not "commandeer the legislative process of the States by directly compelling them to enact a federal regulatory program." *New York v. United States*, 505 U.S. 144, 161 (1992) (relating to solid waste disposal). *See also Printz v. United States*, 117 S. Ct. 2365, 2383 (1997) (the federal government may not compel the states to enact or administer a federal program, relating to regulation of guns).

unconstitutional coercion.") In fact, EPA had argued in that case that small MS4s could avoid constitutional issues by seeking such a permit to avoid the six minimum control measures. *Id.* at 849 (note 23).

In the current case, EPA has mandated compliance with the six minimum control measures as a condition in an individual permit issued pursuant to 40 CFR § 122.26(d). The Petitioner has not been provided with alternative permitting options to avoid the six minimum control measures. Thus, while the Ninth Circuit avoided having to further analyze constitutional issues raised by the six minimum control measures because the municipal petitioners were presented with the option of obtaining an individual permit, JBLM does not have that option because EPA has issued it an individual permit. Thus, the issue raised in EDC but dismissed as not ripe then is clearly ripe for MS4s similarly situated to JBLM in light EPA's strategy for using the adjudicatory process of permit issuance to pursue this strategy. *See* next section below.

2. EPA Should Await the Results of its National Post-Construction Stormwater Rulemaking.

Since at least 2009, EPA has believed that it must promulgate new rules and regulations to expand the existing stormwater program to establish its own post-construction stormwater performance standards. *See* 74 Fed. Reg. 68,617 (December 28, 2009); *see also* EPA's rulemaking webpage at http://cfpub.epa.gov/npdes/stormwater/rulemaking.cfm; *and* EPA Semiannual Regulatory Agenda – Fall 2013 (RIN 2040-AF13) (http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OA-2013-0784-0001 at13). EPA still has not yet proposed any rulemaking, but is attempting through its individual permitting process to implement such a program absent the necessary rulemaking effort. 5 U.S.C. §§ 551 et seq. Despite EPA's stated intention that it must promulgate new regulations to expand the stormwater program to create post-construction discharge standards, EPA Region 10 states that a

rulemaking is not necessary and, instead, it can rely exclusively on the "adjudicatory process of permit issuance" to establish discharge limitations for developed sites. Response Brief at 25-26. That assertion should be rejected while EPA is actively pursuing a rulemaking to address post-construction discharges.

EPA has no authority to regulate developed sites that are otherwise exempt from permitting pursuant to CWA Section 402(p)(1). Section 402(p)(1) is a broad exemption from NPDES permitting for all stormwater discharges except those identified in Section 402(p)(2). Developed sites and impervious surfaces are not listed in Section 402(p)(2) or in EPA's Phase I or Phase II regulations implementing the stormwater permitting program. Active construction activities that disturb at least five acres of land have been subject to permitting under EPA's industrial stormwater permit program (40 CFR § 122.26(b)(14)(x)) since 1990 and those disturbing at least one acre of land pursuant to 40 CFR § 122.26(b)(15) since 1999. In each instance, the permittee may terminate permit coverage when the site is stabilized. *Id.* Currently, EPA does not have authority or regulations to control stormwater discharges from developed sites that are not "associated with industrial activity." 40 CFR § 122.26(b)(14).

The CWA sets forth specific processes that allow EPA to designate new sources or categories of sources for NPDES permitting. It may designate an individual site ("a discharge") that contributes to a violation of a water quality standard or is a significant pollutant discharger on a site-specific basis. Or, as it did for the Phase II expansion, EPA may designate classes or categories of pollutant discharges for permitting through a process Congress laid out in CWA § 402(p)(5)-(6) that requires studies, a report to Congress, and formal regulation.

EPA initiated a rulemaking in 2009 to expand the stormwater permit program to include new or redeveloped sites. That rulemaking is ongoing despite several delays, but EPA has not abandoned that rulemaking effort and it is directly applicable and relevant to EPA's actions in the challenged permit. EPA should be prohibited from using the "adjudicatory process of permit issuance" to attempt to implement a regulatory approach outside its current regulations. Congress clearly set forth the process for expanding the stormwater program through CWA Sections 402(p)(5)-(6). The Agency should not be allowed to short-circuit that process through a permit-by-permit approach.

3. EPA Misinterpreted Section 401 By Not Complying With All of the State's Conditions, Principally the Condition That EPA Provide Flexibility in Adherence to the Western Washington Stormwater Manual.

EPA argues that it was compelled to require JBLM to comply with the Stormwater Management Manual for Western Washington (SMMWW)(Wash. Dep't. Ecology, *Stormwater Management Manual for Western Washington* (2012)) because the State included its use as a condition of the State's section 401 certification. (EPA Response Brief 26-28). EPA's assertion is not entirely correct. Section 401(a) provides that an applicant for a federal license or permit must obtain a certification from the state that any discharge will comply with certain sections of the Act. 33 U.S.C. § 1341(a). Similarly, Section 401(d) allows a state to set "forth effluent limits and other limitations" to ensure that the federal permit will comply with water quality standards and "any other appropriate requirement of State law." 33 U.S.C. § 1341(d).

The case law is clear that a licensing or permitting agency (in this case EPA) does not have authority to reject the conditions that a state develops under Section 401.[6] *E.g. Snoqualmie Indian Tribe v. FERC*, 545 F.3d 1207, 1218 (9th Cir. 2008); *American Rivers, Inc. v. F.E.R.C.*, 129 F.3d 99, 107 (2nd Cir. 1997) (explaining that an agency does not have "authority to decide which conditions are within the confines of § 401(d) and which are not."). At the same time, however, EPA cannot issue a NPDES permit that contains requirements that exceed the Agency's Clean Water Act authority. Here, however, EPA attempts to manipulate the Section 401 conditions under the auspices of authority it does not possess.

In Ecology's January 2012 letter, it provides that the "permit must retain runoff controls… that are functionally equivalent to *2005 Stormwater Management Manual for Western Washington* requirements… .(emphasis added). Subsequently, in its final certification, Ecology required EPA to cite to the 2012 SMMWW. However, in the JBLM Permit, EPA has required compliance with the 2012 Manual, but left out the "functionally equivalent" language. For example, Part II.B.5(b) provides that "Stormwater Site Plans must be prepared consistent with Chapter 3, Volume 1…of the [SMMWW]… ." Similarly, Part II.B.5(c) explains that BMP's must be selected, designed and maintained in accordance with Volume IV…of the [SMMWW]" (JBLM Permit No. WAS-026638, 16-18). To the extent that EPA relies on Washington's Section 401 certification as a basis to require JBLM to comply with the SMMWW, it has violated CWA § 401(d) by rejecting the State's flexible condition to retain runoff controls that are "functionally equivalent" to its manual.

[6] This is not to say that section 401 allows an agency to include a state condition that exceeds the agency's statutory licensing or permitting authority. See *American Rivers, Inc. v. F.E.R.C.,* 129 F.3d 99, 110 (2nd Cir 1997) (explaining that if FERC would violate its authorizing statute by including a state's section 401 condition in a license, FERC had the authority to refuse to issue the license).

4. EPA Used Its Misinterpretation to Justify Its Transformation of State Guidance Into Federally Enforceable Law, Violating Federal and State Administrative Law Statutes.

It is a well-settled principle of law that an agency cannot use guidance documents to impose regulatory obligations. The federal Administrative Procedure Act (APA) requires agencies to undertake a specific process involving notice and public comment; opportunity for public hearing; and response to comments. 5 U.S.C. § 553. The APA broadly defines a rule as an "agency statement of general or particular applicability and future effect." 5 U.S.C. § 551(4). Nonetheless, agencies are frequently tempted to bypass these procedural safeguards for any number of reasons. As the D.C. Circuit observed:

> The phenomenon we see in this case is familiar. Congress passes a broadly worded statute. The agency follows with regulations containing broad language, open-ended phrases, ambiguous standards and the like. Then as years pass, the agency issues circulars or guidance or memoranda, explaining, interpreting, defining and often expanding the command in the regulations…An agency operating in this way gains a large advantage. "It can issue or amend its real rules, i.e., its interpretive rules and policy statements, quickly and inexpensively without following any statutorily prescribed procedures." …The agency may also think there is another advantage – immunizing its lawmaking from judicial review.

Appalachian Power Co. v. EPA, 208 F.3d 1015, 1020 (D.C. Cir. 2000) (citations omitted). This phenomenon now arises within the JBLM Permit. EPA has added unprecedented and unauthorized post-construction stormwater obligations to this permit by simply mandating JBLM's use of the SMMWW, a state guidance that declares on its face that it is non-regulatory in nature. *SMMWW* at 1-7.

The APA requires an agency to follow a prescribed set of procedures when it promulgates a rule. A "rule" is defined as "the whole or part of an agency statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy…." 5 USC § 551(4).

In *Appalachian Power*, EPA developed a "guidance document" to assist state air permitting officials with addressing "periodic monitoring" in the context of Title V permits. *Appalachian Power*, 208 F.3d at 1019. This guidance purported to interpret a previously issued regulation. In reality, however, EPA's guidance would have required states to "amend[] federal emission standards in individual permits, something not even EPA could do without conducting individual rulemakings to amend the regulations containing the federal standards." *Id.* at 1019.

Despite EPA's protestations that the guidance was not binding, the court nonetheless held that, because the guidance would, in pertinent part, "lead[] private parties or State permitting authorities to believe that [EPA] will declare permits invalid unless they comply with the terms of the document, then the agency's document is for all practical purposes 'binding.'" *Id.* at 1021.

Thus, EPA sought to impose new permitting requirements onto Clean Air Act Title V permit holders through the permit in a manner outside its statutory authority. EPA's illegal actions in *Appalachian Power* mimic its unlawful attempt to include in JBLM's Permit obligations it has no authority to require. However, instead of using a "ukase"-styled guidance document of its own creation, it unlawfully seeks to render the SMMWW (a state guidance document that the state clearly intends to be non-binding) into a federally enforceable directive.

Similarly, like the federal government, the state of Washington has its own Administrative Procedure Act (WAPA), which defines a rule as: "any agency order, directive, or regulation of general applicability (a) the violation of which subjects a person to a penalty or administrative sanction; (b) which establishes, alters, or revokes any procedure, practice, or requirement relating to agency hearings…" RCW 34.05.010(16). In *Washington Education Association v. Washington State Public Disclosure Commission*, 150 Wash.2d 612 (2003), the Washington Supreme Court recognized that in order to effectively promulgate a rule, an agency "must adhere to formal rule-

making procedures." *Id*. at 619. "Interpretive statements" or guidelines, on the other hand, are advisory only, and are "not governed by formal adoption procedures." *Id.* at 618-619. The Washington Supreme Court, in a 5-4 decision, ultimately held that the guidance at issue was properly characterized as such because the language used in the guidance was not framed in a compulsory manner and there was no evidence that the guidance was or would be enforced by the issuing agency. *Id.* at 622.

The SMMWW appears to be framed similarly to the guidance document described in *Washington Education Association.* The Washington Department of Ecology (Ecology) clearly states that "[t]he manual does not have any independent regulatory authority" and is "a guidance document which provides local governments, State and Federal agencies, developers and project proponents with ***a*** stormwater strategy to apply at the project level." *SMMWW* 1-7 (emphasis supplied). Ecology notes that: "[f]ollowing this Manual is not the only way to properly manage stormwater runoff." *Id.* The SMMWW then contains a detailed explanation that compliance with it creates a *presumption* of compliance. If a municipality determines that an alternative stormwater management method is more appropriate, it is free to employ that method; but it will need to demonstrate to the Ecology that this alternate method "will not adversely impact water quality." *SMMWW* 1-8 – 9.

EPA's inclusion of the SMMWW in the JBLM Permit impermissibly transforms it into enforceable law. *See, e.g., Texas Oil & Gas Ass'n v. EPA*, 161 F.3d 923, 928 (5th Cir. 1998)(describing how the "rubber hits the road" upon incorporation into a NPDES permit)(citations omitted). Here, EPA has taken a state document, intended solely as guidance and created without mandatory formal procedures, and turned it into a federally enforceable permitting obligation.

V. CONCLUSION

For the foregoing reasons, *Amici* respectfully request that the EAB remand the JBLM Permit.

Respectfully submitted,

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Dated: March 7, 2014

STATEMENT OF COMPLIANCE WITH WORD LIMITATION

I hereby certify that this Amicus Brief, including all relevant portions, contains fewer than 7,000 words.

/s/ Jeffrey S. Longsworth
JEFFREY S. LONGSWORTH

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing Property Builders and Owners *Amici Curiae* brief was sent to the following persons, in the manner specified, on March 7, 2014:

By electronic filing to:

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December 30, 2014

Via Electronic Mail

Mr. Newton Tedder
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Boston, MA 02109-3912

Re: Comments Regarding the Environmental Protection Agency Region 1's Draft Small Municipal Separate Storm Sewer System NPDES General Permit in Massachusetts

Dear Mr. Tedder:

On behalf of the National Association of Home Builders (NAHB), I submit the following comments regarding the Environmental Protection Agency Region 1's Draft Small Municipal Separate Storm Sewer System NPDES General Permit for Massachusetts ("Draft MS4 Permit")(79 Fed. Reg. 58,775; September 30, 2014). NAHB has affiliate members in Massachusetts that discharge into affected MS4 systems potentially subject to the Draft MS4 Permit.

The Draft MS4 Permit impermissibly attempts to regulate stormwater flow, impervious cover and mandate on-site retention standards without appropriate Clean Water Act authority to regulate such flow as a surrogate for pollutants or to mandate on-site activities not directly related to the control of pollutant discharges to U.S. waters. *See e.g.* Section 2.3.6 and related Fact Sheet discussion at pp. 86 *et seq.*

In *Virginia Department of Transportation v. U.S. Environmental Protection Agency*, 2013 U.S. Dist. LEXIS 981 (E.D.Va. Jan. 3, 2013), the federal district court held that the CWA did not confer authority to regulate stormwater flow because stormwater is not a "pollutant," under that term's statutory definition. *Id.* at 5. The court rejected EPA's argument that stormwater flow could be regulated as "proxy" or "surrogate" to affect levels of pollutants already present within a waterbody, while acknowledging that it may be appropriate, in different circumstances, to impose stormwater flow restrictions as a means to regulate *specific pollutant levels demonstrated to be discharged into a waterway within the stormwater flow*. *Id.* at 5-6.

EPA's efforts to regulate purely on-site activities was the subject of NAHB's challenge to the Agency's Construction and Development Effluent Limitations Guidelines rulemaking. That case was settled and EPA agreed to modify best management practice mandates to ensure they related directly to the discharge of pollutants from point sources to waters of the U.S. *See* revised C&D ELG rulemaking *Federal Register* Notice at 79 Fed. Reg. 12.661 (March 6, 2014).

Representative legal arguments related to EPA's limited authority to regulate stormwater flows, impervious surfaces, or mandate retention standards are set forth in the attached *amicus* brief in which NAHB participated, filed before the EPA Environmental Appeals Board in *In re: Joint Base Lewis-McChord Municipal Separate Storm Sewer System* (NPDES Appeal No. 13-09; NPDES Permit No. WAS-026638). NAHB incorporates the attached brief in these comments.

I very much appreciate the opportunity to comment on behalf of NAHB on the Draft MS4 Permit. Please accept these comments as if filed timely. Less than 24 hours have passed since the deadline and, in conjunction with the holidays, we do not believe that EPA has suffered any burdens related to our delayed filing. If there is any concern or problem in EPA accepting these comments, please contact me immediately to discuss EPA's concerns.

Respectfully,

Jeffrey S. Longsworth, Partner
Barnes & Thornburg, LLP

cc: Thomas Ward, NAHB

Attachment

NAIOP
COMMERCIAL REAL ESTATE
DEVELOPMENT ASSOCIATION
MASSACHUSETTS

February 27, 2015

Mr. Newton Tedder
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Boston, MA 02109-3912

Re: Comments on Draft Massachusetts Small MS4 General Permit

Dear Mr. Tedder:

NAIOP Massachusetts, the Commercial Real Estate Development Association, appreciates the opportunity to submit comments on the Draft Massachusetts Small Municipal Separate Storm Sewer System (MS4) General Permit. NAIOP represents the interests of more than 1,600 members involved with the development, ownership, management, and financing of more than 175 million square feet of office, research & development, industrial, multifamily, mixed use, retail, and institutional space in the Commonwealth.

NAIOP believes that the MS4s should drive the implementation of stormwater controls, given the role that MS4 systems play in conveying contaminated stormwater to water bodies. It is however, critical to ensure that municipalities have the **financial and technical resources** to implement the draft permit's requirements and that those **requirements are implemented consistently, fairly, and cost-effectively**.

Unfortunately, while there are some improvements over the 2010 version, the Draft Permit, as currently drafted, does not seem to achieve these goals. Municipalities will be required to undertake a significant number of tasks (particularly during the first year) without any funding. Given how cash-strapped many of the municipalities are, it is highly likely that they would turn to commercial property owners to fund these costs. This would have a dramatic impact on economic development. Without a source of funding the requirements cannot be achieved and economic development is at risk. And without clear guidance as to allocation of costs to all user categories, the temptation to charge only commercial properties will be strong.

Furthermore, throughout the Draft Permit there are different requirements for different municipalities. As a result, there will be inconsistent local regulations as municipalities respond to these requirements. From a policy perspective, local regulation of stormwater discharges from new developments or redevelopment in more urbanized areas must not become so burdensome that projects relocate to greenfield sites, resulting in other and more serious environmental effects. As a more practical matter, the creation of hundreds of separate, uncoordinated local stormwater bylaws or ordinances will create additional complexity and confusion and potentially undermine the effectiveness of the MS4 program. To ensure consistency, EPA should provide further guidance to municipalities as they prepare local stormwater regulations, including a

model bylaw/ordinance. There also needs to be a standardized approach for towns to implement the accounting/reporting requirements of BMP use/effectiveness and pollutant load reductions.

NAIOP's general concerns with the Draft Permit are:

Redevelopment Standards Should Only Apply To Area Disturbed – At several public meetings, there appeared to be a lack of clarity on how "redevelopment" and "larger common plan of development" are defined. The Draft Permit proposes that local stormwater regulations should be developed to regulate stormwater discharges from new development or redevelopment, and proposes that those regulations should apply to any disturbance of one acre or more. In the case of redevelopment, disturbing a portion of an existing development should not subject the entire existing development to local regulations applicable to brand-new projects. A clarification is needed that only disturbed areas over one acre would be subject to the local regulations proposed. Incremental increases in impervious area should only trigger application of the regulations proposed if the impervious area increases more than five acres over any five year period. The model bylaws suggested above should also clarify this.

Credit Should Be Given For Existing BMPs – The MS4 is responsible only for those discharges to the public storm drain system. If a development or property discharges directly to a waterbody it would not come under the MS4's jurisdiction. So, if a property is helping the watershed through BMPs, the local MS4 should receive credit for it in terms of meeting watershed pollutant reduction goals. Not only is this sound public policy, but it would also decrease overall costs associated with the program.

Wet Weather Sampling Cost/Benefit Analysis Is Needed - The updated permit still requires costly system sampling. A cost/benefit analysis for wet weather sampling should be performed by EPA. It should address how many discharges were actually discovered through wet-weather sampling and how greater sampling equates to a reduction in pollution. In NAIOP's experience, resources are better spent implementing more BMPs that actually help control pollutants.

Longer Timelines Are Needed – As stated above, much of the work required under the Draft Permit is front-loaded. The number of activities, plans, and submittals that need to be completed in the first year of the Permit is impractical. The NOI is extremely detailed and there will be a significant learning curve. Longer timelines are needed (as well as technical assistance). We suggest that the timeframe to complete the O&M Plans, outfall/interconnection inventory and condition assessment, Pollutant Source ID Plans, and SWPPP preparation be extended to two years from the effective date. The level of preparation required to complete the new electronic NOI Form is extensive and not practical for a 90-day turn-around. The information is significant, almost as much as required for the Stormwater Management Plan (SWMP) under the previous permit.

We suggest the original NOI submittal require only preliminary information relative to the 6 minimum measures and not the specific listing of proposed BMPs that would potentially be used to meet water quality based effluent limitation requirements. A year or more should be allowed to develop potential options for BMPs.

Pollutant Reduction Requirements For Impaired Waters May Not Be Feasible - Complying with pollutant load reduction requirements for TMDL locations could be close to impossible for some new developments if they must have a NET reduction with the new development. There is nothing in place for off-site trading or credits, so it is unclear how inner city redevelopments and new developments could achieve some of the high requirements for pollutant load reductions.

Street Sweeping Credits Should Be Higher – NAIOP was surprised to see how low the credits for street sweeping are in the Draft Permit. With the current level of credits, there is little incentive to use this extremely effective pollutant source control method. The USGS Cambridge Street Sweeping Survey provides a thorough analysis of this effective BMP. Street sweeping is the number one source control method and should, therefore, be given additional credits.

Definition Of Impervious Is Needed - Appendix A should be amended to include a definition of "impervious." Pervious pavement and green roofs should be exempted from that definition in order to encourage reduction of stormwater discharges. A clear impervious definition would also help municipalities more easily assess fair rates for residential and commercial development projects if the municipality chooses to create and fund a stormwater utility.

Definition Of Disturbance Is Needed - The term "disturbance" must be clearly defined to avoid inconsistency or confusion as to what activities trigger application of local stormwater regulations. For instance, customary O&M activities such as repaving of existing parking lots or repairing or replacing roofs should not be deemed "disturbance."

NAIOP also has the following technical questions and comments on the Draft Permit:

1. Can the EPA verify that the Natural Heritage and Endangered Species Program (NHESP) and/or Fish and Wildlife have the resources to respond within a 90 day time frame in order to provide the documentation necessary to certify no impact to Endangered and Threatened Species fo**r** the number of communities that will need this review as part of developing their NOI?

2. Additional guidance or clarification is needed regarding the specified documentation regarding historic properties particularly if future activities or conditions need to be considered as part of this certification. The screening procedure in Appendix D suggests that any subsurface excavation activity related to any future repair, upgrade or replacement of stormwater infrastructure will require consultation with the State Historic Preservation Officer (SHPO) to certify that there will no impact to historic properties and the documentation of this consultation and certification must be included in the NOI and the SWMP in order to be eligible for permit coverage.

   If certification is required for any potential future subsurface excavation activity at the time of NOI submittal, this presents two major problems: 1) the extent of possible future repairs and related excavation activity will not be fully understood at the time of NOI submittal; and 2) obtaining the SHPO certification for each potential excavation activity will result in extensive added coordination time, costs and project delays if field investigations are required to obtain this certification. Also, will the SHPO have the

resources to respond in a timely manner to the many communities that will need this review as part of developing their NOI?

3. Section 2.1.2.b states that there shall be no increased discharges to impaired waters listed as Categories 5 or 4B on the most recent Integrated Waters list unless the permittee demonstrates there is no net increase in loading for the specific impairment and provides documentation in the SWMP. This implies that all future development would need to demonstrate no increase at all in pollutant loads. This is inconsistent with the language in Appendix F Sections IV and V, which states that stormwater management for new development and redevelopment shall be required only to optimize pollutant removal for the pollutant of concern.

4. Tables F-1 and F-2 of Appendix F indicate that various towns would have to reduce their baseline phosphorus loads by as much as 50% or more. Given that phosphorus removal efficiencies for various stormwater BMPs are typically in the range of 40 and 65 percent, Towns would essentially need to treat nearly 100 % of their existing impervious area. This is both impractical and unrealistic, given site constraints and extensive costs (even if a compliance schedule of up to 20 years is provided).

5. Section 2.3.4.5 requires an extensive outfall/interconnection inventory of the entire MS4 system to be completed in the first year, including location, condition, and framework for tracking, inspections, screenings, etc. As mentioned earlier, there are many complicated tasks to be completed in the first year, and MS4s will need significant dedicated staff to complete them. The proposed inventory will require additional field data to be collected that was not part of the 2003 Permit and will involve significant staff time as well as office/database management planning needs that will take some time.

6. Section 2.3.4.6 states that the storm sewer system mapping is to be completed within two years of the effective date of the permit. This time frame is very short for this level of effort. While many towns have mapped their outfalls, mapping the entire storm sewer system entails a much higher level of effort. Towns will need to plan for this capital expense and budget for it. The time frame should be expanded to match up with TMDL and Impaired Waters control plans to use limited municipal resources most effectively. Allowing staggered mapping by higher priority waters across the town also would help.

7. Section 2.3.4.7.iii states that the initial illicit discharge potential assessment and priority ranking based on existing information shall be complete within one year from the effective date of the permit. Since the drainage mapping will not be complete until two years after the permit effective date and since much of the ranking is based on this information, a two and a half or three year time frame should be allowed to align with the mapping schedule.

8. Section 2.3.4.7.c.iv of the Illicit Discharge Detection and Elimination Program states that "wet weather screening and sampling shall be conducted at every outfall, and/or within the catchment during or after a storm even of sufficient depth or intensity to produce a

stormwater discharge but only during the spring (March to June) when groundwater levels are relatively high." What is the reason for sampling when groundwater is high?

9. Requiring wet weather sampling for any outfall that has one or more vulnerability factors is onerous given that this is a very labor intensive activity. Essentially every outfall in a developed area will have at least one vulnerability factor as the list is very inclusive and does not necessarily identify or prioritize outfalls that are most likely or susceptible to illicit connections. This requirement should be changed to include outfalls that have three or more vulnerability factors or for which there has been observed direct evidence of a potential illicit connection during previous outfall screening and dry weather sampling.

10. Where wet weather sampling is conducted, what criteria should be used to distinguish whether the observed parameter levels are the result of an illicit connection or due to general stormwater quality? What sampling data would clearly indicate an illicit connection given that wet weather sampling results can be highly variable? The results from one event could be quite different than that from another given differing antecedent and precipitation conditions. This could lead to false positives and costly investigations in trying to track down a potential source based results from one event.

11. The catchment investigation procedure as described Section 2.3.4.7.e.ii will be very labor intensive and require a large amount of work. EPA should explain why it is necessary to investigate every junction manhole if there is no dry weather flow or indication of any illicit discharges. This requires work upstream in the middle of roads, sidewalks, private property and will require police details and substantial field work to find each junction. Time and money could be better spent on training municipal staff and contractors during their regular field work and maintenance, as well as the focused educational materials regarding identifying and eliminating illicit connections for the residents, businesses, and property owners. It is suggested that investigations can be completed if there is no flow or evidence of illicit discharges upstream. There may be dry weather groundwater flow that is clean. Time and money would be better spent on implementing structural and non-structural BMP practices to improve stormwater quality.

12. The requirement to provide As-built plans for structural BMPs as stated in Section 2.3.6.a.ii. (f).iii will add substantial added costs relative to the potential benefit. Other alternative methods of documenting the critical elements and functionality of the BMPs such as photo-logs with an engineering inspection report or certification should be allowed.

13. The equation used to calculate yearly phosphorus loads in Section 2 of Appendix F requires the amount of development that has occurred since 2005 to be determined. This is an unreasonable request to expect a town to retroactively determine how much development has occurred since 2005 and perform baseline load calculations. The TMDL reduction targets should either be applied to the current state of development or update Tables F1 and F2 to reflect conditions at the effective date of the permit.

14. The loading rate table 2-1 in Attachments 1 and 2 of Appendix F indicates in a footnote to assume HSG D soils if soils are unknown to estimate pervious loading rates. Text on page 1 of attachment 1 says to assume HSG C/D soils. Using default assumptions of D or C/D soils are too conservative for our region, Type C soils or surrounding soil types should be used to calculate loading rates

15. The text in Attachment 3 of Appendix F regarding Semi-Structural/Non-Structural BMP Performance Credits (page 5) states that the cumulative runoff reduction is being used to estimate cumulative phosphorus load reduction credit for the semi-structural/non-structural BMPs which have an infiltration benefit by disconnecting IA and providing soil amendments to increase permeability. The infiltration BMP curves show that phosphorus reductions are greater than runoff volume reductions. Therefore, it is conservative to use runoff volume as a direct surrogate when in fact phosphorus reductions are likely higher. Consider an additional phosphorus treatment factor in addition to solely the runoff reduction.

16. The porous pavement BMP performance table (Table 3-18) in Attachment 3 of Appendix F gives credits based on the depth of filter course. Does the credit not depend on the relative watershed size to filter course depth?

17. Table 3-21 on page 50 in Attachment 3 of Appendix F references a "Grass Swale" when BMP is called a "Water Quality Wet Swale" in the main text. It is unclear whether this in reference to a wet or dry swale. Are there results if the swale is not under-drained? This BMP gets very poor performance; slightly modified swale designs could get much better results.

18. Table 3-29 in Attachment 3 of Appendix F shows load reductions by converting or diverting impervious to pervious area. It would be helpful to explain the basis for determining the load reduction for diverting to pervious areas.

19. Attachment 1 of Appendix H describes load reduction credits for certain structural BMPs (Table 4-3) and illicit connection removal. Towns should be allowed to take credit for other structural and non-structural load reduction activities and BMPs beyond this limited list. For the structural BMPs, the treatment credits are grouped into only two types of BMPs: runoff reduction and stormwater treatment. These limited categories generalize the treatment potential of each BMP and do not account for the actual processes of a given BMP and a given design of that type of BMP. The curves provided give a range of performance based on BMP relative to sizing, but sizing is based only on contributing impervious area. This does not account for the treatment of runoff from pervious areas when comingled with that contributed from impervious surfaces or in the case where BMPs are used to treat runoff solely from pervious areas (e.g. agricultural areas, lawns, etc.). In addition, the methodology provided as a work around to calculate performance when pervious areas are contributing to the BMP is difficult and time-consuming and requires treatment for each BMP to be calculated individually instead of look-up tables or automation. In addition, Appendix H does not include provisions for the use of

alternative methods to calculate BMP performance such as using a long-term simulation modeling approach, as Appendix F does for calculating phosphorus treatment.

20. Table 1 in Attachment 1 of Appendix H provides annual nitrogen load export rates for only two land covers/ land uses: pervious and impervious. However, the equivalent methodology for phosphorus load calculations (Appendix F) includes a more detailed accounting of loads from not only different land uses, but also impervious and pervious land covers within those land uses. This same level of detail should be applied to the nitrogen load calculation methodology.

In closing, NAIOP believes that the MS4s are the appropriate place to regulate stormwater. In order to ensure its success, NAIOP strongly supports federal and state assistance for municipalities to fund this important program. Thank you again for the opportunity to submit comments. Please contact us if you have any questions or need additional information.

Sincerely,

NAIOP Massachusetts, The Commercial Real Estate Development Association

Tamara C. Small
Senior Vice President, Government Affairs

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February 27, 2015

Mr. Newton Tedder, US EPA – Region 1
5 Post Office Square – Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

RE: Comments on Draft Massachusetts Small Municipal Separate Storm Sewer System (MS4) General Permit

Dear Mr. Tedder:

The Town of Needham ("the Town") is in receipt of the Draft Massachusetts Small Municipal Separate Storm Sewer System General Permit for stormwater management. This letter sets forth our concerns for consideration when developing the final permit. The draft permit requires additional unfunded mandates to the Town. The new permit will result in new costs to our operations in addition to existing significant regulatory expenses. The EPA has acknowledged this "substantial investment by permittees to reduce the discharge of pollutants from their systems..." (EPA Fact Sheet – Massachusetts Small MS4, II.C.1). However, the EPA does not offer any financial assistance other than providing suggestions on how municipalities can increase fees to the end users.

In our review of the permit, the following additional requirements will result in significant capital costs to the Town imposed by the new draft permit:

- Phosphorous control plan and associated removal costs (Appendix F – Section A.I.1). Both structural and non-structural controls pose significant capital expense to the Town. The plan requires a 47% reduction in phosphorus discharges to the Charles River. Much of the land area generating this discharge is not under the direct control of the Town. The Town is concerned that it does not have the jurisdiction to impose provisions to require private property owners to remove such a significant amount of phosphorous based upon the broad theoretical and non-site specific science that the EPA has provided to support this requirement. The Town requests that this limit be reconsidered and a more site specific and targeted approach be considered. The Town may expect

challenges from property owners absent a clear scientific approach to support the requirement.

- The EPA method for calculating phosphorous loading appears to have been established to provide a simple means for all communities within the country to calculate the amount of phosphorus generated. While the Town understands this approach, there should be some flexibility within the permit to allow for a community to go beyond this method to better estimate phosphorous loadings. The Town of Needham is in the process of creating a watershed management plan to investigate drainage patterns, soil types, and areas suitable for infiltration and intends to develop a protocol for testing surface and outfall locations to determine actual loading rates to the Charles River. The Town would prefer an approach that is site specific to Needham in order to reduce costs.

- To remove phosphorous, infiltration would seem to be the most long term cost effective approach. The EPA has acknowledged that infiltration of the first inch of runoff will result in the removal of phosphorus from stormwater from the contributing area thereby removing it from receiving waters. In order to infiltrate the first inch of runoff, soils within the town would need to be reviewed to determine their ability to infiltrate. Soils with NRCS hydrologic soil group designation of type A and B could be considered for infiltration. General groundwater levels would also have to be determined in these areas. The Town would have to require properties with these soil types and sufficiently deep water tables to infiltrate the first inch of runoff created within the property boundaries. To account for the urbanized nature of the areas where infiltration BMPs would be installed, a factor of 2 was applied to typical unit costs for BMPs. Based on this, the costs for constructing infiltration strategies would be in the range of $8 to $24 per cubic foot of storm water treated depending on the particular site constraints and the chosen BMP. Using an average cost of $16 and applying this factor to the volume of storm water created from the first inch of a rain falling on impervious surfaces for these areas, the estimated cost to provide infiltration would be $79,382,000.

- For areas that are determined to be unsuitable for infiltration, but are in the vicinity of a drainage system in the street, impervious surfaces could be connected and the flow conveyed to a location that does have infiltration capacity. The cost for providing infiltration of the first inch of runoff from these impervious surfaces would include the cost of additional drainage infrastructure, including pumping facilities and force main if needed, and a communal infiltration facility sized to handle the flow. The estimated cost for providing this infrastructure would be $74,166,000.

- For the remaining areas that have no onsite infiltrative capacity nor have drainage systems in the vicinity, both a drainage collection system and transportation system to a sub-basin with capacity would be required along with a

communal infiltration facility. The cost for providing infiltration of the first inch of runoff from these areas would include the cost of additional drainage to tie into existing infrastructure and the additional capacity in communal infiltration facilities. A few small pumping facilities were also included for cases where gravity drains may not be possible. The estimated cost for providing the infrastructure to facilitate these areas would be $69,143,000.

- In addition to infiltration, water quality units will be required as part of the system as well as infrastructure to facilitate sampling for continued monitoring of each sub watershed. It is assumed that two water quality units will be needed for each acre of impervious area and one six foot diameter manhole per sub watershed area to facilitate sampling for a cost of $52,560,000.

The combined capital cost of providing infiltration and water quality improvements to address phosphorus for the entire Town in accordance with the approach outlined above would be $275,251,000.

In addition to the capital costs for water quality improvements estimated above, the Town will incur annual operational and maintenance costs. To adequately maintain the communal infiltration systems, pumping facilities and water quality units the Town would incur annual costs of approximately $4,398,000. These costs include labor, electricity, replacement parts, contract maintenance costs (the Town cannot afford to significantly increase its current staffing level to accomplish the additional burden).

The Town would also incur other maintenance costs associated with phosphorous control. Currently the Town contracts out its road sweeping. It is estimated that additional street sweeping by vacuum methods will be required by the draft permit to adequately clean streets to prohibit roadway phosphorous from discharging to the drainage system and subsequent receiving waters. The estimated cost of these services on an annual basis is $70,000.

The new permit also requires TV inspection of the drainage system within 5 years on a priority basis (see Draft MS4 General Permit IDDE Program Flow Chart). Outfall sampling would also be required including testing conductivity, turbidity, pH, chlorine, surfactants, potassium, ammonia, and E. coli for 295 locations. In addition, outfalls discharging directly to impaired waters, or those included in a waste load allocation in an approved TMDL, dry weather discharges must also be screened for pollutants identified as causing the impairment. Outfall sampling alone would result in a cost of $165,000. Ongoing illicit discharge detection and elimination will add an undetermined amount to this annual cost.

According to the draft permit, the entire area of Needham would now be considered urbanized. The 2003 permit excluded some areas of Town that are non-urbanized. The Town disagrees with the new requirement because there are areas, as recognized by the 2003 permit, that contain low density housing along and vast areas of open space and federally controlled tracts of land such as the Charles River Natural Valley Storage Area. The Town should not be required to address stormwater from these areas.

Additional costs associated with hiring a contractor to re-develop a predictive catch basin cleaning program requiring cleaning of catch basin sumps at 50% capacity will dramatically increase catch basin cleaning frequency and costs. The Town currently does not have adequate staff to handle this additional work in-house (Section 2.3.7.a.iii.b). The Town requests that this additional requirement be eliminated. The Town currently performs TV inspection of 10% of its drainage system annually and appropriates funds to remove sediment from its catch basin sumps (at 100% capacity), drainage pipes, and brooks & culverts every year. Annual operating costs to provide the additional work would include yearly cleaning for 4,312 Catch basins at an estimated cost of $80/basin. The annual cost would be $345,000 and the 5 year cost would be $1,725,000.

Monitoring impervious areas throughout the Town and the costs associated (2.3.6.b; 2.3.6.d; 5.1.3; 6.3) with it on an annual basis is overly burdensome and costly. The Permit will require the Town to track impervious cover and "evaluate opportunities to manage and reduce stormwater discharges by reducing the amount of impervious cover..." The Town of Needham is 13 square miles in area. Tracking this vast area will add significant cost to the Town or force the Town to hire a contractor to perform this work. Either way it is either a time drain on staff or cost drain on the Town. The Town requests that this requirement be eliminated or reduced to once every 10 years.

The foregoing is not intended to be all inclusive of the Town's concerns, but is intended to demonstrate some of the impacts that the Town anticipates will occur to the Town's budget and the reasons for the Town's concern. The new NPDES MS4 requirements result in costs that will significantly impact the Town's ability to provide public services. The Town understands the intent of this program and agrees in spirit; however, our Town, as with most others, is already under considerable financial constraint and is concerned that it will be unable to secure the additional funding needed to comply with the new regulations without assistance.

Thank you for your consideration of these comments. Should you have any questions, please contact Richard P. Merson, Director of Public Works at 781-455-7550 or myself at 781-455-7500

Very truly yours,

For Kate Fitzpatrick
Town Manager

Cc: Richard P Merson, Director of Public Works
Robert A. Lewis, Asst Director of Public Works
Anthony L. Del Gaizo, Town Engineer
Vincent Roy, Water & Sewer Superintendent

neponset river
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February 27, 2015

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Re: Comments on Draft Massachusetts Small MS4 Permit

Dear Mr. Tedder:

Thank you for the opportunity to comment on EPA Region 1's proposed General Permit for Small MS4s in Massachusetts. The Neponset River Watershed Association (the Association) is a small non-profit organization covering 13 municipalities which wholly or partly drain into the Neponset River. The River runs south to north from the Foxborough Reservoir to Dorchester Bay.

The problem of unmanaged or inadequately managed stormwater is the most important ongoing water pollution problem in our watershed. Although we do also have severe water pollution due to historic toxic industrial pollutants that remain in our rivers, streams and ponds, we no longer have CSOs in the watershed and SSOs are much rarer that they used to be. Virtually our entire watershed is subject to a Bacteria TMDL, which contains a strict Waste Load Allocation that applies to both direct and indirect stormwater discharges.

Overall, we are extremely happy with EPA's proposed MS4 permit and view it as a great improvement over the 2003 permit currently in effect. Watershed associations throughout Massachusetts have been working together to analyze the MS4 proposal and have come to a consensus on what we like about the proposal as well as recommendations for improvements. Our watershed association is part of this consensus. Therefore, rather than simply repeat comments that you will be receiving from other watershed associations, we would like to concentrate most of our recommendations to three issues:

A. Proposed provisions which fail to require readily available BMPs that would maximize reduction of TMDL pollutants and which fail to give equal priority to bacteria reduction compared to reduction of nutrients, even where there is a Bacteria TMDL but no nutrient TMDL;

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B. EPA's excellent MS4 permit proposals for municipal stormwater ordinances apply only to projects of one acre or more, of which there are very few in our largely "built-out" urban and suburban watershed. Without a lower size threshold for permitting, as well as at least a review of and minimal standards for projects as small as 5,000 s.f., this proposal is unlikely to significantly reduce stormwater pollution from new development and redevelopment.

C. Failure of the permit to require implementation within reasonable time periods of the results and conclusions reached by permittees in the many evaluations they are required to undertake. Of greatest concern is the permit's failure to require additional or alternative BMPs if permitees or EPA finds pursuant to Part 4.0 that current BMPs are not achieving the goals and objectives of the SWMP.

In addition, we will be offering in Section D. of our comments additional recommendations on improvements to other miscellaneous provisions of the proposed permit.

NOTE: ***Language quoted below from the proposed MS4 permit is italicized; recommended new or revised language below is italicized and highlighted.***

A. Proposed MS4 Permit Provisions relating to Bacteria

1. **Some MS4 permit requirements that are not generally applicable should apply to discharges to waters subject to TMDLs**. EPA may not wish to adopt some of the recommendations for improvements to the MS4 permit contained in this comment letter. We would ask that where that is the case, you consider applying such recommendation to activities which result in discharges to waters subject to TMDLs, so that the MS4 permit is at least "consistent" with TMDLs (MassDEP in the MA Stormwater Handbook requires that projects subject to the Wetlands Protection Act propose BMPs that are consistent with TMDLs). EPA has approved all final TMDLs; if you are unsatisfied with any TMDL provision, including its stormwater WLAs, your proper recourse is to propose revisions to that TMDL.

   That being said, we support EPA's BMP-based approach in the proposed MS4 permit and concede that compliance with the WLA in our Bacteria TMDL is difficult to achieve and even more difficult to measure. We would simply ask that the final MS4 permit require permittees to implement all practicable BMPs that will move them in the direction of achieving compliance with TMDL bacteria WLAs, and that this be an objective included in their SWMPs. See also our comments under Section C., below, where we recommend that specific revised or additional BMPs be required where current BMPs are found under Part 4 of the permit to be ineffective at achieving SWMP goals and objectives. This is particularly important for TMDL pollutants.

2. **IDDE is not the only cause of stormwater-related bacterial pollution.** Various areas of the Neponset River, its tributaries, and its lakes and ponds are impaired by as many as eleven separate pollutants. Aside from the statewide mercury TMDL, the only pollutant subject to a TMDL (which applies virtually throughout the watershed) is bacteria. For new development and redevelopment, EPA's proposed requirement that the first inch of rain be retained on-site will, if retained in the final permit, go a long way toward reducing bacteria in our watershed, as LID and recharge are by far the most effective BMPs for bacteria

reduction. We believe that EPA is right in not differentiating between new development and redevelopment in the implementation of this requirement since it provides sufficient flexibility for both types of projects.

We are very concerned, however, that should EPA back off of its proposed "1-inch rule" in the final Permit, various other provisions will give priority to reduction of other pollutants such as phosphorus and nitrogen over bacteria. These include provisions in Part 2.3.6.and in Appendices F and H as they relate to Post-Construction Stormwater Management. Although it is true that BMPs designed to reduce phosphorus will also generally have a positive impact on bacteria, the most effective BMPs for bacteria and phosphorus are not always identical. Furthermore, there are portions of our watershed that are in attainment for phosphorus but are still subject to our Bacteria TMDL. *The MS4 permit should always give at least equal priority in the implementation of all 6 MEPs to BMPs that are most effective at reducing that TMDL pollutant.*

At EPA's Public Meeting on this MS4 proposal held on October 22, 2014 in Westborough, EPA staff opined that the problem of pathogen pollution is being adequately dealt with by the proposed permit's provisions on IDDE. We respectfully disagree. While we concur that IDDE may usually be the single most important factor, we have found that *bacteria discharges coming out of some MS4s in our watershed cannot be accounted for simply by IDDE*. That finding is based on four separate lines of evidence:

a. The findings and requirements of the Neponset Bacteria TMDL, issued jointly by EPA and MassDEP;
b. The results of our own water sampling, performed under an EPA and MassDEP QAPP, which for decades has provided the only data on which EPA's 303(d) list for our watershed is based;
c. The BMP Survey work we have performed over the last 5 years under a series of 604(b) grants and subject to an EPA/DEP QAPP; and
d. Published studies.

a. The "*Final TMDL of Bacteria for the Neponset River Basin*," as well as its 2012 "*Addendum*," list both direct and indirect stormwater discharges as significant causes of bacteria nonattainment, and set an equivalent LA and WLA for each. *If indirect discharges from sheet flow are a significant cause of bacterial pollution in our watershed, then it is only logical that untreated sheet flow going into MS4s is also significant* (especially since most of the towns in our largely developed watershed have limited indirect stormwater discharges). MassDEP officially accepts that pollutants (including bacteria) in sheet flow are a significant source of pollution where TMDLs exist. It states in the Massachusetts Stormwater Handbook that applicants under the Wetlands Protection Act must select BMPs that are "consistent with" applicable TMDLs. MassDEP has repeatedly reassured us verbally that this requirement applies equally to bacteria as to other pollutants covered by other TMDLs. *It is incumbent on EPA to propose revisions to our TMDL if it now believes that IDDE is the only source of bacteria pollution entering MS4s, rather than proceeding on that assumption in this MS4 permit.*

b. In 2014, 25 of our 41 sampling sites showed bacteria in excess of water quality standards on six different dates during dry weather, a clear suggestion that illicit sewage connections may exist in many areas. In wet weather, however, there were 8 sites (about a third of the

total) which had never violated bacteria standards in dry weather but which did violate those standards in wet weather. It is highly likely that at least a substantial portion of the bacteria at those sites came from sheet flow stormwater runoff unrelated to illicit discharges.

c. The BMP survey work referred to above involved collecting wet-weather outfall samples for bacteria at locations where BMP retrofits were being proposed. These were sites where we felt confident no illicit discharges were present based on visual observation of the outfall and the collection system. In addition to sampling for bacteria, we also sampled for surfactants and ammonia as indicators of possible illicit connections. Out of 82 sets of outfall samples collected, 44 sets or 54% showed elevated bacteria levels, but no surfactants or ammonia above EPA IDDE thresholds. This indicates that even where illicit connections are absent, "clean" stormwater discharges will violate our bacteria TMDL more than 50% of the time.

d. A number of recent research studies support the idea that the source of bacteria in stormwater and surface water is not limited to sewage or other active illicit discharges. A small sampling of this literature includes:

- "*Escherichia coli concentrations and loads in an urbanized catchment: The Yarra River, Australia*," Daley, E. et. al. (Journal of Hydrology 497 (2013) 51 – 61). Researchers in this study in Australia analyzed E. coli in an urban river located in Melbourne, and sampled flow from contributing stormwater outfalls. The study found that E. coli concentrations were not well correlated with ammonia, indicating an input of E. coli in the river coming from something other than sewage.
- "*Tracking Bacterial Pollution Sources in Stormwater Pipes,*" Jones, Stephen H. et. al. (A Final Report of the NH Estuaries Project/Office of State Planning, April, 2003). This study was produced at UNH and consisted of sample collection during wet weather from storm drains, tributaries, and the harbor in Hampton, NH. E. coli bacteria in the wet weather samples was analyzed using DNA analysis to determine the source species. Birds were determined to be the most commonly identified source of E. coli in the samples from storm drain pipes (36%), followed by humans (20%), wildlife (15%) and pets (7%). 22% could not be identified.
- "*Microbial source tracking in a small southern California urban watershed indicates wild animals and growth as the source of fecal bacteria*," Jiang, Sunny C. et.al., Appl Microbiol Biotechnol (2007) 76-927-934 DOI 10.1007/s 00253-007-1047-0). A small, urban, residential watershed in California with fecal coliform and enterococci contamination ranging from 2-4 orders of magnitude over State of California standards was examined for the source of microbial contamination in this 2007 study. Techniques were used to identify the species of origin for E. coli and Enterococcus bacteria as well as determine the levels of human viruses in water samples, another indicator of human fecal contamination. Water samples were collected directly from runoff entering a catch basin as well as a stormwater outfall. Results showed that human sewage was not a major contributor to fecal bacterial impairment. Birds were identified as the major source of fecal pollution.

- "*Identification of the sources of fecal coliforms in an urban watershed using antibiotic resistance analysis,*" Whitlock, John E. et. al.; Water Research 36 (2002) 4273-4282). This study used antibiotic resistance analysis to determine the source species (human, wild animal, or pet) of E. coli in stormwater in a Florida watershed. Wild animal was identified as the species of origin for 7 out of 11 sampling events with high E. coli concentrations. The conclusion of this study is that in general wild animals are the dominant fecal contributors to this watershed when fecal coliform levels are elevated. During times of low fecal coliform levels, human and dog fecal contamination was identified as the major source indicating that these species are responsible for low level background contamination but spikes in bacteria are more related to wild animals.

We believe this data clearly demonstrates that stormwater runoff into MS4s, and not just illicit connections, is a major source of bacteria contamination in the watershed.

3. Recommendations on Revision of Permit Language relating to Bacteria

- Part 2.3.6.a.ii.(a) -- the "1 inch" rule. Subsection 1. provides great potential for major reductions of bacteria from new development and redevelopment over 1 acre by ensuring that during roughly 85% of rain events there will be no flow discharged from outfall pipes, thus providing treatment for bacteria washed from impervious surfaces, and minimizing the regrowth of bacteria inside closed drainage systems and the frequency with which remaining regrowth bacteria is discharged to streams. Application of the 1" rule for all areas subject to bacteria TMDLs is a critical strategy for achieving TMDL compliance in addition to IDDE.

  We are less certain, however, as to what the option described in subsection 2. means. **We believe that the following recommended language is consistent with but clearer than the language in the proposed Part 2.3.6.a.ii.(a)(2) and we recommend that the following be substituted for the proposed language in that Part**:

  2. To the extent that it is not technically feasible to retain the entire first one (1) inch of runoff on-site due to site constraints, the stormwater management system shall retain as much of the first inch on-site as is technically feasible, and use stormwater BMPs designed to treat the remainder of the runoff to provide a level of pollutant removal equal to or greater than that provided through the use of biofiltration….

The last sentence in the proposed subsection 2. goes on to states: "*The level of pollutant removal from BMPs shall be calculated consistent with EPA Region 1's BMP Performance Extrapolation Tool."* Unfortunately, that Tool applies only to TP, TN, TZ and TSS. Subsection 2. needs to be include guidance on what must be done to demonstrate an "equivalent or greater" level of pollutant removal for other contaminants, particularly those for which an applicable TMDL exists as well as for contaminants being discharged to "water quality limited waterbodies." **We recommend that EPA adopt the following language at the end of Section 2.3.6.1..ii.(a)2.:**

For pollutants not covered by the BMP Performance Extrapolation Tool, non-infiltration BMPs must be selected and designed to maximize pollution reduction based on their predicted effectiveness as rated in the most recent Massachusetts

Stormwater Handbook (the Handbook) and/or the Boston Water and Sewer Commission(BWSC)'s Stormwater Guidance (the Guidance). For structural stormwater BMPs proposed by an applicant that are not included in the Handbook or Guidance, or for which a pollutant removal effectiveness rating is not provided, effectiveness may be documented through prior studies, literature reviews, or other means and receive approval from the municipal stormwater permitting authority. That authority may also issue a Guidance(s) identifying BMPs or combinations of BMPs that will provide maximum pollution reduction for one or more pollutants.

SEE ATTACHMENT at the end of these comments listing BMPs found to be effective at bacteria reduction.

- Appendices F and Appendix H as they relate to the requirements of Part 2.3.6. Appendix F, Section A. III. for Bacteria and Pathogen TMDLs requires "*additional or enhanced BMPs*" only for Public Education and Illicit Discharges. However, Appendix F. Section A.IV.(for nitrogen on Cape Cod) and Section A.V. (for phosphorus in the Assabet watershed) also require additional and enhanced bacteria BMPs for local stormwater bylaws described in Part 2.3.6.1.a., and for retrofit and priority ranking described in Part 2.3.6.1.b. There is no good reason why the same BMPs should not also be required in Appendix F. Section A.III. for areas with Bacteria TMDLs.

  Appendix F Section A. III. should include the following provisions:

  Part. 2.3.6, Stormwater Management in New Development and Redevelopment: the requirement for adoption/amendment of the permittee's ordinance or other regulatory mechanism shall include a requirement that new development and redevelopment stormwater management BMPs be optimized for bacteria removal; and that the retrofit inventory and priority ranking under 2.3.6.1.b. shall include consideration of BMPs that infiltrate stormwater where feasible.

  Appendix H should be amended to say, after the Table of Contents:

  Notwithstanding the requirements in Section I – V., below, reduction of pollutants discharged to Certain Water Quality Limited Waters shall not receive priority over discharges to Impaired Waters with an Approved TMDL, as identified in Appendix F.

- **Appendix F Section A-3, Table F-8 should be amended to include the following waterbodies** (listed as impaired for bacteria as of the most recent Integrated Waters list and in the Bacteria TMDL or TMDL Addendum for the Neponset River):

MA Stream Segment	*Name*
73-25	*Pecunit Brook*
73-28	*Mother Brook*
73-32	*Unnamed Tributary, outlet of Town Pond, Stoughton to the confluence with Steep Hill Brook Stoughton*
73-33	*Unnamed Tributary locally known as*

B. Requiring local stormwater management permits for new development and redevelopment of ½ acre or more and for all projects listed as a Land Use of Higher Potential Pollutant Loads, as well as requiring some level of review for projects as small as 5,000 s.f.

As noted above, there are very few projects of an acre or more in our largely "built out" urban and suburban watershed. We therefore recommend that smaller projects also be covered by the required new provisions for stormwater management ordinances. **We recommend that Part 2.3.6.a.(ii)(a) of the MS4 permit require permittees' new development and redevelopment ordinances to contain the following provisions:**

- ***permits shall be required for project of ½ acre or more, as well as for projects of more than a de minimus size that are "land uses of higher potential pollutant loads" as defined in the MA Wetlands Regulations; and***
- ***projects between 5,000 s.f. and ½ acre shall require a lower level of administrative review. Such reviews shall occur outside of the formal permitting process with more limited submission requirements and performance standards. If any such review results in the permitting authority identifying a project that it believes needs to be conditioned through the issuance of a permit, the authority shall be authorized to require the applicant to apply for such a permit;***

Should EPA be unwilling to require these provisions in all circumstances, we urge you to consider requiring them:

- for projects which discharge to MS4s that discharge to waters subject to TMDLs;
- where permittees or EPA conclude pursuant to Part 4.0 that the 1 acre threshold is not achieving the goals or objectives of the permit or the SWMP; and
- for projects above a de minimus threshold that are land uses with higher potential pollutant loads."

[See recommended revisions to Part 4.4.v.iii. as it applies to Part 2.3.6.a.(ii)(a) on p.12.]

We also recommend that EPA issue Bylaw Guidance that includes the following provisions contained in the Stormwater Bylaws and Regulations that will be voted on at the upcoming Westwood, MA Spring Town Meeting:

Section 5. Applicability

A. … There are two levels of reviews based on the amount of proposed land to be disturbed as part of a single project they are as follows:

(1) Administrative Land Disturbance Review is required for projects disturbing between 5,000 square feet and one-half acre (21,780 square feet) of land.

(2) Land Disturbance Permit is required for disturbance of one-half acre (21,780 square feet) or more of land or proposed use is listed as a land use of higher potential pollutant loads as defined in the Massachusetts Stormwater Management Standards."

Section 6. Administrative Land Disturbance Review Procedure

A. Application. A completed application for an Administrative Land Disturbance Review shall be filed with Stormwater Authority. Approval must be obtained prior to the commencement of land disturbing activity … The Administrative Land Disturbance Review Application package shall include:

…

(2) Narrative describing the proposed work including existing site conditions, proposed work and methods to mitigate any stormwater impacts

(3) …(P)lan that include:

a. Existing site features including structures, pavements, plantings, and stormwater management systems etc.,

b. Proposed work including proposed stormwater management systems and limits of disturbance

c. Basic erosion and sedimentation controls.

…

D. Stormwater Authority may:

(1) Approve the Administrative Land Disturbance Review Application if it finds that the proposed plan will protect MS4 system, water resources and meets the objectives and requirements of this by-law;

(2)Approve the Administrative Land Disturbance Review Application with conditions, modifications or restrictions that Stormwater Authority determines are required to ensure that the project will protect water resources and meets the objectives and requirements of this by-law;

(3) Require submission of a Land Disturbance Permit Application if the project will disturb land beyond administrative review thresholds or in the opinion of the Stormwater Authority requires more extensive review."

Such Bylaw Guidance could also include the following performance standards for "Administrative Review" projects, contained in the Neponset River Watershed Association's Model Stormwater Bylaws and Regulations.

> Performance Standards for projects subject to Administrative Land Disturbance Review. Applicants shall retain as much of the first one (1) inch of runoff on-site as is practicable and, to the extent it is not practicable for a portion of the runoff, that portion shall meet the requirements listed in (a) – (d), below, to the maximum extent practicable. "Practicable" shall be defined as available and capable of being done after taking into consideration costs, existing technology, proposed use, and logistics in light of overall project purposes. Project purposes shall be defined generally (e.g., single family home or expansion of a commercial development).
>
> > (a) Comply with the Massachusetts Stormwater Management Standards as further defined in the Massachusetts Stormwater Handbook;
> > (b) To the extent that the project will discharge, directly or indirectly, to a water body subject to one or more pollutant-specific Total Maximum Daily Loads (TMDLs), implement structural and non-structural stormwater best management practices (BMPs) that are consistent with each such TMDL;
> > (c) Avoid disturbance of areas susceptible to erosion and sediment loss; and
> > (d) Use LID techniques where adequate soil, groundwater and topographic conditions allow. These may include but not be limited to reduction in impervious surfaces, disconnection of impervious surfaces, bioretention (rain gardens) and infiltration systems.

C. Implementing Results of Required Evaluations, Reports, etc. and adding to or replacing BMPs found to be ineffective

We believe that overall the requirements of the proposed MS4 permit are strong and, with some exceptions, we do not propose that they be strengthened as they apply in most circumstances. However, where ambient water quality and outfall monitoring shows persistent problems, where tracking DCIA and IA shows little progress or even increased IA, or where annual self-evaluations do not show compliance with (or, in some cases, even address) important permit requirements, it is certainly reasonable to require permittees to implement, and not just evaluate, additional or replacement BMPs.

The lack of a requirement to implement corrective measures when existing BMPs are not working fully (Part 4.1.b. only "*allows*" permittees to change BMPs) is a major flaw in the language proposed under Part 2.1.2,b. on increased discharges to impaired waters; Part 4.1 on Program Evaluation; and Part 4.4 on Annual Reports. (Language that we recommend to correct this problem is given below.) Requiring permittees to implement alternative BMPs that they themselves identify is

certainly a better way to proceed than exercising the authority granted to EPA and MassDEP under Part Part 4.1.c. to "*require the permittee to add, modify, repair, replace or change BMPs or other measures as needed to address impacts to receiving water quality…or to satisfy conditions of this permit.*"

It is also critical that EPA provide guidance on how to do evaluations of BMP effectiveness. A catalog of appropriate outcome measures for each BMP and a checklist of alternative BMPs would be very helpful to permittees for initial development of their SWMPs and for their annual evaluations. Particularly important is the failure in Parts 2.1.2, 4.1.b. and 4.4.b to require additional or alternative BMPs for:

- discharges to waters with TMDLs where the current BMPs do not constitute all practicable measures that are capable of moving permittees as close as possible to compliance with direct stormwater discharge Wasteload Allocations. The proposed permit language requires permittees to evaluate the adequacy of BMPs for discharges to waters subject to TMDLs "pursuant to Part 2.2.1 and Appendix F." Unfortunately, Appendix F requirements fall far short of what is necessary to move permittees as close as possible to achieving the WLA for stormwater contained in the Neponset Bacteria TMDL. As noted above, we are reconciled to the fact that achievement of the stormwater WLA in the Neponset Watershed Bacteria TMDL will be very difficult to meet unless 100% of stormwater is infiltrated on site. The MS4 permit, as proposed, however, only requires that permitees attempt to achieve 100% infiltration for development and redevelopment projects over an acre, but not for smaller projects or for municipal retrofits. Thus additional or alternative BMPs should be evaluated and, as appropriate, implemented pursuant to to Part 4.1.b. and 4.4.b.in these circumstances

- discharges to waters "requiring" (but not yet having) TMDLs. (Category 5 waters) where current BMPs are not achieving compliance with the ban on increased discharges contained in Part 2.1.2.

Finally, it is also very important that permitees be required to implement within a reasonable time period the results of the various evaluations, procedures and prioritizations they must perform pursuant to Parts 2.3.6.b.–d. and 2.4.7. EPA establishes clear, year by year implementation guidelines and schedules for IDDE and should do the same for other MEPs and other permit requirements.

In light of the above, we recommend that the following revisions be made to the final permit:

- **Add to the end of Part 2.1.2.b.:**

  Such demonstrations shall be included in each Annual Report.

- **Add to Part 2.3.6.b., after the 3rd sentence:**

  Such schedules shall provide no more than 4 years for full implementation.

- **Add to Part 2.3.6.c., after the second sentence in the second paragraph:**

  Such schedule shall provide no more than 4 years for full implementation.

- Add to the end of Part 2.3.6.d.iii.:

  Permittee shall, over the next four years, implement the modifications and retrofits included in the inventory developed pursuant to this subsection.

- Amend 2.3.7.a. to state (in appropriate subsections):

  After the filing of the first year annual report, the permittee shall begin implementation of the procedures and activities required under this subsection. With the exception of ongoing activities and procedures, these activities and procedures shall be fully implemented by the time of the filing of the third annual report.

- Substitute the following for the proposed Part 4.1.b:

  The permittee shall evaluate the appropriateness of the selected BMPs in achieving the objectives of each control measure and defined measurable goal and provide a rationale for its conclusions. Should a BMP be found to be ineffective or inappropriate, the permitee shall also evaluate whether there are changes to such BMPs and/or replacement BMPs that could reasonably be expected to better achieve these objectives and goals. The permittee shall include its evaluation and any BMP modifications in each Annual Report.

  If there are any change(s), addition(s) or substitution(s) to existing BMPs listed in an Annual Report, permittee shall begin to implement them immediately after the filing of its Annual Report, with full implementation to be completed in no more than two years thereafter. Re-evaluations shall occur in the Annual Report following implementation of each new or revised BMP.

  To the extent that EPA or MassDEP concludes that the above required analyses have not been performed properly or in good faith, or that the conclusions reached are not supported by the analysis, they may exercise their discretion pursuant to subsection 4.1.c. to "order a permittee to add, modify, replace or change BMPs or other measures described in the annual reports as needed to address impacts to receiving water quality caused or contributed to by discharges from the MS4 or to satisfy conditions of this permit."

Add to the end of Part 4.4.v.iii.:

Permittees failing to demonstrate in an Annual Report that the BMPs implemented during the previous year(s), and/or included in the SWMP for implementation in future years, either

- *constitute all practicable measures toward achieving the Waste Load Allocation for direct discharge of stormwater contained in any TMDL, or*
- *will achieve compliance with the prohibition on any net increase in discharges to Category 5 waters in Part 2.1.2.b.,*

shall do the following:.

- *If such ineffective BMP(s) involves post-construction stormwater runoff from new development and redevelopment projects under Part 2.3.6.a.(ii)(a), the permittee shall determine whether any or all of the following revisions to the municipality's*

stormwater ordinance are likely to improve effectiveness and, to the extent that it is found that any of them are, amend their municipal stormwater bylaw within two years thereafter:

- *a requirement that new development and redevelopment projects of ¼ (one quarter) or ½ (one half) acre or more obtain a stormwater permit;*
- *a requirement that all new development and redevelopment projects over a de minimus size involving "Land Uses With Higher Potential Pollutant Loads" (as defined in the MA Wetlands Protection Regulations) obtain a stormwater permit;*
- *a requirement that the stormwater permitting authority review and approve new development and redevelopment projects of 5,000 s.f. or more that are not required to obtain a stormwater permit. Such reviews shall occur outside of the formal permitting process with more limited submission requirements and performance standards. If any such review results in the permitting authority identifying a project that it believes needs to be conditioned through the issuance of a permit, the authority shall be authorized to require the applicant to apply for such a permit; and*
- *a requirement that applicants for stormwater permits submit operations and maintenance plans that meet the requirements of Part 2.3.6.a.iii.*

- *If such ineffective BMP(s) involves the post-construction stormwater runoff program required under Parts 2.3.6.b.-d., the permittee shall require each project above a specific de minimus size occurring on town owned property or financed by the town to:*
  - *demonstrate compliance with the provisions of Part 2.1.2.b. relating to net increases in discharges to Category 5 waters, and/or*
  - *include all practicable BMPs aimed at achieving Waste Load Allocations contained in any TMDL.*

- *If such ineffective BMP(s) involve activities or procedures implemented pursuant to Part 2.3.7. regarding Good House Keeping and Pollution Prevention for Permittee Owned Operations, the permittee shall analyze whether increasing the frequency, nature or stringency of such activities and procedures could potentially increase their effectiveness and, to the extent that any are found to be likely to do so, begin implementing them immediately thereafter.*

D. Miscellaneous Recommendations on improvements to other provisions in the proposed permit.

- SWMPs (1.10) regarding BMPs for Public Education and Public Participation (2.3.2 and 2.3.3). Part 1.10 states: "*The SWMP is the document used by the permittee to describe and detail the activities and measures that will be implemented to meet the terms and conditions of the permit.*" This language, we believe, provides a disincentive for MS4s to do anything more than what is strictly required in the proposed permit, for fear that enforcement action could be taken if they do not in fact implement a measure contained in their SWMP that goes beyond the minimum permit requirements. In most cases the Draft permit is quite detailed in its requirements and no permittee is likely to propose doing more than the minimum permit requirement. The one exception is the requirements

regarding education and public participation, where the requirements remain quite vague and non-specific.

Over the last year, the Association has been working with a group of communities to help them prepare a regional approach to implementing requirements of the proposed MS4 permit, including public education & outreach and public participation. As part of this effort, the project outreach committee and a number of participants have made it clear that they agree with the watershed association that they would benefit from a more comprehensive outreach program than the minimum effort required under the proposed permit in order to build public support for actions and funding needed to implement the permit as a whole.

One task for the Association during the course of the above project has been to develop templates for regional Public Education & Outreach and Public Participation SWMPs. While at least some communities have been enthusiastic about the idea of more extensive outreach and participation programs, the communities were unanimous in requesting that the SWMP templates outline the bare minimum outreach and participation work plan required to comply with the permit. This was because the communities see that by writing more ambitious Outreach and Participation SWMPs, they are raising the bar on themselves, and theoretically opening themselves to enforcement action for failing to implement the more ambitious plan, even if the programs they ultimately do implement still comfortably exceed the actual outreach and public participation requirements of the permit. This unfortunate dynamic has the unintended consequence of greatly reducing the likelihood that communities will implement a robust outreach and participation program.

We therefore recommend that EPA add the following sentence to Part 1.10:

> ***MS4s may also include in the SWMP public education & outreach and public participation measures that go beyond what is strictly required to meet the minimum terms and conditions of the permit" without having implementation of such additional measures become a requirement of this permit.***

- Electronic NOIs (1.7.2 and Appendix E) and Annual Reports (4.4). **We recommend that all MS4s be required to file the electronic NOI** so that EPA and the public can create reports and cross-evaluate various MS4s (in our case, we'd like to compare what each MS4 within the Neponset River watershed is doing for each MEP). While it is practically inconceivable that MS4s would not be able to access a computer somewhere in town (e.g., at the library), perhaps EPA could offer hardship waivers to those that demonstrate they cannot. **We also recommend that the NOI add a section listing BMPs designed to ensure compliance with the ban on increased discharges to waters requiring TMDLs (Category 5 waters).**

  The electronic NOI proposed in Appendix E is extremely disappointing in light of the fact that **EPA Region 1 had already created, but did not propose, an excellent electronic NOI that would have ensured full reporting by listing every MEP requirement one by one with blank fields next to each requirement for the MS4s' planned activities. We recommend that EPA substitute that NOI Form for the one it included in Appendix E.** If that is not possible, it is even more important that EPA create an Annual Report Form that includes such a listing of permit requirements. Based on our reading of Annual Reports of towns in our watershed over the years, virtually none of them addresses all permit requirements. EPA will never be able to evaluate MS4s' self-evaluations if they are not comprehensive.

- Cross Referencing (Parts, 2.2, 2.3, and Appendices E, F, and H). Although from a strictly legal standpoint, MS4s must of course comply with all provisions contained in the MS4 permit, the fact is that the permit is used primarily by DPWs, not lawyers. Therefore, whenever, possible, the permit should contain cross reference to related provisions. For example, in determining which BMPs to implement, most DPWs look solely at Part 2.3. **We recommend that both Part 2.3 and Appendix E (the NOI) have specific references to the requirements of Part 2.1.2.b. forbidding increased discharges to waters requiring TMDLs ; Part 2.2.1. and Appendix F for additional and enhanced BMPs required for discharges to waters subject to TMDLs; and Appendix H for additional and enhanced BMPs required for discharges to water quality limited waters.**

  Similarly, **we recommend that Parts 1.1.0 (on SWMPs), 2.2.1, 2.1.2, 2.3, Appendices F and H should reference the provisions on alternative BMPs that may be required under 4.1 Annual Program Evaluations and 4.4.b. Annual Reports.**

- Discharges to water quality limited waterbodies where chloride is the cause of the impairment (2.2.2.d and Appendix H Section IV.). **We recommend that the chloride provisions in Parts 2.2.2.d. and Appendix H Section IV apply in all waters listed by the state as moderately or severely depleted pursuant to the state Water Management Act Regulations).** Chloride pollution is very serious in our, as in most other eastern Massachusetts watersheds, even though few of them (including ours) are listed as impaired for chloride on the Integrated List of Waters. We believe this is due more to the lack of sampling than to the lack of chloride. This conclusion has strong support from the U.S.G.S. and MassDFG in its recent studies of fluvial fish diversity and populations in our rivers and streams. The fish in most of the Neponset River Watershed were found to be severely depleted, and the greatest correlation to this depletion was found to be the percentage of impervious area in a given sub-watershed. While there is no absolute proof that chloride washed from roads and highways is the major cause of this correlation, it is inconceivable to us that it is not at least a significant cause.

- IDDE (2.3.4.7 and Appendix G*)*

  Wet Weather sampling requirements (described in 2.3.4.7.c.ii.d.iv). **It is recommended that wet weather sampling be allowed beyond the months of March- June**. There will be a considerable number of outfalls that require wet weather sampling due to System Vulnerability Factors and this will increase compliance with wet weather sampling. Given the results of wet weather sampling in Boston under the Boston Water & Sewer Commission Consent Decree it is likely that outfalls will be flowing during wet weather during the rest of the year.

  Approved E. coli/Enterococci tests (described in section 2.3.4.7.c.ii.d.v and in Appendix G). **It is recommended that the approved tests for E. coli and Enterococci for outfall sampling at outfalls discharging to impaired waters be expanded to include Colilert and Enterolert methods**. According to Appendix G of the draft permit the only approved tests for bacteria impaired waters are membrane filtration methods. Colilert and enterolert are both approved for compliance 14onitoring under the EPA Groundwater Rule and Colilert has been used successfully for in stream and outfall water quality monitoring in the past by many groups including the Neponset River Watershed Association. The inclusion of these

methods will increase the ability of many municipalities to perform the laboratory analysis themselves without the use of an outside laboratory. There are also a variety of other less robust bacteria testing methods available in the marketplace, and we do not recommend that EPA authorize the use of these less robust methods.

Quality Assurance Project Plan for outfall sampling procedure (described in section 2.3.4.7.c.ii.d.i). **It is recommended that a requirement be put in place for the development of a simple Quality Assurance Project Plan ("QAPP") for outfall sampling performed to meet the requirements of this permit.** The QAPP should include requirements for quality control samples, including field blanks and field duplicates for each sampling event, as well as sample preservation methods and hold times, and identification of analytical methods. We also strongly recommend that EPA provide a sample QAPP, which would not be required, but which would be a helpful guide for permittees. Lastly while we are recommending a simplified QAPP requirement, we are not recommending that EPA require the QAPP to be formally reviewed and approved by EPA or MassDEP staff in advance.

Thank you very much for the opportunity to comment on this proposed Massachusetts MS4 permit. We dearly hope that EPA will promulgate the permit, without weakening it, as soon as possible, even if you do not see fit to include all the recommendations for improvement we make in this comment letter.

Sincerely yours,

Steve Pearlman
Advocacy Director

ATTACHMENT

stormwater/feb 27 2015 ms4 permit comments final.docx

Bacteria BMPs

Structural BMPs found by the Massachusetts Stormwater Handbook and/or the Boston Water and Sewer Commission Stormwater Guidance to be effective at bacteria removal
(Handbook page references are to Vol. 2, Ch. 2)

Infiltration Practices

- All infiltration practices described in the Mass Stormwater handbook, when designed, and provided with applicable pre-treatment measures as described in the handbook

Filtration Practices

- Filtering bioretention cells (Handbook page 23 and BWSC Guidance Doc page B-7).
- Filtering dry water quality swales (where the WQ volume is retained, filtered and discharged via an underdrain; also sometimes referred to as bioretention swales or biofilter swales; not to be confused with drainage channels or grassed channels; Handbook page 78).
- Sand and organic filters, including tree filter boxes (underdrains should not discharge to a catch basin sump; sometimes also known as tree pits, tree channels, green gutters, or stormwater planters; Handbook page 57 and, for sand filters BWSC Guidance Document page B-17).

- Porous pavements (although normally used as an infiltration practice, porous pavements can also be utilized as a filtration practice when provided with an appropriate reservoir/filter course and underdrain; Handbook page 118).

Constructed Stormwater Wetlands and Wet Basins

- Shallow marsh wetlands (Handbook page 38).
- Pocket wetlands (Handbook page 41).
- Basin/wetland systems (Handbook page 39).
- Extended detention wetlands (Handbook page 40).
- Gravel wetlands (may arguably be considered a filtration practice; Handbook ge 47).
- Wet basins (with appropriate permanent pool volume and length to width ratio; Handbook page 63).
- Wet water quality swales (not to be confused with drainage channels or grassed channels; Handbook page 79).

Structural BMPs found by Handbook and Guidance not to be effective at bacteria removal unless used in combination with other BMPs effective in removing bacteria:

- Catch basins. Treated effluent from a Pathogen-Effective BMPs should never be routed through a catch basin sump.
- Oil and grit separators, and proprietary separators (including particle separators and hydrodynamic separators).
- Sediment forebays.
- Rock lined swales, drainage channels, and grassed swales designed for conveyance rather than water quality. These conveyance practices should not be confused with dry and wet water quality swales, which are designed to retain and treat the water quality volume through media filtration, infiltration or permanent ponding as further described in the MassDEP Stormwater Handbook.
- Dry detention basins, and extended dry detention basins (though in some cases these BMPs may be reconfigured as wetland detention basins which are Pathogen-Effective).

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Draft Massachusetts Small MS4 General Permit - Comments

1. Will EPA provide a clear consolidated schedule of requirements for each BMP similar to what was presented when the 2010 Draft Permit was issued?

2. Please describe the methods to delineate catchments. Are they to be based on of topography only? How can a catchment be ranked before mapping is complete? The sequence of system mapping and catchment ranking is not realistic in the time allowed, two (2) years for mapping, needed to delineate piped drainage systems and catchment ranking in year one (1).

3. EPA should define interconnection as related to screening target requirements or catchment delineations.

4. EPA should quantify multiple and widespread failures as related to system vulnerability factors.

5. EPA should define medium and densely populated areas.

6. EPA should explain the purpose of screening and sampling each outfall when the entire catchment is to be investigated regardless? If the MS4 is required to implement Catchment Investigation Procedures in every catchment per pg. 36. Part 2.3.4.8.c. *(The permittee shall implement the Catchment Investigation Procedure in every catchment of the MS4, even where dry weather screening does not indicate evidence of illicit discharges.)*

7. EPA should clearly explain the purpose of the March-June sampling timeline requirement for wet weather sampling. Dry weather sampling has no calendar requirement and wet weather sampling is much more difficult to coordinate due to precipitation, daylight and tidal requirements.

8. If the purpose of wet weather sampling is to locate leaking sanitary sewer lines, will EPA allow municipalities use alternative methods to locate these illicit discharges? Permittee's feel alternate methods can achieve wet weather goals without the influence of surface runoff in the sample. By utilizing sandbagging techniques an investigator could locate this type of illicit discharge. For example, installing sandbags in junction manholes for several dry days any flow captured would be sampled without the contamination surface run off would contribute. This could be restricted to the same high groundwater months (March-June) specified in the Draft Permit but would eliminate surface runoff contamination which occurs during rain events. Investigating high bacteria from surface runoff is not an effective use of IDDE resources.

9. EPA should clarify if all or some criteria of sample result thresholds must be met to trigger further investigation. The Permittee finds it unreasonable for wet weather sampling thresholds to be the same as dry weather levels.

10. When is an outfall/catchment investigation closed if the outfall is dry during dry weather screening but sampling results are high in wet weather but the IDDE was unable to identify a source?

11. Will EPA align timeline for dog owner messages required in MS4's with water quality limited waters? Messages should be allowed to be provided along with the dog license notices as allowed with other additional requirements.

12. In MS4's with carry out/carry policies out in parks will the Permittee be required to provide waste containers for disposal of trash and pet waste?

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RECEIVED
3/2/15
TWT

February 25, 2015

Mr. Newton Tedder
US EPA – (OEP 06-9)
5 Post Office Square
Boston, MA 03109-3912

Dear Mr. Tedder:

Further to my letter of December 23, 2014, our stormwater team has some additional questions:

1. Neither our DPW headquarter nor our transfer station is in, nor do they discharge to an MS4 area. Does this mean that we are not required to do those tasks in Section 2.3.7 of the draft permit which are site-specific to these locations?

2. All of the Parker River system waters are impaired. We can find no evidence that there is a TMDL for any of the included rivers at this time. Are we correct?

3. Do roadside ditches in a residential area, which gradually discharge in a diffused manner to adjacent bordering vegetated wetlands, constitute an outfall?

Thank you for your assistance.

Respectfully submitted,

Tracy Blais
Town Administrator
Town of Newbury

Cc: Merrimack Valley Planning Commission
(Attention: Joseph Cosgrove)
John O'Connell

TOWN OF NEWBURY
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RECEIVED
11/12/15
MWT

December 23, 2014

Mr. Newton Tedder
US EPA – (OEP 06-4)
5 Post Office Square
Boston, MA 03109-3912

Dear Mr. Tedder:

This letter is in response to EPA's request for comments on the draft MA MS4 General Permit entitled "General Permits for Stormwater Discharges From Small Municipal Separate Storm Sewer Systems in Massachusetts".

Our comments are as follows:

1. MS4 Area Delineations

   It is suggested that communities be allowed to participate in the selection/delineation of MS4 boundaries. The use of census tracts appears to be a somewhat crude way to denote the more vulnerable sections of a small municipality; small, but important dischargers can easily be missed by people who are not familiar with the town. (EPA Urbanized Areas Map, Newbury, MA)

2. Inspections

   We feel that quarterly site inspections of all areas exposed to stormwater, and all stormwater control measures is an excessive and overly burdensome requirement. We would suggest annual inspections would be sufficient (2.3.7.b.iii (a)).

3. Flexibility in Response

   While the activities requirements in the draft permit are excellent for raising public consciousness, locating current points of illicit discharge, and improving the municipality's performance in source control, there are no requirements for BMP retrofits.

   We suggest that the EPA consider giving some credit to the municipalities that actually retrofit their stormwater system with structural BMP's. There are some activities (such as keeping certain records and certain required documentation) that appear to be of limited value for some smaller communities (2.3.7.biv)

4. Measurable Goals for Public Education

   The success of any publication program is not easy to determine. Questionnaires frequently are not returned. The success of a workshop, lecture or seminar is dependent upon weather, conflicting activities that would appeal to the same audience, etc. Hence, success is frequently beyond the municipality's

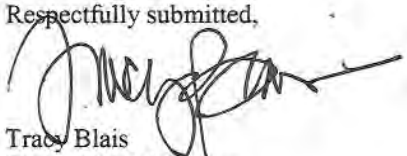
control. While the municipality can sponsor a public education event it cannot force people to attend, nor be assured that the message gets across to attendees.

We suggest that the number of public education activities be increased for communities that do not wish to establish and track "measurable goals", and that the presently required activities be maintained for communities which wish to comply with the draft permit as written. Alternatively, communities that find it difficult to track "measurable goals" might construct some structural BMP's instead. It should be noted that mailed out questionnaires that seek to evaluate the extent that public consciousness has been raised are both expensive and frequently fail to elicit a meaningful response (Fact Sheet page 74-76).

5. Replacing Planned BMP's

The municipality should not be required to justify a change in an ineffective BMP as long as the two BMP's are comparable (4.1 b).

Respectfully submitted,



Tracy Blais
Town Administrator
Town of Newbury

cc: Merrimack Valley Planning Commission
(Attention: Joseph Cosgrove)
John O'Connell

CITY OF NEWBURYPORT
OFFICE OF THE MAYOR
DONNA D. HOLADAY, MAYOR

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Via Email: Tedder.Newton@epa.gov

February 26, 2015

Mr. Newton Tedder
US EPA – Region 1
5 Post Office Square – Suite 100
Mail Code: OEP06-4
Boston, MA 02109-3912

Re: **Public Comment on 2014 Draft NPDES General Permit for MS4 Systems in Massachusetts**

Dear Mr. Tedder:

We thank you for the opportunity to comment on the above referenced draft permit. The City of Newburyport is committed to improving water quality through stormwater management efforts. We have reviewed the subject Draft MS4 Permit and fact sheet and provide the following general comments:

- We consider ourselves an environmentally-friendly community – we worked hard to join the members of the Massachusetts Green Communities – and we are updating our Stormwater Rules and Regulations to implement very strict requirements. These regulations will provide further support to supplement our Stormwater Ordinance. However, The City of Newburyport is operating with limited funding and resources at our disposal. We anticipate that the strict schedule and additional requirements of the Draft MS4 Permit will create a huge financial burden for the City. We do not object to the permitting compliance requirements, per se, but rather how we can fund it.

- The outfall monitoring requirements and schedule, as drafted, are not feasible based on our current and anticipated resources. Wet weather sampling is particularly burdensome, given that it serves little purpose in detecting illicit discharges to the stormwater system. We feel that this requirement should be removed from the permitting requirements so that communities are better able to focus their limited resources on known priority areas.

- The significant amount of recordkeeping, documentation, written procedures and protocols required to be developed under this permit will further exacerbate resource issues. We believe the City's time would be better spent identifying and resolving problems with the sanitary sewer and stormwater infrastructure in order to achieve the maximum benefit to the watershed as a whole.

- If every municipality is required to do all this work at the same time (upon execution of the Permit), we'll all be fighting the same labor pool. The supply of engineering graduates for this demand is simply not going to be there. A similar labor shortage will likely occur for the labor necessary to clean the piping and structures with the equipment needed to perform said functions. While it is not overly complex, the new vacuum trucks do require a particular skillset, otherwise the infrastructure will get destroyed.

- We are considering a separate Stormwater Utility to assist us in funding this work but we are already experiencing strong opposition to yet another fee or tax. Environmental issues are not just local but are also for the welfare of our nation. Therefore, we believe that funding opportunities and programs should be provided at the federal level.

We also provide the following slightly more specific comments:

1. Our 250+ year old city has approximately 38 miles of drainage pipe, 500 manholes, 2,800 basins, 175 outfalls, and 8 culverts. Plus a number of miles of grassed swales. The vast majority of our structures is 100+ years old and need replacement. They do not meet today's standards for treatment (sump depths, hoods, etc.). Simple math will prove that complying with the proposed permit requirements for this many structures and this much pipe will cost in the millions. (2,000 basins @ $4k each = $8 million, etc.)
2. If this Permit is fully executed as currently proposed, we will likely need $485,000 more annually for labor (3 junior engineers, 4 laborers, and summer interns), $70,000 annually in police detail for cleaning and maintenance work, and $45,000 annually for consulting fees. Total additional annual labor costs will be about $600,000.
3. The City currently hires-out services for catch basin cleaning but we will not be able to continue this practice if we are to remain in compliance with the Permit. Therefore, we will need to purchase two vacuum trucks at approximately $400,000 each. Additional equipment will likely be required.
4. The TMDL requirements will be imposed on almost our entire MS4 area because it almost all drains into the Merrimack River. This only adds to the manpower, equipment, and testing costs. We suspect that our runoff will surpass the threshold requirements proposed

in the permit so eliminating positive-tested pollutants from our screening program within 60 days is way too soon. Identifying the problem is one thing; it's another to successfully remove it. Section 2.1.1.d.

5. Demonstrate no net increase in pollutants to an impaired water body is difficult and we need to train people to make this happen. We are not sure if we can get the expertise soon enough and successfully meeting the one-year timeframe as required. Section 2.1.2.b.
6. Mapping our system is time consuming. Our Engineer Department just completed mapping a small, ¼ mile section in our city and it took many days to complete. Our system is very old and has been connected to, rerouted, partially abandoned, collapsed, or otherwise modified. Mapping it properly takes smoke and dye tests and video camera work and this takes time. Two years is too short of a timeframe to map our city. We will need at least five years to perform this work. Section 2.3.4.6.
7. Creating and prioritizing an IDDE program will take additional time. It would be best if we combine an IDDE program with the mapping work so we don't have to look at that section of the system twice. We request longer than 2 years. Section 2.3.4.7.
8. We cannot complete the priority ranking of catchments within one year if our existing information is insufficient to do so. We highly recommend doing the ranking after doing bullets 6 and 7 above. Section 2.3.4.7.c.iii.
9. Implementing a screening program within 15 months is too soon. We first need to locate all the outfalls as well as find the labor. Section 2.3.4.8.b.
10. Some of this work can be done concurrently providing we have the staff but a lot of this work is linear. Implementing and reporting catchment investigation procedures in every catchment (Section 2.3.4.8.c) and the Permit's subsequent req'ts related thereto (Section 2.3.4.8.c.i, ii, and iii) should be pushed back so the mapping can be done first so we know the limits of the catchment areas.

Again, we are committed to improving the water quality from our stormwater runoff but as you can see, it'll take a lot of money and a lot of time. Please take our concerns seriously.

Thank you for the opportunity to comment.

Very truly yours,

Donna D Holaday

Donna D. Holaday
Mayor

C: Tony Furnari, DPS Director
Wayne Amaral, DPS Deputy Director
Jon-Eric White, City Engineer

City of Newton

Department of Public Works

Utilities Division
60 Elliot Street
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Setti D. Warren
Mayor

February 27, 2015

Mr. Newton Tedder
US Environmental Protection Agency
Office of Ecosystem Protection (OEP05-01)
5 Post Office Square – Suite 100
Boston, MA 02109-3912

Re: Comments on the Draft NPDES MS4 Permit

Dear Mr. Tedder:

The City of Newton is in receipt of the Revised Draft Small Municipal Separate Storm Sewer System (MS4) General Permit for stormwater management, applicable to 260 communities in the Commonwealth. Staff from my office attended an information session last fall on the proposed content and requirements. We appreciate that EPA has listened to our previous comments, made in response to the first draft, and has revised some of the most onerous requirements. The current draft, although better, still has an overwhelming number of requirements - several of which have significant cost implications.

The regulatory agencies and the regulated communities share a common mission: to ensure the health and quality of our cities and towns and their natural resources. In order to accomplish these goals, environmental programs must be balanced with other needs and responsibilities of each community and implemented in a fashion that is both feasible and financially responsible. In this context, we offer the following comments on the Draft Permit.

GENERAL COMMENTS

NOI Form: The amount of detailed information required to complete the new electronic NOI Form is extensive and includes information that, in the previous permit cycle, was provided in the Stormwater Management Plan (SWMP). Having a detailed understanding of all the proposed BMPs that will be used to meet the six minimum control measures, as well as those to be used to meet the water quality based effluent limitations, within 90 days is impractical. The NOI submittal should be scaled back to provide only basic information relative to the storm sewer system and leave the more detailed descriptions of the proposed BMPs to meet the six minimum measures and water quality based requirements for the SWMP, which permittees have up to a year to complete.

Timeline: First Year Requirements: The number of major activities and related plans that need to be completed in the first year of the Permit is impractical. Our review of the permit indicates that there are over ten major plans or action items that need to be completed in the first year after issuance of the final permit, or sooner including:

- NOI preparation
- SWMP preparation
- Inventory of municipally-owned parks, buildings, facilities and equipment
- O&M plans for municipal facilities
- Inventory of the City's infrastructure requiring rehabilitation and/or repair
- Sanitary Sewer Overflow (SSO) inventory
- Outfall/interconnection inventory (including condition assessment)
- Updated Illicit Discharge Detection and Elimination (IDDE) Plan
- Storm Water Pollution Prevention Plans (SWPPPs) for relevant municipal facilities
- Updated written protocols for erosion control inspections and infrastructure maintenance.

Comment: We suggest that the time frame to complete these activities, especially the O&M Plans, outfall/ interconnection inventory and condition assessment and SWPPP preparation be extended to at least two years from the effective date.

Phosphorus Control Plan:

Newton is very concerned about the costs to implement a Phosphorus Control Plan (PCP). Like many New England communities, our underground infrastructure is aging and funds must be allocated to fix and upgrade our storm drainage system. The development and implementation costs associated with the PCP are roughly estimated to be $10 Million for Newton. In order to fund the PCP we will have to make tough choices between critical drainage infrastructure projects, stream channel improvements (restoration) and permit compliance projects; some of which will need to be implemented on private / commercial property, which we have little, if any, authority to do. It would be helpful if the EPA could provide documentation (that we may share with our community) demonstrating the benefits of phosphorus control are a worthy investment of this magnitude.

Pollutant Load Calculations - Appendix F and Appendix H: There is a significant amount of work to complete the calculations, tracking and accounting to address impaired waters. It will be difficult for us to prepare all this information and complete the data management relative to pollutant load reductions and credits without a consultant or full time staff member.

Comment: EPA should provide significant support to municipalities if they are to prepare this information on their own. Training sessions and technical support are recommended.

SECTION SPECIFIC COMMENTS

Section 1.9.2 - Documentation Regarding Historic Properties: It is unclear what documentation will be needed to demonstrate no impact to historic properties. The screening procedure outlined in Appendix D suggests that any subsurface excavation activity related to the stormwater program, which is highly likely as part of any future repair, upgrade or replacement of stormwater infrastructure, will require consultation with State Historic Properties Office (SHPO) to certify that there will be no impact to historic properties and the documentation of this consultation/ certification must be included in the NOI and the SWMP in order to be eligible for permit coverage.

Comment: The SHPO certification requirement regarding subsurface excavation activity imposes two major problems: 1) the extent of possible future repairs and related excavation activity will not be fully understood at the time of NOI submittal, and 2) to obtain SHPO certification for each potential excavation activity will result in extensive added coordination time, costs and project delays if field investigations are required to obtain this certification. Also, is EPA confident that SHPO will have the resources to respond in a timely manner to the many communities that will need this review as part of developing their NOI?

Section 2.2.1 – Discharges to Impaired Water Bodies with an Approved TMDL: Tables F-1 and F-2 of Appendix F indicate that Newton's phosphorus reduction target is 52%.

Comment: Given that the reported phosphorus removal efficiencies are generally in the range of 40 and 65 percent for structural stormwater BMPs and much lower for non-structural measures, this would essentially mean that nearly all, or a large majority of existing impervious areas, would need to be treated with structural BMPs. This is not only impractical given the wide range of site constraints that will be encountered in implementing stormwater retrofit BMPs but would also be quite costly. We suggest that EPA provide guidance for municipalities to realistically meet the targets including increased credits for non-structural measures if they are considered truly worthy actions.

Section 2.3 - Requirements to Reduce Pollutants to the Maximum Extent Practicable (MEP):

Comment: Completing the multitude of requirements included in this section in a 5-year permit cycle is not realistic. We suggest that the number of requirements be reduced substantially and be spread over two permit cycles or allow up to 10 years to complete this section's requirements.

Section 2.3.4.7.d.iv – Written Illicit Discharge Detection and Elimination Program: This section states that "The permit does not require a minimum rainfall event prior to wet weather screening. However, the purpose of wet weather screening and sampling under the IDDE program is to identify illicit discharges that may activate or become evident during wet weather."

Comment: We know first-hand how expensive and time-consuming wet weather sampling can be, especially when limited to 4 months of the year as specified. In Newton, we have been collecting wet weather samples for 9 years. The data collected over these 9 years has led us to find only 1 out of 101 drainage basins with an illicit connection. Unless there is clear evidence that there is a wet weather contamination threat, wet weather sampling should not be mandated. Bacteria levels in stormwater are highly variable and individual samples could easily show a spike which could falsely indicate an illicit connection. This could be extremely costly to try to track down with no

results. It is requested that EPA provide: data on past wet weather sampling results that show the number of outfalls sampled during wet weather for which illicit connections were found that were not also found during the dry weather screening process, cost of the stormwater sampling for all the outfalls sampled, percentage illicit connections that had wet weather contamination, not stormwater contamination found that was not indicated during dry weather sampling, and source of the contaminants found (i.e. one time dumping verses continuous illicit connection).

Section 2.3.4.7.e.ii – Catchment Investigation Procedure: This section describes the manhole inspection methodology.

Comment: We feel that it is an excessive amount of work to investigate every junction manhole if there is no dry weather flow or indication of any illicit discharges. Investigating upstream of outfalls requires work in the middle of roads, sidewalks, private property and will require police details and substantial field work and disruption. Time and money may be better spent on training municipal staff and contractors during their regular field work and maintenance, as well as the focused educational materials regarding what is an illicit connection for the residents/businesses/property owners. We request that EPA provide data showing that investigating upstream drainage systems when there is no evidence of illicit connections at the outfalls results in the identification of illicit connections worthy of the associated cost.

Section 2.3.6(d) – Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management: This section states "All BMPs installed as part of the site's stormwater management system shall be constructed in accordance with the Massachusetts Stormwater Handbook Volume 2, Chapter 2."

Comment: The Massachusetts Stormwater Handbook is outdated for many of the changing BMP design features. Some BMPs such as permeable pavements are not even included in the Handbook. Other states are developing more updated design handbooks in response to TMDLs and stormwater requirements such as Rhode Island and the Chesapeake Bay area states. In addition, limiting designers to meeting the Massachusetts Stormwater Handbook will discourage designers to install BMPs that do not meet the standards but still provide treatment (as indicated by the EAP pollutant treatment curves). The wording should be changed to reference the MA Stormwater Handbook, as well as EPA, and other state manuals with recent updates that provide good BMP design guidelines.

Section 2.3.6.d.: This section requires permittee to track impervious area and disconnected impervious area each year.

Comment: Requiring a municipality to have an accurate database of the impervious cover broken down by what is directly connected or disconnected is an onerous requirement without an explanation of the use or benefit of such detailed data. Statewide and/or regional impervious cover data layers provide a much more cost effective estimate of impervious cover for the purpose planning, understanding trends, and identifying hot spots.

Section 2.3.7.a/b – Operations and Maintenance (O&M) Programs and Stormwater Pollution Prevention Plan (SWPPP): This section requires written O&M procedures for the municipal facilities that have specific activities listed within the first year and SWPPPs within the first two years.

Comment: This requirement includes collecting, organizing and updating information on each facility and will be difficult to effectively complete within one year, in addition to the other first years tasks. We suggest extending the time for completion of these documents to three years.

Appendix H, Attachment 1 – Street Sweeping and Catch Basin Cleaning Credits: The credits included in the permit are based on information from Center for Watershed Protection Street Sweeping program in the Chesapeake Basin, dated 2008.

Comment: The credits provided for street sweeping are extremely low and there it is no mention in the permit about the extensive benefits of street sweeping for removing a considerable volume of debris and sediment in addition to actual pollutant loads. The credits do not provide incentive to utilize this source control method that not only removes contaminants and trash, it also contributes to the long term longevity of the BMPs that are listed as most valuable for phosphorus removal; infiltration BMPS. We recommend that this be researched further including the region specific USGS street sweeping study completed recently in Cambridge Massachusetts to determine the appropriate credits. If, in fact, the water quality benefit is shown to have such an insignificant impact then these costly practices should not be required.

Appendix F Attachment 3 Semi-Structural/Non-structural BMP Performance Credits: The section states that the cumulative runoff reduction is being used to estimate cumulative phosphorus load reduction credit for the semi-structural/non-structural BMPs which have an infiltration benefit by disconnecting IA and providing soil amendments to increase permeability.

Comment: The infiltration BMP curves show that phosphorus reductions are greater than runoff volume reductions. Therefore, it is conservative to use runoff volume as a direct surrogate when in fact phosphorus reductions are likely higher. We suggest an additional phosphorus treatment factor in addition to solely the runoff reduction.

Sincerely,

Keith Nastasia
Director of Utilities

cc: David Turocy, Commissioner of Public Works
Theodore Jerdee, Utilities Superintendent
Maria Rose, Environmental Engineer
Louis M. Taverna, City Engineer

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February 27, 2015

Mr. Newton Tedder
Environmental Protection Agency – Region 1
5 Post Office Square – Suite 100
Boston, MA 02109-3912

Dear Mr. Tedder:

We have reviewed the Draft NPDES General Permit for Stormwater Discharges for Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts noticed in the federal register on September 30, 2014. With regards to the Draft Permit and the Appendices, we offer the following comments:

1. Annual Reports submitted under the 2003 Small MS4 Permit indicate a large variability in the work being done by MS4 operators to comply with existing permit requirements. Some of these reports document the significant activities undertaken by the MS4 operators while others have minimal documentation. Without a significant commitment from the Environmental Protection Agency (EPA) or the Massachusetts Department of Environmental Protection (MassDEP), compliance with the Draft 2014 Small MS4 Permit will likely continue to be variable. What level of oversight of this program will be provided by EPA or MassDEP?

2. Section 2.3.6 of the Draft 2014 Small MS4 Permit requires permittees to develop or modify an ordinance or regulatory mechanism to regulate stormwater. Under this requirement, permittees must develop a local stormwater ordinance to retain the first inch of stormwater from all new or redeveloped sites, or provide a level of pollutant removal equal to or greater than retaining the first inch of stormwater. We concur that requiring a greater level of infiltration or treatment of stormwater at the source is consistent with environmental goals for improved water quality. However, based on the guidance provided in the Permit, the requirement also allows for wide interpretation at the local level regarding how to meet this requirement. We are concerned that local governments will independently develop stormwater regulations to meet this requirement that may vary widely from municipality to municipality.

   Additionally, stormwater is regulated by MassDEP through the Stormwater Management Standards under the Wetlands Protection Act. After municipalities develop a stormwater ordinance as required by the Permit, the local regulations will not align with the infiltration and water quality treatment requirements in the MassDEP Stormwater Management Standards. How will these conflicting requirements between the regulations/permits be resolved? This requirement may further contribute to inconsistent development regulatory requirements throughout the Commonwealth. What happens if a local municipality chooses an infiltration requirement or process that is not substantiated by standard engineering practice or science?

3. Will there be a review process of a municipality's proposed stormwater regulations to determine compliance with the MS4 permit requirements? What happens if there are conflicting requirements between local regulations and the requirements/intent of the MS4 Permit? Who will resolve conflicting requirements?

4. Section 2.3.5 and 2.3.6 describe reevaluating current land development regulations that impact the inclusion of low impact development (LID) stormwater management techniques in new development projects, the reduction of impervious cover, and erosion control management. Therefore, stormwater management could be regulated by a number of regulatory boards within each municipality including the Planning Board, Zoning Board of Appeals, Conservation Commission, or possibly an additional Board created by a municipality to regulate stormwater management. We assume the intent is to uniformly incorporate stormwater management throughout the land development process and agree

that there are many land development regulations that require study, revisions, and updates. Our concern is that the execution of this requirement at the local level may result in more regulatory hurdles for the development community, rather than aligning all municipal regulations as intended.

5. Further clarification is needed regarding the application of the design requirements in Section 2.3.6 to redevelopment sites. If a portion of a site is redeveloped, will the entire site be subject to the increased standards described in this Section, or will the new requirements apply only to the portion of the site that is being redeveloped? Is it the intent of EPA to allow each municipality to determine the extent to which compliance is required for redevelopment sites?

6. In our conversations with MS4 communities and facilities, we understand the requirements of the permit are perceived as extensive and arduous. Compliance, and more specifically the documentation of compliance, with the minimum control measures will require significant time, energy, and expense by municipalities and non-traditional MS4s. MS4 communities and facilities are concerned with the lack of funding associated with the Draft Permit.

7. The Draft Permit appears to be more specifically weighted towards municipalities. Section 5.0 of the permit acknowledges non-traditional MS4s and how the requirements will differ for the non-traditional MS4s when compared to municipalities. Requirements for the non-traditional MS4s appear less arduous than the requirements for the municipal MS4s. Although there is no criteria listed within the MS4 permit for non-traditional MS4s, the EPA website lists 41 non-traditional MS4s. The final Permit should provide clear criteria for the designation of non-traditional MS4s and a timeline for when these designations will be made.

8. Appendix F of the Draft Permit describes requirements for discharges to impaired waters with an approved Total Maximum Daily Load (TMDL) and provides targets for pollutant reductions. Some MS4s may have already implemented Best Management Practices (BMPs) to accomplish pollutant reductions. Will credit for previously installed BMPs be allowed, possibly reducing the overall pollution reduction target, or are these pollutant reduction targets required at the time the permit goes into effect? The path to achieve compliance with the pollutant reduction targets should be clarified in the Final Permit.

9. Due to site constraints, there may be properties regulated by the Draft Permit that are not able to achieve the pollutant reduction targets described in Appendix F. In the event that the pollution reduction target is not achievable, is it EPA's intent to require retrofits on privately-owned property that are paid for and installed by private property owners?

In general, the structure of the requirements places a lot of burden on the regulated communities and facilities, which could lead to inconsistency in the implementation of the MS4 permit requirements.

Please call if you have any questions or request clarifications on these comments.

Very truly yours,

Nitsch Engineering, Inc.

Scott D. Turner, PE, AICP, LEED AP ND
Director of Planning

SDT/anl

Q:\10750 MS4\Correspondence\Outgoing\2015-02-27 MS4 comment letter final.docx

Northern Middlesex Council of Governments

February 26, 2015

Newton Tedder
US EPA Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

RE: U.S. Environmental Protection Agency's (EPA) Draft Massachusetts Small MS4 General Permit

Dear Mr. Tedder:

The Northern Middlesex Council of Governments (NMCOG) and the Northern Middlesex Collaborative (NMSC) have reviewed the U.S. Environmental Protection Agency (EPA) Draft Massachusetts Small MS4 General Permit, appendices, and fact sheet, released on September 30, 2014.

Formed by the Northern Middlesex Council of Governments in 2013, the Northern Middlesex Stormwater Collaborative (NMSC) utilizes a regional approach to address the public education, procurement, management, administrative, and mapping tasks necessary to meet EPA requirements and implement municipal stormwater management plans. The NMSC is comprised of thirteen communities in the Northern Middlesex Region including Billerica, Burlington, Carlisle, Chelmsford, Dracut, Dunstable, Littleton, Lowell, Pepperell, Tewksbury, Tyngsborough, Westford and Wilmington. The NMSC is overseen by an Advisory Board with equal representation from each of the 13 participating communities. The goals of the Collaborative are to effectively manage stormwater, improve water quality, share resources, improve services for residents, reduce costs, and promote regional communication. We also strive to serve as a model to municipalities throughout the Commonwealth.

The NMSC recognizes the importance of stormwater management and values the importance of clean rivers, stream, lakes and water bodies. Achieving designated uses, in particular, is important to the health and economic well-being of our communities. However, at the same time, municipalities are balancing environmental concerns with multiple other needs and responsibilities. They are striving to implement stormwater management programs in a responsible manner that balances feasibility, fiscal responsibility, and maintenance of the health and well-being of the residents and

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environment in their jurisdictions. As such, we submit the following comments on the Draft Massachusetts Small MS4 General Permit.

NMSC COMMENTS

The draft general permit requires regulated small MS4s to develop, implement and enforce a "Stormwater Management Program" designed to control pollutants to the maximum extent practicable, protect water quality, and satisfy appropriate requirements of the federal Clean Water Act. Municipalities must comply with existing water quality standards including TMDLs, water quality limitations as found on the 303d and 305b lists, and numeric and narrative criteria. It also includes implementation of six minimum control measures: illicit discharge detection and elimination (IDDE), public education and outreach, public participation, management of construction site runoff, management of runoff from new development and redevelopment, and good housekeeping practices.

WATER QUALITY-BASED EFFLUENT LIMITATIONS AND DISCHARGES TO IMPAIRED WATERS

In the Northern Middlesex region, there are two approved TMDLs: the bacteria/pathogen TMDL and the Assabet River Watershed TMDL. In addition, municipalities are subject to limitations related to phosphorus impaired waters without a TMDL.

Bacteria and Pathogen TMDL

Billerica, Burlington, Tewksbury and Wilmington are subject to the bacteria/pathogens TMDL. This is stipulated on page 14 of the Draft permit, which explains that municipalities "*that discharge to a waterbody segment listed on Table F-6 in Appendix F ....shall meet the requirements ... with respect to reduction of bacteria/pathogens discharges from their MS4.*" Our first comments are editorial in nature. Table F-6 in Appendix F refers to the Phosphorus TMDL table, so the text should be amended to reference Table F-8, which is the bacteria TMDL table. In addition, for the larger tables embedded in the text, the Table name and number should be displayed at the top of the table, rather than at the bottom. For the bacteria TMDL table, one must scroll through **nine pages** in order to see the table name at the end of the table. Listing the table names at the top of the table would save time and enhance readability.

Table F-8 indicates that Billerica, Burlington, Tewksbury and Wilmington all discharge to water bodies impaired for fecal coliforms including Spring Brook (MA 83-14) in Billerica; the Shawsheen River (MA 83-17) in Billerica, and Wilmington; Vine Brook (MA83-06),

Long Meadow Brook (MA 83-11) and Sandy Brook (MA-83-13) in Burlington; and Strong Water Brook (MA 83-07) and an Unnamed Tributary (MA 83-15) in Tewksbury.

A review of the source documents indicate that the Lakes and Ponds TMDLs were drafted years ago using older data and outdated testing methods. For example, the Shawsheen River TMDL was finalized in 2002 and used data from 1989 through 1998.[1] This data likely does not reflect the current conditions today. In addition Fecal coliform is no longer the recommended indicator for bacteria sampling; today, EPA recommends E. coli as the best indicator of health risk from water contact in recreational waters.[2] The TMDLs should be revised to use more updated data and testing methodology.

To comply with the TMDL, municipalities must identify and implement Best Management Practices (BMPs) to reduce bacteria or pathogen discharges from its MS4. These include enhanced public education for pet waste, and septic systems and a "high priority" designation for catchments draining to any waterbody impaired for bacteria or pathogens. However, according to the Massachusetts Lakes and Pond Guide, bacteria and pathogens can come from a variety of sources including failing septic systems, waterfowl, farm animal and pet waste, polluted stormwater runoff, wildlife, and wastewater treatment plants.[3] The bacteria and pathogen BMPs only focuses on pet waste, septic systems and illicit connection, and do not account for bacterial contamination that could come from waterfowl or other animals (e.g. farm animals or geese). Municipalities should have freedom to implement enhanced BMPs that make the most sense for their municipality, and that allow that municipality to focus on the main issues in their jurisdiction. Additionally, a permittee should be allowed to submit information to EPA demonstrating that all or a portion of its discharge does not contain bacteria/pathogens, to obtain an exemption from the Bacteria and Pathogen TMDL requirements.

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[1] http://www.mass.gov/eea/docs/dep/water/resources/n-thru-y/shawshee.pdf

[2] http://water.epa.gov/type/rsl/monitoring/vms511.cfm

[3] http://www.uwsp.edu/cnr-ap/UWEXLakes/Documents/ecology/shoreland/background/mass_lake_and_pond_guide.pdf

Assabet River TMDL

Carlisle, Littleton and Westford must comply with the Assabet River Watershed TMDL, which was approved by EPA in 2004. The TMDL addresses water quality impairments resulting from the excessive growth of algae caused by an over-abundance of phosphorus in the Assabet River system. The TMDL sets waste load allocations (WLAs) for Publically Owned Treatment Works (POTWs) within the Assabet River watershed, as well as load allocations (LAs) for sediment flux and cultural contribution associated with stormwater runoff and groundwater. It does not require phosphorus load reductions from MS4 permittees, however, it also does not allow additional phosphorus from stormwater sources associated with future growth. Therefore, municipalities are required to take measures to ensure that current phosphorus loads from MS4 stormwater discharges do not increase. Municipalities must implement enhanced BMPs, including enhanced public education and outreach, additional requirements for stormwater management in new development and redevelopment, and additional good housekeeping practices (e.g. twice annual street sweeping.)

As with the bacteria TMDL, the age of the water quality data utilized to form the TMDL is a concern. Much of the data is from 1999, and is thus more than 15 years old.[4] The document should be updated with more recent data to better reflect current conditions. Additionally, municipalities should not be limited to the enhanced BMPs listed in Appendix F, because they may not be the most cost-effective and productive BMP for the community. For example, twice annual street sweeping may not be the most cost-effective way to remove phosphorus from the River. In fact, the requirement that municipalities in a nutrient impaired water body must sweep streets a minimum of two times per year is of particular concern. Municipalities worry that this could have unintended results at the municipal level – it could encourage the elimination of street trees, as well as permit denials for new street trees. Trees are important to the environment, and this requirement should be eliminated or revised so as not to discourage street trees in any way.

As with the bacteria TMDL, municipalities should have the freedom to choose the BMPs that work best for them, and should not be restricted to the three BMPs listed in the

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[4] http://www.mass.gov/eea/docs/dep/water/resources/a-thru-m/anuttmdl.pdf

permit. Finally, a permittee should be allowed to submit information to EPA demonstrating that all or a portion of its discharges do not contain phosphorus to obtain an exemption from the Phosphorus TMDL requirements.

Phosphorus Impaired Waters

Billerica, Burlington, Carlisle, Chelmsford, Dracut, Dunstable, Littleton, Lowell, Pepperell, Tewksbury, and Tyngsborough are listed as discharging to Phosphorus Impaired Waters. Phosphorus Impaired Waters do not have a defined pollutant reduction target and no approved TMDL has been established. Appendix H outlines an iterative approach for addressing pollutant reductions to these waters: each permittee must comply with enhanced BMPs (public education, phosphorus-optimized BMPs, and increased street sweeping), a Phosphorus Source Identification Report, and additional structural BMPs.

These requirements are significantly stricter than the bacteria and pathogen TMDLs, and the proactive implementation of structural BMPs will be particularly costly for municipalities. Without an approved TMDL, it is difficult to make the most informed, cost-effective decisions regarding phosphorus reductions. Structural BMPs should not be required without a further understanding of the phosphorus loads to each of the designated water bodies, as well as the potential source. Requiring across-the-board implementation of structural BMPs will be extremely expensive, and it is unlikely that municipalities will be able to implement these structures without a designated funding source.

The permit stipulates that each municipality must complete a Phosphorus Source Identification Report within four years of the effective date of the permit. Additionally, all permittee-owned properties must be evaluated for the possibility of structural BMP retrofit opportunities within five years of the effective date of the permit. The permittee must install one structural BMP as a demonstration project within six years of the permit effective date. While six years may seem like a reasonable timeframe, the reality is that securing funding and planning for this project will take time, especially in addition to other permit requirements. The installation of the demonstration project should be changed to ten years to ensure municipalities have proper time for planning and funding the project. Installation of additional structural BMPs should only be required if phosphorus cannot be reduced using non-structural methods.

Six Minimum Control Measures

Public Education and Outreach (2.3.2)

The draft permit requires municipalities to distribute educational materials to four audiences: (1) residents, (2) businesses, institutions and commercial facilities, (3) developers (construction), and (4) industrial facilities. Municipalities must:

- Distribute two educational messages the first year;
- Distribute at least eight educational messages during the permit term; and
- Ensure messages to each audience are spaced at least a year apart.

In each annual report, municipalities must also document the messages for each audience, the method of distribution, the evaluation methodology, and the measures used to assess the overall effectiveness of the education program. It is clear that the EPA wants municipalities to evaluate the effectiveness of their educational messages and presumably modify or change that messaging over time, as necessary to be effective. However, the current draft permit does not provide any guidance on what would be considered effective messaging or how municipalities should be measuring success. It is recommended that EPA either remove this requirement from the permit or provide more clear instruction on how to adequately measure effectiveness of the individual messages as well as the overall educational program.

Education is a crucial component to stormwater management, and educating different audiences at various intervals is an excellent way to ensure that the message gets across to multiple stakeholders. However, this methodology is not appropriate for all communities. In particular, the smaller municipalities in our region, Dunstable, Pepperell and Carlisle, have very few businesses or industrial facilities. The requirement to educate these audiences should be waived if not applicable to the municipality.

Illicit Discharge Detection and Elimination (IDDE) & System Mapping (2.3.4)

The new draft permit requires municipalities to complete a SSO and Outfall inventory, a detailed system map, a detailed written IDDE program and catchment rankings. Dry weather investigation of key junction manholes as well as wet weather investigations for manholes with system vulnerability factors is required. The extent of the IDDE program requirements is particularly burdensome for municipalities. Comments regarding the IDDE program are as follows:

- *Outfall Inventory*: Municipalities are required to complete an outfall inventory and physically visit each outfall within one year of the permit. The range in the number of outfalls per community is highly variable and is dependent on the population and road miles in the affected community. In the NMSC region, some municipalities have over 600 outfalls, and it would likely take two to three years to visit all the outfalls. EPA should revise the permit to allow extended time for the completion of the outfall inventory, such as 3 to 5 years.

  The permit states that the municipality must "*physically label all MS4 outfall pipes (excluding interconnections) with their unique identifier by the end of the permit term.*" This new condition will presumably require a physical sign to be installed at each outfall pipe in the field. For some municipalities this will result in the installation of more than six hundred new signs. This will not only result in a substantial initial cost in both staff time and material costs for installation but will also introduce legacy costs to manage, maintain and eventually replace the signs over time. The location of many of these signs will also be in places where they will not aesthetically fit the character of the surrounding area and could also be vulnerable to potential vandalism. The installation of a physical sign should not be necessary with the increased level of MS4 mapping detail that will be required under the new permit – particularly because this would not be correlated with any improvements to water quality. EPA should eliminate the need to physically label all MS4 outfall pipes with their unique identifier.

- *GIS Map:* The permit indicates a full map of the drainage system is to be completed in two years. However, in order to correctly and thoroughly map the system, municipalities estimate it could take up to five years. EPA should revise the permit to allow for five years for the full map of the drain system to be completed.

- *Catchment Delineations:* The permit requires that catchment delineations are mapped for the use of priority rankings. Mapping catchments for each outfall will be very time consuming, and has the potential to be expensive with a low level of accuracy. EPA should consider that catchment mapping may not be necessary in all circumstances. For example, if outfall inspections yield a clean result, the outfall should be exempt from the catchment mapping requirement. EPA should revise the permit to allow municipalities to map the catchments as they are being inspected, or as needed.

- *System Vulnerability Factors:* The permit requires that municipalities develop a written systematic procedure for catchment investigation that includes detailed methodology and procedures to isolate and confirm sources of IDDE. The permit provides a series of vulnerability factors which are intended to identify catchments with a high potential for illicit connections. Many of the system vulnerability factors are too all-encompassing, and would include all of the catch basins in a municipality. In particular the factors that state *"Areas formerly served by sewers"* and *"Any sanitary sewer and storm drain infrastructure that is greater than 40 years old"* would encompass almost 100% of the sanitary sewers in many municipalities. EPA should eliminate these factors.

- *Reporting*: The permit states that municipalities need to report the volume or mass of material removed from each catch basin draining to water quality limited waters and the total volume or mass of material removed from all catch basins. This task will significantly increase the cost of catch basin cleaning for municipalities and is not necessarily a wise use of the limited resources available to municipalities. The tracking of volume and/or mass should be eliminated.

- *Wet weather monitoring*: Municipalities must conduct wet weather monitoring during the spring at designated outfalls, in order to identify illicit discharges that may activate or become evident during wet weather. This has the potential to be extremely costly for municipalities, with a low potential for benefits. Municipalities should be able to focus on removing dry weather discharges, which would indicate the most severe problems. Wet weather monitoring should not be required under the permit. Rather, it should be considered an optional BMP for compliance with Bacteria and Pathogen TMDLs.

Stormwater Management in New Development and Redevelopment (2.3.6)

This section of the permit requires municipalities to develop, implement, and enforce a program to address post-construction stormwater runoff from all new development and redevelopment projects that disturb one or more acres. There are two particularly problematic components of this requirement.

First, as currently written, roadway reconstruction projects greater than one acre will be required to provide storage and/or treatment for the first inch of stormwater runoff. This type of infiltration and treatment would likely be impossible for a linear project, and would be crippling to local road budgets. EPA should revise the permit to clarify that linear projects are exempt from this requirement.

Second, the permit requires that stormwater management systems on new and re-developed sites be designed to either: retain the first one (1) inch of runoff from all impervious surfaces on site, or provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration on the first one (1) inch of runoff from all impervious surfaces on site.

Unfortunately, there is a discrepancy between the Massachusetts Stormwater Handbook and the requirements as outlined in this section: the Massachusetts Stormwater Handbook has variable infiltration requirements depending on soil type and site condition. The 1-inch requirement as outlined in the draft permit is particularly problematic for redevelopment sites. Many redevelopment sites are old, abandoned mill sites, which are constrained by site conditions and/or soil type. Municipalities are concerned that implementation of the 1-inch rule would render many of these properties undevelopable. As a result, developers would seek new land to develop as opposed to redeveloping a parcel. With the 1-inch requirement inadvertently encouraging new development, EPA should work with DEP to eliminate any discrepancy between standards.

PROGRAM EVALUATING RECORD KEEPING AND REPORTING

The demands of the new draft permit will significantly increase the level of reporting and record keeping that will be required, compared to the current 2003 permit. These additional demands will not only place a substantial and unfair financial burden on cities and towns but will also require a significant increase in municipal staff time and resources necessary to manage the new permit conditions.

Under the current permit, a significant amount of time and record keeping is required over the course of a year to make certain that all conditions of the permit are being met. The results of those efforts are documented in the annual report which typically ends up being about twenty pages in length for the average-sized community. The bulk of information included in the annual report is dedicated to a self-assessment and a summary of how the municipality is complying and will continue to comply with the permit's minimum control measures. The new permit will not only continue to require the current 2003 permit reporting and record keeping standards but will also require the preparation of extensive supporting documentation for inclusion in the annual report in order to demonstrate permit compliance. These additional requirements are expected to more than triple staff efforts to manage the permit over the course of each

permit year, and the resulting annual reports are expected to be more than five to ten times the size of current annual reports. In order to ease the proposed reporting and record keeping burden, it is recommended that EPA consider the following recommendations and improvements to the current draft permit:

- Provide a standardized and easy to use template that would be utilized to prepare annual reports. The Fact Sheet indicates that EPA is currently developing a suggested annual report template that will have pre-populated information to help ease the reporting burden. A reporting format similar to the current reporting format would be practical, since municipalities have become very familiar with this format, and introducing the option of having the template pre-populate information would also be helpful and appreciated.

- Reduce or eliminate the need to include extensive supporting documents with annual reports. It should be adequate for municipalities to summarize and confirm compliance within each report without the need to provide extensive back-up materials.

- Cities and towns should be given the option to electronically submit their annual reports rather than mailing or hand delivering a hard copy. The Fact Sheet does indicate that it will be possible to submit annual reports via email, however the draft permit only provides EPA's and MassDEP's physical mailing addresses where reports will need to be submitted. The draft permit should include information on electronic submissions.

- Provide guidance documents, to help municipalities fully understand and meet the increased reporting and record keeping requirements of the new permit, and to allow communities to better understand EPA's permit expectations. The current draft permit is almost three hundred pages long with the nine appendices, and the supporting Fact Sheet with attachments is one hundred and fifty pages long. The combined volume of information between the two is not only overwhelming but also confusing and difficult to fully interpret. Helpful documents that would provide better guidance and direction for municipalities include: a summary table of major changes between the current and draft permits (this was provided for the previous draft permit), a simplified summary of permit requirements (this was also provided for the previous draft permit), permit checklists, standardize reporting and record keeping templates,

examples of completed forms and reports that show level of detail expected, FAQ sheets, etc.

- Each annual report is required to estimate the annual increase or decrease in impervious area and directly connected impervious areas. This task would be much more manageable and cost effective for municipalities if it were required every five years, rather than recalculating these areas on an annual basis. Most cities and towns use aerial imagery and GIS to calculate and track impervious cover, which would be extremely expensive if required every year. The expected level of accuracy for the change in impervious area should also be specified in the draft permit.

Funding & Additional Assistance

As drafted, EPA estimates the cost to meet the requirements associated with implementation of the six minimum control measures to be between $78,000 and $829,000 per year averaged over the permit term. This does not include compliance with any additional parts of the permit, including the water quality requirements.

Municipalities will have a very difficult time funding this work. Funding mechanisms should be suggested and provided by EPA, so that municipalities can meet the terms of the permit effectively and efficiently. EPA should also provide assistance with educating local municipal managers, administrators, and boards regarding the permit terms. This education will be crucial to permit implementation at the local level. It is recommended that EPA hold a series of meetings for municipal administrators and policy boards, so they understand the components and implications of the permit.

Thank you for considering our comments. Should you have any questions or need clarification, please feel free to contact me directly at (978) 454-8021, ext. 120.

Sincerely,

Beverly Woods

Beverly Woods
Executive Director

cc: NMSC Advisory Board
NMCOG Councilors

TOWN OF NORTHBOROUGH ENGINEERING DEPARTMENT
Town Hall Offices • 63 Main Street • Northborough, MA 01532 • 508-393-5015• 508-393-6996 Fax

Newton Tedder
US EPA Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

February 27, 2015

Sent via email to Tedder.Newton@epa.gov on February 27, 2015

RE: Comments on the 2014 Draft Massachusetts MS4 Permit

Dear Mr. Tedder;

The Town of Northborough Engineering Department has reviewed the Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Draft General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts. We thank you for the opportunity to provide comments.

The Town of Northborough is a rural community, which is located 10 miles northeast of Worcester and 30 miles west of Boston. The Town has a total area of 18.76 square miles, one third of which is protected open space. The Town also contains 79 miles of roadway along with portions of Massachusetts State Routes 9, 20 and Interstate 290, Interstate 290 connects Interstate 495 with Worcester. Northborough, like many of the cities and towns in Massachusetts is struggling with insufficient funds and manpower to accomplish all of the tasks associated with municipal government while providing a desirable place to live for its' 14,000 residents. The Public Works Department is significantly is currently under staffed in comparison to other communities with similar area and population.

Northborough is one of the 28 members of the Central Massachusetts Regional Stormwater Coalition (CMRSWC) and is a regulated community under the United States Environmental Protection Agency's (the Agency's) 2003 NPDES Phase II Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit. We have provided a letter of support for the Coalition's comments submitted by Spencer's Town Administrator, Adam Gaudette but would like to also provide the following comments:

1. We are supportive of proposed Permit provisions that will directly result in improved water quality, but object to those that are administrative or arbitrary, and that will not have a direct bearing on water quality.

2. We encourage the Agency to update its own guidelines about how regulated communities are expected to balance compliance with the Permit (in its final form) with the ability to afford that compliance without experiencing economic hardship.

3. We encourage the Agency to include flexibility in the final Permit with respect to the date on which the Permit in its final form will become effective in each community. Flexibility in setting the effective date will allow each town the opportunity to budget for Year 1 and Year 2 tasks, specifically, within the municipal budget cycle, which will likely be out of sync with the Permit cycle.

4. We believe that many provisions in the proposed Permit do not lend themselves to implementation over a five-year Permit term, at least in a way that is affordable for the regulated communities and that results in meaningful improvements to water quality. Instead, we propose that the Agency extend the schedule for several specific provisions, such as development and implementation of a catchment delineation, over a ten-year period. The Commonwealth of Massachusetts has in place a statutory framework that allows for such an extended timeline as a Compliance Schedule within a NPDES Permit. This compromise will comply with Clean Water Act 402(b)(1)(B) while providing flexibility for the regulated communities.

5. When describing dry weather and wet weather screening and sampling and outfall/interconnection screening, the proposed Permit frequently refers to "detectable levels of chlorine". It should be noted that chlorine is detectable in most if not all outfalls and at the perimeter of many of Massachusetts' surface water bodies using many field kits available today, and this detection limit is likely to become lower (identifying smaller and smaller concentrations of chlorine) as technology improves. Treated drinking water entering a stormwater system is the potential source the chlorine indicator is intended to highlight. However, chlorine in drinking water is highly volatile, and decomposes quickly once discharged to a surface water body and exposed to sunlight and the ambient atmosphere. If all outfall samples would demonstrate "detectable levels of chlorine", but the chlorine will degrade quickly within a water body, this parameter ceases to be useful as a screening tool. We request that the chlorine parameter either be removed from all sections discussing screening methodologies, or that a numeric threshold be established based on peer-reviewed data that can correlate a specific elevated detected chlorine concentration to a potential illicit discharge, such as a grey water connection (or the absence of elevated bacteria) or a cross-connection (in the presence of elevated bacteria).

6. We strongly encourage the Agency to engage in conversations and workshops that lead to development of a Final MS4 Permit that MassDEP is willing to sign onto. The alternative to a joint Permit, outlined by the Agency's Thelma Murphy at a meeting of the Northern Middlesex Stormwater Collaborative in Lowell, MA on December 4, 2014, would be two separate Massachusetts MS4 Permits: the current 2003 Massachusetts MS4 Permit would continue to be enforced by MassDEP, and the new Final Massachusetts MS4 Permit would be enforced by the Agency. Significant confusion would follow due to administration, operations and maintenance, and coordination duplication resulting from each of the Commonwealth's regulated communities being subject to two separate,

parallel MS4 Permits. In practice, progress toward improving water quality would likely stop as legal challenges were filed, which is not in the best interest of any party involved.

Coordination should begin as soon as possible to reach a version of the permit agreeable to both organizations and compliant with the Clean Water Act, Massachusetts' Surface Water Quality Standards, and associated supporting documentation, so that water quality improvement activities across the Commonwealth can be focused and consistent.

Please feel free to contact me at (508) 393-5015 with any questions you may have.

Sincerely,

Fred Litchfield
Town Engineer

Cc: Senator Harriette L.Chandler
Senator James B. Eldridge
Representative Harold P. Naughton
Representative Danielle W. Gregoire
Town Administrator
Northborough DPW Director

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December17, 2014

Ken Moraff, Director Office of Ecosystem Protection
USEPA
5 Post Office Square, Suite 100
Boston MA 02109-3912

David Ferris, Director
Division of Watershed Management
DEP
1 Winter St
Boston MA 02108

Dear Mr. Moraff and Mr. Ferris,

The Norton Conservation Commission has reviewed the Draft 2014 General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in MA and offers the following comments.

1. There have been many clarifications in the currently proposed 2014 Draft General Permit for MS4s since the 2011 Draft General Permit for Stormwater Discharges from MS4s in MA Interstate, Merrimack and South Coastal Watersheds. Itemizing each town in Section 2.2.1 very clearly identifies which towns are responsible for certain impairments to Commonwealth waters. This is less ambiguous than the 2011 Draft. Sharing and partnering to meet the requirements in Section 2.3.1 is also helpful to municipalities with limited financial and technical resources. And the use of standardized, commonly-used field kits greatly eases the burden of water quality testing on municipalities. The Conservation Commission applauds these positive changes.

2. Clarifying language should be added to Section 1.1, and any other applicable section, regarding MassDOT. The connection between MassDOT's requirements and a municipalities' is still ambiguous. EPA's mapping for each municipality illustrates the regulated areas but does not clearly identify those State roads for which MassDOT will be responsible. The maps imply a municipality is responsible for areas that MassDOT will cover. EPA and MassDOT should reproduce the 'NPDES Phase II Stormwater Program Automatically Designated MA4 Areas" maps to clearly illustrate MassDOT responsibility. There should be a clearly written division of responsibility for those

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watersheds contributing to an impaired water containing State roads in both the General permit for MS4s and the MassDOT's individual permit.

3. The MS4 General Permit should, at a minimum, very clearly state that MassDOT is responsible for storm water discharges on State roads throughout the Commonwealth. We understand that MassDOT is required to obtain an individual permit, but inclusion of clarifying statements in the proposed General Permit for MS4s will greatly enhance a municipalities' ability to rank watersheds, address IDDE violations, and prioritize water quality goals by avoiding any overlap with MassDOT requirements, creating a more cost and resource effective process. This will also aid municipalities in projecting costs and locally approving funding for tasks associated with this MS4 General Permit.

4. The MassDOT individual permit draft should be available for public comment and clearly noticed to all municipalities.

5. Section 1.2.1 should include the Non-traditional MS4s and provide a reference to Section 5? Similarly, Transportation Agencies should be mentioned and reference Section 6.

6. Section 1.10.2, 6th bullet, how will a municipality know if DEP authorizes a new or increased discharge? If this is something municipalities need to include in the SWMP, notification procedure to the municipality should be added to Part 2.1.2 referenced on page 8.

Sincerely,

Jennifer Carlino
Conservation Agent

CC: Keith Silver, NPDES Permit Coordinator
Michael Yunits, Town Manager
Mary Steele, Chairman Board of Selectmen
Norton Finance Committee
Southeast Regional Planning and Economic Development District (SRPEDD)
Newton Tedder, EPA, Region 1
Robert Rafferty, Environmental Partners Group
Frederick Civian, MassDEP

NASHUA RIVER WATERSHED ASSOCIATION

Protecting our water, our land, our communities

November 19, 2014

Newton Tedder, US EPA Region 1
5 Post Office Square
Suite 100, Mail Code—OEP06-4
Boston, MA 02109-3912.

Comments on EPA's Proposed New Municipal Separate Storm Sewer System (MS4) General Permit

Dear Mr. Tedder,

The Nashua River Watershed Association represents 25 communities in north central Massachusetts. Our mission is to work for clean water and open space that is beneficial to humans and wildlife, where people work together to sustain mutual economic and environmental well-being.

We are writing in support of the draft MS4 permit and the measures it would provide to ameliorate the effects of stormwater runoff to the rivers and streams in our watershed. Data collected by the NRWA's Water Monitoring Program over the past 20 years proves with incontrovertible evidence the detrimental effects of stormwater runoff. Our data routinely show bacteria concentrations exceed standards for swimming and boating after a rainstorm. NRWA advises those who wish to swim in the river to delay for at least three days following a rainstorm to allow concentrations to return to safe levels. And bacteria is only one of the myriad of pollutants making their way into our rivers and streams.

NRWA supports the requirement to address illicit connections to storm drains. The NRWA has worked closely with the cities of Fitchburg and Leominster to determine the sources of bacteria in storm drains. These efforts have led to the removal of a few poor connections, but work needs to continue to ensure improvements in water quality.

592 Main Street, Groton, MA 01450-1230 p 978.448.0299 f 978.448.0941 www.nashuariverwatershed.org

The proposed MS4 general permit would result in reductions in stormwater runoff, and in turn result in marked improvement to water quality. NRWA understands municipalities are concerned about the cost of the permit requirements. Regional stormwater coalitions, such as the Central Massachusetts Regional Stormwater Coalition representing approximately 30 towns, can help to offset costs by sharing resources. Watershed associations, including NRWA, can work with towns to reduce costs. Establishment of a stormwater utility, while not ideal for every town, would help to cover the cost of stormwater management. Finally, private development has never before been required to contribute to the cost of maintaining storm drainage systems. Municipalities will benefit from the requirement that new developments and redeveloped properties over an acre contribute to the cost of stormwater management by infiltrating the first one inch of runoff from their properties.

NRWA urges the EPA to finalize the permit without delay.

Thank you for the opportunity to comment.

Sincerely,

Elizabeth Ainsley Campbell
Executive Director

Martha Snow Morgan
Water Programs Director

Submitted & Hearing on 11/19/14

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ORAL TESTIMONY
EPA Draft Massachusetts MS4 General Permit
November 19, 2014

Good afternoon, my name is Alison Field-Juma, Executive Director of OARS, the watershed organization for the Assabet, Sudbury and Concord Rivers (Concord Basin). We have been running an EPA-certified quality assured water quality monitoring program for 22 years. Our organization is dedicated to restoring these three rivers to their Class B water quality—fishable and swimmable. Currently stormwater is a major source of impairment and the proposed MS4 permit will go a long way in enabling us and the communities in this 400-square mile watershed to meet this goal.

Stormwater has an unrelenting impact on our streams, ponds and rivers. Unless we take action now, this impact will only get worse with the increasing intensity of precipitation already being experienced and even more anticipated with climate disruption. Increasing intensity exacerbates runoff pollution and decreases infiltration of stormwater. The resulting loss of baseflow coupled with more frequent droughts and higher temperatures will stress our water bodies further. The draft MS4 permit is a critical tool to decrease stormwater contamination, recharge stormwater, improve infrastructure investment planning, and educate the public so that our surface waters continue to be major public assets. Reducing water pollution will benefit every resident of the state and is well worth the investment.

We are pleased that the EPA has developed a permit that will result in significantly reduce water pollution, while giving municipalities extra time and flexibility to make the needed investments. This is a long-term problem and long-term solutions take time and creativity to develop and put in place. But it is also an urgent problem and we ask EPA to work quickly in response to comments and complete a final permit at the earliest possible date.

Today I will highlight a few key requirements that the draft MS4 permit needs in order to be effective.

1) Illicit connections to storm drains are a serious problem. Requirements to prioritize, investigate and eliminate illicit connections will reduce dangerous pathogen levels and help restore designated uses such as swimming and boating. Right now we are struggling to deal with an illicit discharge into the Wild & Scenic section of the Assabet River.
2) All new development and redevelopment over an acre should infiltrate the first inch of runoff (the most polluted runoff), or provide an equal measure of pollutant reduction. This will ensure that ever more large developments use modern stormwater management techniques, whether new or on previously developed land. It is important that developments not be able to avoid this requirement by having fragmented parcels that fall under the threshold. This requirement will reduce the financial burden on towns by making private parties who use the public storm systems responsible for their discharges;
3) Towns discharging to water bodies with salt problems should minimize road and parking lot salt use to help improve habitat and restore fish diversity. We are glad that this important pollution problem will finally be addressed;
4) Where stormwater runoff causes or contributes to violations of state water quality standards extra measures should be taken to control individual pollutants (e.g., bacteria, nutrients, solids, salt, metals, oil and grease). This is an effective way to target the most serious water pollution problems in individual waterways;
5) Municipal public outreach campaigns should target businesses, institutions and industries—not just residents. These entities have a large role in pollution and need to change their behavior at least as much as residents;
6) Greater public access and opportunities to comment on towns' on-going efforts to comply with the MS4 permit is important to increase public support for increased municipal stormwater management and investment.

Thank you for proposing these significant improvements in the MS4 General Permit and for this opportunity to speak. We will be submitting more extensive written comments.

OARS

FOR THE ASSABET SUDBURY & CONCORD RIVERS

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February 27, 2015

Newton Tedder, Physical Scientist
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Mail Code—OEP06-4
Boston, MA 02109-3912

Via Email: Tedder.Newton@epa.gov

Re: Comments on Draft Massachusetts Small MS4 General Permit

Dear Mr. Tedder,

Thank you for the opportunity to comment on the draft small MS4 General Permit. OARS is the watershed organization for the Assabet, Sudbury and Concord River watersheds, which are part of the Merrimack watershed. The Concord River, of which the Assabet and Sudbury rivers are tributaries, is the public drinking water supply of the town of Billerica. All three rivers have impaired waters, influence by both wastewater and stormwater discharges, and there are many lakes and ponds with water quality problems. Several municipalities have local ponds as part of their public water supply system.

OARS' EPA-approved water quality monitoring program has tracked changes in water quality in the rivers and tributaries since 1992. Our organization is dedicated to restoring these three rivers to their Class B water quality—fishable and swimmable. Currently stormwater is a major source of impairment and the proposed MS4 permit will go a long way in enabling us and the communities in this 400-square mile watershed to meet this goal. As municipalities complete major investments in reducing pollution entering our rivers from wastewater treatment plants, stormwater is increasingly the major source of pollution.

OAR believes that this Draft General Permit, with a few modifications, will serve to protect and restore the health of the water resources of the Merrimack watershed while recognizing the constraints facing municipalities. It is builds upon the 2003 MS4 General Permit, *significantly* strengthening those areas where increased attention and action is needed. We urge EPA to issue it this year without further delay. OARS strongly supports the detailed and important points made by the Mass. Rivers Alliance and Mass. Audubon (particularly regarding the use of low impact development techniques) in their comment letters regarding this permit, and we will not repeat them here.

We would, however, like to emphasize a few key points.

1) Illicit connections to storm drains are a serious problem. Requirements to prioritize, investigate and eliminate illicit connections will reduce dangerous pathogen levels and help restore designated uses such as swimming and boating. OARS strongly supports the revised IDDE methodology in the draft permit. Permits should also include a date for the elimination of the illicit connections that have been identified. Right now we are struggling to deal with an

illicit discharge into the Wild & Scenic section of the Assabet River. Proactive municipal governments are far better at dealing with this problem than under-funded state agencies who can only get involved via enforcement after the problem has been located—which may not be for years. It is not only illicit connections, however, that are a source of pathogen pollution. Sheet flow runoff that enters MS4s is also a source; this is addressed in part by #2, infiltrating the first inch of rainfall for all new and redevelopment. The Neponset River Watershed Association has proposed language to this effect in their comment letter, which we support.

2) All new development *and* redevelopment over *half an acre* should infiltrate at least the first inch of runoff since this is the most polluted runoff, or provide an equal measure of pollutant reduction. This should apply to the entire site so that developers evaluate the infiltration opportunities throughout a site and not just that portion being redeveloped. This will ensure that ever more large developments use modern stormwater management techniques, whether new or on previously developed land. It is important that developments not be able to avoid this requirement by having fragmented parcels that fall under the threshold. We recommend that a half-acre threshold be used due to the cumulative effects of stormwater runoff in urbanized areas, which would otherwise have no attenuation at all unless they were in wetlands resource areas. Because the eastern part of the state is so highly developed already, we strongly support the inclusion of redevelopment in this provision. This requirement will reduce the financial burden on towns by making private parties who use the public storm systems responsible for their discharges.

3) Cost. We understand our communities are concerned about the cost of stormwater management, but there are several ways towns can take the initiative to defray costs. Establishing stormwater utilities, requiring that even small new commercial developments which use public storm drains minimize their own stormwater pollution, and working together with other towns and watershed associations to reduce costs are all useful approaches. For example, in 2005 the town of Westborough put in place a cost-effective stormwater infrastructure maintenance reporting program for over 260 private industrial, commercial and high-density residential sites. These sites are inspected annually to ensure that the structures are being effectively maintained and that owners are reporting accurately. A program like this reduces the financial burden on towns by making private parties who have stormwater infrastructure or use the public storm systems responsible for their discharges. We support the Charles River Watershed Association's suggestion of "trading program" or off-site stormwater management compliance options where on-site opportunities are prohibitively expensive or impossible.

4) Salt. Towns discharging to water bodies should minimize road and parking lot salt use to help improve habitat and restore fish diversity. This could be done through good housekeeping and tracking/reporting use. This should be done whether or not the water body is considered "impaired" for chloride. We are glad that this important pollution problem will finally be addressed.

5) Individual pollutants. Where stormwater runoff causes or contributes to violations of state water quality standards extra measures should be taken to control individual pollutants (e.g., bacteria, nutrients, solids, salt, metals, oil and grease). This is an effective way to target the most serious water pollution problems in individual waterways. We support allowing rebuttal of the presumption that discharges contain specific pollutants by presenting evidence that the target pollutant is not present.

6) Municipal public outreach. Campaigns should target businesses, institutions and industries—not just residents. These entities have a large role in pollution and need to change their behavior at least as much as residents.

7) Greater public access and opportunities to comment on towns' on-going efforts to comply with the MS4 permit is important to increase public support for increased municipal stormwater management and investment. Stormwater Management Plans should be made readily available to the public on-line and in public libraries.

8) Compliance schedules. We support the Charles River Watershed Association's point that the Charles River TMDL compliance should be within ten years, with the milestones that they propose. It is entirely reasonable to expect compliance within a decade if work is started now.

9) Street sweeping one per year is completely inadequate. Municipalities should prioritize parts of their communities for more frequent street sweeping (at least twice per year). High-efficiency vacuum sweeping should be encouraged to remove nutrient-rich particulate pollutants. It is also necessary for permeable asphalt paving. Several communities currently collectively purchase such equipment for cost savings.

We appreciate all the work that EPA staff and others have put in to making this draft permit as effective and responsive to the Commonwealth's needs as possible. We urge all due speed in issuing this permit which has been delayed for far too long so that the effects can begin to be seen. With the increasingly intense precipitation events that we are observing and that are predicted, this becomes more urgent than ever.

Yours sincerely,

Alison Field-Juma,
Executive Director

COMMITMENT & INTEGRITY
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Via Electronic Mail and US Mail

~~December 22, 2014~~December 24, 2014

Newton Tedder
USEPA Region 1
5 Post Office Square- Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

Re: Comments on Draft MS4 General Permit for Massachusetts

Dear Mr. Tedder:

I would like to submit the following comments on the draft "General Permits For Stormwater Discharges From Small Municipal Separate Storm Sewer Systems in Massachusetts" and Appendices F and H (public comment period September 30- December 29, 2014). The comments will be referenced by permit section where appropriate.

Section 1.7.1.: in what form will USEPA provide written authorization- via certified U.S. Mail or by an email?

Commented [CC1]: Should this be a ?

Section 1.7.3.: the NOI should be required to be submitted to MassDEP only if MassDEP jointly issues the permit; the agency noted at the public meeting that it would decide whether to be a co-issuer of the permit only after reviewing public comments submitted during the comment period.

Section 1.10.: the posting of the Storm Water Management Plan at a website operated by the permittee should be mandatory to encourage public involvement in the process.

Section 1.10.2.: the permit requires that the SWMP (to be submitted in 1 year) shall contain "listing of all interconnected MS4s" but system wide mapping which would include detailed pipe connectivity necessary for interconnection identification is not required until the end of Year 2. We suggest requiring interconnections as a part of Section 2.2.4.6 and not a part of the SWMP submission.

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Section 1.10.3.: the extended deadlines for some of the permit elements for new permittees (those not part of the 2003 permit) are warranted and USEPA should reach out to those communities to provide assistance in the MS4 permitting process.

Section 2.0.: the permit is based upon meeting "Maximum Extent Practicable" (MEP) goals; we encourage USEPA to provide further definition of MEP as it can be viewed differently by many people and should be defined as clearly as possible.

Section 2.1.2.: the "Increased Discharges" provision appears to require authorization for each regulated community to obtain authorization of increased discharges from MassDEP. It~~I~~ is not clear what this "authorization" will require. Furthermore, as written this provision would essentially end any new construction within impaired watersheds (Category 5 or 4b). It is not possible to develop land from forested or "natural" conditions, which does not result in increased discharge of pollutants from this newly developed land. Please consider modifying this provision to include assumptions that permittee meeting provisions of this permit will be assumed to meet antidegradation provisions through pollutant load reductions across the regulated municipal area.

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Section 2.3.2.e.: the permit requires the permittee to show evidence of progress and conduct an evaluation of demonstrating progress; such self-evaluation is difficult and its merits are questionable; we suggest removing this somewhat nebulous requirement.

Section 2.3.4.4.b.: the permittee is required to identify all past SSOs over the previous 5-year period within 120 days; due to the complexity of many stormwater systems, we recommend that the time frame be extended to 180 days.

Section 2.3.4.4.c.: 24-hour oral notice to USEPA of an SSO is required; ~~what is the contact number ?~~We recommend that this provision be rewritten and consistent with current MassDEP requirements for SSO reporting as stated here: http://www.mass.gov/eea/agencies/massdep/service/approvals/sanitary-sewer-overflow-bypass-backup-notification.html. These procedures for reporting are well established and allow both verbal or email notification.

Section 2.3.4.5.b.: the physical labeling of all outfalls within 5 years may be problematic if access to the outfall is difficult; in addition, what is the reason for such labeling? Would labeling through a GIS map on its web site be a better way of informing the public of the outfall designation?

Section 2.3.4.7.c.iii: the assessment and priority ranking of all catchment areas in one year is too brief a time period and as catchment delineation requires mapping, this provision is inconsistent with mapping requirements~~; mapping is the first step and it is~~, which are required within ~~tw oone~~ years; it is recommended that the ranking and prioritization be completed within ~~three2~~ years of the effective permit date.

Commented [ZH2]: Two years right?

Section 2.3.4.7.e.: wet weather sampling is required if only one "vulnerability factor" is triggered; the list of vulnerability factors is extensive and it appears almost any stormwater system would have at least one factor thus requiring all outfalls to be sampled for a wet weather event; past discussions have readily questioned the usefulness of a one-time random wet weather sampling; it is recommended that wet weather sampling be conducted only in truly priority catchment areas.

~~*Section 2.3.5: how do the construction control requirements relate to street construction and re-paving ?; the linear nature of such activities makes controls difficult and makes the requirements in Section 2.3.6 for infiltration impractical.*~~

Commented [ZH3]: I'm less concerned with construction provisions for linear projects. I think we cover this in the next section and could remove this one.

Section 2.3.6.: Please define redevelopment in the permit definitions. ~~t~~The ~~infiltration~~ requirement to retain the first one (1) inch of runoff for new or re-developed areas is a laudable goal but the requirement to have pollutant removal equivalent to that of a bio-filtration system should be removed; a "one size fits all" ~~infiltration~~ removal requirement for pollutant removal is too restrictive; we assume USEPA means that "retain" is equivalent to infiltration of the first one inch of runoff- please clarify; the "MEP" principle should be applied here for removal of individual pollutants; infiltration in re-development areas may be limited by site characteristics and the "MEP principle" should again be applied here; also road reclamation and re-surfacing does not fit in the one inch recharge scenario; for a roadway with greater than one acre of disturbance, meeting the infiltration goals does not seem practical; better definition of the requirements for road work should be included possibly in a new appendix; lateral projects do not fit cleanly into the post-construction arena; we request that USEPA provide a clear definition of redevelopment and disturbance as it relates to road projects.

Commented [ZH4]: I don't see specific infiltration requirements?

Section 2.3.6.d.iii.: inventory all permittee owned properties for possible recharge areas is a very time consuming activity for large municipalities with numerous parcels of municipally owned properties; we

suggest allowing the permittee to select five priority sites to evaluate; this likely will result in a better assessment of viable sites.

Section 2.3.7.b.: we strongly suggest that the one comprehensive SWPPP be allowed for all municipal operations, that requiring an individual SWPPP for each site is repetitive, and not a good use of resources; one comprehensive SWPPP can have numerous elements that would apply to all municipal sites.

Section 5 (and fact sheet): the discussion of what entities are included in the "Non-Traditional" MS4's is very limited and does not provide good direction to various federal and state facilities to determine if they are required to be in the program; reviewing the listing of "Non-Traditional" MS4s on the web site clearly shows many sites are not identified; it would be prudent for USEPA to identify and specify all the "Non-Traditional" MS4s which should be in the program as they did by listing all the municipal MS4s which required coverage or were eligible for a waiver; USEPA should actively notify those entities which they consider to be part of the permit universe; entities such as regional school districts and public colleges and universities are not clearly identified.

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~~*Section 5 (and fact sheet)*: the discussion of what entities are included in the "Non-Traditional" MS4's is very limited and does not provide good direction to various federal and state facilities to determine if they are required to be in the program; reviewing the listing of "Non-Traditional" MS4s on the web site clearly shows many sites are not identified; USEPA should actively notify those entities which they consider to be part of the permit universe; entities such as regional school districts and public colleges and universities are not clearly identified.~~

Commented [PH5]: Delete this paragraph

Appendix F: we recognize the need for an enhance effort for stormwater controls in waters which are impaired and subject to an approved TMDL; however, we note that the requirements, particularly related to the Charles River phosphorus TMDL seem extremely complicated, confusing and likely impossible to track; we strongly urge USEPA to review the phosphorus reduction requirements, deadlines and reporting elements; a strong effort should be made to streamline the goals and make the process clearer to those involved; as outlined, it does not seems to be manageable.

Appendix F, page 14: note that the reference to F-6 should be F-8.

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Appendix H-section I.2: the element to demonstrate that an outfall has no nitrogen would require at least 30 discrete sampling events over a 2-3 year period; such an effort seems beyond practical efforts and should be removed from~~or~~ the appendix.

I welcome the opportunity to discuss these comments with you and would like to take an opportunity to credit USEPA with undertaking a very complicated process in a very open and professional manner.

Sincerely,

WOODARD & CURRAN

Paul M. Hogan
Senior Consultant

cc: Thelma Murphy, USEPA
Frederick Civian, MassDEP-Boston

TOWN OF PAXTON
Carol L. Riches
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criches@townofpaxton.net

February 26, 2015

Mr. Newton Tedder
US EPA Region 1
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Mail Code OEP06-4
Boston, MA 02109-3912

RE: Comments on the 2014 Draft Massachusetts MS4 Permit

Dear Mr. Tedder,

I am writing on behalf of the Town of Paxton to bring attention to the impact the new draft Massachusetts MS4 Permit requirements will have on small communities like Paxton. As a Wachusett Watershed town we are regulated by the Department of Conservation and Recreation (DCR) and as such regulated through the Massachusetts Watershed Protection Act.

Paxton saw the opportunity to strive towards compliance with the MS4 Permit requirements by being part of the original thirteen towns who took the initiative to form the Central Massachusetts Regional Stormwater Coalition (CMRSC). Through this CMRSC we were able to meet many of the requirements of the existing MS4 Permit; example being mapping the town's outfalls and coordinating catch basin inspections.

The CMRSC worked to improve public education and outreach one of the minimum control measures of the MS4 Permit by producing material that would help control illicit discharge and proper disposal of household products and pet waste. The new MS4 Permit requires this to be taken a step further by expecting towns to develop plans to prove the effectiveness of this educational outreach. Towns cannot devote such time and resources to creating platforms to monitor such measures and it is not the best use of our time and money.

The new MS4 Permit also proposes many new instances of data collection such as the volume of street sweeping, wet weather sampling, and catch basin cleaning; requiring manpower that Paxton and many towns do not have. We truly understand the importance of data collection but not to the extent that it becomes burdensome, expensive and serving no purpose other than being collected. We would much prefer to see efforts being put into the improvement of the water quality and not merely becoming a collection agency for EPA.

Paxton has adopted a comprehensive storm water permit that is supported and implemented by our town officials. Paxton Conservation Commission has recently hired a Conservation Agent and is

currently in the process of developing a Wetland Protection Bylaw. We are members of the Wachusett Recycling Center that promotes proper disposal of hazardous waste that could poison our water. So as a town we know the importance of clean and illicit discharge free water.

As a town, Paxton truly supports the intent of the MS4 Permit to protect our waters and prevent illicit discharges that could potentially harm our waterways. However, we do not have the money, manpower and resources to perform all the additional requirements that will be mandated by the new MS4 Permit and we look for the EPA to understand that we want do our best to comply but also ask for the understanding and cooperation of EPA.

Sincerely,

Carol L Riches
Town Administrator

TOWN OF PAXTON
Board of Selectmen
697 Pleasant Street, Paxton, MA 01612
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Julia N Pingitore, Chairman,
Peter Bogren. Jr., Vice-Chair
John F. Malone, Clerk
Town Administrator: Carol L. Riches

RECEIVED 1/20/15

January 6, 2015

TOWN OF PAXTON

Support for Central Massachusetts Regional Stormwater Coalition
Comments Addressing 2014 Draft Massachusetts MS4 Permit

The Central Massachusetts Regional Stormwater Coalition (the Coalition) represents 28 Towns in Central Massachusetts, most of which are Permittees under the United States Environmental Protection Agency's (USEPA's) Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit, and all of which take their role as stewards of the environment seriously. Coalition participants recognize and share the USEPA's goal of maintaining water quality and recognize that stormwater management is an important component in protecting the water resources of the Commonwealth of Massachusetts (and beyond).

The Coalition, as a group, has prepared comments on the 2014 Draft Massachusetts MS4 Permit published by the USEPA in the Federal Register on September 30, 2014, for submittal to the USEPA. The Town of Paxton (the Town) is a member of the Coalition.

The Town hereby reserves the following rights:

- The right to submit individual comments on the 2014 Draft Massachusetts MS4 Permit (and any and all revisions), in addition to these Coalition comments.
- The right to submit additional comments to any Response to Comments prepared by the USEPA after the close of the public comment period for the 2014 Draft Massachusetts MS4 Permit.
- The right to submit additional comments on the Final Massachusetts MS4 Permit to address any and all changes made by the USEPA subject to comments the agency receives on the 2014 Draft Massachusetts MS4 Permit.
- The right to appeal any provision of the Final Massachusetts MS4 Permit when it is issued, regardless of whether that provision has been specifically noted in these Coalition comments, in subsequent Coalition comments, or in any comments the Town submits to USEPA individually.

The Coalition and the Town hereby adopt and support by reference, in whole or in part, comments submitted by the Northern Middlesex Stormwater Collaborative, the Merrimack Valley Stormwater Collaborative, the Neponset Valley Stormwater Collaborative, the Massachusetts Municipal Association, and the Massachusetts Coalition for Water Resources Stewardship.

The Coalition has also been in communication with the Massachusetts Department of Environmental Protection for on the Department's comments on the 2014 Draft Massachusetts MS4 Permit. While not yet available to the public, we understand that many of the Department's comments will mirror the concerns of Coalition members about the administrative burden many provisions impose on municipalities without direct benefit on water quality. As such, we incorporate comments submitted by the Massachusetts Department of Environmental Protection by reference, in whole or in part.

This signature page documents the support of the Town for the comments submitted by the Coalition, with rights reserved, as noted.

TOWN OF PAXTON
By its Board of Selectmen

_____	_____
Name	Chairman
_____	_____
Name	Vice Chair
_____	_____
Name	Clerk

Dated: 1/13/2015

CITY OF PITTSFIELD

DEPARTMENT OF PUBLIC WORKS & UTILITIES, CITY HALL, 70 ALLEN STREET, PITTSFIELD, MA 01201 413-499-9330

February 27, 2015

Mr. Newton Tedder
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, Massachusetts, 02109-3912

Via E-mail: Tedder.Newton@epa.gov

RE: Draft NPDES General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts – Public Comment Letter

Dear Mr. Tedder:

We are submitting this letter in accordance with the public comment protocol for the proposed NPDES General Permit. Please know that we believe in the intent and ultimate goals of this program and indeed have realized some significant environmental improvements as a result. Our primary challenge, and, we imagine, that of most communities, is the financial obligation required to successfully implement such a program. We do not see how the requirements could be met without adding staff or incurring consulting fees. Increasing our permit fees slightly is a possibility, but will not be enough to fund the program; placing an additional tax or utility fee burden on our aging population is not only unpopular, but also perhaps impossible.

The following concerns constitute "reasonably ascertainable issues" identified on the basis of review of the draft General Permit, supporting documentation provided by EPA (including fact sheets, appendices, technical guidance and reports), and practical experience implementing the program over the preceding eleven (11) years. These are significant issues that warrant response by EPA and consideration for modifications in the final General Permit.

Minimum Control Measures / Maximum Extent Practicable Requirements

1. **MCM 3 - IDDE Investigations**: Level of effort to achieve all of the elements of the Illicit Discharge Detection and Elimination (IDDE) Program is significantly higher than currently experienced and not significantly reduced from previous drafts despite prior concerns expressed in this regard. Several specific issues include:
    a. **Catchment Prioritization:** We recognize the value of categorizing and ranking/prioritizing catchments as a means of identifying more likely pollutant sources early in the program. Protocols for ranking catchments (and continually re-evaluating rankings) require significant knowledge about storm drain and sanitary sewer system condition and characteristics, which are elements drawn from mapping and investigations that are executed after the initial prioritization is completed at the end of year 1. The methods described in the permit provide some latitude based on "existing knowledge," however, it is important that absence of specific information regarding a catchment does not default to "High" categorization or prioritization within a category. We are concerned that "unknown" conditions related to screening factors may result in a disproportionate number of catchments being categorized as Problem or High, which in turn places these catchments on a faster-tracked investigation schedule with implications for labor and costs for communities. *Proposed Modification*: Ranking and prioritization factors are highly specific, and cover a broad spectrum of infrastructure condition, land use, laboratory analytical results and development age/characteristics. We suggest simplifying the procedure and allowing communities to categorize catchments as either "excluded" or "problem" as defined in the permit, with all other catchments falling into "other" to be investigated on a prioritized basis developed through local operator knowledge. Investigations can be performed within the 10-year timeframe currently established in the permit, with documentation on investigation results provided in annual reports. For those communities that have already undertaken a prioritization exercise on

the basis of guidance provided in the 2010 Draft Permit, that ranking ought to be allowed as the basis for execution of the plan.

b. **Wet Weather Monitoring:** The Fact Sheet accompanying the general permit indicates that the revised wet weather monitoring requirements were modified to reduce the number of outfalls that would require labor intensive sampling/monitoring. However, the twelve (12) specified "System Vulnerability Factors" provided as the basis for inclusion in a wet weather monitoring program encompass a broad swath of infrastructure system characteristics and the "one or more" threshold trigger for categorizing a catchment as a wet weather monitoring candidate will capture the vast majority of outfalls in many if not most communities. This fails to provide the relief communities requested during the 2010 Draft General Permit comment period, and which the fact sheet accompanying the 2014 Draft General Permit implies has been provided. *Proposed Modification*: Wet weather screening of catchments should be conducted on the basis of observed conditions during physical investigation of catchments rather than the system vulnerability factors presented in the permit. Actual conditions as the trigger for further investigation will mitigate the low threshold ("one or more") and the breadth of the factors that, as proposed, will result in a disproportionate number of outfalls requiring wet weather screening.

c. **Catchment Investigation Procedure:** The storm drain network investigation as proposed, including the physical inspection of all key junction manholes irrespective of evidence of dry weather flow or other illicit connections at the point of outfall discharge, is new, excessive, and will fail to provide environmental benefit for the additional labor and expense required. *Proposed Modification*: Allow local MS4 operators to implement a manhole inspection methodology appropriate to the complexity of their system, to be documented in their IDDE plan, with results reported annually as required in the current permit.

d. **Catchment Investigative Procedure (2):** : EPA states, "This review shall be used to identify areas within the catchment with higher potential for illicit connections and System Vulnerability Factors that indicate a risk of sanitary or septic system inputs to the MS4 under

wet weather conditions." Septic systems are not designed to remove nutrients and may discharge nutrients to an MS4 through groundwater. Septic systems can comply with MA Title 5 (310 CMR 15.00) and still discharge nutrients. Are septic systems considered an illicit connection if they discharge nitrogen and phosphorus to groundwater? Do the Clean Water Act and this MS4 permit override MA Title 5 and therefore limit septic systems from discharging any amount of nitrogen or phosphorus indirectly to an MS4, even though they do not violate the state's Title 5 permitting program? *Proposed Modification*: EPA should set a concentration limit, consistent with other regulations that may trigger mitigation action under this permit's regulations.

2. **MCM 3 - Sanitary Sewer Overflows**: The inclusion of sanitary sewer infrastructure management or monitoring (such as reflected in Section 2.3.4.4 – Sanitary Sewer Overflows) as a component of MS4 permit compliance is a redundant requirement since communities that operate sanitary sewer systems are already regulated in this regard under existing wastewater NPDES permits. The manner in which the condition is incorporated into the MS4 permit potentially subjects communities to multiple penalties under separate permit programs in the event of an SSO excursion. *Proposed Modification*: Elimination of this requirement.

3. **Affordability; Estimated Program Cost Increases**: EPA directs MS4 owners to the 2011 "*Sustainable Stormwater Funding Evaluation*" Final Report for reference regarding anticipated program cost increases (administrative, operating and capital) under a variety of scenarios. This document, and subsequent evaluations conducted for Upper Charles River watershed communities indicates that program administrative/operational costs alone will range from double to quadruple existing expenditures. More recent updates to these figures for the communities that were the subject of EPA's detailed analysis indicate that, if anything, these estimates are under-representing the magnitude of cost increases. Capital costs to comply with the TMDL requirements embedded in the permit are estimated in the tens of millions of dollars. The enormous gains in water quality under the Clean

Water Act in the first two decades after passage were achieved through a locally affordable program aimed at primarily wastewater-related point source discharges, and underwritten by state and federal funding equivalent in many cases to 90% of the program capital cost. Stormwater-related pollutant contributions to receiving water bodies are much more difficult to control and will achieve an incremental water quality improvement compared to the wastewater discharges that were the target of initial infrastructure investments. It is inconceivable that the estimated costs of this MS4 program can be affordably sustained by a limited number of property owners within communities subject to the most stringent pollutant reductions. Water quality improvements have local, state and national benefits. A program that EPA and other environmental organizations (regulatory, advocacy/non-profit or commercial) recognize as this important should have some kind of legislative or Congressional support that provides adequate funding to promote programs that can achieve water quality improvements in a more equitable and financially sustainable manner.

4. **Regional or Alternative Implementation Opportunities**: Many of the sustainable funding alternatives explored in the 2011 "*Sustainable Stormwater Funding Evaluation*" Final Report refer to opportunities for working with designated dischargers (DD) in some capacity. The Residual Designation Authority (RDA) Draft Permit has not progressed in some time, and there is little information available as to the likelihood of this permit ever becoming final. In addition, under current conditions, it applies to a very small number of communities (Bellingham, Franklin and Milford). Private properties are a major contributor of pollutants to MS4 discharges; however, this RDA mechanism is an unwieldy approach to incorporating private activity into pollutant control. Without passage, however, private property owners have no incentive to collaborate with local authorities regarding operation of sites that were designed and constructed in accordance with local stormwater regulations in place at the time of development. It is unrealistic to include any of the funding scenarios that include cooperation or collaboration with a group of designated dischargers that do not exist today, are unlikely to be designated in the near future, and are unlikely to

voluntarily engage in a complex and costly program without measurable benefit to them directly.

5. **Affordability; Integrated Planning (IP):** The water quality protection objectives of the NPDES stormwater and wastewater programs are recognized and supported by the City of Pittsfield. However, inclusion of an increasing number of the sanitary sewer management elements into the MS4 permit program suggests that EPA is migrating towards an integrated planning model as presented in your "Integrated Municipal Stormwater and Wastewater Planning Approach Framework." As provided for in the conditions of this draft permit, however, the effect is to import compliance conditions suitable for wastewater management programs while failing to provide permit relief or incentives to the regulated community for employing an integrated management approach to community water resource assets, including stormwater management infrastructure. The result is the equivalent of "double jeopardy" under dual permits without schedule, affordability or reporting relief. *Proposed Modification*: EPA should integrate an affordability assessment component into the Permit that will allow communities to determine the extent to which they and their constituents can afford to implement Clean Water Act requirements associated with both storm and sanitary sewer permit obligations, including operational and capital costs. If EPA is committed to the IP approach, general permits such as this should be explicitly incorporating elements of the framework on an iterative basis (i.e. every term renewal moving closer to the ideal). Ultimately, a model of risk-based decision making relative to infrastructure investments can recognize greater water quality benefit for the dollars spent without the current regulatory liability associated with multiple permits addressing water quality through different program frameworks.

6. **Definitions – Redevelopment**: The term "redevelopment" is nowhere defined in the permit or appendices. Given that EPA is requiring "redevelopment" projects to meet the new development design guidelines for stormwater management (and particularly in reference to the one-inch retention/treatment provision), it is important to know what constitutes redevelopment versus rehabilitation, restoration, maintenance or repair

projects. This is particularly of concern as it relates to transportation-related projects such as pavement programs (full depth reconstruction, pavement overlays, chipping, etc.), and the possibility that routine maintenance could trigger requirements for significant drainage improvements that would not otherwise be appropriate or necessary for operational purposes. *Proposed Modification*: Define redevelopment to exclude roadway projects that do not add significant new paved acreage.

7. **MCM 5 – Roadway Projects:** The revised Stormwater Management in New Development and Redevelopment MCM presents several challenges. Primary among these is the requirement to retain the first inch of runoff (or treat the equivalent pollutant load) from all impervious areas on site. This requirement will pose a significant challenge as it relates to roadway projects (either new or redeveloped) and will contribute to significant escalation of costs associated with drainage and/or treatment from roadways. *Proposed Modification*: Include an exemption or waiver from this permit condition for roadway projects.

8. **MCM 5 - BMP Sizing:** Language in this permit provision states that "all impervious area" is subject to the capture, infiltration or treatment requirements and specifically that flow volumes [for retention or treatment] are calculated based on "multiplying the area of impervious area on site by one inch." We seek clarification that BMPs on site need not be sized to reduce "calculated" pollutant loads that theoretically are contained in flow from disconnected impervious area on-site that is not otherwise directed to the MS4.

9. **MCM 5 – EPA and DEP Consistency:** With the encouragement of the Massachusetts Department of Environmental Protection (MassDEP) and EPA, many communities have adopted the Massachusetts Stormwater Management Standards either directly or by reference into existing municipal design standards and by-laws. This permit represents a divergence from the MassDEP stormwater standards and complicates compliance for regulated entities. We request EPA and MassDEP develop a consistent set of development standards that ensures that exemptions or waivers provided

under federal NPDES permits will ensure similar treatment under MassDEP surface water discharge regulations.

10. **MCM 5 - 1-inch Standard:** EPA has stipulated that the one-inch retention/treatment standard applies to both new and re-development projects. As noted above, this is not consistent with the MassDEP stormwater management standards and creates further confusion relative to application of development standards. See our comment above regarding joint approach.

11. **MCM 5 – Street Design Guidelines:** At Section 2.3.6 (b), the MCM requires development of a report assessing current street design and parking lot guidelines that affect creation of impervious cover to be due within three (3) years of the permit effective date. The intent is to identify opportunities to support low impact design options to be incorporated into local regulation and standards. Under "smartgrowth" principles with comparable environmental impact mitigation interests, the federal government, state and local agencies have promoted a "complete streets" approach to invite multi-modal use of roadways that frequently results in greater impervious area. Given the sometimes contradictory nature of these programs, the regulated community would like assurances that the federal and state government are collaborating to provide adequate guidance that achieves prioritized environmental objectives without potential penalty (either in terms of punitive fines or loss of grant/loan funding, etc.) to the regulated community. *Proposed Modification:* We propose modification of the permit term within this section to provide greater latitude to MS4 owners regarding implementation of recommendations resulting from the report. Where there are competing interests relative to "environmental street design" the MS4 owner should be allowed to make local decisions that are in its best interest.

12. **MCM 6 – Good Housekeeping Affordability Assumptions:** The Good Housekeeping MCM as proposed will be extremely expensive for most communities to implement. The accompanying permit fact sheet states that while this is the most costly program area for most communities, these are existing functions (e.g. catch basin cleaning and street sweeping) and the costs

associated with compliance under the permit will be incremental, or less, such that "these costs are likely not above and beyond what the permittee likely spends on maintenance of permittee owned property currently." The cost estimate provided fails to appreciate that most communities do not currently collect the data, analyze findings, document and report activities in the manner now required under this permit. For communities that contract these services to outside vendors, procurement of new contracts to include documentation required will undoubtedly impact bids by increasing costs significantly. It is expected that data collection from catch basin sump cleaning efforts will almost double the time per catch basin required. It is reasonable to anticipate, therefore that catch basin cleaning costs will double, regardless of whether the activity is out-sourced or done in house. Program affordability, particularly in light of requirements under Water Quality-Based Effluent Limits (WQBEL's), continues to diminish and timeframes within the permit further compromise a community's ability to meet permit requirements under the MCM's as presented in this draft permit. *Proposed Modification:* Again, we request that EPA include an affordability component into the MS4 Permit, comparable to that provided under CSO Long Term Control Plan programs.

Water Quality Based Effluent Limitations (WQBELs)

13. **Source Reports and controls**: With this MS4 draft some Municipalities are required to submit source reports and control plans with enhanced measures for WQBELs. The cost of producing the reports and the control measures are high when coupled with the other requirements of the draft NPDES permit. Program affordability is again called into question. Furthermore, the program is experimental and the likely effectiveness of it is unknown.

14. **Sampling:** Communities can perform a sampling plan to show that specific outfalls are not contributing nutrients or bacteria, but the sampling protocol outlined in the draft permit is onerous and could be difficult or impossible to complete depending on precipitation events. *Proposed Modification:* Allow grab samples, and reduce the number of samples required.

15. **New Discharger Definition:** Based on the accompanying fact sheet, the definition of "new discharger" within the permit does not include expansion of an MS4's existing system within its jurisdiction. The distinction is important since increased discharges can be covered under the General Permit, but new discharges must be covered under a separate individual permit. Please confirm that the term "adjacent" or "adjacency" within the context of this definition includes any new drainage element, including an outfall, within an MS4's jurisdiction but not otherwise connected to any other component of the MS4. For instance, the town may accept a private road that includes a "self-contained" drainage system (e.g. a series of connected catch basins discharging to a discrete outfall none of which is connected to or "adjacent to" existing drainage infrastructure) without triggering a requirement to cover that segregated outfall through a separate individual permit. Public management of the streets will generally lead to better pollutant management and on that basis the permit should not dis-incentivize acceptance of private roads.

16. **Phosphorus Load Export Rates – Appropriate Use:** Regarding Appendix F and attachments, the Phosphorus Load Export Rates (PLERs) are general and approximate at best. The composite PLERs are good for screening / planning purposes or comparative purposes. They are not accurate for determining hard design of control measures. For example, they can be used to evaluate whether a proposed change in land use is expected to increase or decrease pollutant loads. But to use a PLER to conclude that the loading rate is actually X lbs/yr, or will change from Y lbs/yr to Z lbs/yr with land use or other changes, is not a recommended technical practice. Loading rates are ordinal rather than cardinal, i.e., they can tell you if one is higher than another, but not exactly how much higher one is than another. It appears that EPA assumes that over the entire Commonwealth of Massachusetts, using PLERs will represent the average condition. That may be true, but EPA is requiring that the PLERs be used to make decisions on a much smaller watershed and sub watershed scale, which is inappropriate.

17. **PLERs - Derivation:** It is not clear how the values for PLERs in the EPA documents are derived, however, a literature search shows that there is a large range of values for any given land use. For example, the PLER for medium density residential is given as 0.55 lb/ac/yr in Table 1-1 (App. F Attachment 1), but the range of PLERs for medium density residential in the scientific literature can be an order of magnitude around the value. Please provide further information regarding derivation of the PLERs since these values have significant impact on program implementation for regulated communities.

18. **PLERs – Blanket vs. Site Specific:** PLERs found in older literature generally do not reflect the presence of stormwater BMPs, low impact development (LID) planning, etc., and therefore may overestimate pollutant loads for current land uses. In addition, composite PLERs are a particular concern for communities that have previously instituted stricter local development standards for stormwater management many years ago (in some cases, decades) where assumed PLERs may be much greater than actual conditions. *Proposed Modification:* Rather than limiting appeals of assumed baseline watershed phosphorus loading to updates of land use information, allow permittees the option to develop their own alternative methodology for determining baseline phosphorus loads and reduction requirements based on more detailed data and/or site specific information.

19. **Ambiguity in Determining Contributing Drainage Area:** It is not clear in Appendix F and its pertaining attachments whether the permittee will be using the impervious area or the directly connected impervious area (DCIA) in the PLER calculations, which includes factoring in DCIA in determining PCP area. The phosphorous loads should be determined from the DCIA of a target catchment, but this is not explicitly mentioned in either Appendix F or its attachments. The only explicit mention on DCIA is in Appendix F under sections "Phosphorous Source Identification Report" and "Nitrogen Source Identification Report" which simply state that the source identification report should include the "Impervious area and DCIA for the target catchment." There is no mention of how this DCIA information needs to be used, for example, in determining either the PCP area, total development area,

impervious area (IA) for calculating phosphorous reduction credits for non-structural BMPs, or in distributing the total drainage area into impervious area for BMP load and volume calculations. In all the above instances, DCIA should be considered, rather than total impervious area. This needs to be clarified in the new permit.

20. **Determining Infiltration Rate for Structural BMPs:** Attachment 3 of Appendix F specifies identification of infiltration rate for a particular BMP when determining the design volume of a structural BMP to achieve a known phosphorous load reduction target from a contributing drainage area. However, it is not clear how the infiltration rate needs to be determined. It is stated that the infiltration rates represent the saturated hydraulic conductivity of the soils. Since saturated hydraulic conductivity of soils is a function of its hydrologic soil group, it is important to mention how this rate needs to be determined for a combination of soil types. Please provide further guidance to determine infiltration rates for an infiltration type structural BMP, such as an infiltration trench or infiltration basin.

21. **Choosing BMP Performance Curve for Multiple Combination of BMPs:** Attachment 3 of Appendix F provides several BMP performance curves for different types of structural BMPs. However, the permittee may choose a combination of BMPs to achieve a desired phosphorous load reduction. It has been noted through literature search that a combination of BMPs may be more effective in capturing larger storms, and hence will be more effective in providing desired phosphorous load reductions from these storm events. For example, if a bio-retention system is coupled with a secondary spillway to a porous pavement, it has been found from literature that this combination is effective in capturing the first 1" rain (first flush) and higher flows, respectively. In such a situation, it is not clear what BMP performance curve should be referenced and how the curve(s) need to be used by the permittee. Please provide further documentation regarding the method to determine BMP performance curves for a combination of BMPs.

Other Issues

22. **Non-Stormwater Discharges**: At public meetings during which EPA has presented material about the new permit, there has been much discussion about the classification of sump pump discharges as an allowed "non-stormwater discharge." Explicit guidance is necessary regarding local permit programs sufficient to meet documentation of determination standards relative to sump pump discharges as a class of allowed discharges.

23. **City / Town Administration Outreach**: In most communities responsibility for permit compliance resides with Public Works or similar agency officials. City or Town Mayors, Councilors, Select people and Town Managers are often not involved in program administration outside of procurement or appropriation processes for identified projects. Their lack of understanding and support to local implementing agencies has been a continuing challenge. EPA and/or DEP must increase their involvement in educating Town officials about the extent, costs, operational impacts and policy determinations incumbent on program administrators to ensure continued organizational support, particularly for funding strategies.

Thank you for your consideration of our comments.

Sincerely,

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Parker River CLEAN WATER Association

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Boston, MA 02109-3912
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Re: PRCWA Public Comments on 2014 Draft NPDES Massachusetts Small MS4 General Permit

25 February 2015

Dear Mr. Tedder:

Please welcome Parker River Clean Water Association (PRCWA) comments on the EPA's 2014 Draft NPDES Massachusetts Small Municipal Separate Stormwater Systems General Permit. PRCWA is a non-profit watershed association whose mission is for the conservation and protection of all ecosystems in the Parker River Watershed. The Parker River Watershed consists of 7 communities, all in the EPA-Region 1, -North Andover, Boxford, Groveland, Georgetown, Newbury, Rowley, and West Newbury with the contribution of Rowley River & Egypt River subwatershed to the town of Ipswich water supply.

We applaud the efforts of the EPA on the improvements on the water quality requirements and regulations, and the requirement for municipals in our watershed to better monitor and manage stormwater in the 2014 Draft MA Small MS4 General Permit. We particularly commend the efforts of the EPA to support and improve implementation, to improve public awareness of stormwater issues, and to improve design of new, and retrofit better, stormwater infrastructure to retain the first 1" inch of run-off from all impervious surfaces on one acre or more sites or provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of bioinfiltration on the first 1" of run-off from all impervious surfaces on one acre or more sites. As noted by the EPA –Region 1, polluted stormwater contributes significantly to the violation of water quality standards in MA state streams, rivers, lakes, and ocean.

PRCWA Water Quality Program has been monitoring the Parker River Watershed for the past 17 years for pathogens and nutrients. Major segments

of the Parker River Watershed rivers and streams, and Plum Island Sound have been designated with impairment for pathogens thus requiring a TMDL. Our communities in our watershed are on private septic systems with a limited amount of our community on sewer treatment systems, one of which is a regional compromised sewer system on Plum Island tied in with the Newburyport Municipal Sewer System. With climate change the watershed is faced with the additional stress of compromised aging stormwater infrastructure in our communities. **The contribution of increased depth of flood waters, the effects of subsequent erosion and pollution, the need for improvements of aging stormwater infrastructure, plus the urgent need to increase recharged to our overly stressed water withdrawal from private wells and from privately held water supply districts in our watershed, PRCWA strongly supports the promotion of the 2014 Draft of NPDES Small MA MS4 General Permit.**

PRCWA suggests the following improvement to this area of the proposed 2014 NPDES MA SMALL MS4 General Permit.

- **The stormwater bylaw requirements should apply to projects as small as a quarter or half an acre.** Urbanized, or village areas, of towns in our community have very few large developments and redevelopment projects, and projects under an acre would not be required to employ any stormwater management measures unless they are located in wetland resource areas. This will make it difficult for our towns to comply with the proposed prohibition against new and increased stormwater discharges from MS4s. (Sec. 2.3.6.a)

We urge the EPA to respond to comments and to issue the completed permit with upmost promptness.

Thank you for your consideration of Parker River Clean Water Association's comments on the 2014 Draft NPDES MA Small MS4 General Permit.

Best regards,
Yvonne Buswell, PRCWA director

CITY OF QUINCY, MASSACHUSETTS
Department of Public Works

Thomas P. Koch
Mayor

Daniel G. Raymondi
Commissioner

City of Quincy
DPW

February 27, 2015

Mr. Newton Tedder
US EPA Region 1
5 Post Office Square- Suite 100
Mail Code OEP06-4
Boston, Massachusetts 02109-3912

Re: 2014 Draft General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts

Dear Mr. Tedder:

Below please find the City of Quincy's public comments on the September 30, 2014 draft of the above referenced MS4 permit. Quincy supports the Environmental Protection Agency's (EPA) efforts to protect water quality and we have been working diligently for many years to improve our sewer and stormwater infrastructure and to implement Best Management Practices (see Attachment for fiscal year 2014 investments). Based on a detailed and thoughtful review, however, we have determined that this draft permit contains many unclear, unachievable, and unfunded mandates. We offer the following comments, together with our recommendations as to how the permit could be revised to address each comment:

1. Comment: The cost to comply with many of the permit mandates is tremendous which will necessitate significant increases in staff, equipment and professional services resulting in substantial negative financial impacts on the City, its rate-payers and its tax-payers. The five-year projection of implementation costs (beyond current expenditures) is fourteen (14) million dollars, but could be far greater if significant infrastructure improvements are needed.

In addition to the initial preparatory expenditures in the amount of $250,000 which have recently been approved by the Quincy City Council and Mayor Koch, we have estimated the average annual costs for this EPA mandate at $2.7M. Based on EPA's draft compliance

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schedule, the following table shows the program costs. The timeline assumes that the General Permit will be final in December 2015; Year 1 will fall approximately within Fiscal Year 2016, and so on.

Expected Major Program Requirements (FY16-20)	
Public Education & Outreach	$17,500 per year
Drainage System Map Updating	$15,000 twice in 5 years
Outfall Monitoring, cleaning, and inventory	$20,000 per year
Personnel Costs for Drain Crew & Compliance Officer*	$500,000 per year*
IDDE Program Field Investigations & CCTV Inspection	$60,000 per year
Additional Street Sweeping & Disposal Costs (above existing program)	$50,000 per year
Additional Catch Basin Cleaning & Disposal Costs (above existing program)	$50,000 per year
Impervious Cover Estimates and Tracking	$30,000 per year
Retrofit drain cleaning & CCTV Inspection Equipment	$600,000
Written O&M Procedures for Parks, Buildings, Vehicles/Equip and Infrastructure	$35,000
SWPPPs for City Garages, DPW, Staging Areas, etc.	$10,000 in years 1 & 2
Outfall Sampling (Dry and Wet Weather) & Laboratory Analysis	$300,000 per year
Drainage System Construction Modifications & Improvements	$1,500,000 per year**
Annual Reports and Record Keeping	$10,000 per year
Average NPDES MS4 Program Estimated Cost per year	**$2.7M annual average**

*Personnel Costs assumes a Compliance Officer (Senior Engineer), Drain Foreman, Working Foreman, 2 Special Heavy MEOs and 1 laborer plus benefits.

**Estimate uses City's $1.5M Annual I/I Construction Framework as a proxy. Actual costs for drainage system repairs, corrections of illicit discharges and connections, and construction of storm water management facilities will be based upon urgency and available funds.

Based upon the task-list cost estimates above, we estimate that the annual costs for this program to be an additional $2.7M annual average. Please note that this excludes the existing costs already in the City DPW budgets for street sweeping, catch basin cleaning, drainage system O&M, IDDE efforts, and I/I removal efforts.

Recommendation: Additional funding assistance is necessary and should be made available. Without a funding component, Quincy views this permit as additional "unfunded mandates" from the federal government. In addition, without a federal financial commitment, it will be difficult to convince local voters, rate payers, tax payers and decision makers to fund these

mandated storm water programs. It is critical for the proper implementation of this federal mandate that EPA make available a dedicated funding source for all municipalities covered by storm water permits.

2. Comment: The EPA'S draft MS4 permit contains unclear, unachievable and unfunded additional mandates that present a very significant financial burden to the City in the event that the permit is enforced in a manner consistent with the way EPA currently enforces its NPDES permits for point source discharges. The requirements for discharges to impaired waters are costly, overly burdensome, and have questionable direct impact on the improvement of water quality

The Clean Water Act contains language that allows EPA to require "limit of technology" treatment of any system which discharges into an impaired water. Since all of Quincy's drains discharge into water bodies (Neponset River, Quincy Bay, Town River) which are on the 2014 draft integrated list of impaired waters, there is the very real potential that the MS4 program could evolve to the point that Quincy is mandated to treat its storm water run-off. Since it is extremely unlikely that the receiving waters will come off the impaired waters list, the logical extension of the permit and the Clean Water Act is that storm water treatment will be required, it is just a matter of when.
In the event that "end of pipe" treatment is required, the challenges are:

- There is little to no room for treatment systems in the areas around the City's outfalls;
- There are few cost effective and technically proven storm water treatment technologies for removing the likely target pollutants which impair the receiving waters;
- As treatment units must be sized for peak discharges and storm drains have enormous peak flow rates, the cost of providing any significant treatment will be very high; and
- A fairly conservative estimate of several million dollars per outfall/drainage basin (including permitting, land acquisition, etc) implies that "end of pipe" storm water treatment in Quincy could easily be in the realm of $100 million dollars in capital spending, not including the ongoing operational expenses of the treatment units.

In the event that BMPs (rain gardens, storm water infiltration, etc.) are required throughout the City, there are guidance documents from the Mid-Atlantic region which show most storm water nutrient management tools cost $2,000 - $4,000 per year per acre, assuming no land acquisition expenses. With around 6,500 total acres generating storm water 3,500 estimated to be impervious acres served by the City drainage system, full deployment of these tools could add an additional 7 to14 million in annual storm water spending.

Regardless of the approach EPA may take (end of pipe or BMP), there is no certainty that the required upgrades would improve the receiving water quality to the point that further

unfunded mandates would not be forthcoming. As a whole, the new permit, combined with the manner in which EPA has been enforcing point discharge treatment requirements, represents a potential unlimited spending mandate on the City as long as the receiving waters remain in impaired status even if the City demonstrates that it isn't contributing to the impairment.

Furthermore, other public entities such as Braintree, Milton, Weymouth, MBTA, DCR and MA. DOT are also discharging through City drains into Quincy Bay and the Neponset River. Quincy has no control over these separate governmental bodies; however, we are solely responsible for the water quality of Quincy Bay. We get no credit for the work we do. There is no proportional responsibility. Quincy remains responsible to monitor, sample and report.

In addition, the impact of tidal backflow from impaired waters into Quincy's MS4 will require the City to make additional investments to identify potential pollutant sources that are not actually originating from our MS4. This permit mandates more work than could possibly be funded under any reasonableness standard and offers no evidence that these huge expenditures will eliminate the impairments. Even if Quincy was to implement every aspect of this permit, and future permits, our water bodies would most likely remain impaired.

This permit mandates more work than could possibly be funded under any reasonableness standard and, but offers no evidence that these huge expenditures will eliminate the impairments. There is also limited guidance as to how the City should prioritize these significant investments.

Recommendation: The EPA must provide a more defined and reasonable standard of effort for the City to comply with the requirements associated with discharges to impaired waters. This should include a way for Quincy to demonstrate that its MS4 discharges are within water quality standards. If the City can demonstrate that its MS4 discharges are within water quality standards then it should be excused from further required actions regardless of whether the receiving water remains impaired. In addition, more clarification on how MS4s are expected to prioritize investigation and removal of pollutants of concern is needed.

3. Comment: The requirements for written programs, policies, procedures, and reports do not have direct water quality benefits and should have a lower priority. Significant increases in financial and staff resources will be necessary in order to prepare and submit all of the mandated written documentation. With limited resources, the focus of the permit should be on performance, not documentation. There are over 50 phrases in the main body of the permit and many more in the appendices (and this does not include the

actual annual reporting requirements listed in Section 4.4) that require certain information be included in the Annual Report.

Recommendation: An efficiency and effectiveness review should be performed on the entire permit; preferably by an outside party who can assist the EPA in prioritizing those items where written documentation and annual reporting will provide a measurable benefit. The permit should be revised to reflect these improvements.

4. Comment: Once the permit is finalized, the City will be required to submit a Notice of Intent (NO1) to comply with the permit within 90 days. This requirement is similar to the 2003 permit; however, a significant amount of new information is required to be included in the NOI. Much of that information will not be known until the City revises its stormwater management program, which is not due until the end of the first year of the permit. It will also be difficult for the City to adequately respond in its NOI until it completes its stormwater management program assessment, which will also not be completed until the end of permit year one.

Recommendation: The NOI requirements should be revised to remove elements of the storm water management program that will be addressed during the assessment and updating of the existing program. These requirements can be included in the requirements for the written storm water management plan and/or first Annual Report.

5. Comment: Section 1.7.4. Page 5. The draft permit still does not define the responsibility for addressing comments received in response to EPA's posting of the Notice of Intent for public comment. The permit needs to state whether the City of Quincy or the EPA will be responsible for this task.

Recommendation: Since EPA is publishing the Public Notice for all MS4s and similar comments are likely to be submitted for many NOIs, it is recommended that EPA be responsible for addressing public comments.

6. Comment: Section 1.10.2. Page 8. The discussion about interconnections is not clear about whether Quincy is responsible for discharges "TO" its system or "FROM" its system. Since Quincy is not responsible for drainage mapping in abutting communities, we are unable to list the information regarding the receiving water bodies for our interconnections.

Recommendation: Clarify whether an interconnection is a discharge TO the MS4 or FROM the MS4. In addition, delete the requirement to provide information regarding receiving water bodies for interconnections in its entirety, as MS4s cannot demand the mapping from abutting communities needed to prepare this information.

7. Comment: Section 2.1.2. This requires the City to obtain authorization from MassDEP for increased discharges. It is not clear what this "authorization" will entail. This provision could threaten new construction and redevelopment within Quincy's impaired watersheds (Category 5 or 4b), because of the prohibition against new discharges to these waters unless it can be demonstrated that there is no net increase in pollutants. Without historic data, it is not possible to measure "increased discharges of pollutants" from new or redeveloped land.

Recommendation: This provision should be modified to allow increased discharges that meet water quality standards regardless of impairments. The permit should also allow compliance with anti-degradation provisions via pollutant load reductions in other areas of the same watershed (instead of prohibiting the increased discharge altogether).

8. Comment: Section 2.3.4.4. Page 26. Sanitary sewer overflows are already prohibited and regulated at both the Federal and State level under existing mechanisms governing wastewater facilities. Including SSOs in the MS4 permit results in Quincy being regulated by multiple permits for the same issue. This will cause confusion, unnecessary expenditures and potentially conflicting requirements for compliance.

Recommendation: The MS4 permit should only contain language related to SSOs potentially contributing to illicit discharges and that these potential illicit discharges should be investigated, eliminated, and documented under the IDDE Program.

9. Comment: Section 2.3.4.4b mandates that the City identify SSOs over the previous five-year period within 120 days and Section 2.3.4.4c requires a 24-hour verbal notice and a five (5) day written notice of an SSO to EPA and MassDEP. The City already reports all SSOs to the EPA and MassDEP in accordance with current MassDEP and EPA regulations, which are exactly the same as those stated in these Sections. Adding these requirements to the MS4 permit duplicates an existing effort and, therefore, is unduly and unnecessarily burdensome.

Recommendation: This section should be rewritten to simply reference, not duplicate, current EPA/MassDEP requirements for verbal and written SSO reporting.

10. Comment: 2.3.4.5. Page 26. It is unclear whether outfall/interconnection inventories completed prior to the effective date of the new permit will count toward compliance.

Recommendation: Revise this Section to allow prior inventories to count towards compliance, providing they meet the requirements of Section 2.3.4.5.

11. Comment: Section 2.3.4.7.c.i & 2.3.4.8.c.i. Pages 30 & 37. The definition of and

implementation milestones for "Problem Catchments" significantly disadvantage MS4s that have proactively undertaken outfall sampling in advance of it being required by this permit. Proactive MS4s with sampling data, especially those in urban areas, will have far more outfalls that must be designated as Problem Catchments and given only 5 years to complete IDDE. Conversely, MS4s that have made no effort to sample their outfalls will have no (or very few) Problem Catchments, but are given 5to10 years to complete IDDE. As written, the permit punishes proactive MS4s by imposing far more stringent IDDE milestones than those for MS4s that have not performed sampling.

Recommendation: The definition and implementation milestones for "Problem Catchments" need to be revised to remove this inequity.

12. Comment: Section 2.3.4.7.c.iii. Page 31. The draft permit mandates that the initial illicit discharge potential assessment and priority ranking must be completed within 1 year from the effective date. However, mapping of the MS4 infrastructure and Catchment Delineations will not be completed until 2 years from the effective date. The mapping requirement contained in the 2003 permit was limited to MS4 outfalls only and, therefore, "existing" mapping is insufficient to complete the required 2.3.4.7.c.iii assessment/ranking.

Recommendation: The required catchment assessment and ranking in 2.3.4.7.c.iii needs to align with the mapping and have a completion date of 2 years from the effective date.

13. Comment: Section 2.3.4.7.d.iv. Page 32. The limitation on when wet-weather screening should take place ("March to June") does not make sense for IDDE. Although wet-weather screening is intended to identify illicit discharges that only occur during peak flows, whether it should be performed in conjunction with high or low groundwater is determined by the System Vulnerability Factors (SVFs). For example, if the SVFs indicate structural defects and exfiltration potential, high groundwater would actually inhibit the investigation. In this case, sampling should be performed during a heavy rainfall event at low groundwater. Conversely, if the SVFs indicate capacity restrictions and SSO potential, then sampling during high groundwater would be appropriate.

Recommendation: The permit should be revised to state that wet-weather sampling should be performed during conditions appropriate for the identified SVFs for each catchment area, and provide examples similar to those above to assist MS4s in making an informed decision about when to sample.

14. Comment: Section 2.3.4.7.d.iv. Page 32. The requirements related to wet-weather monitoring are not provided in sufficient detail. Inspection must be performed during wet weather, defined as sufficient intensity to produce a discharge. However, it is not clear

whether a discharge must be observed at every outfall to achieve compliance. Does the City have to return to an outfall repeatedly until a discharge is observed, even if it was monitored during a substantial rainfall event? To require the City to mobilize staff, equipment, and laboratory services an unlimited number of times to observe flow at each outfall places is an unreasonable burden.

Recommendation: The permit should be revised to provide specific minimum storm parameters, for both time and rainfall amount. The minimum storm event should be one sufficient to anticipate discharges at all functional outfalls. The requirement for discharges to be observed at every outfall should be eliminated.

15. Comment: Section 2.3.4.7.d.v. Page 32. Based on the response from you at the MS4 Information Session on October 28, 2014, analysis for conductivity is being required as a measure of salinity. Requiring both salinity and conductivity testing for the same purpose is a waste of MS4 resources.

Recommendation: The permit should be revised to require either salinity or conductivity, but not both. In addition, the permit needs to state the applicable benchmark and required action for the chosen parameter, as is provided for other sampling parameters in Section 2.3.4.7.d.vi.

16. Comment: Section 2.3.4.7.d.v & 2.3.4.7.vi. Pages 32 & 33. The level of accuracy for each required sampling parameter is not provided. For example, at what detection level is chlorine to be considered "detectable" in Section 2.3.4.7.vi.

Recommendation: The permit must be revised to clarify the required level of accuracy for each sampling parameter.

17. Comment: Section 2.3.4.7.e. Page 34. The System Vulnerability Factor (SVF) for "any sanitary sewer and storm drain infrastructure greater than 40 years old in medium and densely developed areas" is too inclusive. In Quincy, where infrastructure is typically in excess of 40 years old, this SVF serves as a "catch all" to require wet-weather sampling in virtually all catchment areas. Infrastructure age, by itself, is not an indicator of illicit potential. For example, some of our oldest sewers are in better condition than those built 40 or more years later. It is typically other factors, such as poor structural condition, that are the source of elevated illicit potential, not solely the age of the infrastructure.

Recommendation: This SVF should be revised to include only those sewers and drains that are known to have specific concerns, not all sewers/drains older than an arbitrarily selected age.

18. Comment: Section 2.3.4.7.e. Page 33. The SVF for "crossing of storm and sanitary sewer alignments" is too inclusive. On streets with both sanitary sewers and storm drains, the likelihood that a catch basin connection crosses a sanitary sewer or a sanitary sewer service connection crosses a storm drain is extremely high. This would mean that nearly all catchments would trigger this vulnerability factor and therefore require wet weather sampling.

Recommendation: This SVF should be revised to include only those catchments that are known to have specific concerns, not all catchments where storm and sanitary sewer alignments cross.

19. Comment: Section 2.3.4.7.e. Page 34. The SVF for "any sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken or offset sanitary infrastructure...or other vulnerability factors identified through Infiltration/Inflow Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations" is too inclusive. Again, in Quincy, where infrastructure is typically in excess of 40 years old, most sewers have some defects, which again would mean that nearly all catchments would trigger this SVF and therefore require wet weather sampling. In most cases, individual sewer defects do not portend illicit connections.

Recommendation: This SVF should be revised to include only those catchments known to have specific concerns related to the sewer system, and not all catchments with sewers that have minor defects.

20. Comment: Section 2.3.4.7 f & g. Pages 35 & 36. The second paragraph of Section f contains the same requirements as Section g, except for the timeline.

Recommendation: The permit should be revised to either delete one of the paragraphs, or clarify the intended difference between the two requirements.

21. Comment: Section 2.3.4.8.c. Page 36. The draft permit requires that the IDDE Catchment Investigation Procedure be implemented in "every catchment of the MS4, even where dry weather screening does not indicate evidence of illicit discharges." If there is no evidence of any sewer input at an outfall, IDDE field investigation is a waste of resources.

Recommendation: This requirement should be changed to say that outfall screening or sampling, whichever is appropriate, should be repeated some number of times at varying times/conditions to confirm there is no sewer input. If no sewer input is confirmed during dry and wet weather screening or sampling, IDDE field investigation will not be required.

22. Comment: Section 2.3.4.8.c.i-iii. Pages 36 & 37. The milestones stated for the IDDE

effort in 2.3.4.7 are unrealistic for urban MS4s . For some MS4s with ongoing IDDE programs, it has taken many years to locate and remove illicit connections from even one catchment area, let alone 100% of catchment areas. This is especially burdensome in areas where nearly every outfall will exceed the benchmarks for at least one IDDE sampling parameter or System Vulnerability Factor. The draft permit requires IDDE to be completed for the entire MS4 within 10 years. This requirement is both cost-prohibitive and unattainable during that limited period of time.

Recommendation: The permit should be revised to allow for additional time to locate illicit discharges. It is recommended that EPA extend the timeframe for completing the Catchment Investigation Procedure in 100% of the area served by all MS4 catchments from within 10 years of the permit effective date to within 20 years of the permit effective date. The permit should also indicate that, as long as the MS4 is making reasonable efforts to locate the source of the discharge, the MS4 will be in compliance even if the source is not located within the allotted timeframe.

23. Comment: Section 2.3.6.a.ii.a. Page 40. The requirement to retain/treat the first one inch of rainfall applies to "runoff from all impervious surfaces on site." Without a definition for the term "site" (see comment below), this implies runoff from the entire parcel on which the one acre-or-more disturbance occurs. It is not reasonable or cost-feasible to require a large parcel to treat runoff from "all impervious surfaces" on that parcel when they disturb only a small portion of it. Take, for example, a large user that occupies hundreds or even thousands of acres. If it was to disturb one acre, the draft permit would require the user to retrofit its entire drainage system to retain/treat the first inch of runoff. This measure alone will have a chilling effect on economic development and job creation within our City.

Recommendation: Language in this section needs to be revised to limit the regulated area to all impervious areas within the development or redevelopment area, not the entire parcel. Alternatively (or additionally), the definition of "site" needs to defined so that it refers to the area within the limits of work for a development, redevelopment, or other construction project.

24. Comment: Section 2.3.6. The requirements to have pollutant removal equivalent to that of a bio-filtration system must be removed, as a "one size fits all" model for pollutant removal is too restrictive. A "Maximum Extent Practical" principle is more appropriate. For example, the City's annual roadway reclamation or re-surfacing projects do not fit into the "one inch recharge" scenario, even though projects are greater than one acre of disturbance.

Recommendation: EPA should define the words "development" and "redevelopment,"

which would allow exclusion of lateral projects such as roadway improvements.

25. Comment: Section 2.3.6.a.ii. Page 40. This section sets different standards than those existing in the Misstep's Storm water Policy and associated handbooks. Having two different sets of standards will cause conflicts for MS4s and developers and will likely subject communities to litigation. In addition, the ordinances/bylaws of most Massachusetts MS4s reference the MA Storm water Standards.

Recommendation: If EPA wants more stringent standards, it should work with the MassDEP to effect changes to existing State regulations instead of enacting a second, different, and conflicting set of requirements through the MS4 permit.

26. Comment: Section 2.3.6.a.ii. Page 40. The requirement to inventory all City-owned properties for possible recharge areas is not practical.

Recommendation: At most, the City can select five priority sites per year to evaluate, which will result in a better assessment of viable sites.

27. Comment: Section 2.3.6.b&c. Page 41. Both of these sections require review of local bylaws. It is not cost-effective to perform two separate reviews and prepare two separate "assessments" related to the reduction of impervious area.

Recommendation: Sections b and c should be combined into one assessment report, covering both reviews.

28. Comment: Section 2.3.7.b. Requiring an individual Storm water Pollution Prevention Plan (SWPPP) for each municipal site is repetitive, unduly burdensome and unreasonable. The City has one Hazard Mitigation Plan and one Open Space Plan, both of which are renewed every 5 years. It makes sense to have one SWPPP renewed every 5 years. One, single comprehensive SWPPP should be allowed for all municipal operations, with site-specific elements covered as needed.

Recommendation: The permit should be revised to allow a single SWPPP document with site-specific sections as needed to cover all sources of potential pollution.

29. Comment: Section 4.3. Page 51. Now that outfall monitoring has been incorporated into Section 2.3.4.7, there is no need for a separate Section 4.3.

Recommendation: Requirements stated in Section 4.3 should be incorporated into Sections 2.3.4.7 or 4.4, as appropriate.

30. Comment: All Appendices. The appendices do not contain proper page numbering.

Recommendation: Page numbers should include a reference to the Appendix (e.g., "A-21") so as to avoid duplication with the main permit document.

31. Comment: Appendix A. No definition is provided for the following critical terms: Directly Connected Impervious Area, Disturbance, Illicit Discharge, Increased Discharger, Redevelopment, or Site. Interpretation of these terms could be a significant source of controversy, especially for Planning Boards charged with the implementation of the requirements for new development and redevelopment.

Recommendation: Definitions of these terms should be added to Appendix A.

32. Comment: App. H 1.2, 11.2, 111.4, IV.5, V.5. To require the collection of at least 30 flow-weighted samples over a period of 2 to 3 years from each storm water outfall discharging (or tributary) to an impaired water in order to demonstrate that the discharges meet water quality standards is excessive and cost-prohibitive.

Recommendation: All of these sections of the permit should be revised to require sampling of outfalls during not more than 10 rainfall events. EPA should provide a list of rainfall events during which outfall sampling must be performed.

33. Comment: Appendix I. Multiple Sections. Appendix I should not be included in the permit. It should a reference/example document only. The protocol presented in the Appendix is not required by the permit and is only one of many methods that could be used to comply with IDDE requirements. It's inclusion as an Appendix to the permit is inappropriate. In addition, because this protocol is specific to a single method, some of the information that is included is incorrect. For example, holding times presented in Appendix I, Attachment 1, Table 1 are listed incorrectly due to an assumption that analyses are being performed onsite (see Specific Conductance, which actually has a holding time of 28 days, not "Immediate").

Information presented in Appendix A, Table 1 and Step V, are also not appropriate for inclusion in a NPDES permit. The parameters and thresholds presented in Table 1 are already included as Section 2.3.4.7.d.vi. The information regarding instrumentation is reference material and should not be included in a permit. Step V should be removed in its entirety because it does not belong in a permit. It should be in a Fact Sheet or reference/example document.

Recommendation: The permit should be revised to delete Appendix I in its entirety. EPA should provide an online source to the IDDE protocol in Section 2.3.4.7.

The City of Quincy values our water resources and supports the EPA's efforts to reduce pollutants in storm water; however, this draft permit, if implemented in its present form, will have significant negative impacts on our City and its ability to provide basic services. Increases in personnel, capital expenditures, professional services, and expenses are needed to enable us to comply with all these unfunded mandates.

It is the obligation of all of us, to balance the needs and costs of government with the ability of our rate payers and tax payers to pay for the improvements that this permit mandates. The EPA is an unelected federal bureaucracy that has lost sight of the fact that our sewer rate payers and our real estate taxpayers are already burdened with escalating costs of housing, food and health insurance. There is no doubt that this permit will result in higher real estate taxes and higher sewer bills because of the EPA's lack of concern for small businesses, working families, retirees and seniors on fixed incomes.

Additional funding assistance is necessary and should be made available. Without a funding component, Quincy views this permit as additional "unfunded mandates" from the federal government. In addition, without a federal financial commitment, it will be difficult to convince local voters, rate payers and tax payers and decision makers to fund these mandated storm water programs. We urge the EPA to make available a dedicated funding source for all municipalities covered by storm water permits. As responsible caretakers of public resources, we cannot ignore the impact that these expenditure increases will have on our property tax payers and sewer rate payers.

Respectfully Submitted,

City of Quincy, Massachusetts by its Commissioner of Public Works

Daniel G. Raymondi

cc: Mayor Thomas P. Koch,
Thelma Murphy, EPA Region 1 Coordinator
Frederick Civian, MassDEP Storm water Coordinator
Shawn Hardy, PE, Quincy City Engineer

ATTACHMENT

Background

The Water/Sewer/Drain Division of the Department of Public Works is responsible for water distribution, sewer services, and drain/storm water management for the commercial and residential communities of the City of Quincy. The Division conducts operations 24 hours a day, 7 days a week with a workforce that consists of an Operations Manager, Senior Civil Engineer, General Foreman and 59 highly skilled, experienced, trained, certified and licensed personnel.

Water and Sewer operations are funded through an Enterprise Account established pursuant to M.G.L. c. 44 § 53F1/2. All of the costs associated with Water and Sewer operations are paid by water/sewer ratepayers. Drain operations are funded through the property tax. All of the costs associated with Drain operations are paid by the property taxpayers of Quincy.

The Department strives to maximize the benefit and value of our infrastructure funding. Examples of the Department's ongoing accomplishments and successes are as follows:

Drain/Storm Water Management

- Maintained and improved our complex storm water collection system consisting of 150 miles of underground drain pipes, 9,329 catch basins and 5 dewatering pump stations located at Division Street, Alrick Road, Hollis Avenue, Webster Street and the Strand. City drain crews responded to street flooding, broken catch basins, and clogged drain lines on a regular basis.

- As part of Mayor Koch's commitment to improving the city's infrastructure, the Department completed the second year of its proactive Comprehensive Storm Drain/Catch Basin Cleaning and Evaluation Program. Utilizing internal personnel and a private contractor, 1,145 tons of debris was removed from 1,700 catch basins across the city dramatically improving the efficiency of our drainage system.

- Repaired 80 catch basins.

- Revised and implemented the protocol for the operation of the tide gates at Blacks Creek which minimized potential flooding concerns.

- Inspected, maintained and monitored the City's tide gates to prevent rising tides from entering the system and causing flooding.

- Maintained outfalls that allow storm water to drain into brooks, waterways, and marshes and eventually into the ocean. Cleaned debris and branches from Furnace Brook, Town Brook, and Blacks Creek.

- With the assistance of Community Preservation Act Funds and local Friend and Community Groups, the Department managed $90,000 in projects related to the health and preservation of Butler's Pond, Sailor's Home Pond and Manet Lake. This includes efforts to eliminate invasive species from the standing bodies of water.

Street Sweeping

In addition to the daily sweeping of our main thoroughfares, business districts and trash routes and our fall comprehensive sweep, Highway Operations, with the purchase of a new street sweeper, initiated spring and fall street-sweeping blitzes. The City was divided into three zones and the entire City was swept spring and fall in three weeks. This prevented that material from migrating into our drainage system.

Storm Drain Projects

- Removed roots and cleaned the drains along the Furnace Brook drainage area. These remedial activities over the past two years consisted of cleaning approximately 20,300 feet of drainage pipe and disposal of 340 cubic yards of sediment and debris.

- Continued targeted cleaning projects in the Furnace Avenue, Miller Street and Cross Street area of West Quincy.

- Assisted in flood mitigation projects of the Miller Street / Cross Street / Furnace Avenue neighborhood with the installation of back flow prevention devices in the closed conduit portion of Furnace Brook. New drainage pipes were also installed to divert flows from the neighborhood's existing system to reduce the magnitude, frequency, and duration of flooding. This phase of the Furnace Avenue Flood Improvement Project was completed for $215,000 in May of 2014.

- Completed the replacement of storm drainage piping between the Atlantic Middle School on Hollis Avenue to the Massachusetts Bay Transportation Authority (MBTA) Parking lot on Hancock Street (North Quincy drainage area). Grove Construction completed $1.5M of piping and structure replacement including three cross country sections.

- Completed the $1,100,000 Spence Avenue Drainage project that provided flood relief to Circuit Road, Quincy Avenue, Charlesmount Road, Craig Avenue and Martensen Street. The project improved the condition of the storm water infrastructure and increased the hydraulic capacity of the system with the goal of reducing the magnitude, frequency, and duration of localized flooding. This project will mitigate flood conditions in this neighborhood through drainage easements.

- Performed routine cleaning of the Town Brook By-Pass system behind Star Market on School Street. The by-pass system is a component of Town Brook flowing from the Braintree Dam to the Town River at Southern Artery. The By-Pass structure diverts peak (storm) flow into a

Deep Rock Tunnel which flows under the city to Town River, thus mitigating flooding in the Downtown.

Sewer Improvements

- Continued implementation of a new Sewer Ordinance that allows the Department to charge users for unauthorized sewer connections, unauthorized sewer use and prohibited discharges into our sewer system.
- Maintained 204 miles of sewer mains.
- Responded to 1,085 sewer related calls.
- Cleaned 971 sewer mains and performed 118 sewer repairs.
- Responded to 20 odor issue calls, 42 pump station alarms and performed general maintenance on our infrastructure and pump stations to ensure continuous, uninterrupted operation.
- Upgraded sewer and storm drain pipes around the Hancock Street, Chestnut Street and Cottage Avenue triangle. Sewer replacement was completed on Chestnut Street and a portion of Cottage Avenue. The Hancock Street sewer was inspected and determined to be in serviceable condition.
- Continued to operate the closed circuit television (CCTV) truck to proactively investigate the internal condition of sewer and drain piping. This vehicle responded to sewer calls and emergency situations and was routinely scheduled for I&I investigations.
- Maintained and inspected the sewer collection system which included the six wastewater pump stations at Fort Square, Quincy Point, Evelyn Place, Carlisle Street, Squantum Gardens and the Strand.
- Completed engineering designs for upgrades and improvements to the second largest City-owned sewer pump station. The Fort Square pump station services a major portion of south Quincy. In conjunction with the Town Brook relief interceptor sewer, the pump station was also designed to relieve the surcharging of the trunk sewer running parallel to the Town Brook. With a design capacity of over 3,500 gallons per minute, the pump station pumped directly to the MWRA high-level sewer and ensures that wet weather and high flow events do not cause sewer overflows. Constructed in 1985, the aging pump station has a number of deficiencies and improvements are necessary in order to sustain the reliability of the station. Methuen Construction Company, Inc. was awarded a contract for $2.5M. The project is substantially completed.
- Initiated the evaluation of the Quincy Point pump station which is the largest City-owned sewer station in the city. This project is similar to the Fort Square pump station improvement project and a preliminary design is scheduled to be completed in fiscal year 2015.

Construction is scheduled for fiscal year 2016.

- Evaluated need for repair or replacement of the sewer force main from Quincy Center to Quincy Point.

Infiltration and Inflow (I&I) Work

- Invested $550,000 dollars into the City's fourth I&I removal project. This important initiative was started by Mayor Koch in 2009.

- Completed the sewer replacement for Rice Road. This repair became necessary because of settlement and suspected infiltration. The project replaced approximately 1,500 linear feet of sewer and service laterals.

- Completed an emergency open excavation repair of 70 linear feet of sewer on the 24 inch sewer that runs through Mallard Road onto Post Island Road. Also, completed the non-emergency portion of the work in this area. A final Cured In-Place Pipe (CIPP) liner was installed in the two remaining sections of sewer. It is estimated that this work has removed approximately 175,000 gpd of I&I from the sewer.

- Completed emergency sewer repairs to a portion of Dysart Street.

- Two catch basins were found illicitly connected to the City's sewer system. The two catch basins were removed from the sewer and properly reconnected to the local drainage system.

I & I removal projects scheduled for construction in fiscal year 2015 include:

- CIPP lining along East Squantum Street to line the 15- and 24-inch clay sewer that runs through the salt marsh. This sewer has structural defects and infiltration is leaking into the pipe. Portions of this sewer have been previously lined and the manholes were previously sealed.

- Open-cut spot repairs throughout coastal areas of the city to replace defected pipe that is leaking infiltration into the pipe. This work will also involve CIPP lining in select areas and will address structural and capacity concerns.

Community Outreach

The Department continued its commitment to strengthen relations with its constituency and other Departments through improved communication, information, and education through:

- Timely updates on the City web site and Department home page.

- Delivery of 40,000 InfoLetters twice yearly to every household in Quincy, social and community centers, the City's libraries, City Departments, coffee shops and to businesses.

- Appearances on Quincy Access Television.
- Articles and advertisements in the Quincy Sun and Patriot Ledger newspapers.
- Produced and installed "Public Notices" at 11 beaches.
- Informational Water Bill inserts.
- Participation in municipal, community and neighborhood special events.
- QATV public service announcements, crawls and bulletin boards on Quincy Access Television channels 8 and 11.

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RECEIVED
11/12/15
MWR

December 23, 2014

US EPA – OEP06-4
Mr. Newton Tedder
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Subject: Comments on the Draft Massachusetts Small MS4 General Permit

Dear Mr. Tedder:

The Town of Reading is in receipt of the Draft Massachusetts Small MS4 General Permit for stormwater management. This letter provides our comments for consideration when developing the final permit.

We recognize the importance of stormwater management to the environmental health of Massachusetts waterways and the maintenance of designated uses. With the Clean Water Act long focusing on point sources alone, we applaud the efforts of the Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) over the last decade to incorporate non-point source pollutant reduction into the CWA regulatory program.

The regulatory agencies and the regulated communities share a common mission – to ensure the health and quality of our cities and towns and their natural resources. In order to accomplish these goals, environmental programs must be balanced with other needs and responsibilities of each community and implemented in a fashion that is both feasible and financially responsible. In this context, we offer the following comments on the Draft Permit.

Stormwater Retention/Treatment

The Draft Permit requires that when a project disturbs one or more acres, or is less than one acre but is part of a larger common project that disturbs more than an acre, stormwater management facilities for new development and redevelopment projects shall be designed to either retain the first one inch of runoff from all impervious surfaces or treat that stormwater. This is a sweeping requirement that encompasses many types of projects, including pavement maintenance work that exceeds one acre. Therefore, to fulfill this requirement, a community will need to redesign the existing stormwater management facilities as part of the resurfacing of a road. With the abundance of utilities located within right of ways many communities do not have room within the existing right-of-way to install stormwater management facilities and will need to purchase/take extra land by eminent domain to provide a location for these facilities. This will add a significant expense to the cost of routine maintenance work on roads. Accordingly, many communities will need to scale back on

their pavement maintenance projects because of the limitations in funding, which will cause the Commonwealth's roads to deteriorate faster than they currently do.

The 2010 Draft Permit required new development and redevelopment projects to comply with the Massachusetts Stormwater Standards. Stormwater Management Standard 7 (Redevelopment) allowed certain projects to meet the standards to the maximum extent practicable. In the case of pavement maintenance work, resurfacing a road within the existing footprint would be a redevelopment project and providing stormwater treatment would be required to the maximum extent practicable, not required as it would be under this permit. Therefore, the Draft Permit should be revised to require projects comply with the Massachusetts Stormwater Standards, or revised to provide exemptions for specific types of projects, such as pavement maintenance.

Street and Parking Lot Design Guidelines

The Draft Permit requires that within three years a community prepare a report assessing the current street design and parking lot guidelines and determine if changes need to be made to these guidelines to support low impact design features. It is unclear in the permit if low impact design would need to be applied to pavement maintenance projects that have full-depth reclamation. Incorporation of low impact design features into existing pavement maintenance projects will add significant cost to these projects. As stated in the previous comment, funds for these projects are limited and will likely reduce the number of projects a community can do in a year. The Draft Permit should be clarified on this issue.

Tracking of Impervious Area

The Draft Permit requires that a community estimate the annual increase or decrease in the number of acres of impervious area and directly connected impervious area. Tracking of impervious area in a community is a burdensome requirement on a community's limited financial and personnel resources. A community can track changes in impervious area associated with municipal facilities, large commercial and industrial projects, and roadways. However, tracking changes in impervious area on private property, e.g., driveways, roofs and walkways, is not practical. Communities do not have the staff available to determine the changes in impervious area that have occurred on private property. Doing a flyover of the community on an annual basis would be the most reasonable way to perform this task; however, the cost of doing this annually is prohibitive. The Draft Permit should be revised to require a community to track changes in impervious area at municipal facilities, large commercial and industrial projects, and roadways only.

Wet Weather Sampling

The Draft Permit requires that a community conduct wet weather sampling at outfalls to the extent necessary when there is the presence of one or more System Vulnerability Factors. The permit states that 80 percent of the Problem Catchments must be completed with three years of the permit effective date, with 100 percent completed within five years of the permit effective date. For a community with a many outfalls requiring wet weather sampling, meeting this timeline may be difficult. The wet weather sampling must be done between March and June when the groundwater levels are relatively high. To obtain reliable results, the sampling must be done during the "first flush." Given the need to mobilize rapidly upon commencement of a storm to capture the first flush, sampling will need to be done during working hours. With limited staff, only a few of outfalls will be sampled during a storm. If many outfalls need to be sampled or if dry weather persists during the spring months, it may not be feasible for a community to meet the timeline requirements for wet weather sampling. The Draft Permit should extend the timeline beyond the five year permit term.

Chloride Reduction

The Draft Permit requires a community to implement procedures for winter road maintenance, including minimization of the use of sodium chloride and other salts. Most communities currently try to limit salt use to reduce costs and apply it to the roads in a responsible manner. However, to reduce salt usage below to what is necessary to maintain safe, passable roads, in order to address water quality impairments, endangers human life and opens a community up to potential litigation for having unsafe roads. The Draft Permit should require that communities follow the most current Best Management Practices for salt usage on roads.

In conclusion, while the Town of Reading agrees with the regulation of stormwater inputs to maintain high water quality, the Draft Permit as presented includes several requirements which are not achievable by many communities and do not take into account time and budget constraints that affect cities and towns. The permit should be scaled back to include achievable, cost-effective goals during the course of the five-year permitting period. If communities are presented with a permit they can meet, they are more likely to successfully invest the funds and labor into implementation.

Thank you for your consideration of these comments. Should you have any questions, please contact me at 781-942-9082.

Very truly yours,

George Zambouras, P.E.
Town Engineer

cc: Frederick Civian, MassDEP
Robert W. LeLacheur, Jr., Town Manager
Jeffrey Zager, Director of Public Works

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
235 Promenade Street, Providence, RI 02908-5767 TDD 401-222-4462

RECEIVED 12/29/14

December 23, 2014

CERTIFIED MAIL

Newton Tedder
US EPA—Region 1
5 Post Office Square—Suite 100
Mail Code—OEP06-4
Boston, MA 02109-3912

RE: Rhode Island Department of Environmental Management (RIDEM) Comments on the 2014 Draft Massachusetts Small MS4 General Permit

As the delegated permitting authority for the administration of the National Pollutant Discharge Elimination System (NPDES) Program in Rhode Island, the Department of Environmental Management (DEM) Rhode Island Pollutant Discharge Elimination System (RIPDES) Program is responsible for the review and coordination of responses to regulatory matters that affect the administration of the Program.

The DEM has received and reviewed the 2014 Draft Massachusetts Small MS4 General Permit. Based on this review the RIPDES Program has the following comments:

1. The Mount Hope/Kickemuit River Estuary TMDL and the Runnins River TMDL approved by USEPA on 1/14/2010 and 12/06/2002 respectively, affect the Massachusetts municipalities of Seekonk, Rehoboth, Swansea and Fall River. Requirements for these TMDLs should also be incorporated into Appendix F, Part B.III. Also the Blackstone River, Mill River and Peters River Bacteria (and Metals) TMDL approved by USEPA on 4/23/2013 identify Massachusetts' sources as contributing to bacteria impairments in the Blackstone River and Peters River. Though urban stormwater discharges are not specifically identified as contributing to the impairments in Rhode Island waters, the TMDL identifies both wet and dry weather sources in Massachusetts as contributing to impairments in RI.

2. In addition to the Additional or Enhanced BMPs specified in the Bacteria TMDL Requirements section, the Rhode Island TMDLs for bacteria require enhancements to the post-construction minimum control measure for MS4 operators to revise their ordinances to ensure that: 1. **new land development** employ stormwater controls to prevent any net increase in bacteria for sites contributing to MS4s which discharge to the impaired water bodies, and 2. **redevelopment projects** employ stormwater controls to reduce bacteria to the *maximum extent feasible*. RI's Bacteria TMDLs also

30% post-consumer fiber

require construction of structural BMPs at priority outfalls similar to the requirement specified for nutrient TMDLs in Part B.II.1.c of Appendix F., Description of planned structural controls. These requirements should be incorporated into Parts B.III of Appendix F to ensure interstate equity in addressing pollutant loadings contributing to the impairments.

3. The Blackstone River, Mill River and Peters River Bacteria and Metals TMDL approved by USEPA on 4/23/2013 also identified Massachusetts' sources as contributing to metals impairments in the Blackstone River and Peters River. Though urban stormwater discharges are not specifically identified as contributing to the impairments in Rhode Island waters, the TMDL identifies both wet and dry weather sources in Massachusetts as contributing to impairments in RI.

4. In addition to the Additional or Enhanced BMPs specified in the Metals TMDL Requirements section, the Rhode Island TMDLs for bacteria require enhancements to the post-construction minimum control measure for MS4 operators to revise their ordinances to ensure that: 1. **new land development** employ stormwater controls to prevent any net increase in metals of concern for sites contributing to MS4s which discharge to the impaired water bodies, and 2. **redevelopment projects** employ stormwater controls to reduce metals of concern to the *maximum extent feasible*. RI's Metals TMDLs also require construction of structural BMPs at priority outfalls similar to the requirement specified for nutrient TMDLs in Part B.II.1.c of Appendix F., Description of planned structural controls. These requirements should be incorporated into Parts B.IV of Appendix F to ensure interstate equity in addressing pollutant loadings contributing to the impairments.

If you have any questions regarding this correspondence please do not hesitate to call me at 401-222-4700 extension 7202, or Margarita Chatterton at extension 7605.

Sincerely,

Eric A. Beck, P.E.
Supervising Sanitary Engineer
RIPDES Permitting Program, Office of Water Resources
Rhode Island Department of Environmental Management
Providence, Rhode Island

Tedder, Newton

From: Roger <rramjet@verizon.net>
Sent: Friday, February 27, 2015 12:38 PM
To: Tedder, Newton
Subject: Re: Draft MA MS4 permit comments - Roger Frymire 27Feb2015 - correction to one word

Mr. Tedder -

I proof-read my comments four times before sending, but just found an egregious error I must correct:

In my paragraph on chlorine testing, please replace the word hypochlorite with the correct "thiosulfate" as I have done below.

thanks once again.
rf

On 2/27/2015 10:19 AM, Roger wrote:
> Mr. Tedder -
>
> First, I'd like to thank you and all the permitting team for your
> excellent efforts to date. Having commented on earlier drafts for MA
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> and CSO permits, etc. - I am impressed with the consideration given to
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> As always, Thank you for your professional consideration of these comments.
>
> Sincerely,
> Roger Frymire
> 22 Fairmont Av
> Cambridge MA 02139-4423
> 617-492-0180
> ramjet@alum.mit.edu
>
>
>
>

Tedder, Newton

From: Roger <rramjet@verizon.net>
Sent: Friday, February 27, 2015 10:19 AM
To: Tedder, Newton
Subject: Draft MA MS4 permit comments - Roger Frymire 27Feb2015

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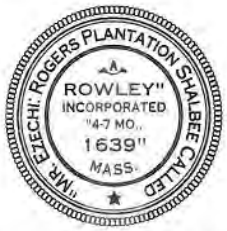
Sincerely,
Roger Frymire
22 Fairmont Av
Cambridge MA 02139-4423
617-492-0180
ramjet@alum.mit.edu



Town of Rowley

Massachusetts 01969

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December 22, 2014

Mr. Newton Tedder
US EPA-Region 1
5 Post Office Square—Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

RE: Public Comment on the 2014 revised Draft NPDES General Permit for Small MS4 Systems in Massachusetts

Dear Mr. Tedder:

On behalf of the Town of Rowley, I respectfully offer comments on the revised draft MS4 permit for Massachusetts, notice of which was published by EPA in the Federal Register on September 30, 2014.

The Town of Rowley shares and embraces the goal of protection and enhancement of water quality with the EPA. The Town is blessed with various water resources (fresh and salt) which enrich and sustain our community. As a small rural community we know all too well the detrimental impacts of stormwater and have witnessed storm and flood related impacts to our small and historic infrastructure. We submit these comments and concerns in the hope that a "cooperative engagement" can take place between the EPA (regulator) and our citizens (regulated community).

Rowley is a small rural community settled in 1639 with a long tradition of agriculture and aquaculture that recognizes the importance of clean water. Our municipal structure is also small and departments such as Highway mirror the same in staffing since our built roadway infrastructure is not extensive and not complex. Thus the apparent number of administrative requirements and tasks is initially a deep concern for our town. We are concerned that there doesn't seem to be a proportional application of these administrative requirements that would address a small rural community's lessoned ability at implementation.

Town Department Capacity & Budget Constraints

The Town in general and our Departments specifically, have been operating with very constrained budgets for a decade. The Town has been obligated, when able, to implement stormwater management in the

most cost effective manner, given the extent of competing local demands in education, public safety, facilities and infrastructure upgrades and general welfare. Town officials will have to make very compelling cases for additional resources to Town Meeting attendees and Boards of Selectmen. It doesn't seem to be prudent to expect small Towns to make major expenditures just prior to these requirements effective date without both EPA and the state DEP coordinated in these regulations, and offering committed implementation assistance to small MS4 communities.

The Rowley Highway Department has a small number of permanent full time staff and doesn't current possess the capability to assume the extensive administrative burdens put forth in the draft permit. The magnitude of the draft permit's administrative requirements will apparently require possible engagement of expensive consultants solely to guide implementation and direct future hiring of more full-time staff for those tasks.

For our community, which lacks built infrastructure to begin with, the projected costs of compliance are overwhelming. Given current fiscal circumstances and the capacity of municipal departments, it would seem prudent to adopt a proportional and focused approach to implementing those administrative requirements.

Clarification, State-Federal Regulatory Consistency and Streamlining Needed

In our rural community where not all of the town lies within the designated MS4 area, we have questions about how to cost-effectively implement an illicit discharge detection and elimination program. The draft permit is unclear as to administrative responsibilities where municipal storm drainage systems are lacking. This is but one example where clarification is needed. Our community certainly wishes to be responsive to eliminating instances where pollution is degrading water quality but municipal funds need to be wisely marshalled where most effective. There is also the concern that a coastal community is being forced to respond to degraded water quality in waterways that have already flowed through many miles of inland communities upstream from us. Thus the waterways' impairment may already be a "done deal" and expenditures here may not improve the receiving waters as effectively as they would if implemented upstream.

It appears that some confusion may lie in the apparent contradiction between MassDEP rules and the EPA draft permit about treatment and infiltration threshold definitions and requirements for stormwater management in new developments. These apparent inconsistencies may result in additional administrative and potential legal expenses. The final permit should provide for clarity and consistency in regulatory thresholds and requirements between local, state, and federal regulatory requirements.

Time Line for New Permit

In light of the existing uncertainties and implementation questions and given the level of investment needed for compliance, this draft permit does not allow nearly enough time for small Town with the requisite Town Meeting process to set up an adequate revenue source to fund a fully compliant program. We respectfully urge EPA to extend the timeline for the MS4 permit effective date, NOI filings and compliance. Our town is already preparing the Fiscal Year 2016 budget. The local budgetary cycle requires Town Meeting votes to adopt fiscal year budgets in the Spring for the July 1st, 2015 thru June 30th, 2016 year. Any major new expenses generated by a final permit effective as envisioned in Fall 2015 are likely to provoke financial turmoil in City/Town halls. We note that EPA has phased in many of the proposed

requirements including the additional GIS mapping and IDDE implementation. More time, however, will be needed to allow for planning, staffing, and incorporation into establish programs.

Given the local budget cycle, EPA should establish an effective date of Fiscal Year 2017 for the permit and extend timeframes for municipalities to file the NOI, prepare stormwater management programs and undertake the many administrative mandates. A minimum of two years should be provided from the permit effective date simply to allow small municipalities time to plan, staff and budget accordingly. Communities will need this time to work in determining costs and appropriate funding sources, to obtain the necessary local approvals, to secure funding levels and staffing that can sustain a compliant program, and finally to establish workable intermunicipal Collaborative programs for sharing personnel, equipment and/or testing labs.

Thank you for considering these comments in preparing the final MS4 permit for Massachusetts.

Sincerely,

G. Robert Merry
Chairman

Joseph Perry
Vice Chairman

Robert Snow
Clerk

Jack Cook

David Petersen

C: Fred Civian, Massachusetts Department of Environmental Protection
Merrimack Valley Planning Commission

To: Newton Tedder

From: Robert J. Rafferty, P.E. – Environmental Partners Group, Inc.

Cc: SEMSWC Steering Committee

Date: December 29, 2014

Subject: Comments – Draft NPDES Small MS4 Permit

The following list of comments regarding the Draft NPDES Small MS4 permit is compiled from discussions with the Southeastern Regional Services Group (SERSG) during MS4 training workshops and review of the Draft Permit and attachments. SERSG has established a stormwater collaborative, Southeastern Massachusetts Stormwater Collaborative (SEMSWC) to share knowledge, expertise and costs among its twenty (20) communities. Community members are:

Town of Abington	Town of Foxborough	Town of Plainville
Town of Bridgewater	Town of Lakeville	Town of Raynham
City of Brockton	Town of Mansfield	Town of Sharon
Town of Canton	Town of Middleborough	Town of Stoughton
Town of East Bridgewater	Town of North Attleborough	City of Taunton
Town of Easton	Town of Norton	Town of West Bridgewater
	Town of Norfolk	Town of Wrentham

1. Tables and references are outdated in permit:

    a. The list of TMDLs in the Draft Permit does not include the September 2014 South Coastal bacteria TMDL

    b. The draft 2014 list of 303(d) waters includes other TMDLs and impairments not listed in the draft permit.

    c. Communities listed in Section 2.2.2 are not always listed in Table F-8. Which table determines coverage? The wording in the permit is unclear and inconsistent.

    d. Communities listed in Section 2.2.2 are not always listed in the TMDL as influencing water quality. For example, West Bridgewater is listed in Section 2.2.2 as having a bacteria TMDL because of the Salisbury Plain River (MA62-06) TMDL, but the actual TMDL document excludes West Bridgewater's MS4. West Bridgewater should not be listed in the new MS4 permit for this TMDL.

2. EPA must coordinate its various permitting programs. The definition of "Waters of the United States" recently underwent a public comment period. This is a fundamental

building block of the Clean Water Act and the Small MS4 NPDES permit. Without a clear definition of the "Waters of the United States", the comments made relative to the MS4 permit may be moot or altered.

3. Many of the Draft Permit's prescriptive requirements do not allow the individual permittees to select the most effective BMPs for their community and watershed, nor can they align BMPs with best "measurable goals", especially with the requirements for nutrient impaired waters. For example, requiring public education on specific impairments multiple times per year may not provide a measurable goal for a community or be the most effective use of funds to reach the goals of the permit. Street sweeping two times per year in drainage areas discharging to nitrogen impaired waters may not be cost-effective, or effective, for all communities. Constructing BMPs on municipal land may also conflict with the measurable goal requirement. These are prescriptive requirements that may not have measurable results for some communities and therefore do not meet the requirement that the permittees assign measurable goals to their selected BMPs. Each community should be allowed to decide which BMPs provide the biggest impact and best measurable goals. EPA should instead provide a menu of options and/or suggestions that a permittee can select for effectiveness and measurability.

4. 2.1.1.d: EPA states, "… the permittee shall, as expeditiously as possible, but no later than 60 days of becoming aware of the situation, eliminate the condition causing or contributing to an exceedance of water quality standards." But, under 2.3.4.2. – Elimination of Illicit Discharges, EPA states "Where elimination of an illicit discharge within 60 days of its identification as an illicit discharge is not possible, the permittee shall establish an expeditious schedule for its elimination…". Is the 60 day limit a hard deadline or a guidance threshold?

5. 2.3.4.2: Please define "identification as an illicit discharge" and "upon detection of an illicit discharge". Are these situations defined as samples/testing at an outfall that indicates a probable illicit discharge or when the illicit source is located and identified?

6. 2.2.1.a: EPA states that TMDL waters covered by the permit are as of the EFFECTIVE date of the permit. With the number of waters listed as pending TMDLs in the MA 303(d) impaired waters list, EPA should set the coverage date for the TMDL waters as of the FINAL date of the permit to allow communities to budget and plan properly, much as EPA has done to delay the effective date of the entire permit for budgeting purposes.

7. 2.3.4.6.: The schedule for mapping of the complete MS4 is overly aggressive. Mapping can take more than 2 years with connectivity included and post collection data processing for small and mid-sized communities, especially when adding the other requirements of this MS4 permit due within the first two years. The limited availability of proper equipment and staffing will strain the ability of communities to create an accurate map without data gaps and conflicts within this time frame.

8. 2.3.4.6.a.ii: Does “where available” refer to the existence of sewer systems or maps of sewer systems?

9. 2.3.4.7.diii: Dry weather screening and sampling should not proceed when there is observable snow melt.

10. 2.3.4.7.e.i. – Catchment Investigation Procedures: EPA states, “This review shall be used to identify areas within the catchment with higher potential for illicit connections and System Vulnerability Factors that indicate a risk of sanitary or septic system inputs to the MS4 under wet weather conditions”. Septic systems are not designed to remove nutrients and may discharge nutrients to an MS4 through groundwater. Septic systems can comply with MA Title 5 (310 CMR 15.00) and still discharge nutrients. Are septic systems considered an illicit connection if they discharge nitrogen and phosphorus to groundwater? Do the Clean Water Act and this MS4 permit override MA Title 5 and therefore limit septic systems from discharging any amount of nitrogen or phosphorus indirectly to an MS4, even though they do not violate the state’s Title 5 permitting program? EPA instead should set a concentration limit, consistent with other regulations, that may trigger mitigation action under this permit’s regulations.

11. 2.3.5 Construction Site Stormwater Runoff Control: EPA states, “…so that it is not transported in stormwater and allowed to discharge directly or indirectly to water of the U.S.”. EPA’s requirement for nutrient reduction from private development sites and for ordinance updates exceeds the coverage area of the permit. There is no consistent wording that restricts these ordinances to discharges to the MS4. The wording in the permit should be consistent in every paragraph so that this important point is not lost. Otherwise, this is not applicable to the EPA’s jurisdiction under this permit.

12. 2.3.5. Construction Site Stormwater Runoff Control: The “Objective” should be rephrased to restrict the definition to stormwater discharged to the MS4.

13. 2.3.5.6 – System mapping: a.i. The draft permit states, “Waterbodies identified by name and indication of all use impairments as identified on the most recent EPA approved MA Integrated Report of waters report pursuant to CWA section 303(d) and 305(b).” This means the requirements of the draft permit can change during the permit period whenever a new Integrated Report is approved by EPA. This is a difficult requirement for permittees that rely on town meeting votes once per year for budgets. EPA should set a fixed date of compliance with impaired waters, as EPA does with TMDLs, which set compliance with TMDLs finalized as of the EFFECTIVE date of the permit.

14. 2.3.5.6.ei and eii(b): The application of System Vulnerability Factors for wet weather sampling is a blanket approach to applying generic criteria that do not apply to every community regulated by the permit, and the permit does not allow waivers if the criteria do not apply. For example, two of the SVFs are (1)“Crossing of storm and sanitary sewer alignments”, and (2) “Any sanitary sewer and storm drain infrastructure greater than 40 years old in medium and densely developed areas”, which are criteria presented without

any supporting basis or justification. Many communities are proactive in their infrastructure maintenance and have addressed cross connections (direct or indirect) and increased the expected life span of their sewers and drains through routine maintenance and upgrades. Communities with active asset management and/or CMOM programs should be exempt from wet weather monitoring in these catchment areas.

15. 2.3.6.aii (b) through (d) inclusive: Infiltration systems do not discharge to the MS4 and therefore should not be covered under this permit.

16. 2.3.6.dii: This paragraph refers to "each sub-basin identified pursuant to Part 2.3.4.6.a.". The reference to sub-basins is unclear since the referenced section defines mapping elements, not sub-basins.

17. Coordination with other NPDES Permits:

    a. Appendix H and Fact Sheet page 66: EPA is requiring permittees to monitor nutrients, especially nitrogen in the Taunton River watershed, which is a common practice under the wastewater discharge NPDES program. However, the requirement to construct BMP controls circumvents the TMDL process established by the Clean Water Act Sections 303(d) and 305(b). Under these sections, a TMDL must allocate the acceptable pollutant load among all potential sources. EPA is requiring all permittees to construct BMPs, regardless of pollutant load.

    b. The NPDES permitting fact sheets in the Taunton watershed for wastewater treatment facilities shows an analysis that allots 20% of the nitrogen load (286 lbs/day) to non-point sources (included as LA's under the TMDL). This leaves 0% of the nitrogen load to be mitigated from other WLA's such as storm drain outfalls. By this process, no nitrogen loading is occurring from outfalls.

    c. The NPDES wastewater fact sheets follow a stringent process to assign nitrogen limits to the treatment facilities based on flow, discharge load, attenuation, and the resulting nitrogen load to the estuaries. For communities furthest upstream from the estuary and the wastewater treatment facilities, the stream flows are dominated by the wastewater treatment facilities (Brockton's wastewater facility's discharge flow is 98% of the flow in the Salisbury Plain River at 7Q10). Under the Draft MS4 permit, these communities are required to monitor stormwater flows, educate the public, and construct BMPs for nitrogen mitigation. Dividing the 286 ppd of nitrogen between the 43 communities in the Taunton watershed gives approximately 6.7 ppd of nitrogen for each community. The nitrogen load for NPS sources in these upper watershed communities is therefore not measurable and not significant, especially when EPA considers 50 lb per day of nitrogen from smaller treatment facilities as negligible. Furthermore, EPA does not allow for attenuation of the nps nitrogen load, as it does for the point source loads. Before requiring MS4 permittees to expend limited funds, EPA should

provide better data to establish the impact from each community, much like EPA has done for point load sources.

18. Appendix A:

    a. Water Quality Limited Water definition: This includes the phrase "*including but not limited to* waters listed in categories 5 of 4b…". This is an overextension of the definition of impaired waters in the CWA. This is also not definable or enforceable since permittees are instructed to look to the integrated list for impaired waters. What other document does EPA consider included in a definition for Water Quality Limited Water?

19. Appendix G:

    a. When fecal coliform is the Pollutant Causing Impairment, EPA suggests using fecal coliform as the Monitoring Parameter. Should this be updated to E. coli or entero?

20. Appendix F – Charles River TMDL Phosphorus Control Program

    a. Does allowing a permittee the option of installing BMPs in non-MS4 areas (and non-regulated areas) extend EPA's jurisdiction and the coverage of this permit beyond the regulated area? Can a permittee, on its own, choose to extend permit coverage beyond the MS4 Permit's jurisdiction? Can EPA conduct enforcement beyond the MS4 under this permit once a permittee elects to work outside the MS4 to meet the requirements of this permit? EPA should provide a guide to the legal and regulatory impacts of a permittee extending the EPA's jurisdiction beyond that allowed by law.

    b. Page 7, Phosphorus Control Plans performance evaluation: "The permittee shall evaluate the effectiveness of the PCP by tracking the phosphorus reductions achieved through implementation of structural and non-structural BMPs and tracking increases resulting from development". EPA should be clear that this includes BMPs already implemented prior to the effective date of the permit as described in the previous paragraph on page 6, "Description of Phase 1 planned structural controls".

    c. Does EPA have expectations for the quantity of BMPs to be implemented in each phase of the Phosphorus Control Plans, or can the permittee choose when to implement structural and non-structural controls within the 20 year period without risk of fines or enforcement from EPA?

21. Appendix F – Lake and Pond Phosphorus TMDL Requirements

    a. Are permittees that discharge to a lake or pond listed in Table F-6 the only entities regulated by this permit for lake and pond phosphorus? Footnote 9 provides a list

of lakes and ponds with final TMDLs, but no community is listed in Table F-6 for White Island Pond. Does the TMDL govern, or does the draft MS4 permit? Including tables such as this within the permit may cause conflicting governance and coverage under the various regulatory programs. If White Island Pond is included, what is the required percent reduction?

b. According to EPA's definition of TMDLs, "TMDLs are water quality assessments that determine the source or sources of pollutants of concern for a particular waterbody, consider the maximum amount of pollutants the waterbody can assimilate, and then allocate to each source a set level of pollutants that it is allowed to discharge." Why is EPA delegating the "allocation to each source" to the permittee under the Lake and Pond Phosphorus TMDL requirements? This is not a function to be assigned to local communities but should be conducted by EPA.

22. Appendix F, Attachment 1 and Appendix H, Attachment 1 require the permittee to calculate the phosphorus load from the entire impaired watershed, not just the catchment area connected to the MS4. Many communities have areas not connected to the MS4 but draining to the impaired water, and should not be required to reduce P load from these areas under this permit. If this is a TMDL requirement, it should be included with TMDL regulations and not included with regulations covering the MS4 exclusively.

23. Appendix H I) 1.c.iii

    a. BMPs listed in "Table 4-2 of Attachment 1 to Appendix H" should include existing BMPs.

24. Appendix I:

    a. The Stormwater Monitoring Program QAPP provided in this appendix as Attachment 1 is in direct conflict with the permit. Permit paragraph 2.3.4.5.c states that the location of outfalls must have a minimum accuracy of +/- 30 feet. Paragraph 2.3.4.7.d.i refers to Appendix I. Section 2.0 of the QAPP in Appendix I states, "Sample sites will be located using GPS, with an accuracy goal of +/- 1 meter".

25. Fact Sheet

    a. Fact Sheet pages 65-66: EPA states that all outfalls discharge nitrogen and phosphorus and other pollutants. The only way for permittees to avoid the permit's requirements is to sample outfall flows over many scenarios, prove that zero pollutants exist over all these flow scenarios, and ask permission of EPA - not a fair or likely scenario. Even if an MS4 is discharging nutrients, the outfall may not be contributing to water quality impairments if the nutrient load is comparable to the natural environment. The requirement to have 0 mg/L of nutrients is overly restrictive and should be adjusted to a more natural scenario.

b. EPA's cost ranges presented for the 6 MCM's do not add correctly when applying the percentage guidelines for MCMs 1, 2, 4, and 5. The costs listed in the Fact Sheet total to a range of $67,200 to $534,000. But, for example, the $40,000 listed for MCM 1 is 5% of $800,000. Which is the correct estimate?

c. The previous Draft MS4 Permit (10/26/10) allowed a permittee to omit wet weather sampling at outfalls with less than 10% impervious cover. Page 91 of the 2014 Fact Sheet refers to King, et al. (2011) as evidence that water quality impacts may occur in areas with impervious cover less than 10%. This document is not readily available for review. An abstract found on line states, "Within distinct physiographic classes, higher-gradient, smaller catchments required less impervious cover than lower gradient, larger catchments to elicit community thresholds". This should not be applied broadly by EPA and should not be used to remove the previous exemption for areas and communities with less than 10% impervious cover without corroborating studies. The quantity of research and data that shows minimal impact in areas with less than 10% impervious cover far outweighs one study showing impact at less impervious cover. Furthermore, EPA uses the Boston Water & Sewer (2004) protocol in Appendix I for sampling. The basis of this protocol omits areas with less than 10% impervious cover, a direct conflict with the King, et al. (2011) study.

Office of the
ENGINEERING DEPARTMENT

RICHARD D. CARNEY
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TOWN OF SHREWSBURY

MASSACHUSETTS 01545-5398

February 26, 2015

Newton Tedder
US EPA Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

Re: Comments on the 2014 Draft Massachusetts MS4 General Permit

Dear Mr. Tedder:

Thank you for the opportunity to provide comments on the Draft Massachusetts MS4 General Permit on behalf of the Town of Shrewsbury Engineering Department. The Engineering Department supports the goal of this Draft Permit, which is to improve the quality of our waters of the United States. Our department has been responsible for overseeing the Town's stormwater program since the 2003 Phase II General Permit was issued.

Comments on specific sections:

1.10 - 1.10.2, Stormwater Management Program - The permit requires a written Stormwater Management Program (SWMP) to be completed within one year of the effective date. This requires a collaborative effort among multiple municipal departments, boards, and the general public. It also requires that the BMPs for each control measure be listed. The Town needs ample time to study all of the options for BMPs and seek a sustainable funding source for them in order to commit to them in the SWMP. Determining the BMPs for TMDL requirements and discharges to impaired waters are particularly challenging here, and will take significantly longer than one year.

2.1, Water Quality Based Effluent Limitations - This section states that "this permit includes provisions to ensure that the permittee's small MS4 does not cause or contribute to an excee dance of water quality standards". The referenced section of the Clean Water Act, 402(p)(3)(B)(iii), actually states that municipal discharge permits shall require controls to reduce the discharge of pollutants to the maximum extent practicable, known as MEP. Our concern with the language in this section is that it would overrule the commonly recognized MEP standard, an authority that the EPA does not have over water quality standards in Massachusetts. The language in this section and other parts of the permit where applicable should be revised to reflect the MEP standard.

2.1.1, Requirement to Meet Water Quality Standards - It is our belief that TMDL wasteload allocations are goals and not standards that must be achieved in our MS4 discharges. Any requirement to remove pollutants of concern should be done using the MEP standard.

2.1.2, Increased Discharges - There is no clear definition of increased discharges and increased loading within the permit. The language here appears to read that any increase in flow is an increased discharge of pollutants, and would require the Town to prove that there is no increase in the total load of a pollutants within the MS4 discharges. Many of the Category 5 Waters have a long list of pollutants on the most recent Integrated List of Waters, and it's unlikely that stormwater flows exist without containing at least trace amounts of all or most of the pollutants listed. Increases in flow to an MS4 can come from the smallest of land alterations, many of which don't require local permitting and are nearly impossible for the Town to track. It's not practicable for any MS4 operator to oversee all land alterations within the MS4 and try to prove that there is no net increase in pollutant loading. This section should either be eliminated or revised with clear language that addresses only significant pollutant loads.

2.2.1.b and Appendix F, Part A, Discharges Subject to Requirements Related to an Approved TMDL - The permit is requiring Shrewsbury to meet varying degrees of phosphorous reduction loads based on the requirements for the Northern Blackstone Lakes TMDL, and the Lake Quinsigamond and Flint Pond TMDL. These TMDLs are based largely on outdated studies that used questionable scientific modeling and also lacked significant empirical data for stormwater point source discharges. The TMDLs specifically state:

"Unfortunately, no detailed study of the nutrient sources within the watersheds has been conducted to date." (Total Maximum Daily Loads of Phosphorus for Selected Northern Blackstone Lakes, p. 37).

"Because of the limited data available on discrete sources of nutrients within the watershed, a locally organized watershed survey is recommended to target reductions in nonpoint source nutrients and sediments." (Total Maximum Daily Loads of Phosphorus for Lake Quinsigamond and Flint Pond, p.4). The Lake Quinsagmond and Flint Pond TMDL was largely based on the Watershed Management Plan for Lake Quinsigamond and Flint Pond report (McGinn, 1982 - as referenced in the TMDL document). Within this report it is noted that only a total of six stormwater sample locations were used in the study, two of which are located in Shrewsbury. Both of the locations in Shrewsbury are within streams or culverted streams that also intercept flows from storm drains (McGinn, p. 144). There is nothing within the McGinn report or within the two TMDLs that suggest that removing phosphorus loads from point source discharges in the amounts required in Appendix F will have any direct impact on achieving the wasteload allocation goals of the TMDLs. It is quite possible that the majority of the impairments are caused by other pollution sources, such as nonpoint source stormwater pollution. Within Appendix F, there is also a number of BMPs listed to achieve phosphorus reductions. Most of these are unfeasible due to site constraints within MS4 owned properties. Rather than try to achieve unsubstantiated point source load reductions with BMPs that can't be implemented, the permit should simply allow for the removal of phosphorus using the MEP standard.

2.2.2, Discharges to Certain Water Quality Limited Waters Subject to Additional Requirements - Shrewsbury does not have any Category 5 Waters where nitrogen is listed as a cause of impairment. Nitrogen is not listed as a pollutant source for Category 4a Waters in Shrewsbury as well. We are also unaware of any scientific studies that have been conducted and subjected to peer review that would indicate that nitrogen is a problem in Shrewsbury. We feel that Shrewsbury should be removed from the requirements of this section.

2.3.2, Public Education and Outreach - Most of the general public has no understanding of how stormwater impacts water quality. This problem is not unique to Shrewsbury or any other municipality. We also receive many out-of-town visitors using our open space and recreational facilities. Those people can be difficult for us to reach yet educating them is just as important as our local residents. It's not practical for every community to perform their own educational efforts, and then try to assess the effectiveness of those efforts with some type of marketing research analysis. We're also not experts on industrial activities. EPA and industry operators themselves typically have a better understanding than local officials of how to manage industrial materials and the wastes that they generate. It should not be up to MS4 communities to educate people on the requirements of the EPA Multi-Sector General Permit (MSGP), or even the Construction General Permit (CGP), as EPA suggests. The CGP and MSGP are permits issued and administered by EPA, not MS4 communities. Stormwater public education and outreach is better suited for programs on a national level. In the absence of that, MS4 communities should be given more flexibility in determining their own target audiences and appropriate contents of outreach materials.

2.3.4, Sanitary Sewer Overflows - The Massachusetts Department of Environmental Protection (MassDEP) already requires the reporting of SSOs and appropriate mitigating measures, and the reporting requirement should be removed from this permit.

2.3.4.5.b through c., Outfall/Interconnection Inventory - More than one year is needed to update the outfall inventory, and the full permit term of five years is recommended. It's impractical for survey crews to perform this work without GPS equipment. Many outfalls have significant forest canopy nearby that can interfere with satellite signals used with GPS. Often the only option is to perform this survey work during November-April when a clear signal can be obtained. We currently have over three feet of snow on the ground in Shrewsbury today, making surveying even more challenging during winters such as these. The requirement to physically label outfalls with markers serves no purpose in improving water quality, and this requirement should be removed from the permit. Many outfalls are on private property where the markers would remain largely unseen except by the property owners who may find them aesthetically unpleasing. Those that would be more visible to the public would often become vandalized, as we've experienced with other signage in town. There is no benefit to these markers beyond what's being achieved with outfall mapping.

2.3.4.6, System Mapping - More than two years is needed to map all of the required elements listed, and the full permit term of five years is recommended.

2.3.4.7.d, Outfall and Interconnection Screening and Sampling - The requirement to sample interconnections should be eliminated. Interconnection points are generally located within

primary roadways and major highways, and are often located within structures that are difficult to access. If monitoring at the outfall indicates a problem, the interconnection points can then be evaluated on an as-needed basis. The three year time period given to complete screening tasks, especially with the wet weather sampling constraints, is unrealistic and five years is recommended. During spring seasons with little rainfall, allowing wet weather sampling during March to June only makes compliance even more challenging as there will be little opportunity to complete this task.

2.3.6, Stormwater Management in New Development and Redevelopment - The requirement to retain one inch of runoff from all impervious surfaces on site is beyond what's required under the MassDEP Stormwater Management Policy. A clear definition of redevelopment needs to be within the permit as well. One particular concern we have is that roadway resurfacing could be interpreted as redevelopment. Shrewsbury has installed BMPs in recent years for resurfacing projects, however due to site constraints it is unlikely that we could have either retained the first one inch of runoff or provided pollutant removal through biofiltration as required in this permit. Another concern that we have is the number of commercial facilities in town in dire need of improvement, with owners struggling to sell their property or attract business tenants because of the conditions of these unmaintained properties. Redevelopment under this permit would become cost prohibitive. The MEP standard consistent with MassDEP stormwater management is needed here as well, or the Town will probably see more businesses fleeing the area. Redevelopment under MassDEP standards usually improves discharge quality from existing sites and is a better choice than the "do nothing" option, thereby leaving sites in poor condition; which is what we anticipate will happen often under these permit conditions. It is highly recommended that that standards within this permit be consistent with the MassDEP stormwater management standards for both new and redevelopment. The requirement to estimate the annual increase in impervious area (IA) and directly connected impervious area (DCIA) on an annual basis will require significant costs without providing any stormwater control that improves water quality. Resources are better spent on BMPs. Impervious areas are not point sources, nor are they pollutants. They have hydrologic modeling runoff rates associated with them, as do a variety of other land surface features. Impervious areas and other land surface area calculations are more appropriately conducted to monitor stormwater flows, not pollution levels. This requirement should be removed from the permit. It's an academic study that is more suitable for universities than municipalities. We do however support the idea of reducing impervious areas where it can be achieved in an effort to promote groundwater recharge and improve base flows.

2.3.7, Good House Keeping and Pollution Prevention for Permittee Owned Operations - Measuring the volume or mass of materials removed from catch basin cleanings has no impact on water quality. We feel that cleaning catch basins is important and we wish to continue doing so. Spending resources on measurements would potentially reduce the number of catch basins that we could clean each year with the funding available. These measurement requirements should be removed from the permit.

<u>General Comments:</u>

Administrative Burden - There is somewhere around 15-20 sections and subsections within this permit that require monitoring, measuring, tracking, assessing and educating, amongst

other tasks, that will simply result in mountains of paperwork that pull resources away from other tasks that could provide real-world water quality benefits.

Time Constraints and Funding - Most of the schedules within the permit are too aggressive and likely setting-up most municipalities for failure. EPA has been steering municipalities in the direction of creating stormwater utilities in order to fund stormwater management programs necessary for permit compliance. These utilities when done properly take time to establish. A minimum of two to three years of planning is needed in most cases when everything goes well. There can also be accounting hurdles that last a year or more after utilities are in place. Making sure there is an adequate funding source available takes time, and is one of the reasons we feel that the schedules in the permit are mostly unreasonable.

Program Credits - Many communities, including Shrewsbury, have implemented stormwater controls in the past that are above and beyond what is required under the 2003 permit but may be required under the new permit. These municipalities should be commended for taking proactive measures and allowed to take credit for the controls required within the new permit that they have already implemented. Additionally, any controls implemented that were required under the MassDEP Stormwater Managment Policy should be given credit as well, and the permit language should more clearly define allowed credits and a timeframe for those credits.

Program Costs - Currently Shrewsbury spends approximately $280,000 per year to comply with the 2003 Permit. EPA has estimated that the cost of compliance for the new permit could vary from $78,000 to $829,000 per year depending on the size of the municipality. After reading through the Draft Permit and the Fact Sheet, we're concerned that the EPA may be grossly underestimating the true costs of permit compliance. Shrewsbury is highly affected by the Lake Phosphorus Control Plan (LPCP) requirements due to the Lake Quinsigamond and Flint Pond TMDL, and the Northern Blackstone Lakes TMDL. EPA uses the upper Charles River communities, Milford, Bellingham, and Franklin in the Fact Sheet as examples of communities where cost estimates for a Phosphorous Control Plan (PCP) have been done in the past. The PCP plan costs for those three communities is $200 million to $350 million under worst case assumptions, and $85 million to $195 million if aggressive phosphorous source reductions and non-structural controls are implemented to remove the most challenging 15% of the total load reduction needed (Fact Sheet, Page 33). Viewing the Impervious Cover & Watershed Maps on the EPA's website, Shrewsbury has more impervious cover (IC) than any of these three communities, and is equal to 42% of their combined IC. Approximately one-half of Shrewsbury's IC area is within the two TMDL watersheds, where phosphorus load reductions are required, or 21% of the combined IC within the three communities. Using the lower and higher cost estimates provided within the Fact Sheet ($85 million and $350 million) as guidance, the costs for Shrewsbury's PCP would be 21% of this estimate, or $18 million to $74 million. It should also be noted that the phosphorus load reductions required for those Charles River communities are 37-46%, whereas the majority of the required reductions for Shrewsbury are 46-63%. This could further add to the costs. <u>The LPCP portion of this permit alone could cost Shrewsbury approximately $1.2 to $5 million per year or more over a 15 year compliance period.</u> The entire town is within an MS4 regulated area as well. Most communities are only partially regulated. In addition, all of Shrewsbury falls within an area either discharging to TMDL water bodies or water quality limited water bodies, which simply trigger more and more

permit conditions requiring significant costs for compliance. Our residents have already seen significant increases in their water bills, their sewer bills, and recent property assessments increases from a 2014 Proposition 2 ½ Override. Our concern is that in order to acquire any funding for stormwater beyond current expenditures, the rates need to be equitable and there needs to be a proven costs-benefits analysis to support them.

Thank you once again for this opportunity to provide comments. We hope that they will assist you in developing a more workable permit. Please don't hesitate to contact our office if you'd like to discuss these comments in detail.

Sincerely,

Brad Stone
Junior Civil Engineer – Conservation

Additional Signatories:

Jeffrey Howland, P.E. - Town Engineer

John Knipe – Highway Supt.

Daniel Morgado – Town Manager

Robert Tozeski – Water & Sewer Supt.

Paul Burnett - Sewer Commission

COMMONWEALTH OF MASSACHUSETTS

Town of Southwick

Office of the Board of Selectmen

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December 24, 2014

U.S. Environmental Protection Agency, Region 1
5 Post Office Square, Suite 100, Code OEPO6-4
Boston, MA 02109-3912

Attn: Newton Tedder

Re: Draft Massachusetts EPA NPDES MS4 Phase 2 Regulations

The Town of Southwick, no doubt like many other Massachusetts communities, has significant questions/concerns with the latest (9/30/14) draft NPDES MS4 Phase 2 Regulations which, if implemented, will result in undue significant increase in costs to municipalities in the Commonwealth. The following summarizes some of the major issues with this draft.

1. Pavement Maintenance Work Triggers Retaining the First Inch of Stormwater or Adding Treatment. Under the proposed regulations, disturbing more than 1 acre in area through phased construction or reclamation projects totaling one acre or more (which translates to only ¼ mile of 30' wide pavement) will require that the first inch of storm water either be retained or all the stormwater must be treated. This essentially will now require that cities and towns must completely redesign and re-construct their entire stormwater collection and/or treatment system to satisfy this requirement in conjunction with the road paving/reconstruction project. This new requirement will consume the already stretched-thin road maintenance budgets and cities and towns will additionally be forced to acquire extra land through purchase or eminent domain. This huge new expense could dwarf the typical (local level) road overlay or mill/pave costs of $100,000 to $150,000 per mile, especially in older areas with extremely narrow city/town-owned rights-of-way.

   Current federal, state and local funding for pavement maintenance is less than half of what is needed to preserve the condition of roads, let alone be required to include additional drainage work. Accordingly, Massachusetts roads are degrading faster than they can be repaired. The costs associated with this EPA-proposed requirement will

compound the problem, inherently creating more failing roads and more erosion. There must be an exemption to this proposed requirement for pavement maintenance projects, including minor pavement width improvements. If a new road is being constructed or if an existing road is being widened, incorporating these stormwater management requirements should be a goal, subject to existing conditions like available right-of-way width and/or proximity of existing structures to the right-of-way.

2. Requirement for Tracking Impervious Area. The EPA's documents suggest that the simple presence of impervious areas is not a direct correlation to stormwater quality. MassDEP considers roof-water runoff "clean" and can be infiltrated into the ground without pre-treatment. Paved areas can store/detain and/or treat stormwater so that stormwater quality issues are mitigated. Accordingly, tracking the amount of impervious area does not have a direct correlation to water quality and therefore the MS4's should not have to expend resources *tracking minor changes* in impervious area. As long as new development is in compliance with Best Management Practices, control of development should be under the jurisdiction and control of local planning authorities. Any attempt at limiting /restricting development through controlling impervious area should be outside the purview of the Clean Water Act.

3. Signage at Outfalls. Installation of signage at outfalls provides no tangible benefit to water quality. Installation of signs and posts will waste resources, encourage theft or vandalism and provide little to no use in management of the stormwater system. All regulated organizations are now required to have maps with locations of all outfalls and the availability of GPS devices makes these outfalls easy to locate by Town personnel.

4. Chloride Reduction. Most municipalities already work to limit salt (chloride) usage as the cost of road salt and deicers represent an increasingly larger portion of winter storm budgets. Responsible DPW administrators continually look for ways to reduce costs wherever practical and have no objection to training the operators in Best Management Practices suggested by the EPA. However, reducing salt usage below what is practical with the current technology would be irresponsible when it exposes motorists to hazardous conditions. Road designs and weather conditions vary widely across the Commonwealth, so no one solution fits all. If the EPA will protect an endangered reptile, bird, plant or animal, it should be equally concerned with human life. The chloride reduction regulations should be limited to recommending the use of Best Management Practices.

5. Cost of Implementation. An article published in Construction Outlook, a publication of UCANE, recently published EPA cost estimates between $70,000 and $829,000 per year to comply with the new regulations depending on population and size. At the 9/24/2014 meeting, Newton Tedder from the EPA and other speakers commented that they believe most municipalities will have to pass a stormwater utility to fund the new

NPDES Phase 2 regulations. Accordingly, it appears that the EPA is admitting that the new regulations will be so costly that the municipalities cannot afford them through existing revenues. The EPA was charged with cleaning the water and operating within its budget as set by Congress. States and local cities and towns must do the same. It is unconscionable at a time when state and local governments are undergoing staff and budget cuts to capriciously raise the cost of compliance with the new regulations. Municipalities are happy to work with the EPA to achieve progress on stormwater, but the heavy handed, adversarial and punishing regulations as proposed will not encourage cooperation from state and municipal partners.

The Town of Southwick urges the EPA to not impose unnecessary and expensive financial burdens on the cities and towns in the Commonwealth. Taking reasonable actions to improve water quality is one thing, but being mandated to accomplish unreasonable demands is unnecessary. All levels of government must be cognizant of costs of new regulations. The EPA's proposed regulations, reporting requirements and overall costs of implementation must be reduced to a sustainable and rational level. The taxpayers should not be burdened by an attempt to reach unrealistic goals.

Very truly yours,

Russell S. Fox

RUSSELL S. FOX
BOARD OF SELECTMEN CHAIRMAN
TOWN OF SOUTHWICK

Cc: Richard Neal, Congressman
Donald F. Humason, Jr., 2nd State Senator for the 2nd Hampden and Hampshire District
Nicholas A. Boldyga, Representative for the Third District of Hampden County
Karl Stinehart, Southwick Chief Administrative Officer
Randal Brown, Southwick DPW Director
Dennis Clark, Southwick Conservation Commission Coordinator
Alan Siessler, Southwick Town Planner
Richard Buley, Chairperson, Southwick Finance Committee

TOWN OF SPENCER
Office of Utilities & Facilities

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February 26, 2015

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Sent via email to Tedder.Newton@epa.gov on February 26, 2015

Attention: Comments on the 2014 Draft Massachusetts MS4 Permit
Docket ID No. FRL-9917-31-Region-1; Document No. 2014-23262

Dear Mr. Tedder,

The following pages outline some of the Town of Spencer's concerns with the proposed Permit duplicating portions of the CMRSWC letter that we were part of authoring and signed by the Spencer Town Administrator.

General Comments

The Town of Spencer is supportive of proposed Permit provisions that will directly result in improved water quality, but object to those that are administrative or arbitrary, and that will not have a direct bearing on water quality. We have repeated some of our general objections from our CMRSWC letter below.

1. We encourage the Agency to update its own guidelines about how regulated communities are expected to balance compliance with the Permit (in its final form) with the ability to afford that compliance without experiencing economic hardship. Since 1997, the Agency has generally considered a maximum combined annual water and wastewater bill of 4.5% of mean household income (MHI)- 2% for drinking water and 2.5% for wastewater services- to be affordable. In their May 2013 "Affordability Assessment Tool for Federal Water Mandates" report, the United States Conference of Mayors, the American Water Works Association, and the Water Environment Federation argue that MHI is a poor indicator of economic distress, bears little relationship to poverty within the community, does not capture variation across diverse populations, and does not account "for the historical and future trends of a community's economic, demographic, and/or social conditions", especially during recessions and recovery from them, such as Massachusetts is presently

experiencing. Municipal revenues are decreasing, and further restrictions on development or redevelopment are not in the best interest of the community.

2. Even so, if we were to use MHI as the basis for evaluating a community's ability to afford a stormwater management program to comply with the proposed Permit, the 4.5% MHI cap would easily be exceeded if stormwater costs were included, along with drinking water and wastewater, in the calculation. This is true whether a community funds its program traditionally through the tax base or has developed a sustainable funding mechanism such as a stormwater utility or enterprise fund. In some rural Massachusetts towns, the cost of stormwater compliance will exceed the cost of wastewater compliance and the total may well be closer to 10% of MHI. Leaders and administrators in these towns will have a difficult task indeed to convince their residents and business owners that some of the proposed provisions will result in water quality improvements commensurate with the expense.

3. We encourage the Agency to include flexibility in the final Permit with respect to the date that the Permit in its final form becomes effective in each community. Flexibility in setting the effective date will allow each town the opportunity to budget for Year 1 and Year 2 tasks, specifically, within the municipal budget cycle, which will likely be out of sync with the Permit cycle. In the last few years, many communities have been telling their leaders and residents that the new Permit would be out "soon" based on updates from the Agency, with the target issue date moving over the course of several municipal budget cycles. Many of these leaders will face reluctance, skepticism, and frustration when proposing increased stormwater program budgets, and will need to re-educate their decision makers about why these increases are required.

4. We believe that many provisions in the proposed Permit do not lend themselves to implementation over a five-year Permit term, at least in a way that is affordable for the regulated communities and that result in meaningful improvements to water quality. Instead, we propose that the Agency extend the schedule for several specific provisions, such as development and implementation of catchment delineation, over a ten-year term. The Commonwealth of Massachusetts has in place a statutory framework that allows for such an extended timeline as a Compliance Schedule within a NPDES Permit. Indeed, the Agency has taken advantage of this extended schedule in the proposed Permit for the Catchment Investigation Procedure (see Section 2.3.4.8(c)(iii), IDDE Program Implementation Goals and Milestones, Page 37). This compromise will comply with Clean Water Act 402(b)(1)(B) while providing flexibility for the regulated communities.

5. When describing dry weather and wet weather screening and sampling and outfall/interconnection screening, the proposed Permit frequently refers to "detectable levels of chlorine". It should be noted that chlorine is detectable in most if not all outfalls and at perimeter of many of Massachusetts' surface water bodies using many field kits available today, and this detection limit is likely to become lower (identifying smaller and smaller concentrations of chlorine) as technology improves. Treated drinking water entering a stormwater system is the potential source the chlorine indicator is meant to highlight. However, chlorine in drinking water is highly volatile, and decomposes quickly once discharged to a surface water body and exposed to sunlight and the ambient atmosphere. If all outfall samples would demonstrate "detectable levels of chlorine", but the chlorine will degrade quickly within a water body, this parameter ceases to be useful as a screening tool. We request that this either parameter be removed from all sections discussing screening methodologies, or that a numeric threshold be established based on peer-reviewed data

that can correlate a specific elevated detected chlorine concentration to a potential illicit discharge, such as a grey water connection (or the absence of elevated bacteria) or cross-connection (in the presence of elevated bacteria).

6. We strongly encourage the Agency to engage in conversations and workshops that lead to development of a Final MS4 Permit that the Massachusetts Department of Environmental Protection (Mass DEP) is willing to sign onto. The alternative, outlined by the Agency's Thelma Murphy at a meeting of the Northern Middlesex Stormwater Collaborative in Lowell, MA on December 4, 2014, would be two separate Massachusetts MS4 Permits: the current 2003 Massachusetts MS4 Permit would continue to be enforced by the Mass DEP, and the new Final Massachusetts MS4 Permit would be enforced by the Agency. Mayhem would ensue due to administration, operations and maintenance, and coordination duplication resulting from each of the Commonwealth's regulated communities being subject to two separate MS4 Permits. In practice, progress toward improving water quality would likely stop as legal challenges were filed, which is not in the best interest of any party involved.

7. This coordination should begin as soon as possible to reach a version of the permit agreeable to both organizations and compliant with the Clean Water Act, Massachusetts' Surface Water Quality Standards, and associated supporting documentation, so that water quality improvement activities across the Commonwealth can be focused and consistent.

8. Please refer to the CMRSWC letter for additional specific comments.

We appreciate the opportunity to comment on this proposed Permit, and look forward to the additional protections and clarifications afforded by its consistency. Please feel free to contact me directly any time at (508) 885-7525 or styler@spemcerma.gov if you have questions.

Sincerely,
TOWN OF SPENCER

Steven J. Tyler, P.E.
Superintendent

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SPRINGFIELD WATER
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February 26, 2015

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Re: Massachusetts Small MS4 Draft General Permit Comments

Dear Mr. Tedder:

The Springfield Water and Sewer Commission (Commission) appreciates the opportunity to comment on the Small MS4 draft general permit for Massachusetts. The Commission is a regional water and sewer authority providing retail and wholesale water and sewer service to approximately 250,000 people. Each year, the Commission plans a budget that will allow for sustainable reinvestment and operation of our facilities and infrastructure while maintaining compliance with all applicable federal, state, and local regulations. Each year, this task has become more difficult due to increases in the cost of supplying services and the expanding regulatory framework. With the comments that follow, we hope to provide some direction for Region 1 to develop a stormwater permit that addresses water resource issues but remains reasonable, considerate of the realities of municipal operations and finances, and is consistent with statutory limitations on municipal stormwater pollution control stipulated in the Clean Water Act.

General Comments:

While the goal of the Clean Water Act is laudable and supported by the Commission, we consider the requirements in the MA Small MS4 general permit to be overly prescriptive, burdensome, and most likely unachievable for most communities.

Schedule Constraints: The schedules set forth in the draft permit are not reasonable or feasible when considered in the context of municipal realities. Schedules for some aspects of the permit may appear reasonable but become unreasonable when the permit is viewed in its entirety and it becomes clear that schedules for most parts of the permit overlap.

Significant Administrative Burden: The permit, as drafted, would create a significant administrative burden for municipalities that would detract from their ability to provide direct

benefits to water quality through such concrete activities as increased street sweeping, increased catch basin cleaning, and removal of illicit discharges. The permit goes overboard in terms of monitoring, measuring, and quantifying changes in pollutant loads. More environmental progress would be gained if communities could focus resources on actual, physical improvements to stormwater systems and not on pollutant accounting. Per the Clean Water Act municipalities are obligated to remove pollutants from stormwater to the maximum extent practicable and that should be the objective of the permit. The ongoing assessment of receiving waters is a function of MassDEP, not individual communities.

Funding Challenges: Many of the deadlines provided in the draft permit do not allow sufficient time to allocate funding within set municipal budget cycles to complete the tasks required. No item in the permit should be required to be completed during the first permit year except the preparation of the Stormwater Management Plan (SWMP).

Integrated Planning Opportunities: There should be language within the permit that references EPA's Integrated Planning framework and how integrated planning can be utilized to address a community's stormwater/MS4 requirements. That language should be specific about how an integrated planning approach could be applied through the permit and how permit conditions, including implementation schedules, would be modified under an integrated plan.

Section-Specific Comments:

1. Section 2.1 Water Quality Based Effluent Limitations and 2.1.1-Requirement to Meet Water Quality Standards: Section 2.1 (page 9) states that "Pursuant to Clean Water Act Section 402(p)(3)(B)(iii), this permit includes provisions to ensure that discharges from the permittee's small MS4 do not cause or contribute to exceedances of water quality standards...". Similarly, the Fact Sheet, at page 4, states "Section 402(p)(3)(B)(iii) of the CWA also authorizes EPA to include in an MS4 permit 'such other provisions as [EPA] determines appropriate for the control of ... pollutants'" and that "[t]his provision forms a basis for imposing water quality-based effluent limitations (WQBELs)" citing to *Defenders of Wildlife v. Browner*. 191 F.3d 1159 (9th Cir. 1999), and EPA's preamble to the Phase II regulations, 64 Fed. Reg. 68722, 68753, 68788 (Dec 8, 1999); and at page 16, that "EPA interprets this latter clause (i.e. "such other provisions as [EPA] determines appropriate for the control of . . . pollutants" at Section 402(p)(3)(B)(iii) of the CWA) to authorize the imposition of water quality based effluent limitations." This interpretation distorts entirely the meaning of CWA Section 402(p)(3)(B)(iii) and the intent of Congress in enacting this provision, and is incorrect. When Section 402(p) of the CWA was added in 1987, it established a comprehensive new scheme for regulation of stormwater. It differentiated the technology-based requirements for MS4s relative to the rest of the NPDES program by creating a new "maximum extent practicable standard," in contrast to the traditional BAT/BCT standard that applied to industrial stormwater and other wastewater discharges. The opening clause of CWA § 402(p)(3)(b)(iii) states that, unlike industrial stormwater permits, MS4 permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable . . . ." A subordinate clause states that such controls shall include "management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants." Each of those controls is subject to the limitation in the first clause that they shall be required "to the maximum extent practicable." EPA's interprets this provision contrary to its plain meaning and

in a manner which suggests that the final clause referring to "such other provisions as the Administrator or the State determines appropriate" is independent and coequal with the requirement to reduce pollutants to the "maximum extent practicable." Region 1's reading distorts the syntax of § 402(p)(3)(B)(iii) and the intent of Congress in enacting this provision.

The Region also suggests, incorrectly, that the Ninth's Circuit's opinion in *Defenders of Wildlife v. Browner* supports this misreading of the statute. While in dicta at the end of its decision, the court suggested that the "such other provisions" clause allowed EPA the discretion to include "either management practices or numeric limitations" in MS4 permits, the court did not say that the discretion to include numeric limitations or to require compliance with water quality standards could be exercised without regard to the "maximum extent practicable" limitation in the statute. That issue was not presented by the facts of the case before it, and it was not addressed in the court's opinion. Had the court so ruled, it would have been contrary to the plain language of the statute and subject to reversal on appeal.

Federal courts have consistently ruled that the MEP standard is the only standard that MS4 discharges are required to meet. *Natural Resources Defense Council, Inc. v. U.S. EPA*, 966 F.2d 1292, 1308 (9th Cir. 1992) (CWA § 402(p)(3)(B) "retained the existing, stricter controls for industrial stormwater dischargers but prescribed new controls for municipal stormwater discharge); *Defenders of Wildlife v. Browner*, 191 F.3d 1159, 1165 (9th Cir. 1999) (CWA § 402(p)(3)(B) "replaces" the requirements of § 301 with the MEP standard for MS4 discharges, and it creates a "lesser standard" than § 301 imposes on other types of discharges); *Environmental Defense Center v. EPA*, 319 F.3d 398 (9th Cir. 2003), vacated, rehearing denied by, and amended opinion issued at 344 F.3d 832 (9th Cir. 2003) (CWA "requires EPA to ensure that operators of small MS4s 'reduce the discharge of pollutants to the maximum extent practicable'"); *Mississippi River Revival, Inc. v. City of St. Paul*, 2002 U.S. Dist. LEXIS 25384 (N.D. Minn. 2002) ("the CWA specifically exempts municipal stormwater permittees" from the requirement to ensure that water quality standards are met).

In addition, EPA's citation to the Preamble to the Phase II regulations, 64 Fed. Reg. 68722, 68753, 68788 (Dec. 8, 1999) to support its interpretation of Section 402(p)(3)(B)(iii) of the CWA as authorizing the imposition of water quality based effluent limitations is disingenuous. The Preamble to the Phase II rule at 64 Fed. Reg. 68788, states only that EPA disagrees with commentators who challenged EPA's interpretation of the CWA as requiring water quality based effluent limits for MS4s. The Preamble gives no legal rationale. Like the fact sheet, at page 4, the Preamble to the Phase II rule cites to *Defenders of Wildlife*. As noted above, *Defenders of Wildlife* does not support the proposition that EPA can require MS4 operators to comply with WQBELs regardless of practicability.

EPA has taken the position in the defense of the Phase II rule in *Environmental Defense Center* that:

> MS4 requirements… rest on the "maximum extent practicable" ("MEP") standard which CWA Section 402(p)(3)(B)(iii), 33 U.S.C. § 1342(p)(3)(B)(iii), prescribes for Section 402(p) municipal storm sewer permits. 40 CFR § 122.34(b). Thus, while the regulations suggest numerous ways in which small MS4s ought to control their stormwater discharges, *the MS4s are not, in the end, required to do anything that is not "practicable."* 2000 U.S. 9th Cir. briefs 70014, 70020 (June 26, 2001). (Emphasis supplied)

Given the plain language of Section 402(p)(3)(B)(iii), any application of the Phase II rule to require that MS4 discharges need to meet WQBELs regardless of "practicability" would be *ultra vires.*

The cited section of the Clean Water Act makes no mention of water quality standards. Instead, it establishes Maximum Extent Practicable (MEP) as the standard to which pollutants must be removed from municipal MS4s. The language in section 402(p)(3)(B)(iii) of the Act is clear that MEP governs pollution control requirements for municipal stormwater discharges. Section 402(p)(3)(B)(iii) of the Act states that controls to reduce the discharge of pollutants to the MEP include management practices, control techniques and systems, design and engineering methods, and such other provisions as the Administrator determines appropriate for the control of pollutants. The "such other provisions" clause is within the broader context of the MEP standard, not separate from it as EPA tries to imply. The proper wording throughout the permit that would be consistent with the Act would be for the permittee to meet water quality standards to the maximum extent practicable. For Congress to bother to include such language in the Act is clear and unassailable evidence that lawmakers understood that there are limitations in the ability of municipalities to meet water quality standards in stormwater discharges. These limitations are spelled out in the statutory standard of MEP applied only to municipal stormwater discharges. NPDES stormwater permits for municipalities will continue to be contentious as long as EPA refuses to recognize that the MEP standard applies as the only mandate for pollutant removal from MS4s. Water quality standards and TMDL waste load allocations may be goals but are not the required standards that must be achieved in municipal stormwater.

2. Section 2.1.2 Increased Discharges: New and additional stormwater flow to impaired waters regardless of concentration would be prohibited under this draft permit. This requirement could only be overcome by demonstrating that the pollutant of concern is not present in the new/increased discharge or that the total load of pollutants to the impaired waters will not increase. Even the most innocuous "new discharge," say a new single family home with a driveway and stormwater-minimizing design, will produce some pollution and will add some additional load, be it insignificant, to a receiving water. The language in this section could thus be interpreted to mean no new development in MS4 areas draining to impaired waters. Many urban areas of Massachusetts have nothing but impaired waters. This section could effectively preclude new development in such communities. That is an impact that goes far beyond EPA and federal authority. This language must be modified to stipulate thresholds on new/additional pollutant loads being significant and not merely all new loads.

3. Section 2.2.1.b (pages 11-15) and Appendix F, Part A: The permit requires compliance with TMDL waste load reductions associated with stormwater. It mandates a progressive reduction in pollutant loads with 100% reduction achieved within 15 years. The permit neglects to recognize that most TMDL's developed for Massachusetts waters are lacking in sound science and are instead based on very generic models of watershed loading. In many cases there is a dearth of actual sampling data from the TMDL regulated waters or data may be 25 or more years old. Even in the more rigorous Charles River TMDL for phosphorus, the model used to determine needed phosphorus reduction produced results that are not supported by actual test data. The TMDL's which drive pollutant removal requirements in the draft permit are wholly inadequate for this purpose and cannot legitimately justify specific pollutant load removal for the vast majority of waters. To be consistent with the Clean Water Act and avoid reliance on unsubstantiated pollutant load reductions, municipalities should be required to remove the pollutant of concern to the maximum extent practicable by implementing feasible BMPs, including structural and non-structural measures, that have been demonstrated through generally accepted research to be effective at removing that pollutant. Municipalities cannot do any more than what is feasible and should not be squandering limited resources chasing highly tenuous pollutant "numbers".

4. Section 2.2.1.c (pages 15-17) and Appendix F, Part B: Massachusetts municipalities should not be held to comply with out-of state TMDL requirements. TMDLs are determined by state environmental agencies. While there may be an "open" regulatory process for TMDL development it is highly unlikely that process and its requisite public notification was extended to potentially impacted communities outside of the state. The interests of Massachusetts municipalities were not represented by anyone during TMDL development in Rhode Island, Connecticut, New York, Vermont or New Hampshire. Massachusetts cities and towns are now being subjected through this draft permit to regulatory programs in other states to which they had no opportunity to participate. Even within Massachusetts, the majority of TMDLs were developed in the early 2000's at a time when their link to future stormwater permits was unknown. Massachusetts TMDLs, with few exceptions, were offered as stand-alone documents with little bearing on anything that a municipality would be required to do. Had it been clear that these documents would have substantial and costly implications for cities and towns the TMDL development process would have fallen under much greater scrutiny and the haphazard, unscientific way they were created would likely have been challenged. The TMDL program in Massachusetts is so hopelessly flawed in terms of science and public process that it should not be utilized for NPDES permitting at all, let alone be the primary focus of a MS4 general permit.

5. Section 2.2.2 Discharges to Certain Water Quality Limited Waters Subject to Additional Requirements (pages 17-22) and Appendix H: This section assumes that there has been sound and defensible science used to determine the cause of impairments of numerous water bodies. That has rarely been the case. State agencies including Massachusetts DEP have rarely had the resources to perform legitimate water quality investigations of lakes, ponds and rivers. Very often an assessment of a water body is based on the most cursory information (visual observation of weeds or algae) and lacks the detailed sampling and analysis needed to truly determine conditions and causes. Yet this unscientific assessment will now result in communities expending significant resources developing nitrogen source identification reports and phosphorus source identification reports along with the planning, implementation and tracking of structural BMPs for removal of these pollutants. For some communities, the "water quality limited waters" driving these added expenses could be 75 miles downstream. It is

ludicrous to imagine that stormwater generated in a small community of 5,000 people could have a significant impact on a coastal bay nearly 100 miles distant yet that is what is being described in this section. There needs to be both better science and common sense applied before cities and towns are held to "fix" problems that often do not exist.

6. Section 2.3.2 Public Education and Outreach: While EPA provides more time to conduct the public education program in this draft of the permit, it is important to keep in mind that the majority of the public does not understand how stormwater can become polluted and how it can contribute to water quality issues. Most of the public still believes that catchbasins in their roads transport stormwater to a treatment facility prior to discharge. In addition, most people do not understand the concept of a watershed, or the concepts related to the water cycle (rainfall, runoff, infiltration, and evapotranspiration). A significant amount of awareness-raising must be done across the United States prior to an individual community education/outreach campaign in order to truly stimulate behavior changes in the general public. Many municipalities see a large influx of visitors during the tourist season and thus education must extend well beyond the immediate locality to be truly effective. Stormwater education is a national need and should be spearheaded by EPA nationally through a consistent education campaign and not simply left to municipalities.

7. Section 2.3.4 Illicit Discharge Detection and Elimination (IDDE) Program (pages 25-37): Overall the IDDE program as described is highly prescriptive and very burdensome. While IDDE is necessary and valuable for a strong stormwater management program, the extent to which a municipality can comply with the edict mandated in the draft permit is questionable. The schedule mandated by the permit is unreasonable for an initiative that constitutes a major capital project requiring significant expenditures and coordination. The described program needs to be tempered by the Maximum Extent Practicable standard and thus subject to that which is feasible.

8. Section 2.3.4.1 Definitions and Prohibitions (page 25): EPA needs to modify its definitions to differentiate illicit discharges caused by mis-connected sewer laterals or direct introduction of contaminants into the MS4 by illegal dumping from those caused by systemic failures within the sanitary sewer or MS4. It is one thing to track, identify, and remove an illicit connection but altogether different to track, identify, and correct a failed sanitary sewer or similar system defect. The former are generally easy to locate and repairable within a relatively short time while the latter are extremely difficult to locate and repair and may involve wholesale replacement of large parts of the sanitary sewer collection system. The language in section 2.3.4 implies a "one size fits all" approach to IDDE and it clearly is not in terms of locating and removing the illicit discharge.

9. Section 2.3.4.4 a through e: This Sanitary Sewer Overflow reporting requirement is redundant and should be removed from the Small MS4 permit. MassDEP already requires SSO reporting through statewide regulations. For purposes of this MS4 permit, the term SSO needs to be defined. Relative to stormwater management and MS4 permitting the only SSO that should be considered are those that discharge through a stormwater outfall into a receiving water. SSOs that enter basements or are contained on street surfaces or upland areas have no link to an MS4.

10. Sections 2.3.4.5 and 2.3.4.6 (page 26-28): Outfall and interconnection inventory and system mapping are necessary and valuable components of stormwater management. However, the timeframe to complete these more detailed studies is likely inadequate, especially for smaller communities that may lack GIS and GPS capabilities. Communities should identify feasible schedules for completing this work within their SWMP.

11. Section 2.3.4.7.d.i (page 32): The Commission objects to the requirement that the permittee adopt a screening and sampling protocol consistent with a January 2012 draft document (EPA New England Bacterial Source Tracking Protocol). If this protocol is to be used in a regulatory context as proposed for this permit, it should be subject to rule making, peer reviewed, and scrutinized by others outside of the Agency and become a Final, not a draft, before making its use mandatory. Otherwise, the draft document may be useful as a suggested reference only.

12. Section 2.3.5 – Construction Site Stormwater Runoff Control, and 2.3.6 – Stormwater Management and New Development and Redevelopment (Post Construction Stormwater Management). These provisions require permittees to develop, implement, and enforce a program to reduce pollutants and any stormwater runoff discharge to the MS4. EPA has no authority to make local land-use decisions by compelling permittees to make specific choices with regard to ordinances or other regulatory mechanisms. EPA is exercising federal land-use mandates on a local basis in violation of the 10th Amendment of the Constitution.

    These provisions would also apply to public road reclamation and resurfacing projects involving more than ¼ mile of 30 foot wide pavement (approximately 1 acre equivalent). By doing so, this permit would cripple local road maintenance budgets by effectively requiring redesign and construction of entirely new stormwater collection and control systems for all but the smallest road resurfacing project. Maintaining safe, passable roads is among the highest priorities of local government and one that is currently grossly underfunded. Taking limited funds and utilizing them for stormwater improvements for virtually every significant resurfacing project will greatly curtail meaningful improvements to local roads. Resurfacing and pavement maintenance projects should be exempted from this requirement to meet stormwater standards. The standards might be applicable to road reconstruction projects but only to the extent that they are practicable.

13. Section 2.3.6.d (pages 42-43) Directly Connected Impervious Area: The requirement to monitor and track impervious cover is a burdensome and inappropriate requirement for most municipalities. It has the appearance of a research effort and not a tool that will benefit stormwater management by the community. Compiling and tracking impervious area will require manpower and costs that would be better utilized implementing better stormwater control systems. If Region 1 is that interested in tallying impervious cover acreage, the Commission suggests it directly fund and coordinate with colleges and universities to accomplish the task through graduate and undergraduate GIS projects.

    Region 1's effort to regulate impervious surfaces raises the legal issue on whether such surfaces are "point sources" under the NPDES permit program. Impervious surface, on its own, cannot be subject to regulation under the NPDES permit program because impervious surfaces are neither a "point source" nor a "pollutant." Instead, it is a feature of the landscape that

indirectly influences how water is carried on and off land. Congress predicated the stormwater permitting program and Section 402(p) of the CWA on "point source" discharges of "pollutants" from certain categories of dischargers, including MS4s and industrial activities. If Region 1 were to interpret "point source" to include impervious surfaces, it renders that term meaningless and contrary to Congressional intent to define the term and distinguish between "point sources" and "nonpoint sources." In addition, Region 1's authority to control pollutant discharges does not encompass the ability to mandate land-use decision-making. While local authorities can develop a regulation, for example, to limit impervious surfaces or other stormwater flows into the MS4, EPA is limited to regulating the discharge of pollutants from the MS4 and cannot force MS4s to do what EPA is not otherwise authorized to do, including imposing restrictions on local land use decisions. While on November 26, 2014, EPA released a guidance memorandum in which it asserts authority to mandate retention standards based upon the amount of impervious surface at a site, that authority is necessarily limited to discharges from MS4 storm system (i.e., the "point source") into navigable waters. In short, impervious surfaces are not "point sources" under the NPDES permit program. CWA Section 304 prohibits unauthorized point source discharges, but Congress left the regulation of nonpoint source pollution to the states.

The Commission appreciates the opportunity to comment on Massachusetts Draft Small MS4 General Permit. We urge EPA to consider modifications to the permit that will make it more sustainable and reasonable for municipalities and consistent with the Clean Water Act.

Respectfully

Springfield Water and Sewer Commission
Joshua D. Schimmel
Director of Operations –Wastewater

Cc: Kathy Pedersen, Springfield Water and Sewer Commission

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January 2, 2015

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Re: Draft Massachusetts Small MS4 Permit

Dear Mr. Tedder:

Thank you for this opportunity to comment on EPA's Draft General Permit for Small MS4s in Massachusetts. I appreciate the decision to extend the comment period.

For Belmont, as for the rest of the state, polluted stormwater is the most serious water pollution problem. We know the town has many illicit discharges – both misconnections of sewerage pipes to the stormwater system and places where sewer pipes are broken and the sewage seeps underground into the stormwater drains.

The Illicit Discharge Detection and Elimination requirements could help if they are seriously enforced – but that's a big "if". Belmont was issued a 308 letter by the EPA in 1998 and a Notice of Noncompliance by the Massachusetts Departments of Environmental Protection in 2000. So far, though the town has invested in upgrading its infrastructure, it has not come close to solving its problems, nor have the regulators put much pressure on it to increase its investments.

I hope that the provisions of this permit will be strengthened and that they will be enforced.

Cordially,

Sue Bass

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January 14, 2015

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Boston, Massachusetts, 02109-3912

Via E-mail: Tedder.Newton@epa.gov

RE: Draft NPDES General Permit for Stormwater Discharges From Small Municipal Separate Storm Sewer Systems in Massachusetts – Public Comment Letter

Dear Mr. Tedder:

This letter is submitted to you in accordance with public comment procedures related to the proposed NPDES General Permit referenced above. The concerns enumerated below constitute "reasonably ascertainable issues" developed on the basis of review of the draft General Permit, supporting documentation provided by EPA (including fact sheets, appendices, technical guidance and reports), and practical experience implementing the program over the preceding eleven (11) years of the existing permit term. These are significant issues that warrant response by EPA and consideration for modifications in the final General Permit. The initial comments refer to conditions associated with "Requirements to Reduce Pollutants to the Maximum Extent Practicable" (the six Minimum Control Measures [MCM]); the latter comments refer to conditions related to "Water Quality Based Effluent Limitations (WQBELs)." General comments follow thereafter.

Comments

Minimum Control Measures / Maximum Extent Practicable Requirements

1. **MCM 1 – Public Education and Outreach**: Although not explicitly required under the permit, EPA has repeatedly suggested that introducing stormwater quality-related topics in school curricula would be an appropriate and cost-effective means of achieving MCM-1 objectives. Experience has demonstrated that statutory subject requirements within most school systems makes it very difficult to introduce non-mandatory (or non-MCAS related) material. Cost estimates related to achieving the minimum requirements of this

2. MCM appear to be under-representing the broad audience targets and should not assume school programs as the basis for cost estimates.
3. **MCM 3 - IDDE Investigations**: Level of effort to achieve all of the elements of the Illicit Discharge Detection and Elimination (IDDE) Program is significantly higher than currently experienced and not significantly reduced from previous drafts despite prior concerns expressed in this regard. Several specific issues include:
    a. **Catchment Prioritization:** We recognize the value of categorizing and ranking/prioritizing catchments as a means of identifying more likely pollutant sources early in the program. Protocols for ranking catchments (and continually re-evaluating rankings) require significant knowledge about storm drain and sanitary sewer system condition and characteristics, which are elements drawn from mapping and investigations that are executed after the initial prioritization is completed at the end of year 1. The methods described in the permit provide some latitude based on "existing knowledge," however, it is important that absence of specific information regarding a catchment does not default to "High" categorization or prioritization within a category. We are concerned that "unknown" conditions related to screening factors may result in a disproportionate number of catchments being categorized as Problem or High, which in turn places these catchments on a faster-tracked investigation schedule with implications for labor and costs for communities. *Proposed Modification*: Ranking and prioritization factors are highly specific, and cover a broad spectrum of infrastructure condition, land use, laboratory analytical results and development age/characteristics. We suggest simplifying the procedure and allowing communities to categorize catchments as either "excluded" or "problem" as defined in the permit, with all other catchments falling into "other" to be investigated on a prioritized basis developed through local operator knowledge. Investigations can be performed within the 10-year timeframe currently established in the permit, with documentation on investigation results provided in annual reports. For those communities that have already undertaken a prioritization exercise on the basis of guidance provided in the 2010 Draft Permit, that ranking ought to be allowed as the basis for execution of the plan.
    b. **Wet Weather Monitoring:** The Fact Sheet accompanying the general permit indicates that the revised wet weather monitoring requirements were modified to reduce the number of outfalls that would require labor intensive sampling/monitoring. However, the twelve (12) specified "System Vulnerability Factors" provided as the basis for inclusion in a wet weather monitoring program encompass a broad swath of infrastructure system characteristics and the "one or more" threshold trigger for categorizing a catchment as a wet weather monitoring candidate will capture the vast majority of outfalls in many if not most communities. This fails to provide the relief communities requested during the 2010 Draft General Permit comment period, and which the fact sheet

accompanying the 2014 Draft General Permit implies has been provided. *Proposed Modification*: Wet weather screening of catchments should be conducted on the basis of observed conditions during physical investigation of catchments rather than the system vulnerability factors presented in the permit. Actual conditions as the trigger for further investigation will mitigate the low threshold ("one or more") and the breadth of the factors that, as proposed, will result in a disproportionate number of outfalls requiring wet weather screening.

c. **Catchment Investigation Procedure:** The storm drain network investigation as proposed, including the physical inspection of all key junction manholes irrespective of evidence of dry weather flow or other illicit connections at the point of outfall discharge, is new, excessive, and will fail to provide environmental benefit for the additional labor and expense required. *Proposed Modification*: Allow local MS4 operators to implement a manhole inspection methodology appropriate to the complexity of their system, to be documented in their IDDE plan, with results reported annually as required in the current permit.

4. **MCM 3 - IDDE Mapping:** New mapping requirements relating to sewer infrastructure under the IDDE MCM are a significant concern, as they not only require mapping of all storm drain components, but now must include sanitary sewer infrastructure "where available" and knowledge of asset conditions relative to both storm and sewer systems in order to implement procedures related to prioritization and execution of catchment investigations on the basis of the System Vulnerability Factors. This level of asset inventory, condition assessment, mapping and documentation represents an effort that could take much longer than the two (2) year deadline in the permit. Based on the dynamic and cumulative documentation relative to investigations and program progress, it is also clear that communities are virtually required to develop this mapping and condition assessment as part of a GIS database. For communities that have not begun or are in early stages of GIS development, two years is certainly an inadequate amount of time. The "where available" language relative to sewer mapping (Section 2.3.4.6 (a) (ii)) is itself problematic because it is not clear to what extent the MS4 operator, who may be different than the sanitary sewer system operator, is required to obtain, develop or update sanitary sewer mapping elements that could influence catchment prioritization or wet weather screening obligations through the course of the permit term. *Proposed Modification*: Extend deadlines for storm system mapping requirements to Years 4 or 5 and make all sanitary sewer mapping voluntary or "recommended" rather than required.
5. **MCM 3 - Sanitary Sewer Overflows**: The inclusion of sanitary sewer infrastructure management or monitoring (such as reflected in Section 2.3.4.4 – Sanitary Sewer Overflows) as a component of MS4 permit compliance is a redundant requirement since communities that operate sanitary sewer systems are already regulated in this regard under existing wastewater NPDES permits. The manner in which the condition is incorporated into the MS4 permit potentially subjects communities to multiple penalties

under separate permit programs in the event of an SSO excursion. *Proposed Modification*: Elimination of this requirement.

6. **Affordability; Estimated Program Cost Increases**: EPA directs MS4 owners to the 2011 "*Sustainable Stormwater Funding Evaluation*" Final Report for reference regarding anticipated program cost increases (administrative, operating and capital) under a variety of scenarios. This document, and subsequent evaluations conducted for other Upper Charles River watershed communities (including Medway), indicates that program administrative/operational costs alone will range from double to quadruple existing expenditures. More recent updates to these figures for the communities that were the subject of EPA's detailed analysis indicate that, if anything, these estimates are under-representing the magnitude of cost increases. Capital costs to comply with the TMDL requirements embedded in the permit are estimated in the tens of millions of dollars. The enormous gains in water quality under the Clean Water Act in the first two decades after passage were achieved through a locally affordable program aimed at primarily wastewater-related point source discharges, and underwritten by state and federal funding equivalent in many cases to 90% of the program capital cost. Stormwater-related pollutant contributions to receiving water bodies are much more difficult to control and will achieve an incremental water quality improvement compared to the wastewater discharges that were the target of initial infrastructure investments. It is inconceivable that the estimated costs of this MS4 program can be affordably sustained by a limited number of property owners within communities subject to the most stringent pollutant reductions. Water quality improvements have local, state and national benefits. A program that EPA and other environmental organizations (regulatory, advocacy/non-profit or commercial) recognize as this important should have some kind of legislative or Congressional support that provides adequate funding to promote programs that can achieve water quality improvements in a more equitable and financially sustainable manner.
7. **Regional or Alternative Implementation Opportunities**: Many of the sustainable funding alternatives explored in the 2011 report refer to opportunities for working with designated dischargers (DD) in some capacity. The Residual Designation Authority (RDA) Draft Permit has not progressed in some time, and there is little information available as to the likelihood of this permit ever becoming final. In addition, under current conditions, it applies to a very small number of communities (Bellingham, Franklin and Milford). Private properties are a major contributor of pollutants to MS4 discharges, however, this RDA mechanism is an unwieldy approach to incorporating private activity into pollutant control. If the permit were to be finalized as it currently stands, these three communities are likely to experience detrimental economic development impacts due to the additional cost of operating in their towns compared to immediately abutting communities. Without passage, however, private property owners have no incentive to collaborate with local authorities regarding operation of sites that were designed and constructed in accordance with local stormwater regulations in place

at the time of development. It is unrealistic to include any of the funding scenarios that include cooperation or collaboration with a group of designated dischargers that do not exist today, are unlikely to be designated in the near future, and are unlikely to voluntarily engage in a complex and costly program without measurable benefit to them directly.

8. **Affordability; Integrated Planning (IP):** The water quality protection objectives of the NPDES stormwater and wastewater programs are recognized and supported by the regulated community. However, inclusion of an increasing number of the sanitary sewer management elements into the MS4 permit program suggests that EPA is migrating towards an integrated planning model as presented in your "Integrated Municipal Stormwater and Wastewater Planning Approach Framework." As provided for in the conditions of this draft permit, however, the effect is to import compliance conditions suitable for wastewater management programs while failing to provide permit relief or incentives to the regulated community for employing an integrated management approach to community water resource assets, including stormwater management infrastructure. The result is the equivalent of "double jeopardy" under dual permits without schedule, affordability or reporting relief. *Proposed Modification:* EPA should integrate an affordability assessment component into the Permit that will allow communities to determine the extent to which they and their constituents can afford to implement Clean Water Act requirements associated with both storm and sanitary sewer permit obligations, including operational and capital costs. If EPA is committed to the IP approach, general permits such as this should be explicitly incorporating elements of the framework on an iterative basis (i.e. every term renewal moving closer to the ideal). Ultimately, a model of risk-based decision making relative to infrastructure investments can recognize greater water quality benefit for the dollars spent without the current regulatory liability associated with multiple permits addressing water quality through different program frameworks.
9. **Definitions – Redevelopment**: The term "redevelopment" is nowhere defined in the permit or appendices. Given that EPA is requiring "redevelopment" projects to meet the new development design guidelines for stormwater management (and particularly in reference to the one-inch retention/treatment provision), it is important to know what constitutes redevelopment versus rehabilitation, restoration, maintenance or repair projects. This is particularly of concern as it relates to transportation-related projects such as pavement programs (full depth reconstruction, pavement overlays, chipping, etc.), and the possibility that routine maintenance could trigger requirements for significant drainage improvements that would not otherwise be appropriate or necessary for operational purposes. *Proposed Modification*: Define redevelopment to exclude roadway projects that do not add significant new paved acreage.
10. **MCM 5 – Roadway Projects:** The revised Stormwater Management in New Development and Redevelopment MCM presents several challenges. Primary among these is the requirement to retain the first inch of runoff (or treat the equivalent pollutant

load) from all impervious areas on site. This requirement will pose a significant challenge as it relates to roadway projects (either new or redeveloped) and will contribute to significant escalation of costs associated with drainage and/or treatment from roadways. *Proposed Modification*: Include an exemption or waiver from this permit condition for roadway projects.

11. **MCM 5 - BMP Sizing:** Language in this permit provision states that "all impervious area" is subject to the capture, infiltration or treatment requirements and specifically that flow volumes [for retention or treatment] are calculated based on "multiplying the area of impervious area on site by one inch." We seek clarification that BMPs on site need not be sized to reduce "calculated" pollutant loads that theoretically are contained in flow from disconnected impervious area on-site that is not otherwise directed to the MS4.
12. **MCM 5 – EPA and DEP Consistency:** With the encouragement of the Massachusetts Department of Environmental Protection (MassDEP) and EPA, many communities have adopted the Massachusetts Stormwater Management Standards either directly or by reference into existing municipal design standards and by-laws. This permit represents a divergence from the MassDEP stormwater standards and complicates compliance for regulated entities. We request EPA and MassDEP develop a consistent set of development standards that ensures that exemptions or waivers provided under federal NPDES permits will ensure similar treatment under MassDEP surface water discharge regulations.
13. **MCM 5 - 1-inch Standard:** EPA has stipulated that the one-inch retention/treatment standard applies to both new and re-development projects. As noted above, this is not consistent with the MassDEP stormwater management standards and creates further confusion relative to application of development standards. See our comment above regarding joint approach.
14. **MCM 5 – Street Design Guidelines:** At Section 2.3.6 (b),the MCM requires development of a report assessing current street design and parking lot guidelines that affect creation of impervious cover to be due within three (3) years of the permit effective date. The intent is to identify opportunities to support low impact design options to be incorporated into local regulation and standards. Under "smartgrowth" principles with comparable environmental impact mitigation interests, the federal government, state and local agencies have promoted a "complete streets" approach to invite multi-modal use of roadways that frequently results in greater impervious area. Given the sometimes contradictory nature of these programs, the regulated community would like assurances that the federal and state government are collaborating to provide adequate guidance that achieves prioritized environmental objectives without potential penalty (either in terms of punitive fines or loss of grant/loan funding, etc.) to the regulated community. *Proposed Modification:* We propose modification of the permit term within this section to provide greater latitude to MS4 owners regarding implementation of recommendations resulting from the report. Where there are competing interests relative to "environmental

street design" the MS4 owner should be allowed to make local decisions that are in it's best interest.

15. **MCM 6 – Good Housekeeping Affordability Assumptions:** The Good Housekeeping MCM as proposed will be extremely expensive for most communities to implement. The accompanying permit fact sheet states that while this is the most costly program area for most communities, these are existing functions (e.g. catch basin cleaning and street sweeping) and the costs associated with compliance under the permit will be incremental, or less, such that "these costs are likely not above and beyond what the permittee likely spends on maintenance of permittee owned property currently." The cost estimate provided fails to appreciate that most communities do not currently collect the data, analyze findings, document and report activities in the manner now required under this permit. For communities that contract these services to outside vendors, procurement of new contracts to include documentation required will undoubtedly impact bids by increasing costs significantly. It is expected that data collection from catch basin sump cleaning efforts will almost double the time per catch basin required. It is reasonable to anticipate, therefore that catch basin cleaning costs will double, regardless of whether the activity is out-sourced or done in house. Program affordability, particularly in light of requirements under Water Quality-Based Effluent Limits (WQBEL's), continues to diminish and timeframes within the permit further compromise a community's ability to meet permit requirements under the MCM's as presented in this draft permit. *Proposed Modification:* Again, we request that EPA include an affordability component into the MS4 Permit, comparable to that provided under CSO Long Term Control Plan programs.

Water Quality Based Effluent Limitations (WQBELs)

16. **New Discharger Definition:** Based on the accompanying fact sheet, the definition of "new discharger" within the permit does not include expansion of an MS4's existing system within its jurisdiction. The distinction is important since increased discharges can be covered under the General Permit, but new discharges must be covered under a separate individual permit. Please confirm that the term "adjacent" or "adjacency" within the context of this definition includes any new drainage element, including an outfall, within an MS4's jurisdiction but not otherwise connected to any other component of the MS4. For instance, the town may accept a private road that includes a "self-contained" drainage system (e.g. a series of connected catch basins discharging to a discrete outfall none of which is connected to or "adjacent to" existing drainage infrastructure) without triggering a requirement to cover that segregated outfall through a separate individual permit. Public management of the streets will generally lead to better pollutant management and on that basis the permit should not dis-incentivize acceptance of private roads.

Other Issues

17. **Non-Stormwater Discharges**: At public meetings during which EPA has presented material about the new permit, there has been much discussion about the classification of sump pump discharges as an allowed "non-stormwater discharge." Explicit guidance is necessary regarding local permit programs sufficient to meet documentation of determination standards relative to sump pump discharges as a class of allowed discharges.
18. **Town Administration Outreach**: In most communities responsibility for permit compliance resides with Public Works or similar agency officials. Boards of Selectmen and/or Town Managers are often not involved in program administration outside of procurement or appropriation processes for identified projects. Their lack of understanding and support to local implementing agencies has been a continuing challenge. EPA and/or DEP must increase their involvement in educating Town officials about the extent, costs, operational impacts and policy determinations incumbent on program administrators to ensure continued organizational support, particularly for funding strategies.
19. **Floor Drain Inventory:** It is appropriate and appreciated that this requirement has been removed from the Draft Permit.
20. **Errors:** A number of errors in referencing were noted in the document. The ones we noticed are listed below, there may be more. Please carefully check all cross references in the preparation of the Final Permit and correct the following errors:

- Page 12 – change references from Table F-5 to Table F-6
- Page 14 – change references from Table F-6 to Table F-8
- Page 14 lists reference to Buzzards Bay but there is no Nitrogen TMDL for Buzzards Bay watershed on DEP's website
- Page 14 list does not include Wareham although Wareham is in Buzzards Bay watershed
- Page 15 change reference from Table F-7 to F-9
- Page 17 – reference to Table F-10 is incorrect (that is a table of Assabet towns)
- Appendix F page 5 of 53 – footnote No. 4 incorrectly references Table F-2 for PCP area scope inclusive of MS4 only (should be Table F3) and references Table F-1 for jurisdiction-wide PCP area (should be F-2)

Sincerely,

Gino A. Cresta, Jr., Director
Town of Swampscott
Department of Public Works

February 24, 2015

Newton Tedder
U.S. EPA Region 1
5 Post Office Square – Suite 100
OEP06-4
Boston, MA 02109-3912

Re: **Comments on the Draft NPDES General Permit for Stormwater Discharges from Small MS4s in Massachusetts**

Dear Mr. Tedder:

Tighe & Bond has prepared the following comments and questions, referenced by page (from the copy of the draft permit provided on EPA's website) and by the permit section number. We have focused our comments on sections of the permit where we believe there is a substantial need for improvement to allow feasible, cost effective implementation of the Clean Water Act and NPDES program goals.

Part 1: Introduction

- **(Page 1, Part 1.2.1)**: This part states that an MS4 is eligible for coverage if it is located either fully or partially within an urbanized area as determined by the latest Decennial Census by the Bureau of Census as of the effective date of this permit (the 2010 Census). EPA has *verbally* stated that the area to be covered by the permit is the *combined area* defined by the 2000 Census and the 2010 Census and has also indicated this on the regulated area maps provided on their website. Can EPA please clarify the limits of permit coverage in the permit text?

- **(Page 7, Part 1.10)**: This section requires permittees to modify or update their existing BMPs and measurable goals in their Stormwater Management Programs (SWMP) to meet the terms and conditions of the new permit. Does that mean that permittees cannot delete ineffective or impractical BMPs from the MS4-2003 SWMP while they are updating the SWMP? Part II.D.2 of the MS4-2003 allowed modification of the SWMP under certain conditions and Part 4.1 of the draft General Permit generally continues these requirements. As written, we interpret these sections to prohibit subtraction (deletion) of components or controls of the SWMP. While we agree communities should be encouraged to build on their current program for the new permit, EPA should recognize it has been over a decade since BMPs were first identified and therefore municipalities should be provided an opportunity to meet the new permit conditions using the most cost-effective, appropriate BMPs for the community in 2015 and beyond. We recommend the final permit be revised to explicitly allow flexibility in deleting ineffective BMPs that Towns committed to in 2003 during development of the updated SWMP that meets the new General Permit requirements.

- **(Page 9, Part 1.10.3):** New permittees will struggle to catch up to other communities regulated since 2003 within the deadlines provided. We recommend that the outfall inventory and outfall mapping (second and third bullets, respectively) be conducted at the same time and be completed within four (4) years. We believe it is also reasonable to require the initial dry weather screen to be completed concurrently. We recommend modifying the fourth bullet, "All other timelines for the

IDDE Program… shall be extended by *four (4) years*" to allow communities to spread the cost of drainage system mapping over additional years.

Part 2.1: Water Quality Based Effluent Limitations

- **(Page 10, Part 2.1.1. and Appendices F&H)**: Permittees that are required to address TMDLs have public outreach requirements above and beyond the requirements in Part 2.3.2. EPA should consider explicitly *allowing* permittees to combine public outreach efforts if feasible to meet both TMDL requirements and the public education and outreach requirements under Part 2.3.2. This will allow permittees to focus their messages to address key water quality concerns, without overwhelming the audience with too frequent communication or overcomplicated materials. For example, permittees may send a spring flyer to Businesses within a Nitrogen TMDL area with a targeted message regarding proper use and disposal of grass clippings and proper use of slow release fertilizer that also provides the web address for more general stormwater information related to businesses. This outreach effort would achieve multiple goals and should meet the requirements of Parts 2.1.1 and 2.3.2.

- **(Page 10, Part 2.1.1.b & c)**: Please clarify the statement "or its tributaries in some cases." Does EPA intend to say that if a discharge from a MS4 to a tributary of a waterbody that is subject to an approved TMDL, or to a tributary of a waterbody that is impaired, that the MS4 is subject to the same requirements as if the MS4 were discharging directly to the impaired waterbody, even if the tributary is not listed in the most recent Massachusetts Integrated List of Waters as impaired or subject to a TMDL?

- **(Pages 11-22, Part 2.2):** Upon scenario testing for a number of permittees, we have identified some potential errors and inconsistencies in the applicability of pollutant-specific requirements to municipalities for TMDLs (Part 2.2.1) and impairments (Part 2.2.2) that EPA should correct or clarify. In several cases, it was unclear to us why some municipalities were listed for certain impairments since receiving waters within the Regulated Area were not listed as impaired for the pollutant of concern.

    - It appears that EPA has applied TMDL and impaired waters requirements to receiving waters that are *outside of the Regulated Area* by including those municipalities in the watershed-specific list. We request that prior to issuing the final permit, EPA revise the lists provided in the permit (both this section and Appendices F & H) as appropriate to correct this.

    - What documents govern interpretation of TMDL and impaired waters applicability? Is it individual TMDL reports, the 303 (d) list / most recent Final Massachusetts Integrated List of Waters, or the tables provided in Part 2.2? See previous comment regarding applicability to tributaries that are not listed as impaired in the current Massachusetts Integrated List of Waters. Please state the source in the final permit.

    - **(Pages 18-19, Part 2.2.2.a.i.1)**: There are several communities, such as Boylston and Mendon, listed as having waterbodies that are impaired due to nitrogen that we believe are in error. For these example municipalities, the proposed Massachusetts Year 2014 Integrated List of Waters does not show Category 5 or 4a receiving waters in Boylston or Mendon with nitrogen as the

pollutant of concern. In the response to comments, please clarify EPA's rational and authority to broadly impose nitrogen reduction requirements in the Blackstone River and Ten Mile River watersheds and unimpaired tributaries and please revise the permit to reflect necessary changes.

- **(Page 10, Part 2.1.2)**: Please define "increased discharge" in Appendix A of the permit.

- **(Page 11-18 Part 2.2.1 and Part 2.2.2)**: EPA needs to provide clarification for communities that are subject to overlapping requirements for addressing TMDLs and water quality impairments as currently defined under Parts 2.2.1 and 2.2.2. By way of example, the draft General Permit has identified Mendon as needing to meet requirements to address the Charles River Watershed phosphorus TMDL, an approved TMDL for bacteria/pathogens, and water quality impairments for nitrogen and phosphorus, however, our review of the Final 2012 and Proposed Year 2014 Integrated List of Waters does not identify this extensive list of impairments within the Town's Regulated Area. Based on the permit requirements, the town would be subject to implementing the provisions of Appendix F for the Charles River as well as Appendix H for the impairment status within the same watershed, which is duplicative. It would be more reasonable to require one or the other, but not both. Please revise the final permit to reduce this duplication.

- **(Page 14, Part 2.2.1.b.3)**: Note that Manchester and Manchester-by-the-Sea are listed in the bacteria/pathogen table. We recommend EPA remedy this duplicate listing and verify no other communities are duplicated in the lists provided.

Part 2.3 Requirements to Reduce Pollutants to the Maximum Extent Practicable

Part 2.3.2 Public Education and Outreach

- **(Page 24, Part 2.3.2.e)**: It will be a significant challenge for individual communities to measure effectiveness of stormwater educational messages and the overall education program at the local level, and it will be very difficult to determine if efforts provide meaningful results. It may not be an efficient use of funds for every community to individually pay for independent effectiveness measurement programs that could be equally or more effective if done collaboratively. EPA should be measuring effectiveness of MS4 education program at a state or regional level. We recommend removing this requirement from the permit and suggest that EPA work with state agencies, regional stormwater groups, or watershed groups to evaluate the effectiveness of educational efforts. However, if this requirement must be included in the final general permit, we recommend this section be revised to encourage a collaborative effort between communities, regional stormwater groups, and/or watershed groups and clarify that EPA will consider these efforts as meeting permit conditions as long as they are completed in accordance with Part 2.3.1.b . In addition, if this requirement remains in the final permit, we respectfully request EPA provide additional guidance on measuring and tracking effectiveness of MS4 education programs at a local, regional, and state level.

Part 2.3.4 Illicit Discharge Detection and Elimination

- **(Page 26, Part 2.3.4.4.b)**: Developing the inventory of SSOs would typically be completed as part of developing the written SWMP. We recommended EPA extend

the timeline for completing the inventory of all SSOs to be within one year of the effective date of the permit.

- **(Page 26-27, Part 2.3.4.5.b & c)**: If outfall inventory and dry weather inspections completed under the MS4-2003 need to be repeated, we recommend coordinating the timelines of the inventory required by Section 2.3.4.5 and dry weather screening required in 2.3.4.7.d.iii to both be completed within three years. The most costly part of these requirements is the labor, and therefore we recommend revising requirements to allow performing dry weather screening and the outfall inventory concurrently, which will allow communities to reduce the number of time consuming visits to each outfall to save on labor costs.

- **(Page 27, Part 2.3.4.5 c):** It is unclear if permittees are required to re-do the outfall inventory. Many permittees have recorded dimensions, shape, material, spatial location, and physical condition, as well as sensory observations, under the MS4-2003. We recommend EPA revise this requirement to state that, if the permittee previously recorded spatial location meeting the minimum accuracy listed in the permit, the location does not need to be GPS located again. In addition, if dimension, shape, material were inventoried, they should be compared to observations in the field to verify the outfall was correctly inventoried but are not required to be re-inventoried.

- **(Page 27, Part 2.3.4.5.b)**: EPA requires permittees to physically label all MS4 outfall pipes and interconnections with others MS4s with a unique identifier by the end of the permit term. We have assisted several communities with labeling their outfalls. We purchased approximately 450 62" flexible fiberglass reinforced composite utility markers and customized labels (stickers) at an approximate cost of $13 per marker due to a bulk rate. Outfall markers were placed at outfalls throughout these communities. Finding the correct label and installing the markers in the ground with the specialty driving tool was time consuming. It is expensive to label every outfall with no apparent direct water quality benefit for this effort. Will EPA please clarify the goals of the outfall labeling exercise and revise the permit accordingly?

    - Is the purpose of this exercise to provide a visual clue for citizens and businesses, alerting them to the presence of the otherwise unseen stormwater drainage system? If so, this can be easily achieved without labeling every outfall or interconnection. This goal could be more cost-effectively achieved through labeling a small number of "example" high visibility outfalls. To the average citizen a label that says "outfall number X" is alarming without supporting education. These small number of high visibility outfalls could be labeled not only with a unique identifier, but also with more information about stormwater impacts to surface water quality, recreation, public health, etc. The information could also include a website or contact information.

    - Is the purpose of this exercise to make it easier for EPA enforcement and environmental groups to identify outfalls and collect samples separately from the community's effort? If so, this goal could be more cost-effectively achieved by requiring communities to provide GPS coordinates or GIS data to EPA, as communities update their mapping. Because permittees are required to collect GPS locations of outfalls, submitting ether GIS files or latitude and longitude coordinates for each outfall would be adequate to meet this need.

- Is the purpose of this exercise to make it easier for communities be able to identify their outfalls in the field, as City/Town staff turnover and IDDE efforts progress? If so, we recommend this can be achieved more cost-effectively through other MS4 permit requirements, including developing an accurate drainage system map and developing a complete outfall/interconnection inventory including photographs showing each outfall.

- There are some outfalls that may be impracticable for a municipality to label, as they are not readily accessible due to being located on private property with no easements. Also, due to the location of many outfalls, these markers are easy targets for vandalism or theft, which will add costs for permittees to replace.

- **(Page 28-36, Part 2.3.4.7 and 2.3.4.8)**: The IDDE requirements are lengthy, cumbersome, and costly. We believe that the requirements may be so onerous that communities will not even attempt full compliance.

  - For example, highly urbanized communities that have been doing ongoing IDDE work under the MS4-2003 permit will likely have the majority of their system categorized as Problem Catchments. While they will not be required to complete dry weather sampling, they will be required to complete investigations of 100% of the problem catchments within five years, which is not achievable or feasible. In many of these communities, catchment investigations will include opening manholes in roadways with heavy traffic, thereby necessitating police details and putting the safety of inspectors at jeopardy and causing traffic delays.

  - Conversely, rural areas with limited urbanized area and no sewer (or recently installed low pressure sewer) will still have to complete investigations in 40% of their entire MS4 with little potential for finding illicit discharges. Communities should expend their limited budgets on finding and fixing non-stormwater discharge inputs instead of excessive planning.

- **(Page 29, Part 2.3.4.7.c):** While the IDDE Program has potential for measurable water quality improvements, the elaborate multi-step ranking process will not result in a cost-effective, pragmatic implementation strategy. The prioritizing and ranking process and milestones should be streamlined to reduce the onerous planning effort and result in the same environmental benefit. We recommend EPA generally revise the process as such:

  - Classify each catchment into one of the four categories (excluded, problem, high priority, and low priority).

  - Rank all catchments together (regardless of category) using the criteria presented

  - Determine the total number of dry weather and wet weather inspection points (outfalls, interconnections, and key junction manholes) in each catchment area and schedule catchments for investigation based on category and priority ranking as well as staffing and financial considerations.

Generally speaking, the goal should be to focus on which catchments are likely to have illicit discharges and which ones are unlikely to have illicit discharges. Then the likely catchments should be prioritized by severity.

- **(Page 33 – 35, Part 2.3.4.7.e.ii):** The draft General Permit is requiring communities to implement a manhole inspection methodology that "must, at a minimum, include an investigation of each key junction manhole within the MS4, even where no evidence of an illicit discharge is observed at the outfall." Based on our experience completing field work to identify and track potential illicit discharges, Tighe & Bond thinks that this effort is onerous with little potential benefit to improve water quality for the amount of effort. Inspecting manholes is valuable only when an outfall has dry weather or wet weather indicators (visual, olfactory, screening) of an illicit discharge. This procedure is ideal to find the problem during the time the discharge is occurring. In addition, there are substantial safety risks associated with inspecting key junction manholes. The majority of these manholes will be in roadways with heavy traffic, putting staff and contractors at risk during inspections and necessitating police details. These efforts will also cause traffic nuisance conditions. To improve the benefit of the inspections and reduce the overall risk, we recommend EPA revise this section of the permit to only apply the manhole inspection methodology when evidence of an illicit discharge is observed at the outfall.

- **(Page 32 - 33, Part 2.3.4.7.d iv and vi):** EPA has provided benchmarks that "indicate sewer inputs to the MS4", however, these benchmarks have typically been used for comparing results from dry weather sampling. What benchmarks does EPA want permitees to compare to for wet weather sampling results? Please clarify in the final permit.

- **(Page 33, Part 2.3.4.7.e.i):** EPA has provided "System Vulnerability Factors" for permittees to identify catchments that have a higher potential for illicit connections under wet weather conditions. However, for the majority of permittees with sewer systems, almost every catchment in the MS4 will have the presence of these Factors. In addition, many communities with and without sewer have drainage systems greater than 40 years old. Therefore they will be required to complete wet weather investigations of a high percentage of catchments. We request EPA re-consider the vulnerability factors and revise this list to be simplified and more focused, as there are currently too many factors. For example, remove the factor related to age being 40 years or greater as the other factor related to overall condition is more meaningful. Age is not necessarily an indicator of condition. Crossings of storm and sanitary sewer alignments and possible common trench construction situations can be seen when viewed from a map perspective, but oftentimes when we review as-builts it is clear that sewer lines are many feet below the drainage system, which will not likely result in exfiltrated sewage entering the drain line. The focus should be on situations where the sewer line is at a higher elevation than the drainage system or where it is within a few feet.

- **(Page 35, Part 2.3.4.7.e.ii.b):** Wet weather monitoring in accordance with the wet weather screening and sampling requirements to meet the deadlines specified in the goals and milestones section will be an all-consuming effort for Town staff and/or their consultants each Spring, particularly when nearly all catchment areas have System Vulnerability Factors as described in the previous comment. There are a limited number of storm events that occur between March and June during business days and hours of operation. In our experience with wet weather sampling, we have

found that oftentimes storm events produce runoff but are not long enough to allow an inspector to get to more than a few outfalls. Assuming a community has 600 outfalls, and 550 of them have Vulnerability Factors, and an inspector could get to five to ten outfalls each wet weather event, it would take 55 to 110 events to get to all outfalls. There are only approximately 85 working days from March through June. Assuming it rained once a week, there may be approximately 17 events during the "wet weather season" each year. Field staff would have to monitor weather forecasts daily and attempt to do wet weather outfall monitoring during nearly every spring storm during business hours and beyond. One way to alleviate this burden could be to extend the wet weather monitoring season to include March through November. Recent increases in severity and frequency of storms in New England has been well documented. Extending the monitoring period would enable communities to spread their time over a longer period and also utilize labor from summer interns.

- **(Page 37, Part 2.3.4.8.c):** We suggest that EPA simplify this section and limit the IDDE burden by putting an annual cap on implementation of the Catchment Investigation (Part 2.3.4.7.e) so that communities should perform wet weather investigations on up to 10% of all outfalls with System Vulnerability Factors per permit year and perform the remaining catchment investigation procedure on up to 10% of *inspection points* (outfalls, interconnections, and key junction manholes). All permittees must begin with Problem Catchments followed by High Priority Catchments then Low-Priority Catchment. This would accomplish the goal of investigating the entire MS4 within 10 years of the permit effective date, starting with the highest priority areas. Because the labor and screening cost are driven by the number of "inspection points" not catchments, the cost for each community will be evenly distributed over multiple permit years. As the permit is written now, municipalities with the most work to do (due to large drainage systems, complex and aging storm and sanitary sewer systems, and a high percentage of Problem and High Priority Catchments) will have the least amount of time. Our proposed change provides extra time for these communities to spread out the IDDE Program costs and considerable staff commitment. We believe EPA and the Commonwealth will achieve a better result if the program milestones are manageable.

- **(Page 32, Part 2.3.4.7.d and Appendix I)**: We are very pleased that EPA developed the Bacterial Source Tracking Protocol to create a consistent procedure for determining the presence of illicit discharges. However, we are troubled by the following aspects of the protocol:

    - Testing for chlorine and then noting any sample where chlorine is detected above the instrument Reporting Limit requires additional labor and/or expenditures for field instrumentation or laboratory analysis with little benefit. We understand the concern that chlorine in the sample can further disinfect the sample during the hold time, but what is the expected die off rate during the 6 hour hold time and at what chlorine concentration? We think it is unreasonable to categorize catchments where "ammonia ≥ 0.5 mg/l, surfactants ≥ 0.25 mg/l, and *detectable levels of chlorine*" as High Priority Catchments that are "highly likely to contain illicit discharges." (Page 33, Part 2.3.4.7.d.vi) To more accurately measure bacteria concentrations and properly prioritize catchment areas, EPA should allow the use of pre-sterilized sample bottles with dechlorination chemicals instead of chlorine analysis.
    - On p. 1 of Appendix I, EPA advises "additional concurrent collection of samples for select Pharmaceutical and Personal Care Product analysis." This option is financially out of reach for most communities, unless EPA's lab has

capacity and can perform the analysis for a reduced cost. Currently EPA's preferred PPCP analysis suite can be performed for $450 per sample if shipped across the country. Additionally, there are no corresponding surface water quality standards for these constituents and high concentrations do not constitute a water quality violation. It is not advisable for communities to request that EPA perform this analysis, as there will be cases where PPCPs are detected where traditional outfall screening does not indicate an illicit discharge. This would indicate an indirect source of human wastewater entering the MS4. Should these diffuse, intermittent, and difficult to find discharges to the MS4 be a priority when there is much work to do to find and correct direct illicit discharges and sanitary sewer overflows?

Part 2.3.6 Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management

- **(Page 40, Part 2.3.6.a.ii):** We are incredibly concerned that EPA has revised the post-construction stormwater management performance standards to be inconsistent with the Commonwealth's Stormwater Management Handbook (hereafter referred to as the Handbook). This is problematic for a number of reasons:
    a. The Handbook was developed through an extensive public process, including receiving stakeholder input from engineers, contractors, communities, and the public, and the provisions were carefully vetted to ensure they are feasible and reasonable. While the MS4 permit has a public comment process and response to comments, this is not the same effect as obtaining stakeholder and expert consensus through numerous meetings and public outreach efforts to develop a state-wide stormwater management handbook with design guidelines and maintenance recommendations. Because comments EPA receives will be focused on the MS4 program, they will lack the substantial input on design details associated with a 1" requirement. We are concerned that EPA may issue a final permit that does not include the necessary technical considerations associated with retaining 1" or providing the equivalent level of pollutant removal.
    b. The Handbook provides various considerations for redevelopment projects that recognize stormwater management for redevelopment is much more difficult and costly, and the Handbook allows flexibility for these types of projects. As the draft MS4 general permit is written, these flexibilities are not allowed, and therefore redevelopment projects will be required to expend significant money to comply and, in some cases, this requirement may make redevelopment infeasible and push projects to green field sites. Additionally, this standard is applied to "the first one (1) inch of runoff from *all impervious surfaces on the site*" which unfairly applies this new standard to unimproved portions of the site.
    c. Has EPA considered how this standard will apply to work on municipal roadways? Roadway projects may exceed one acre of land-disturbing activity on individual projects and are often included in Capital Improvement Plans, which could be considered a "common plan of development" and therefore even though individual projects disturb less than one acre, the combined plan results in a disturbance of one or more acres. These roadway projects may merely be mill and overlay efforts that are necessary for public safety and long-term roadway maintenance. Will municipal roadway projects be required to meet this 1" standard? This is infeasible in many cases, due to limited area for structural BMP installation on right of ways and limitations on installation caused by the existing drainage layout and elevations. With the

exception of full-depth reconstruction, the maintenance and rehabilitation of existing roadways and parking areas should be exempt from this requirement. Implementation of stormwater management systems within the right of way for the purpose of water quality and/or flow attenuation should be up to the discretion of the permittee and based on the receiving water-specific retrofit feasibility assessment and implementation requirements in Section 2.2 of the Permit.

d. This proposed new requirement is troubling for permittees that have already adopted their local stormwater ordinances per the requirements of the MS4-2003. In most cases these local Bylaws and Ordinances reference the ten MA Stormwater Management Standards as local "performance standards". In many cases, local code also exempts projects already completely within wetlands jurisdiction to avoid redundant permitting and reduce costs and effort on both the applicant and the community's part. This new MS4 requirement will mean permittees must update their local code, which is an extremely costly and laborious effort. In our experience, updates to bylaws/ordinances and regulations typically necessitates a public participation process, with numerous meetings, obtaining and responding to stakeholder comments, and, if they are written into the local ordinances or bylaws , require review by Town Counsel or City Solicitor and then City Council or Town Meeting approval.

We strongly recommend that if EPA desires this level of post-construction stormwater management, they work with MassDEP to initiate a public process to vet the technical components of the requirement, feasibility, and revise the Massachusetts Stormwater Handbook instead of adding this requirement to the MS4 general permit. If this is not possible, at a minimum, we strongly urge EPA to revise the requirement to match the Massachusetts Stormwater Handbook's considerations for redevelopment and revise the requirement to exempt municipal roadway projects when they are conducted in accordance with a SWPPP per MCM #4.

- **(Page 41, Part 2.3.6 b & c)**: Tighe & Bond recommends EPA revise the compliance timelines for part b and part c to be completed concurrently within four (4) years of the permit effective date. While these are slightly different efforts, review of local code (bylaws, ordinances, regulations, design guidelines, etc.) is time consuming and takes substantial effort, and therefore it is most efficient to review local code only once during the permit term. Tighe & Bond recommends requirements relating to review of local code (regulations) be on the same compliance schedule.

- **(Page 42, Part 2.3.6.d):** We believe the goal of this exercise is to utilize impervious cover percent as a measure of watershed health, as the impervious cover model does. However, tracking annual changes in impervious cover will be significantly difficult, costly, and time consuming with no benefit to water quality. Therefore, we suggest the assessment be done only in the first and last years of the permit term (or every five years) and be supported by statewide GIS mapping initiatives to understand the short-term change and utilize these data to feed into planning impervious cover management under future MS4 permits.

Part 2.3.7 Good House Keeping and Pollution Prevention for Permittee Owned Operations

- **(Page 44, Part 2.3.7.a.iii (b)):** Because most communities have not surveyed or measured the distance to the bottom of each catch basin sump, it will be difficult to know when a sump is "50 percent full" and therefore we recommend a revised approach to this requirement. We recommend EPA allow communities to either annually clean catch basins or, if a community wants to reduce the frequency of cleaning to less than once a year, we recommend EPA require communities to use an easily measurable benchmark, such as ensure that deposits are no less than2 feet below the invert of the outlet pipe, as an alternative for catch basins with a total sump depth of at least four (4) feet (i.e., deep sump catch basins). Another consideration for this requirement is that, if a community is sweeping more than once per year, should all catch basins still be cleaned annually? More frequent sweeping results in decreased sediment and other loadings to catch basins, and therefore we recommend that communities that increase their sweeping to at least two times per year should be allowed to reduce catch basin cleanings to reflect this.

- **(Page 46, Part2.3.7.b)**: In many cases a community may own, but not operate its transfer station. In this case it is impossible for the municipality to develop and enforce a SWPPP where the day-to-day operations are not controlled by the municipality and a new lease agreement is potentially five to 20 years away. We suggest that EPA modify this language to only apply to permittee *operated* facilities.

Part 4: Program Evaluation, Record Keeping, and Reporting

- **(Page 51-52, Parts 4.3 and 4.4):** There are numerous reporting requirements listed throughout the permit and also listed in these parts. To make it easier for permittees to correctly identify all requirements and timeframes for completion (deadlines), we request EPA prepare a table of all reporting requirements and deadlines to include in this section.

Appendices:

- **(Appendix A):** Please include definitions for *Common Plan of Development, Disturb* or *Land-Disturbing Activity,* and *Increased Discharges* and please improve the definition for *Key Junction Manhole*.

- **(Appendix H, Part V)**: The wording of the "solids, oil and grease (hydrocarbons), or metals" water quality limitation is not consistent with MassDEP's impairment causes. Please revise the permit to clarify if "solids" is equivalent to MassDEP's "turbidity" and "total suspended solids" impairment causes.

- **(Appendix I)**: Attachment 1 to the EPA New England Bacterial Source Tracking Protocol references Standard Operating Procedures in Section 5.0, Attachments (Page 7 of 7), however these documents are not included in the draft permit or readily available online. Please make these available upon issuance of the final permit.

Other/Overall:

- **Guidance.** We sincerely appreciate EPA has made the investment to prepare guidance documents for specific parts of the permit, including IDDE, impervious

cover tracking, etc. We request that EPA update and revise guidance documents as appropriate for the final permit, including guidance maps showing impaired waterbodies and potentially additional information on applying for an individual permit (anticipating that many smaller, rural regulated communities may choose to do so).

- **Recordkeeping.** The administrative burden of maintaining detailed written records for all permit activities, such as maintenance, inspection and training records should be minimized wherever possible. We suggest that EPA maintain flexibility on the level of detail required for this tracking effort that will be meaningful and yet not detract from the staff time for operation tasks as opposed to administration tasks. Cost efficient approaches to demonstrating compliance with the Good Housekeeping requirements might involve monthly summaries of highlights from staff time cards, employee diaries, and planning calendars.

We thank you for the opportunity to comment on the draft Massachusetts Small MS4 General Permit. Please contact us with any questions at 508-754-2201 or ejscerbo@tighebond.com or jsmoonan@tighebond.com .

Respectfully,

TIGHE & BOND, INC.

Emily Scerbo, P.E.
Project Manager

Janet S. Moonan
Project Engineer

Copy: Tracy Adamski, Tighe & Bond
Gabrielle Belfit, Tighe & Bond

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Massachusetts Tri-County Highway Superintendents' Association

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Hampshire Director

December 1, 2014

Mr. Newton Tedder
U.S. Environmental Protection Agency, Region 1
5 Post Office Square, Suite 100 Code OEPo6-4
Boston, MA 02109-3912

Re: Massachusetts Draft EPA Storm Phase 2 Regulations

Dear Mr. Tedder,

We are writing to provide our association's concerns regarding the proposed new Stormwater Phase Two regulations. The following is a list of the most troubling portions of the proposed new Stormwater Phase Two regulations.

1) Pavement maintenance work triggers retaining first inch of stormwater or stormwater treatment. Under the new regulations, when one disturbs more than one acre in area or phased construction totaling one acre (translates to only ¼ mile of 30' wide pavement) or more which will include road reclamation projects, the new regulations require that the first inch of storm water be retained or all the stormwater must be treated. This essentially means one now not only has to resurface the road one has to completely redesign and re-construct the entire stormwater collection system to satisfy this requirement. This will cripple road maintenance budgets. Accordingly, cities and towns will be forced to purchase/take extra land by eminent domain for stormwater storage or pay for the expense of stormwater treatment systems on simple routine maintenance projects. This is a huge expense in downtown business districts and even in rural areas with old roads and narrow town-owned rights-of-way.

   As everyone is aware, the funds available for pavement maintenance are less than half of what are needed to simply preserve the condition of the current infrastructure. This means that Massachusetts roads are falling apart faster than they can be repaired. The above added costs will compound the problem and create more failing roads and more erosion. Municipalities will be forced to use the wrong pavement rehabilitation technique at the wrong time which will squander the available limited pavement maintenance resources.

   There must be an exemption for pavement maintenance projects. The above regulations should not be applied to maintenance projects. If a new road is being constructed or a lane is being added, these stormwater management upgrades may be able to be accommodated, depending on surrounding conditions like available right-of-way width and/or proximity of buildings to the right-of-way. Simple pavement surface maintenance projects or minor improvements should not trigger rebuilding the world.

2) Chloride Reduction. Most municipalities already are trying to limit salt/chloride usage. The cost of road salt and deicers is a large portion of the winter storm budgets. Any responsible DPW director or winter road program manager is looking to reduce the costs in all areas that are practical. There is no objection to installing computers on the truck spreaders and training

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the operators in best management practices nor do we object to the EPA providing Best Management Practices or guidance suggestions; however, reducing salt usage below what is practical with the current technology is irresponsible and to do this exposes the motorists to hazardous conditions and the municipalities to legal action. Yes, usage of chlorides could all stop tomorrow, but at what cost to human life. If the EPA will protect an endangered salamander, it should be equally as concerned with the loss of human life. The chloride reduction regulations should be limited to recommending that municipalities follow the latest accepted Best Management Practices.

3) Requirement for tracking impervious area. The EPA in its permit guidance documents implicitly admits that the simple presence of impervious areas is not a direct correlation to stormwater quality. Sites with paved areas can store/detain or treat stormwater so that the presence of paved areas on stormwater quality is mitigated. Similarly, the MaDEP considers roof water runoff "clean" and can be infiltrated into the ground without pretreatment. Tracking the amount of impervious areas does not have a direct correlation to water quality; therefore the MS4's should not have to expend resources tracking changes in impervious area. As long as new development is in compliance with Best Management Practices, control of development should be under the jurisdiction and control of local planning authorities. Any attempt at limiting /restricting development through the veiled attempt at controlling impervious area is outside the purview of the Clean Water Act.

4) Cost of implementation. An article published in Construction Outlook a publication of UCANE recently published EPA cost estimates of compliance between $70,000 and $829,000 per year depending on population and size. This is very troubling because they have been known to significantly under-estimate the actual cost. At the meeting, Newton Tedder from the EPA commented that he believes most cities and towns will have to pass a stormwater utility in order to pay for the costs to comply with the new Storm Phase Two regulations. Obviously, the EPA is admitting that the new regulations are an undue burden and so costly that the municipalities cannot afford them with existing revenues. It seems unlikely that the intent of Congress in passing the Clean Water Act was to authorize the EPA to mandate additional taxes and create its own hidden tax structure to accomplish its charge of cleaning the water. The EPA was charged with cleaning the water and operating within its budget as set by Congress. The States and local cities and towns must do the same. It is unconscionable at a time when state and local governments are undergoing staff and budget cuts to capriciously raise the cost of compliance with the new regulations. The local governments will be happy to work with the EPA to achieve progress on storm water. However, the heavy handed, adversarial and punishing regulations as proposed will not encourage cooperation from state and municipal partners.

The Congress of the United States should act to restrain the EPA from imposing uncontrolled and expensive tax burdens on the subjects it regulates. Taking reasonable actions to improve water quality is one thing, but being mandated to accomplish everything overnight is unfathomable. All levels of government must be cognizant of costs. The regulations, reporting requirements and the overall implementation costs must be reduced to a sustainable

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and rational level. The taxpayers and the country cannot be bankrupted by an attempt to reach unrealistic goals set by a bloated out of touch federal bureaucracy.

5) Signage at outfalls. Installation of signage at outfalls provides no tangible benefit to water quality. Installation of signs and posts will waste resources. The signs will encourage theft or vandalism and will provide little to no use in management of the stormdrain system. All regulated organizations are required to have maps with locations of all outfalls. The availability of low cost GPS devices makes these outfalls easily located by just about anyone.

Thank you for your consideration, if you would like additional information, please contact me at joepip@easthampton.org or (413) 527-1410.

Very Truly Yours,

MASSACHUSETTS TRI-COUNTY HIGHWAY
SUPERINTENDENTS' ASSOCIATION

Joseph Pipczynski, President

Taunton River Watershed Alliance, Inc
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Taunton MA 02780
Tel. 508-828-1101
www.savethetaunton.org

February 27, 2015

Newton Tedder
Via e-mail: Tedder.Newton@epa.gov
United States Environmental Protection Agency, Region 1
5 Post Office Square
Suite 100, Mail Code OEP 06-4
Boston MA 02109-3912

Re: Comments on EPA Draft General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts

Mr. Tedder:

The Taunton River Watershed Alliance, Inc. (TRWA) submits the following comments on the Draft National Pollutant Discharge Elimination System (NPDES) General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts (MA MS4 Permit). TRWA is an environmental organization whose mission is the protection and restoration of the water quality and aquatic ecosystems of the Taunton River and its tributaries and other habitats and ecosystems of the watershed. Our members use the Taunton River and its tributaries for recreation and our volunteer water quality monitoring teams have conducted monthly testing at locations on the River and several tributaries since 1991.

As you are aware proper stormwater management which restores and preserves predevelopment hydrology is essential for watershed health. Although it is not possible to eliminate all the imperviousness that generates stormwater much can be done to mitigate the effect of impervious cover. We are concerned that too many of the streams in the Taunton River watershed experience erosion, destruction of stream bed habitat, and wash out of benthic aquatic life for even the frequent small storms Massachusetts receives (per Region 1 website 65% of MA storms are < 0.5 inches). These streams are

also not maintaining base flow conditions to support aquatic life. The habitat and benthic life of the streams most impacted by stormwater are needed for spawning/reproduction and juvenile food supply during critical life stages of virtually all recreational and commercial freshwater and marine fish species (or their primary food sources). The Taunton River supports globally rare freshwater and brackish tidal marshes and was added to the National Wild and Scenic Rivers System in 2009. The negative impacts of poorly managed stormwater have widespread environmental ramifications. As discussed below, TRWA supports the draft as an important next step but believes much more needs to be done to begin reducing the frequency and volume of stormwater discharged from existing impervious cover for progressively larger storms.

This is a good draft permit building on the May 1, 2003 MA MS4 permit which expired in 2008. Learning from experience in stormwater management gained over the last 12 years EPA has improved the new permit. The draft permit provides more explicit requirements for compliance as well as tools to help the regulated community reduce stormwater's contribution to water quality impairment.

Elements of the draft permit TRWA feels are important to retain include both the more specific Maximum Extent Practicable (MEP) requirements and the water quality based requirements for discharges to water quality limited waters and waters with Total Maximum Daily Loads (TMDLs). TRWA opposes significant changes to the three bulleted Sections listed below for the reasons provided:

- **The Illicit Discharge Detection and Elimination (IDDE) Program Section 2.3.4.**

  Illicit discharges are continuous sources of untreated sanitary waste pollution that separate sewer owners need to identify and eliminate once and for all. Storm sewer owners/operators must maintain a vigilant program to prevent new sanitary/stormwater connections. In addition the detailed piping network and catchment area delineations are critical to future stormwater abatement efforts.

- **The Stormwater Management in New Development and Redevelopment Section 2.3.6.**

  Proper control of stormwater from new development is essential to avoid violation of numeric and narrative pollutant and aquatic life water quality criteria, stormwater pollution impacts to wetland resources and for compliance with state and federal antidegradation regulations. Improvement of stormwater systems during redevelopment is necessary to begin the process of reducing stormwater pollution from existing development. The final permit should do more to regulate and reduce stormwater from existing private/commercial development. Currently only in the Charles River watershed (Appendix F.A.1) is EPA requiring measurable action to reduce existing stormwater phosphorous pollution loads. Reducing phosphorus will also address other stormwater pollutants and aquatic life habitat impairment. EPA should include a permit provision so that if the Charles River efforts to address stormwater pollution in an optimized cost effective fashion are successful other areas may be required to do the same in

advance of permit reissuance. A provision such as this is needed due to the Region's poor track record on timely reissuance of this general stormwater and other NPDES water quality based permits.

- **Appendices H and F**

  For the water quality impaired receiving waters of the Taunton River watershed the water quality based elements of the permit in Appendix H (nitrogen and phosphorus) Appendix F (pathogens) are necessary and strongly supported. For nutrients in particular we are concerned about the nutrient load stormwater adds to the portions of the watershed receiving wastewater treatment plant discharges. The draft NPDES permits for wastewater treatment plants use a very optimistic estimate of a 20% reduction in nitrogen load from nonpoint sources including stormwater. This permit does little to ensure a 20% nitrogen reduction from existing stormwater sources. At a minimum it is critical that this permit be issued promptly, municipalities take efforts to reduce stormwater flows and nitrogen loads and that this permit is replaced with a more comprehensive stormwater permit as soon as possible. If there is delay in issuance of this permit, lack of permittee progress in reducing stormwater impacts or delay in reissuance of this permit in 5 years the nitrogen limitations of wastewater treatment plant permits should be reviewed and reduced.

TRWA has **two major requests for changes in the final permit:**

1. In Appendix H under nitrogen (Section I.1.b.i.5) and phosphorus (Section II.1.b.i.5) the N or P Source Identification Report, we believe the last four words **"of permittee owned properties"** should be removed. The detailed mapping required in the IDDE section of the permit (2.3.4.6) provides the permittee with the essential information to readily complete a useful system-wide source identification report on potential upgrade opportunities at the planning level for all impervious area within their jurisdiction. This information is critically needed by the permittee, property owners, environmental groups and others promoting voluntary BMP efforts on non-permittee owned property. This change does not impose a major burden since planning level identification of potential BMP opportunities can readily be done as part of the system mapping already required for the IDDE program. We understand that for the more detailed Potential Structural BMP analysis required in Part c of the Sections noted above EPA may allow the permittee to limit its analysis to "all permittee-owned properties" as provided in the current draft permit.

2. It is critical for the public to have ready access to information regarding what a specific municipality is doing to comply with the permit, and the opportunity for watershed groups to offer assistance or to complain if it appears that a city or town is not complying. This permit is an improvement over the 2003 permit, but robust implementation and dedication of adequate resources by municipalities and regulatory agencies will be needed to achieve significant reductions in water quality and insure that a promising program doesn't fall into a black hole. The

following should be added to the stormwater Record Requirements of Section 4.2.c of the draft:

a.) The permittee should be required to keep a list of interested parties and notify them by mail or e-mail of the stormwater program reports available online, the other information available including where they may be reviewed by the public, and opportunities to participate in Stormwater Management Plan (SWMP) review and implementation;
b.) As new stormwater program implementation products are completed interested party notification should be required including but not limited to the following; annual reports, updated system mapping, construction site ordinances, new development/redevelopment ordinances, source identification reports, potential structural BMP analysis, structural BMP demonstration plans and Stormwater Pollution Prevention Plan (SWPP) updates for permittee owned or operated facilities.

Conclusion

TRWA supports the draft MA MS4 Permit. We urge EPA to not make any changes that would reduce the level of stringency or reduce the effectiveness of the Sections referenced in the bullets above. We would like EPA to eliminate the limiting language "**of permittee owned properties"** in the source identification report Sections of Appendix H. TRWA requests EPA make public access to information more convenient so that the public and watershed groups can support local, state and federal efforts to address stormwater problems. We believe that prompt issuance of this permit as well as timely renewal 5 years from now of a more comprehensive permit addressing existing privately owned stormwater sources connected to a permittee's separate sewer system is necessary to maintain the credibility of the NPDES wastewater permits currently being reissued in the Taunton River watershed and elsewhere in Region 1. Finally, **TRWA encourages expeditious issuance of the permit because reissuance is seven years overdue this May**. Thank you for considering these comments.

Sincerely,

Marta J. Nover
President
Taunton River Watershed Alliance, Inc.
1298 Cohannet Street
Taunton MA 02780

cc: Via e-mail
Ken Moraff, EPA (moraff.ken@epa.gov)
Thelma Murphy, EPA (murphy.thelma@epa.gov)
Bethany Card, MassDEP (bethany.card@state.ma.us)
Frederick Civian, MassDEP (frederick.civian@state.ma.us)
Rachel Calabro, Save the Bay (rcalabro@savebay.org)
Heidi Ricci, Mass Audubon (hricci@massaudubon.org)
Alison Bowden, The Nature Conservancy
Thomas Borden, Narragansett Bay Estuary Program (tom.borden@nbep.org)
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TOWN OF UPTON, MASSACHUSETTS

BOARD OF SELECTMEN

Newton Tedder
US EPA Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

February 17, 2015

Attention: Comments on the 2014 Draft Massachusetts MS4 Permit
Docket ID No. FRL-9917-31-Region-1; Document No. 2014-23262
Town of Upton, MA

Dear Mr. Tedder;

The Town of Upton is a community that will be subject to regulation under the United States Environmental Protection Agency's (USEPA's) Massachusetts Municipal Separate Storm Sewer (MS4) Permit, as we are presently a Permittee under the USEPA's 2003 Massachusetts MS4 Permit.

We have been a member of the Central Massachusetts Regional Stormwater Coalition since 2013, and have provided a Letter of Support for the comments submitted by that group.

However, the Draft 2014 Massachusetts MS4 Permit includes some substantial provisions that will apply to Upton for the first time. We felt it worthwhile to provide this separate comment letter to highlight our concerns.

For the first time, water bodies in our community have been identified as contributing to both nitrogen (Part 2.2.2[a]) and phosphorus impairments (Part 2.2.2[b]). For both of these impairments, no Total Maximum Daily Loading (TMDL) has been established, and there no specific pollutant reduction target has been proposed. Instead, the Town of Upton is being asked to implement enhanced public education messages, development and redevelopment controls, and good housekeeping measures in municipal operations. We are optimistic we could implement these enhanced elements successfully, as they build on our existing program.

However, some proposed enhanced requirements are excessively burdensome for a Town of our size and rural nature. These enhanced requirements include:

- Preparation of a Nitrogen Source Identification Report (Final due by Year 4 of the Permit);
- Preparation of a Phosphorus Source Identification Report (Final due by Year 4 of the Permit);

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Kenneth E. Picard
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- Completion of an inventory, by Year 5 of the Permit, of Town-owned properties that are candidates for the installation of structural Best Management Practices (BMPs) for nitrogen and phosphorus removal, within watersheds impaired for each, respectively; and
- Installation of selected structural BMPs for nitrogen and phosphorus removal beginning within six years of the Permit effective date and continuing on a schedule to be provided in Year 5.

We are advocates for the use of green infrastructure where it can be maintained in a cost-effective way in order to provide ongoing stormwater treatment, and we utilize low impact development (LID) techniques on Town projects. However, this proposed mandate will exceed our internal capacity as a small community to perform such an inventory, perform a cost/benefit analysis of the BMPs appropriate for each impairment, finance the design and construction of the BMPs, and evaluate the effectiveness of each. Without an approved TMDL outlining a target load for either impairment, our efforts would not substantially contribute to improvements in the watersheds. Costs to use a third-party to perform these assessments will siphon budget from critical infrastructure operations and maintenance activities that have a strong, direct bearing on water quality improvements.

For these reasons, we support maximizing the use of pollution prevention tools, LID, public education, and other non-structural BMPs to the maximum extent practicable before looking to structural BMPs as the solution. We request the ability to continue to evaluate potential sources of nitrogen and phosphorus discharged to Upton's MS4 and report our progress on mitigating identified sources, in lieu of the proposed stringent and inflexible provisions in Section 2.2.2 (and the associated Appendix H) of the proposed Permit.

We also support an extended timeline for the implementation of some proposed Permit provisions, including activities associated with discharges to water quality-limited water bodies.

The Town of Upton reserves the rights: to submit additional comments to any Response to Comments prepared by the USEPA after the close of the public comment period for proposed Permit; to submit additional comments on the Final Massachusetts MS4 Permit to address any and all changes made by the USEPA based on comments it receives; and/or to appeal any provision of the Final Massachusetts MS4 Permit when it is issued, regardless of whether that provision has been specifically noted in these comments.

We look forward to the requested flexibility and modifications being integrated into the Permit in its final form.

Sincerely,

Robert J. Fleming
Chairman, Board of Selectmen
Town of Upton, MA

TOWN OF UXBRIDGE
DEPARTMENT OF PUBLIC WORKS
147 HECLA STREET
UXBRIDGE, MASSACHUSETTS 01569-1326
508-278-8616 ♦ Fax 508-278-3179

Benn S. Sherman, P.E.
Director

February 26, 2015 Sent via email: Tedder.Newton@epa.gov on 2/26/2015

Newton Tedder
US EPA Region 1
5 Post Office Square, Suite 100
Mail Code OEP06-4
Boston, MA 02109-3912

RE: Comments on the 2014 Draft Massachusetts MS4 Permit

Dear Mr. Tedder:

The Town of Uxbridge Department of Public Works (DPW) has reviewed the United States Environmental Protection Agency (USEPA) National Pollutant Discharge Elimination System (NPDES) Draft General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts. We thank you for the opportunity to provide comments and we note that the Uxbridge Town Manager will be submitting comments separately. On behalf of the Town of Uxbridge, we are submitting these comments in an effort to bring to light the substantial impacts this draft permit will have on our community.

As a Phase II MS4 community, we have a population of nearly 13,000 people (of which over 10,000 within the regulated area), a land area of 30.4 square miles and is situated in southern Worcester County along the border with Rhode Island. A number of water resources traverse the Town, including the Blackstone, Mumford and West River systems. For this reason, the Town is very concerned with the operation and maintenance of the Town's infrastructure, as well as budgetary constraints.

The Town of Uxbridge strongly supports the goal of protecting the Waters of the United States from untreated stormwater runoff. Since the beginning of the Phase II MS4 implementation, the Town has supported the underlying goal of improving the quality of the Waters of the United States. The Town has worked tirelessly to implement the requirements of the original 2003 permit. In this regard, the Town joined the Central Massachusetts Stormwater Coalition (CMRSWC) and continues to partner with other member communities to develop and implement a consistent framework to address the continuously changing stormwater needs.

The following pages outline the concerns that the Town of Uxbridge have with the proposed Permit. Our comments have been organized into two sections: ***General*** (which describes overarching concerns and concepts); and ***Specific*** (which apply to unique sections of the proposed Permit). For the latter, we have provided the section and page number of text for ease of reference. Where appropriate, we have provided suggestions for replacement language (or clarification) that would better align the proposed Permit with other MS4 Permits in New England, or have outlined provisions, concepts, or metrics we believe are more suitable or feasible (for in-the-field implementation).

General Comments

1. The Town of Uxbridge is supportive of proposed Permit provisions that will directly result in improved water quality, but object to those that are administrative or arbitrary, and that will not have a direct bearing on water quality. We have outlined specific objections as much as possible in our Specific Comments, below.

2. We encourage the Agency to update its own guidelines about how regulated communities are expected to balance compliance with the Permit (in its final form) with the ability to afford that compliance without experiencing economic hardship. Since 1997, the Agency has generally considered a maximum combined annual water and wastewater bill of 4.5% of mean household income (MHI)- 2% for drinking water and 2.5% for wastewater services- to be affordable. Municipal revenues are decreasing, and further restrictions on development or redevelopment are not in the best interest of the Town struggling to maintain the level of service expected by residents.

   If we were to use MHI as the basis for evaluating a community's ability to afford a stormwater management program to comply with the proposed Permit, the 4.5% MHI cap would easily be exceeded if stormwater costs were included- along with drinking water and wastewater- in the calculation. This is true whether the Town funds its program traditionally through the tax base or has developed a sustainable funding mechanism such as a stormwater utility or stormwater enterprise fund. The Town will have a difficult task to convince our residents and business owners that some of the provisions in this proposed Permit will result in water quality improvements commensurate with the expense.

   The Town agrees that clean water supports our communities in many, many ways; notwithstanding this, the absence of guidance on how to best afford the increased costs of stormwater management cannot be ignored.

3. We encourage the Agency to include flexibility in the final Permit with respect to the date on which the Permit in its final form will become effective in each community. Flexibility in setting the effective date will allow each town the opportunity to budget for Year 1 and Year 2 tasks, specifically, within the municipal budget cycle, which will likely be out of sync with the Permit cycle. In the last few years, many communities have been telling their leaders and residents that the new Permit would be out "soon" based on updates from the Agency, with the target issue date moving over the course of several municipal budget cycles. Many of these leaders will face reluctance, skepticism, and frustration when proposing increased stormwater program budgets, and will need to re-educate their decision makers about why these increases are required.

4. We believe that many provisions in the proposed Permit do not lend themselves to implementation over a five-year Permit term, at least in a way that is affordable for the regulated communities and that results in meaningful improvements to water quality. Instead, we propose that the Agency extend the schedule for several specific provisions, such as development and implementation of a catchment delineation, over a ten-year period. The Commonwealth of Massachusetts has in place a statutory framework that allows for such an extended timeline as a Compliance Schedule within a NPDES Permit. Indeed, the Agency has taken advantage of this extended schedule in the proposed Permit for the Catchment Investigation Procedure (see Section 2.3.4.8(c)(iii), IDDE Program Implementation Goals and Milestones, Page 37). This compromise will comply with Clean Water Act 402(b)(1)(B) while providing flexibility for the regulated communities. Where

we believe this extended schedule is appropriate, we hereafter refer to it in subsequent comments as a "10-year Compliance Schedule".

5. When describing dry weather and wet weather screening and sampling and outfall/interconnection screening, the proposed Permit frequently refers to "detectable levels of chlorine". It should be noted that chlorine is detectable in most if not all outfalls and at the perimeter of many of Massachusetts' surface water bodies using many field kits available today, and this detection limit is likely to become lower (identifying smaller and smaller concentrations of chlorine) as technology improves. Treated drinking water entering a stormwater system is the potential source the chlorine indicator is intended to highlight. However, chlorine in drinking water is highly volatile, and decomposes quickly once discharged to a surface water body and exposed to sunlight and the ambient atmosphere. If all outfall samples would demonstrate "detectable levels of chlorine", but the chlorine will degrade quickly within a water body, this parameter ceases to be useful as a screening tool.

   We request that the chlorine parameter either be removed from all sections discussing screening methodologies, or that a numeric threshold be established- based on peer-reviewed data- that can correlate a specific elevated detected chlorine concentration to a potential illicit discharge, such as a grey water connection (or the absence of elevated bacteria) or a cross-connection (in the presence of elevated bacteria).

6. We have observed that many provisions in the proposed Permit include the development of a written program, written inventory, written report, written procedures, or other "written" documentation. These proposed provisions counter a shift on the part of many regulated communities to cloud-based infrastructure management systems, such as the online mapping and inspection platform used the Town of Uxbridge. The Town uses these cloud-based tools because they work with mobile devices, reduce paperwork, and allow data to be added to a management system in real-time. These tools reduce the amount of inefficient administrative time to enter information into a form or spreadsheet and typically allow towns to create work orders from the field for follow-up or maintenance activities. The data is every bit as useful and accessible and can be readily queried into reports to provide summaries and snapshots.

   Managing operations and maintenance procedures through cloud-based systems such as the one the Town uses is also more effective- if a change is made to a procedure or form on our platform, that change is available immediately without the need to print new forms. These workflow improvements should be considered to be enhancements, and encouraged as they are consistent with federal efforts to reduce paperwork and not "overburden the public with federally sponsored data collections", mentioned as the goal of the Paperwork Reduction Act.

   We also know that many regulatory agencies like municipalities to maintain hard copies of documents at multiple locations, even though this practice does not lead to improved use of these documents. The *absence* of large volumes of paperwork doesn't mean that a community isn't implementing something any more than the *presence* of many binders means that a community is effectively utilizing the programs in them. Decreasing the use of paper in our work environment is also environmentally preferable.

   It is important for both the Agency and the public to realize that increased use of technology and cloud-based tools allows local governments to work more efficiently and respond to their needs and requests more efficiently.

This modernization should be encouraged, and we request the Agency to incorporate flexibility for many of the "written" submittals requested to be implemented as modules within asset management platforms, and allow the permittee to demonstrate by other methods that these procedures, inventories, etc… exist and are being utilized.

7. We strongly encourage the Agency to engage in conversations and workshops that lead to development of a Final MS4 Permit that MassDEP is willing to sign onto. This coordination should begin as soon as possible to reach a version of the permit agreeable to both organizations and compliant with the Clean Water Act, Massachusetts' Surface Water Quality Standards, and associated supporting documentation, so that water quality improvement activities across the Commonwealth can be focused and consistent.

Specific Comments

1. Part 1.10(a), Stormwater Management Program (SWMP), (Page 7). The SWMP is required to describe the specific activities that will be taken, and the schedule for each activity or Best Management Practice (BMP), for the duration of the permit term. This document cannot be developed without thorough coordination of multiple departments and persons within each regulated community, and without each of these departments and persons committing the resources (both time and financial) needed for those activities and BMPs to be completed on the schedule proposed. The SWMP is arguably the most complicated and detailed submittal in the proposed Permit.

   The Town therefore request that the proposed Permit be revised to require an in-person coordination meeting between the Agency (and MassDEP, ideally) and the regulated community one year after the effective date to review the draft SWMP, with the Final SWMP due one year after that coordination meeting. This gives the regulated community an opportunity to receive intermediate feedback from the Agency and MassDEP, and for corrections to be made, if needed, to ensure that Final SWMP will be acceptable to all parties, reducing revision efforts. This coordination meeting would provide many communities with feedback on their current compliance status (which has not routinely been provided to this point), and allow them to adjust proposed investments in any Minimum Control Measure that they intend to incorporate into the SWMP.

2. Part 2.1, Water Quality Based Effluent Limitations (Page 9). This section references Clean Water Act 402(p)(3)(B)(iii), stating that this section of the Clean Water Act prohibits discharges that "cause or contribute to an exceedance of water quality standards". However, the referenced section of the Clean Water Act actually states that Municipal discharge Permits shall require "controls to reduce the discharge of pollutants to the maximum extent practicable", commonly known as MEP.

   MEP has long been the statutory standard that governs the level to which municipalities are responsible for limiting and reducing pollution in stormwater, and has been interpreted in many decisions as being subject to certain limitations, including the limits of technology and cost/benefit analyses.

   For example, if a community spends $1 billion dollars on a stormwater treatment project for Pollutant X and continues to contribute 0.01% of the loading of Pollutant X to a receiving water that does not meet water quality standards for that pollutant, that community would be considered to have *satisfied the MEP standard* but would *not comply with the narrative limit* ("contribute

to…") proposed in this section. The Agency implies that language in the proposed Permit would ***overrule MEP as the accepted standard***, an authority that the Agency does not have over water quality standards in the Commonwealth of Massachusetts.

To eliminate this inconsistency, we strongly request that language in this and other parts of the proposed Permit be revised to clearly establish that MEP standard shall be applied throughout the proposed Permit.

3. Part 2.3.2, Public Education and Outreach (Pages 22-24). As noted previously, flexibility in the Permit will result in the most substantial improvements to water quality. This also applies to a Permittee's authority to direct education and outreach messages to targets it has determined are the priorities for their specific community, rather than mandated messages to mandated audiences. We request the following modifications:

    a. In (b), replace "shall" with "should", to enable the Permittee to focus messages on the types of properties it has already determined- through its efforts under the 2003 MS4 Permit- to be the highest priority. The Agency should encourage the Permittee to evaluate whether it should target a new audience, but not all audiences exist in regulated communities. Increased flexibility to direct messages to priority targets (rather than to mandated audiences) will result in the most substantial improvements to water quality.

    b. In (c), replace:

        "…shall distribute a minimum of two (2) educational messages over the permit term to each audience identified in Part 2.3.2.b. (The permittee shall distribute at least eight educational messages during the permit term)."

        with

        "…shall distribute a minimum of eight (8) educational messages over the permit term."

    c. In (e), (f), and (g), eliminate the mandate to quantify the effectiveness of each message, each distribution technique, and the overall program. These requirements aim to compel technical and administrative personnel in the Town to function as marketing or public relations specialists, where they have not been trained to do so. If and when the Town tries a new message delivery mechanism, encourage- but do not mandate- that they report on how well it worked. Towns are not in the habit of sending good money after bad, and will not continue to pay for services or products that it knows are ineffective.

        The inclusion of these elements in the final Permit, however well-intentioned, will have the effect of siphoning off a portion of the town's funding to a third party for implementation, losing the connection within the community. Instead, we encourage the Agency to actively share the resources that have been developed (and continue to be developed) within Massachusetts, as ways to reduce the burden on individual communities to developing its outreach and education programs.

4. Part 2.3.4.5(c), Outfall/Interconnection Inventory (Page 27). The proposed Permit asks the Permittee to physically label all MS4 outfall pipes. This proposed provision is related to public

education, not inventory of the system, and should not be included in Part 2.3.4.5. The Agency is already proposing that regulated communities capture information such as pipe and open channel discharge locations under Part 2.3.4.6 (System Mapping, Page 27-28), with the goal of being able to readily locate and mobilize at these locations to perform illicit discharge activities. As such, the Town is already required to maintain outfall location information in the way most useful to it. Placement of physical labels, such as signs, will be costly and provide no additional benefit to Permittee personnel over and above the system mapping. We recommend that placement of such signage be considered a potential delivery mechanism in Part 2.3.2 (Public Education and Outreach, Page 22-24) on a location-by-location basis - that is, if the community determines that the placement of such signage in an area would increase the public's understanding of stormwater services provided or help resolve a chronic illicit discharge issue, such as illegal dumping, in that area.

5. Part 2.3.4.6(a)(i), System Mapping (Page 27-28). The number of required mapping elements (ten) and detail to be provided for each far exceeds the system mapping provisions included (or proposed) in any other New England state. We understand the value in documenting the location of many kinds of points of interest within stormwater system infrastructure, but request that this Part be scaled back to focus mandatory future mapping only on outfalls, pipes, catch basins, and drain manholes, with other information to be collected as the Permittee's discretion.

   Further, the definition of catchment provided in this section ("the area that drains to an individual outfall or interconnection") differs from the Agency's responses to questions on this provision at public meetings. For example, at a meeting in Lowell, an Agency representative stated the opinion that two catch basins connected to a single outfall pipe would not need to be delineated; in fact the proposed Permit does not include an exemptions for a "small" catchment like this one. We encourage the Agency to define, in the final Permit, some types and configurations of catchments that could be exempt from the delineation requirement, such as this example.

6. Part 2.3.4.7(c,), Assessment and Priority Ranking of Catchments (Page 30): We request clarification of the identifying parameters for sewer input based on sampling results. The permit language states that Problem Catchments and High Priority Catchments be categorized by ammonia $\geq$ 0.5 mg/l, surfactants $\geq$ 0.25 mg/l and bacteria levels greater than the water quality criteria applicable to the receiving water; or ammonia $\geq$ 0.5 mg/l, surfactants $\geq$ 0.25 mg/l and detectable limits of chlorine.

   Based on these requirement detection limits, *all three parameters* must be above levels for prioritization into one of these categories. We do not believe this is the intent of the Agency and request clarification on the threshold of these parameters.

7. Part 2.3.4.7(c)(i), Assessment and Priority Ranking of Catchments (Page 30). The definition of Low Priority Catchment should allow for categorization based on either the outfall/interconnection screening (Part 2.3.4.7(d)) or the catchment characteristics assessment (Part 2.3.4.7.(c)(ii)), but not both.

   For example, if a catchment has no history of complaints or reports, has good dry weather water quality (per screening kits), has low development density, contains no industrial or commercial properties, consists of new infrastructure, and is located within a recently-sewered area, then there is hardly justification to require the full scope of screening and sampling outlined in 2.3.4.7(d). The community should be able to consider this example to be a Low Priority Catchment without

going to extraordinary efforts, which is the very purpose of defining this category between the Excluded and High Priority categories.

8. Part 2.3.4.7(c)(iii), Reporting dates for Assessment and Priority Ranking of Catchments (Page 31). The level of effort required for the Assessment and Priority Ranking of Catchments is substantial and will require far more than one year from the effective date to implement. We request that this provision have a submittal milestone closer to 60% of the Permit term (i.e., Year 3 of a five-year permit term or Year 6 of a 10-year Compliance Schedule).

9. Part 2.3.4.7(e)(i), Catchment Investigation Procedure (Pages 33-34). This section outlines the System Vulnerability Factors that indicate "a risk of sanitary or septic system inputs to the MS4" under some conditions. These Factors include information that is either subject to the separate NPDES permit for the permittee's publicly owned treatment work (POTW), or is not applicable (for communities that aren't sewered). In either case, the core concept outlined by the Agency in listing these factors is that there needs to be increased cooperation between the entity primarily responsible for the operation of the regulated community's POTW (e.g., Town wastewater department or local sewer district) or subsurface wastewater discharge program (e.g., Board of Health or Code Enforcement Officer) and the entities primarily responsible for compliance with the MS4 Permit).

   The information outlined in the Factors includes data and occurrences that are already routinely tracked by the POTW/subsurface system operator(s). As such, it is much more efficient to require these Factors to be discussed during the development of the SWMP early in the process and reviewed with the Agency at the one year coordination meeting (see Specific Comment #1) than to mandate that the permittee duplicate that substantial effort with a mid-permit term submittal.

10. Part 2.3.4.8(a), IDDE Program Implementation Goals and Milestones (Page 36). The level of effort required to complete the dry weather screening and sampling is substantial and will require far more than three years from the effective date. We request that this provision have a submittal milestone at Year 6 of a 10-year Compliance Schedule, or, alternately, that the Permittee be required to begin this task by Year 3 (of a 5 or 10-year Compliance Schedule).

11. Part 2.3.4.8(c), IDDE Program Implementation Goals and Milestones (Page 36-37). We request that the first sentence be deleted. As noted in Specific Comment #10, if a catchment characteristics assessment satisfies all criteria in Part 2.3.4.7.(c)(ii)), there is hardly justification to require the full scope of screening and sampling included in the Catchment Investigation Procedure.

    Further, the progress milestones for Problem, High Priority, and "all" catchments outlined in (i) through (iii) of this Part are not realistic, given the effort required in performing the Catchment Investigation Procedure, even if Low Priority catchments are excluded. We request that the Agency revisit these progress milestones based on a ten-year Compliance Schedule.

12. Part 2.3.6(a), Post-Construction Stormwater Runoff from New Development and Redevelopment (Page 39): The Agency has been asked at a number of public meetings to clarify the intent of the requirement to retain (or provide treatment for) the first inch of runoff from new and re-developed sites that disturb one or more acres and discharge to the MS4.

    The Town similarly request that the Agency confirm that projects such as roadway maintenance projects - including surface overlay, milling followed by overlay, and full-depth reclamation that

does not expose the roadway sub-base - are not included in the definition of "disturb". That is, if a community is implementing a maintenance project on an existing roadway, without increasing the area of impervious surface, that no stormwater retention or treatment is required. The potential unintended result of the alternative interpretation is the crippling of existing pavement maintenance projects- already underfunded- as new stormwater conveyance, storage, and treatment infrastructure is designed, for very little water quality benefit. Another potential unintended result of the alternative interpretation is discouraging redevelopment of urban/brownfields parcels with existing infrastructure in favor of focusing on a previously undeveloped parcel, which would ultimately increase, not decrease impervious area.

Finally, the Agency has acknowledged at public meetings that it is not authorized to supersede a state's water quality-based limits and has previously deferred to the antidegradation policy set forth in Massachusetts' Surface Water Quality Standards, 314 CMR 4.00. Nevertheless, tools for calculating removal efficiencies in this Part are inconsistent with the Massachusetts Stormwater Handbook. Please clarify that the Agency does not intend to challenge or rewrite guidance for design of stormwater treatment BMPs included in the Massachusetts Stormwater Handbook.

13. Part 2.3.6(d), Directly Connected Impervious Area (Page 42): The proposed Permit asks each Permittee to report on impervious area (IA) and directly connected impervious area (DCIA) each year of permit coverage, with the goal of reducing both metrics each year of permit coverage. The Agency has indicated that it will provide a benchmark for measurement of these metrics through maps located on its Massachusetts NPDES website and implies that these maps reflect "subbasins" that are hydraulically connected to a point of discharge. A review of these draft maps shows that development data are not only outdated (e.g., GIS layers dated 2000 through 2010) but also that the subbasins delineated by the Agency do not reflect development. The subbasins shown on these maps are inconsistent with the definition of "catchment delineation" in the proposed Permit (see: Section 2.3.4.6(a)(i), Page 28). That is, the subbasins on maps referenced by the Agency are of undeveloped topography, ignoring the engineered infrastructure and roadway elevations that convey stormwater across a reference area to a point of discharge. In fact, a single subbasin as shown on the Agency's map may include multiple hydraulic catchments.

    The value of using IA and DCIA as a surrogate for stormwater pollution is not yet proven, and we believe the Agency, not the regulated communities, should take the lead on gathering data on the correlation between the two. To allow the Agency to develop meaningful IA and DCIA benchmarks, we encourage that the IA and DCIA reporting measure be moved from a Year 2 start date to milestone closer to 80% of the Permit term (i.e., Year 4 of a five-year permit term or Year 8 of a 10-year Compliance Schedule). As a result of this shift, the deadline for submittal of the inventory and priority ranking for installation of BMPs should be shifted appropriately (or deleted entirely, as discussed in other comments we've provided).

14. Part 2.3.7, Good House Keeping and Pollution Prevention for Permittee Owned Operations (Pages 43-49). This Part has expanded substantially from the 2003 version, and with good reason: pollution prevention and good housekeeping are a very effective non-structural BMP for reducing stormwater pollution. Having said that, some sections of this part lack the flexibility inherent in other state MS4 Permits. Some provisions focus too strongly on the specific steps to be taken to reach an objective instead of the objective itself. As an example: Part 2.3.7(a)(ii)(a) includes specific procedures to be implemented for "Parks and open space". One mandated procedure outlined in this section is to establish "pet waste handling collection and disposal location at all parks and open space including the placing of proper signage concerning the proper collection and

disposal of pet waste". This specific procedure is inappropriate for a community that has already banned dogs from public parks and open spaces and has successfully enforced that ban. In this case, the mandated placement of pet waste collection stations would work *against* the implemented dog ban by providing visitors with a disposal location of waste from animals that shouldn't be there, sending mixed signals! This example community is already accomplishing the objective (reducing bacteria and nutrient runoff from a park) through an alternative approach that they decided was most appropriate, and should be permitted the flexibility to stay on the course they have chosen while the goal continues to be achieved. An improvement for our example community could be to encourage (not mandate) them to place signage informing visitors about improvements to water quality in the park (or adjacent water bodies) that have been observed since the pet ban went into effect. We request that this Part of the proposed Permit be revised to focus on the end point or objective rather than the prescriptive steps to reach it.

Further, the progress milestones under all sections of this Part are not realistic, given the effort required in evaluating the range of activities and potential pollution sources across a wide spectrum of permittee-owned facilities and operations. We request that the Agency revisit these progress milestones based on a ten-year Compliance Schedule with the Permit.

15. Part 2.3.7(a)(iii)(b), Infrastructure Operations and Maintenance- Catch Basins (Pages 44-45). A catch basin sump being no more than 50 percent full is described as the threshold for proper function of the basin. This may be accurate, but the inclusion of this metric is arbitrary and not in and of itself protective of water quality. As many commenters will likely note, most Massachusetts regulated communities are already familiar with locations within their MS4 where catch basins receive higher debris and sediment loading and require more frequent cleaning. Most of these communities already inspect and clean these basins more frequently, and include these activities in Annual Reports to the Agency.

    Use of the "no more than 50 percent full" metric is preferred over the "twice a year, minimum" metric that has appeared in previous versions of this and related permits. However, if a permittee is mandated to use the "no more than 50 percent full" metric as the threshold for additional cleaning and/or investigation of areas not previously considered a priority, then it's inevitable that other areas will suffer as a result. The end result is that, given current wording, the permittee can be considered non-compliant if a single basin in the system has a sump more than 50 percent full, regardless of whatever increased investment was made in cleaning and inspection activities or net improvements to water quality.

    The Town requests that the Agency replace "shall" with more permissive language like "should" in this section, maintaining the "no more than 50 percent full" metric as an ideal to strive for but not a provision that can lead to noncompliance.

    Finally, the last bullet in this section asks the permittee to report "the volume or mass of material removed from each catch basin draining to water quality limited waters and the total volume or mass of material removed from all catch basins". The latter part of this provision is feasible, although will require thorough recordkeeping and tedious summaries. The first part, however, is not feasible: regardless of the methodology by which the volume or mass is calculated, the numbers reported would not match reality. No catch basin cleaning technology can remove 100% of the sediment and material in a sump and material density varies, so a calculated volume/mass isn't realistic: at the end of the day, the calculated mass/volume from cleaning X catch basins would not be equal to the mass/volume of material in the truck that cleaned X catch basins. Manifests would

never match estimated, reported removal mass/volume and would be flagged in an audit. The potential for a truck to return to the Public Works yard (or other location) after cleaning a single catch basin to be re-weighed (allowing for documentation of the actual mass removed from that basin) is also not realistic. This provision has good intentions, but is not feasible from a boots-on-the-ground perspective. It may be possible for some communities to plan cleaning routes to be watershed- or catchment-specific (allowing a total volume or mass to be quantified for that water body), although in other communities this may be highly inefficient. The Town requests that this bullet be modified to eliminate the "each catch basin" provision.

16. Part 2.3.7(a)(iii)(b), Infrastructure Operations and Maintenance- Street Sweeping (Page 45). The proposed Permit describes each street (with some limitations) being swept a minimum of once per year as the threshold for reduction of sediment loads to surface waters. This may be accurate, but the inclusion of this metric is arbitrary and not in and of itself protective of water quality. Most Massachusetts regulated communities are already familiar with locations within their MS4 where streets may contribute higher sediment loading and therefore require more frequent sweeping. Most of these communities already sweep these roadways more frequently than once a year, and include these activities in Annual Reports to the Agency.

    We request that the Agency include more permissive language that maintains the annual evaluation metric as an ideal to strive for, but eliminates a single provision that can lead to noncompliance.

We appreciate the opportunity to comment on this proposed Permit, and look forward to working with you to create a more practical general permit. If you have any questions, please don't hesitate to contact me at 508-278-8616 or via email at bsherman@uxbridge-ma.gov.

Sincerely,

Benn S. Sherman, P.E.
Director of Public Works

CC: Board of Selectmen
David Genereux, Town Manager

TOWN OF UXBRIDGE
OFFICE OF THE TOWN MANAGER
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David Genereux
Town Manager

February 26, 2015 Sent via email: Tedder.Newton@epa.gov on 2/26/2015

Newton Tedder
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RE: Comments on the 2014 Draft Massachusetts MS4 Permit

Dear Mr. Tedder:

The Town of Uxbridge currently operates its storm sewer system under the 2003 NPDES Phase II MS4 general permit. As a Phase II MS4 community, we have a population of nearly 13,000 people (of which over 10,000 reside within the regulated area), a land area of 30.4 square miles and is situated in southern Worcester County along the border with Rhode Island. A number of water resources traverse the Town, including the Blackstone, Mumford and West River systems. For this reason, the Town is very concerned with the operation and maintenance of the Town's infrastructure, as well as budgetary constraints.

We thank you for the opportunity to provide these comments on the 2014 Draft MS4 permit. We also note that the Uxbridge Department of Public Works will be submitting a separate set of comments, and we hereby incorporate those comments into our own. On behalf of the Board of Selectmen, we are submitting these comments in an effort to bring to light the substantial impacts this draft permit will have on our community.

The Town of Uxbridge strongly supports the goal of protecting the Waters of the United States from untreated stormwater runoff. Since the beginning of the Phase II MS4 implementation, the Town has supported the underlying goal of improving the quality of the Waters of the United States. The Town has worked tirelessly to implement the requirements of the original 2003 permit. In this regard, the Town joined the Central Massachusetts Stormwater Coalition (CMRSWC) and continues to partner with other member communities to develop and implement a consistent framework to address the continuously changing stormwater needs.

GENERAL COMMENTS

1) This letter is intended to express our concerns with the extremely large and overreaching burden that the 2014 Draft Permit will impose on the Town of Uxbridge, as well as others in the Commonwealth. The Draft Permit as currently written will result in large increases in compliance costs related to administratively focused tasks, studies, and reports that will

create no quantifiable increase in water quality in the Town's receiving waters. Furthermore, the Draft Permit imposes strict conditions on the development and redevelopment projects that are in conflict with current Massachusetts Stormwater Standards, existing local bylaws and regulations.

2) The Draft Permit requires the Town to develop a number of different stormwater education messages, each of which are targeted to a specific audience. While the Town does in fact agree with the targeted message campaign, the Draft Permit requires the Town to develop and implement ways to measure the effectiveness of those messages on the intended audience. The Draft Permit does not provide any guidance as to how this is to be done. In addition, the Draft Permit language does not consider the current metrics (number of pamphlets distributed, number of web page views, etc.) as adequate for measuring effectiveness. In order to comply, the Town will be required to engage a consultant to design messages, conduct surveys and measure the effectiveness of the campaign. This type of activity is simply not a good way to spend limited money on stormwater cleanup and will not provide an improvement to overall water quality. The USEPA should remove the requirements for determining effectiveness of the public education

3) The Town is also concerned with the impediments to land redevelopment costs that the Draft Permit appears to impose. In the sections of the permit dealing with the new and redevelopment land projects, the Draft Permit appears to require the upgrading of the stormwater management system of an entire site, even if only the portion of the site is actually undergoing redevelopment. Further, the requirement of the Draft Permit to treat the first 1-inch of stormwater runoff is in conflict with the Massachusetts DEP Stormwater Standards, which requires the 1-inch treatment volume only for discharges to critical environmental areas. The imposition of both the 1-inch treatment volume for all new land development projects, as well as the retrofitting of the entire site undergoing land redevelopment activities will greatly increase the cost of construction of both types of projects. This requirement may make future redevelopment projects not cost effective. While the Town does not encourage unchecked land development activities, the added construction costs due to the Draft Permit must be weighed against the general economic harm that may occur from those added costs. We encourage USEPA to reassess this requirement to treat the 1-inch stormwater runoff on the entirety of a redevelopment site. Additional consideration should be taken with respect to the conflicts created between the Draft Permit, existing Massachusetts Stormwater Standards and other local land development bylaws and regulations.

4) The Draft Permit provides a level of detail for activities to be completed to achieve permit compliance that has been previously not seen. There are at least 250 different actionable items that the Town has to demonstrate compliance with over the permit term. The Draft Permit lists criminal penalties for failure to comply with these items. Many of these items are of limited benefit. For example, requiring the Town to sweep streets a second time in the year, primarily in order to collect leaves is unreasonable. We believe the USEPA needs to re-examine this list of activities. We urge the USEPA to develop permit requirements

that are based on quantifiable improvements in stormwater runoff quality, rather than mandating a set of actions that may or may not result in an appreciable improvement to runoff quality.

5) There are a number of areas within the permit where it appears the USEPA is using cities and towns to collect data on behalf of the agency. Collecting data on volume of street sweepings, catch basin cleanings, amount of directly connected impervious areas (DCIA), and wet weather sampling serves little purpose in increasing stormwater runoff quality. Although this data may be interesting to collect for research purposes, there is a cost associated with the collection efforts. The impacts to town's resources (staff and budget) should not be borne by the Town since there is no appreciable benefit to runoff quality.

6) The overall projected cost for compliance is of great concern to the Board of Selectmen. The Town is currently defining the costs associated with the implementation of the 2003 permit and developing estimates for the compliance with the Draft Permit. Based on municipalities similar to Uxbridge that have undertaken this financial analysis, it appears that there will be appreciable budgetary increases in order to comply with the draft permit. Furthermore, these projected costs do not include monies necessary to perform structural retrofits on existing Town owned stormwater management systems.

7) The Town is a supporter of improving stormwater quality and is doing its best to fund the activities necessary to comply with the 2003 permit. The Town did expect the Draft Permit would require an increase in the expenditure of money related to new stormwater compliance costs, however, the projected compliance costs are unreasonable, especially given the unreasonableness of many of the items that are driving the cost increase, and the lack of quantifiable improvements to runoff quality. The USEPA must examine further the cost implications of the Draft Permit, and work to find ways to reduce this additional burden to cities and towns. While the USEPA has indicated that it understands there will be additional permit compliance costs, it has not sought out ways to reduce that burden. The USEPA champions the establishment of stormwater utilities to raise dedicated funding for stormwater management. Establishment of such a utility is one way to raise the funds necessary for stormwater management activities. Unfortunately the utility simply represents a way to levy an additional tax or fee on the residents and business owners of the Town. A stormwater utility may prove to be a viable option to raise program funds, however, it does not do anything to limit the amount of money that is needed by the Town to comply with the Draft Permit. We strongly urge the USEPA to re-examine all the new mandates that it is requiring cities and towns to comply with in the Draft Permit.

The Town of Uxbridge Board of Selectmen is quite concerned with the large expansion of the USEPA's involvement in the Town's stormwater management program. The USEPA is mandating a number of activities that will be expensive to implement, are not within the core function of a municipality in Massachusetts, and will have not resulted in a readily apparent increase in stormwater quality. The Town of Uxbridge is a strong supporter and advocate for clean water, whether it is drinking water, stormwater, or wastewater. Unfortunately, the increased costs

due to permit compliance must be balanced against the financial capability of the Town of Uxbridge and other cities and towns to absorb those additional costs. The scale of the costs increases, as well as the reasons for those increases, is not something that can easily be defended or explained to the general public. Should the USEPA wish to increase stormwater runoff quality, they must adopt a more cooperative approach to the problem, and work with the cities and towns in Massachusetts to create a permit with more realistic requirements that create measurable improvements in stormwater quality. Until the Federal and/or State governments step forward with the additional funding necessary to gain permit compliance, cities and towns will be stuck in an adversarial relations with the USEPA, and will be unable to adequately fund their stormwater management programs.

The Town of Uxbridge thanks you for the opportunity to provide public comment on the 2014 Draft Permit. We look forward to working with the USEPA in the future to create a more practical and cost effective stormwater permit.

Sincerely,

David Genereux
Town Manager

CC: United States Senator Elizabeth Warren
United States Senator Edward Markey
United States Representative James McGovern
Massachusetts Senator Ryan Fattman
Massachusetts Representative Kevin Kuros
Uxbridge Board of Selectman
Benn Sherman, Director of Public Works
Uxbridge Planning Board
Uxbridge Conservation Commission
Uxbridge Zoning Board of Appeals

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February 27, 2015

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Re: 2014 Draft General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts

Dear Mr. Tedder,

In our role as consultants, our professionals here at Weston & Sampson are responsible for advising and assisting many municipal clients that own Municipal Separate Storm Sewer Systems (MS4s). Through the services that we have provided, and are continuing to provide, we have a strong understanding of the challenges that these communities face in complying with stormwater permit requirements. Based on that understanding, and in response to EPA's request for public comments, we offer the following comments and suggestions on the above-referenced draft MS4 Permit. We would like to note that a number of the comments below are based on the comments of others on this draft permit, as well as prior MA and NH drafts. We have echoed these comments in our letter to reinforce their importance.

1. Comment: Section 1.7.4. Page 5. This third draft of the Massachusetts permit still does not define responsibility for addressing comments received in response to EPA's Public Noticing of the Notice of Intent. The permit needs to state whether the MS4 or the EPA will address public comments.

   Recommendation: Since EPA is publishing the Public Notice for all MS4s and similar comments are likely to be submitted for many NOIs, it is recommended that the permit be revised to state that the EPA will be responsible for addressing public comments.

2. Comment: Section 2.1, page 9, states (and other sections reference) that the "permit includes provisions to ensure that discharges from the permittee's small MS4 do not cause or contribute to an exceedance of water quality standards". Discharges from the MS4 should certainly not be the cause of an exceedance, but simply contributing a measurable concentration of a pollutant does not necessarily constitute a violation of water quality standards. EPA is simply presuming that the MS4 contribution is significant, not rendering a demonstration, as required by federal law and applicable NPDES rules, that the MS4 is a significant contributor.

   Recommendation: All references to contributing to an exceedance of water quality standards should be deleted from the permit, or at least qualified to state that the contribution in the discharge has to be in excess of water quality standards.

3. Comment: Section 2.1, page 9, states that "Pursuant to Clean Water Act Section 402(p)(3)(B)(iii), this permit includes provisions to ensure that discharges from the permittee's small MS4 do not cause or contribute to exceedances of water quality standards…". The cited section of the Clean Water Act makes no mention of water quality standards. Instead, it establishes Maximum Extent Practicable (MEP) as the standard to which pollutants must be removed from MS4s. The language in section

402(p)(3)(B)(iii) of the Act is clear that MEP governs pollution control requirements for municipal stormwater discharges. This section of the Act also states that controls to reduce the discharge of pollutants to the MEP include management practices, control techniques and systems, design and engineering methods, and such other provisions as the Administrator determines appropriate for the control of pollutants. The "such other provisions" clause is within the broader context of the MEP standard, not separate from it as EPA seems to imply.

For Congress to include such language in the Act is clear and unassailable evidence that lawmakers understood that there are limitations in the ability of municipalities to meet water quality standards in stormwater discharges. These limitations are spelled out in the statutory standard of MEP applied only to municipal stormwater discharges. Water quality standards and TMDL Waste Load Allocations (WLAs) may be goals, but are not the required standards that must be achieved in municipal stormwater.

The draft permit requires MS4s to implement specific BMPs to meet phosphorous reductions and TMDL WLAs, as well as evaluate/implement additional BMPs as needed. Specific percent reductions in phosphorous loads and WLAs are essentially numeric limitations. If EPA's approach to stormwater permitting is indeed an iterative BMP approach to MEP, and one that has been upheld in the courts, then the permit needs to be consistent in its language so that this intent is clear. At present, the draft permit contains conflicting language that first suggests the BMP approach to MEP is sufficient and then requires compliance with water quality standards, including numeric limitations set by TMDLs.

Furthermore, TMDLs are developed with the sole purpose of addressing discharges to impaired waters; therefore, EPA's inclusion of additional requirements/BMPs to address discharges to impaired waters in the MS4 permit is duplicative and inappropriate.

Recommendation: The permit must be revised to be consistent with the Act, which would be for the permittee to be allowed to use an iterative BMP approach to MEP standards. Requirements related to TMDLs and setting specific numeric limitations should be removed from the permit since these are inconsistent with the Act.

4. Comment: Sections 2.1 and 2.2 of the draft permit set forth requirements that place the responsibility on the permittee to prove that its MS4 is not causing or contributing to a water quality violation. Under 40 CFR Section 122.44(d)(1)(ii), a *permitting authority* determines whether a discharge "causes, has the reasonable potential to cause, or contributes to" an excursion of water quality standards. The "reasonable potential analysis is required to account for dilution, the various sources of the pollutant of concern and current/proposed treatment improvements affecting pollutant levels in rendering a decision on the need to control a particular facility." Once such a determination is made, the *permitting authority* determines whether a pollutant reduction is required. Likewise, under Section 303(c), the state (or EPA) determines which sources require control under the TMDL program. Neither the CWA nor EPA's regulations provide a basis to presume an impairment contribution or to transfer the assessment procedure to the permittee.

   Furthermore, deriving water quality-based limitations for any NPDES permit without an adequate effluent characterization, or an adequate receiving water exposure assessment would result in the imposition of unjustifiable limits on that discharge.

   Recommendation: Any and all provisions in the permit that place the responsibility to conduct "reasonable potential" analyses on the permittee should be deleted.

5. Comment: Section 2.2 of the permit sets forth onerous requirements for MS4 discharges to impaired waters, but in most cases, the impairments and TMDLs are based on extremely limited, and possibly suspect, water quality data. Science tells us that phosphorus can contribute to the growth of aquatic plants and algae thereby making a water body less suitable for recreation and possibly having negative

impacts on fish and aquatic wildlife; therefore, phosphorus reduction is a reasonable goal. However, specific sources of this phosphorus, the ability to cost-effectively reduce phosphorus, and the actual level of reduction needed are not well understood, especially for stormwater. The lack of current and valid data used in TMDLs clearly shows that specific percent reduction requirements for phosphorus called for in these reports are highly suspect. We recognize that comments on a draft permit are not the forum for correcting weak or faulty TMDLs; however, given the questionable nature of these studies, MS4s should not be held to meeting TMDL reduction requirements through this permit.

Recommendation: Prior to including requirements related to impaired waters in the MS4 permit, the EPA should provide sufficient scientific data to confirm that:

- The receiving waters are actually impaired for the pollutant of concern.
- That the MS4's discharges are causing or are a significant contributor of that pollutant.
- That there is scientific evidence that required BMPs will actually result in a reduction of that pollutant.

Since permit-required sampling of MS4 discharges to impaired waters should include analysis for the pollutant of concern during wet weather, this data can be used (in conjunction with catchment delineation) to produce an outfall-specific estimate of each discharge's pollutant loading. Outfalls with an elevated pollutant loading would then be evaluated, prioritized, and mitigated as part of an iterative BMP approach to MEP standards.

6. Comment: Section 2.2 of the permit sets forth numerous requirements for discharges to impaired waters, but also states that tributaries to these impaired waters are also subject to these requirements without any apparent regard to whether those tributaries are impaired. If the tributaries are not listed as impaired for that pollutant on the 303d list, and an approved TMDL has not set forth load allocations and/or percent reductions needed for that tributary, then the EPA may be over-stepping its authority in attempting to force additional requirements for these tributaries.

   Recommendation: Section 2.2 should be revised to be applicable only to discharges to impaired waters, or discharges to those tributaries specifically included by reference in approved TMDLs.

7. Comment: Section 2.2 (and Appendix F). The permit requires MS4s to achieve significant percent reductions in phosphorus loading; however, the various non-structural BMPs have phosphorus reduction rates of not more than 10% so MS4s will need to achieve the remaining percent reduction through structural BMPs. The only structural BMPs capable of achieving the reductions called for in the TMDLs are infiltration trenches/basins. Consequently, in order to comply with the MS4 permit, communities will have to site, design, and construct hundreds of these BMPs at an incredible capital cost. In addition, once constructed, the MS4s will have to maintain these hundreds of BMPs at an equally incredible annual operating cost.

   It is also possible that limitations – such as soils, depth to groundwater, presence of contaminants, etc. – may prevent MS4s from constructing BMPs in locations needed to provide the required reductions. As such, constructing enough BMPs in needed locations may not be even technically feasible.

   Since the permit is based on MEP, and achievement of the required reductions is not "practicable", the proposed permit requirements exceed statutory authority.

   Recommendation: The permit should be revised to provide more "practicable" (or practical) reductions in phosphorus loadings, or at a minimum, substantially more time for MS4s to comply with the reduction requirements.

8. Comment: Section 2.2. The implementation of the draft permit requirements for discharges to impaired waters has questionable direct impact on the improvement of water quality. For MS4s discharging to impaired waters, very large expenditures are mandated, but even if MS4s implement every aspect of this permit, and future permits, the waterbodies could remain impaired. The permit offers no evidence that the large expenditures on mandated BMPs will actually eliminate the impairments.

   Recommendation: The EPA should provide a more defined and reasonable level of effort to comply with requirements associated with discharges to impaired waters. This should include a way for the MS4 to demonstrate that its MS4 discharges are within water quality standards, and be excused from further required actions regardless of whether the receiving water is still impaired.

9. Comment: Section 2.1.2. This requires MS4s to obtain authorization from MassDEP for increased discharges; however, it is not clear what this "authorization" will entail. This provision could also threaten new construction and redevelopment within impaired watersheds (Category 5 or 4b), because of the prohibition against new discharges to these waters unless it can be demonstrated that there is no net increase in pollutants. Without historic data, it is not possible to measure "increased discharges of pollutants" from new or redeveloped land.

   Recommendation: This provision should be modified to allow increased discharges that meet water quality standards regardless of impairments. The permit should also allow compliance with anti-degradation provisions via pollutant load reductions in other areas of the same watershed (instead of prohibiting the increased discharge altogether).

10. Comment: Section 2.3.4.4. Page 26. Sanitary sewer overflows are already prohibited and regulated at both the Federal and State level under existing mechanisms governing wastewater facilities. Including SSOs in the MS4 permit results in the Permittee being regulated by multiple permits for the same issue. This will cause confusion, unnecessary expenditures and potentially conflicting requirements.

    Recommendation: The MS4 permit should only contain language related to SSOs potentially contributing to illicit discharges and that these potential illicit discharges should be investigated, eliminated, and documented under the IDDE Program.

11. Comment: Section 2.3.4.4b mandates that MS4s identify SSOs over the previous five-year period within 120 days and Section 2.3.4.4c requires 24-hour verbal notice and five (5) day written notice of an SSO to EPA and MassDEP. MS4s already report all SSOs to the EPA and MassDEP in accordance with current MassDEP and EPA regulations, which are exactly the same as those stated in these Sections. Adding these requirements to the MS4 permit duplicates an existing effort and, therefore, is unduly burdensome for the permittee.

    Recommendation: This section should be rewritten to simply reference, not duplicate, current EPA/MassDEP requirements for verbal and written SSO reporting.

12. Comment: 2.3.4.5. Page 26. It is unclear whether outfall/interconnection inventories completed prior to the effective date of the new permit will count toward compliance.

    Recommendation: Revise this Section to allow prior inventories to count toward compliance, providing they met the intent of Section 2.3.4.5.

13. Comment: Section 2.3.4.7.c.i & 2.3.4.8.c.i. Pages 30 & 37. The definition of and implementation milestones for "Problem Catchments" significantly disadvantage MS4s that have proactively undertaken outfall sampling in advance of it being required by this permit. Proactive MS4s with sampling data, especially those in urban areas, will have far more outfalls that must be designated as Problem Catchments and given only five years to complete IDDE.

Conversely, MS4s that have made no effort to sample their outfalls will have no (or very few) Problem Catchments, but are given 5-10 years to complete IDDE. As written, the permit punishes proactive MS4s by imposing far more stringent IDDE milestones than those for MS4s that have not performed sampling.

Recommendation: The definition and implementation milestones for “Problem Catchments” need to be revised to remove this inequity.

14. Comment: Section 2.3.4.7.c.iii. Page 31. The draft permit mandates that the initial illicit discharge potential assessment and priority ranking must be completed within one year from the effective date. However, mapping of the MS4 and Catchment Delineations aren’t completed until two years from the effective date. The mapping requirement contained in the 2003 permit was limited to MS4 outfalls only and, thus, "existing" mapping is insufficient to complete the required 2.3.4.7.c.iii assessment/ranking.

    Recommendation: The required catchment assessment and ranking in 2.3.4.7.c.iii needs to be revised so as to align with the mapping (i.e., have a completion date of two years from the effective date).

15. Comment: Section 2.3.4.7.d.iv. Page 32. The limitation on when wet-weather screening should take place ("March to June") does not make sense for IDDE. Although wet-weather screening is intended to identify illicit discharges that only occur during peak flows, whether it should be performed in conjunction with high or low groundwater is determined by the System Vulnerability Factors (SVFs). For example, if the SVFs indicate structural defects and exfiltration potential, high groundwater would actually inhibit the investigation. In this case, sampling should be performed during a heavy rainfall event at low groundwater. Conversely, if the SVFs indicate capacity restrictions and SSO potential, then sampling during high groundwater would be appropriate.

    Recommendation: The permit should be revised to state that wet-weather sampling should be performed during conditions appropriate for the identified SVFs for each catchment area, and provide examples similar to those above to assist MS4s in making an informed decision about when to sample.

16. Comment: Section 2.3.4.7.d.iv. Page 32. The requirements related to wet-weather monitoring are not provided in sufficient detail. Inspection must be performed during wet weather, defined as sufficient intensity to produce a discharge. However, it is not clear whether a discharge must be observed at every outfall to achieve compliance. Does the Permittee have to return to an outfall repeatedly until a discharge is observed, even if it was monitored during a substantial rainfall event? To require the Permittee to mobilize staff, equipment, and laboratory services an unlimited number of times to observe flow at each outfall places an unreasonable burden.

    Recommendation: The permit should be revised to provide specific minimum storm parameters, for both time and rainfall amount. The minimum storm event should be one sufficient to anticipate discharges at all functional outfalls. The requirement for discharges to be observed at every outfall should be eliminated.

17. Comment: Section 2.3.4.7.d.v. Page 32. Based on the response from EPA at the MS4 Information Session on October 28, 2014, analysis for conductivity is being required as a measure of salinity. Requiring both salinity and conductivity testing for the same purpose is a waste of MS4 resources.

    Recommendation: The permit should be revised to require either salinity or conductivity, but not both. In addition, the permit needs to state the applicable benchmark and required action for the chosen parameter, as is provided for other sampling parameters in Section 2.3.4.7.d.vi.

18. Comment: Section 2.3.4.7.d.v & 2.3.4.7.vi. Pages 32 & 33. The level of accuracy for each required sampling parameter is not provided. For example, at what detection level is chlorine to be considered "detectable" in Section 2.3.4.7.vi.

Recommendation: The permit should be revised to clarify the required level of accuracy for each sampling parameter.

19. Comment: Section 2.3.4.7.e. Page 34. The System Vulnerability Factor (SVF) for "any sanitary sewer and storm drain infrastructure greater than 40 years old in medium and densely developed areas" is too inclusive. Throughout Massachusetts, infrastructure is typically in excess of 40 years old; thereore, this SVF serves as a "catch all" to require wet-weather sampling in virtually all catchment areas. Infrastructure age, by itself, is not an indicator of illicit potential. For example, some of our oldest sewers are in better condition than those built 40 or more years later. It is typically other factors, such as poor structural condition, that are the source of elevated illicit potential, not solely the age of the infrastructure.

    Recommendation: This SVF should be revised to include only those sewers and drains that are known to have specific concerns, not all sewers/drains older than an arbitrarily selected age.

20. Comment: Section 2.3.4.7.e. Page 33. The SVF for "crossing of storm and sanitary sewer alignments" is too inclusive. On streets with both sanitary sewers and storm drains, the likelihood that a catch basin connection crosses a sanitary sewer or a sanitary sewer service connection crosses a storm drain is extremely high. This would mean that nearly all catchments would trigger this vulnerability factor and therefore require wet weather sampling.

    Recommendation: This SVF should be revised to include only those catchments that are known to have specific concerns, not all catchments where storm and sanitary sewer alignments cross.

21. Comment: Section 2.3.4.7.e. Page 34. The SVF for "any sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken or offset sanitary infrastructure...or other vulnerability factors identified through Infiltration/Inflow Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations" is too inclusive. Again, in Massachusetts, where infrastructure is commonly in excess of 40 years old, most sewers have some defects, which again would mean that nearly all catchments would trigger this SVF and therefore require wet weather sampling. In most cases, individual sewer defects do not portend illicit connections.

    Recommendation: This SVF should be revised to include only those catchments known to have specific concerns related to the sewer system, and not all catchments with sewers that have minor defects.

22. Comment: Section 2.3.4.7 f & g. Pages 35 & 36. The second paragraph of Section f contains the same requirements as Section g, except for the timeline.

    Recommendation: The permit should be revised to either delete one of the paragraphs, or clarify the intended difference between the two requirements.

23. Comment: Section 2.3.4.8.c. Page 36. The draft permit requires that the IDDE Catchment Investigation Procedure be implemented in "every catchment of the MS4, even where dry weather screening does not indicate evidence of illicit discharges." If there is no evidence of any sewer input at an outfall, IDDE field investigation is a complete waste of resources.

    Recommendation: This requirement should be changed to say that outfall screening or sampling, whichever is appropriate, should be repeated some number of times at varying times/conditions to confirm there is no sewer input. If no sewer input is confirmed during dry and wet weather screening or sampling, IDDE field investigation will not be required.

24. Comment: Section 2.3.4.8.c.i-iii. Pages 36 & 37. The milestones stated for the IDDE effort in 2.3.4.7 are unrealistic for urban MS4s. For some MS4s with ongoing IDDE programs, it has taken many years to locate and remove illicit connections from even one catchment area, let alone 100% of catchment

areas. This is especially burdensome in areas where nearly every outfall will exceed the benchmarks for at least one IDDE sampling parameter or System Vulnerability Factor. The draft permit requires IDDE to be completed for the entire MS4 within ten years. This requirement is both cost-prohibitive and potentially technically unattainable during that limited period of time.

Recommendation: The permit should be revised to allow for additional time to locate illicit discharges. It is recommended that EPA extend the timeframe for completing the Catchment Investigation Procedure in 100% of the area served by all MS4 catchments from within ten years of the permit effective date to within 20 years of the permit effective date. The permit should also indicate that, as long as the MS4 is making reasonable efforts to locate the source of the discharge, the MS4 will be in compliance even if the source is not located within the allotted timeframe.

25. Comment: Section 2.3.6.a.ii.a. Page 40. The requirement to retain/treat the first one inch of rainfall applies to "runoff from all impervious surfaces on site." Without a definition for the term "site" (see comment below), this implies runoff from the entire parcel on which the one acre-or-more disturbance occurs. It is not reasonable or cost-feasible to require a large parcel to treat runoff from "all impervious surfaces" on that parcel when they disturb only a small portion of it. Take, for example, a large user that occupies hundreds or even thousands of acres. If it was to disturb one acre, the draft permit would require the user to retrofit its entire drainage system to retain/treat the first inch of runoff.

    Recommendation: Language in this section needs to be revised to limit the regulated area to all impervious areas within the development or redevelopment area, not the entire parcel. Alternatively (or additionally), the definition of "site" needs to defined so that it refers to the area within the limits of work for a development, redevelopment, or other construction project.

26. Comment: Section 2.3.6. The requirements to have pollutant removal equivalent to that of a bio-filtration system must be removed, as a "one size fits all" model for pollutant removal is too restrictive. A "Maximum Extent Practical" principle is more appropriate. For example, annual roadway reclamation or re-surfacing projects should not fit into the "one inch recharge" scenario, even though projects are greater than one acre of disturbance.

    Recommendation: EPA should define the words "development" and "redevelopment," which would allow exclusion of lateral projects such as roadway improvements.

27. Comment: Section 2.3.6.a.ii. Page 40. This section sets different standards than those existing in the MassDEP's Stormwater Policy and associated handbooks. Having different sets of standards will cause conflicts for MS4s and developers and will likely subject communities to legal action. In addition, the ordinances/bylaws of most Massachusetts MS4s reference the MA Stormwater Standards.

    Recommendation: If the EPA wants more stringent standards, this should be done through working with the MassDEP to affect changes to existing State regulations instead of enacting a second, different, and conflicting set of requirements through the MS4 permit.

28. Comment: Section 2.3.6.a.ii. Page 40. The requirement to inventory all MS4-owned properties for possible recharge areas is not practical.

    Recommendation: At most, an MS4 should select five priority sites per year to evaluate, which will also result in a better assessment of viable sites.

29. Comment: Section 2.3.6.b&c. Page 41. Both of these sections require review of local bylaws. It is not cost-effective to perform two separate reviews and prepare two separate "assessments" related to the reduction of impervious area.

Recommendation: Sections b and c should be combined into one assessment report, covering both reviews.

30. Comment: Section 2.3.7.b. Requiring individual Stormwater Pollution Prevention Plan (SWPPP) for each municipal site is repetitive and overly burdensome. MS4s typically have one Hazard Mitigation Plan and one Open Space plan, both of which are renewed every five years. It makes sense to also have one SWPPP renewed every five years.

    Recommendation: The permit should be revised to allow a single SWPPP document with site-specific sections as needed to cover all sources of potential pollution.

31. Comment: Section 4.3. Page 51. Now that outfall monitoring has been incorporated into Section 2.3.4.7, there is no need for a separate Section 4.3.
    Recommendation: Requirements stated in Section 4.3 should be incorporated into Sections 2.3.4.7 or 4.4, as appropriate.

32. Comment: All Appendices. The appendices do not contain proper page numbering.

    Recommendation: Page numbers should include a reference to the Appendix (e.g., "A-21") so as to avoid duplication with the main permit document.

33. Comment: Appendix A. No definition is provided for the following critical terms: Directly Connected Impervious Area, Disturbance, Illicit Discharge, Increased Discharger, Redevelopment, or Site. Interpretation of these terms could be a significant source of controversy, especially for Planning Boards charged with the implementation of the requirements for new development and redevelopment.

    Recommendation: Definitions of these terms should be added to Appendix A.

34. Comment: App. H 1.2, 11.2, 111.4, IV.5, V.5. To require the collection of at least 30 flow-weighted samples over a period of two to three years from each stormwater outfall discharging (or tributary) to an impaired water in order to demonstrate that the discharges meet water quality standards is excessive and cost-prohibitive.

    Recommendation: All sections of the permit with this provision should be revised to require sampling of outfalls during not more than ten rainfall events. The EPA should provide a list of rainfall events of varying volume or intensity during which outfall sampling must be performed.

35. Comment: Appendix I. Multiple Sections. Appendix I should not be included in the permit. It should be provided as a reference/example document only. The protocol presented in the Appendix is not required by the permit and is only one of many methods that could be used to comply with IDDE requirements. Its inclusion as an Appendix to the permit is inappropriate. In addition, because this protocol is specific to a single method, some of the information that is included is incorrect. For example, holding times presented in Appendix I, Attachment 1, Table 1 are listed incorrectly due to an assumption that analyses are being performed onsite (see Specific Conductance, which actually has a holding time of 28 days, not "Immediate").

    Information presented in Appendix A, Table 1 and Step V, are also not appropriate for inclusion in a NPDES permit. The parameters and thresholds presented in Table 1 are already included as Section 2.3.4.7.d.vi. The information regarding instrumentation is reference material and should not be included in a permit. Step V should be removed in its entirety because it does not belong in a permit. It should be in a Fact Sheet or reference/example document.

    Recommendation: The permit should be revised to delete Appendix I in its entirety. EPA should provide an online source to the IDDE protocol in Section 2.3.4.7.

36. Comment: General. The requirements for written programs, policies, procedures, and reports do not have direct water quality benefits and should have a lower priority. Significant financial and staff resources will be required to prepare and submit all of the required written documentation. With limited resources, the focus of the permit should be on performance, not documentation. There are over 50 phrases in the main body of the permit and many more in the appendices (not including the actual annual reporting requirements in Section 4.4) that require information be included in the Annual Report.

    Recommendation: An efficiency and effectiveness review should be performed on the entire permit; preferably by an outside party who can assist the EPA in prioritizing those items where written documentation and annual reporting will provide a measurable benefit. The permit should be revised to reflect these improvements.

Weston & Sampson supports the EPA and the MassDEP's effort to protect our water resources. We thank you for this opportunity to comment on the draft permit process, and we hope that you accept these comments in the interest of improving the ability of municipalities to comply with this and future stormwater permits.

Very truly yours,

WESTON & SAMPSON

Patricia C. Passariello, P.E.
Technical Leader

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walkBoston™

February 26, 2015

Newton Tedder, US EPA – (OEP06-4)
5 Post Office Square – Suite 100
Boston, MA 02109-3912
617.918.1038 / tedder.newton@epa.gov

Re: Draft Regulations for MS4 Permit, public comment

Dear Mr. Tedder,

WalkBoston is Massachusetts' primary pedestrian advocacy organization, and we have worked with more than 100 communities across the state to help them improve walking safety, add new sidewalks and paths, and encourage more people to walk more. Our work sits at the intersection of health, transportation, community vitality and environmental improvement. Massachusetts is experiencing a significant increase in interest in walking and transit use – an increase that we believe supports the EPA's goals of improved environmental quality in very important ways.

I am writing to express WalkBoston's concerns with the newly proposed MS4 NPDES Stormwater Regulations. The regulations could seriously impact the ability of communities to add walking (and bicycling) facilities that would allow our citizens to engage in healthy, active transportation and limit their ability to reduce the use of private vehicles. We believe that this is a potentially serious unintended consequence of the revised regulations and one that deserves re-consideration.

We urge you to consider exempting existing roadways from this requirement when pavement reclamation is being used and when the expansion of impervious area is for GREEN Transportation elements like sidewalks and bike lanes. We would be pleased to meet with you to discuss these concerns and thank you for your consideration.

Sincerely yours,

Wendy Landman

Wendy Landman
Executive Director

Cc Commissioner Martin Suuberg, MA DEP Martin.Suuberg@State.MA.US
Secretary Stephanie Pollack, MassDOT Stephanie.Pollack@State.MA.US
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TOWN OF WALPOLE
COMMONWEALTH OF MASSACHUSETTS

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February 20, 2015

Newton Tedder
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OEP06-4
Boston, MA 02109-3912

Dear Mr. Tedder:

The draft 2014 MA MS4 General Permit ("Permit") has many aspects which will achieve positive results for the Town of Walpole by reducing pollutants carried to our waterways by untreated stormwater. The permit requirements, " to reduce the discharge of pollutants to the maximum extent practicable", is a goal that we can all agree upon. The permit requirements to investigate, educate, involve, treat, infiltrate, reduce, and remove will change how the Town approaches the management of stormwater. The results of the control measures will make our streams, rivers, ponds and other water bodies cleaner for recreational uses, wildlife habitats, public and private drinking water and other uses of water . The "reduce pollutions that discharge" is a good thing. The "maximum extent practicable" is the part which needs more flexibility. Is it the "maximum extent practicable" based on science or is it the "maximum extent practicable" given the Towns available resources (staff and funds)? In order for the 2014 permit to be practicable it needs to be realistic for the Town to implement.

The Town of Walpole offers the following comments, suggestions and concerns:

Deadlines and timing

EPA has to be aware of the timing of the permits effective date and yearly deadlines so that these deadlines are achievable given the July to June municipal budgeting cycle. The Town has to have enough time to request and approve funds in order to meet each EPA deadline based on the effective date of the permit. The Town needs at least a year in advance to include permit expenses into the budget for the following Fiscal year. The one year deadline is not enough time to budget funds and draft the revised SWMP as required by 1.10.b.

Recommend: *2 years to submit SWMP based on the effective date of the permit.*

Resources spent on tasks which do not directly clean our water are wasteful.

The permit should not require time and resources to be spent on tasks which do not directly impact the goal of improving the quality of our water. The report writing and record keeping for the Annual

Report are too time consuming and the unfunded requirements for expensive infrastructure will divert valuable Town funds to project's which may only benefit a few and divert funds away from projects which benefit the most needy. The Town of Walpole has struggled to fund much needed project such as a Senior Center, Police Station, and Fire Station. In addition, to the regular budgeted items needed to run the Town these are the type of projects which will be competing for funds with the new MS4 permit requirements. The Town every fiscal year has to carefully budget to fund those required programs and services and weigh the numerous needed program and services. EPA has to recognize the funding issue and pare down the requirement s to those that directly improve our water quality and remove unnecessary reporting and data collection requirements.

The permit requires the Towns to address 6 Control Measures to the maximum extent practicable each one of these will require additional staff hours and resources to complete:

Section 2.3.2 Public Education) and Section 2.3.3 Public involvement are probably the most manageable of the 6 control measures and will hopefully benefit the program as a whole by educating and bring attention to the issues of stormwater management and why reducing pollution to the waterbodies effects individuals.

Recommendation:/Comment:

The requirement to measure the effectiveness of the 6 annual messages to residents, Businesses, Developers, and Industry and document the achievements, re-evaluate if needed, and document within the Annual Report will require the Town to become media specialist and a time consuming task only to prove to EPA that the messages were sent.

Public education of issues which are common across the Commonwealth, such as, pet waste disposal, yard waste disposal, car washing limitations, use of phosphate and nitrogen products, are best taken on by regional planning commissions, watershed groups and regional stormwater groups rather than requiring each town to duplicate information. Regional partnerships and planning agency are better equipped to measure the effectiveness of these programs as well.

Section 2.3.4 -Illicit Discharge Detection Program The illicit discharge detection program is a necessary program required by the permit to find pollution discharges to the municipal waterways and remove them. A program which the Town began under the 2003 permit however the 2014 permit extensively builds upon the 2003 requirements, adding more costs.

Mapping, testing, analyzing: The large amount of information required by the 2014 permit will require the Town to hire private consultants to review every outflow structure in town for the outflow inventory and ranking. This will require time to collect the information, map and input the data, and analyze the data to determine the ranking. The required data at 2.3.6.ai and aii is extensive. The Town is in support of having this detailed information mapped however the diversion of resources to achieve this task within 1 year will be a strain on the Town's budget.

Recommend/comment:

Section 2.3.4.5.c*-It is unclear if the Town is required to re-do the outfall inventory which was completed under the 2003 permit or add new outfalls since 2003.*

Recommend/Comments:

Section 2.3.4.5 b- *The task of physically labelling all MS4 outfalls pipes and interconnections with other MS4s with a unique identifier will be expensive to conduct and maintain. We believe that providing a GPS coordinate or GIS mapping will achieve the result of creating an inventory of out fall pipes necessary to monitor water quality.*

Section 2.3.4.8- *The IDDE requirements are lengthy, cumbersome and costly. The Town is better off to spend funds to fix known problems then excessive funds on investigating potential problems.*

Section 2.3.4.7.c. *- The IDDE Program should focus on which catchments are likely to have illicit discharges and which ones are unlikely to have illicit discharges. Then the likely catchment areas should be prioritized.*

Section 2.3.4.7.e *and* ***Section 2.3.4.8.c.*** *- The "System Vulnerability Factors", wet weather monitoring and deadline for Catchment Investigation: See Tighe and Bond recommendations to simplify and cap annual investigation.*

Section 2.3.5 -Construction Site Stormwater Runoff: The construction management portion of the permit was addressed in the 2003 permit when the Town adopted the *Stormwater and Erosion Control Bylaw*. The Bylaw administered by the Conservation Commission requires any project disturbing 40,000 square feet or more of land to file for a Land Disturbance Permit to implement erosion controls and stormwater management BMP's for their project. The Bylaw has worked well.
Recommend and Comment: *The record requirements and documentation to be included within one year of the effective date and included within the Annual Report is the unnecessary and costly requirements of the 2014 Permit. It also seems somewhat redundant with both state and EPA requirements already in place through construction permits and SWPPP's .*

Section 2.3.6.-Post-construction Stormwater Management: The Town implemented this program under the 2003 Permit by adopting the Stormwater and Erosion Control Bylaw and including review of the MA DEP Stormwater Management Requirements with subdivision and site plan reviews.

Recommend/Comment: *The 2014 permit requirements of retaining the first 1-inch for construction totaling one acre is inconsistent with DEP's Stormwater Management Standards. We recommend that the 2014 Permit be consistent with the DEP Stormwater Handbook.*

Section 2.3.6.a.ii - Retaining first inch of stormwater or stormwater treatment for public road projects will be costly to the Town. Under the new regulations, when one disturbs more than 1 acre in area or phased construction totaling one acre (translates to only ¼ mile of 30' wide pavement) or more which will include road reclamation projects, the new regulations require that the first inch of storm water be retained or all the stormwater must be treated. This essentially means one now not only has to resurface the road one has to completely redesign and re-construct the entire stormwater collection system to satisfy this requirement. This will cripple road maintenance budgets. Accordingly, cities and towns will be forced to purchase/take extra land by eminent domain for stormwater storage or pay for the expense of stormwater treatment systems on simple routine maintenance projects. This is a huge expense in downtown business districts and even in rural areas with old roads and narrow town-owned rights-of-way (provided by others).
The funds available to the Town for pavement maintenance are less than half of what are needed to maintain existing condition of the current infrastructure. Walpole, as do other Towns, strives to repair

as many roads as possible each year as funds are available. The above added costs will mean that there will be less funds available for maintenance of roadways and therefore conditions which cause erosion will continue for longer periods.

Recommend: An exemption for pavement maintenance projects. *The above regulations should not be applied to maintenance projects. If a new road is being constructed or a lane is being added, these stormwater management upgrades may be able to be accommodated, depending on surrounding conditions like available right-of-way width and/or proximity of buildings to the right-of-way. Simple pavement surface maintenance projects or minor improvements should not trigger rebuilding the world.*

Section 2.3.6.b and c. -Requirement to track impervious surfaces, assess parking and road design and review Regulations and Bylaws for feasibility of green infrastructure are all tasks which will help the Town comply with the2014 Permit and useful planning information. The requirement for each Town to take on these tasks without new resources or support is not practical for a town like Walpole with limited staff.

Recommend: *These requirements are much better suited for regional planning groups which can then support the Town's limited planning staff. We recommend a four year timeline to complete this both tasks.*

Section 2.3.7 Good Housekeeping : The implementation of Operation and Maintenance Plans was begun under the 2003 and is a task which should be completed by the Town as it is required.

Section 2.3.7.a.iii (b) -The new requirements for cleaning catch basins will require the Town to take a new approach and length time consuming record keeping and documentation. For a Town which does not have issues with catch basin cleaning the amount of review and record keeping is a financial burden which will increase the funds needed for this task. If there are no issues then the review and record keeping just seems like an un-necessary task.

Section 4.3 and 4.4 -Record keeping and inspection of all storm drain systems in the Town annually will be a large task for the Town. Many of the storm basins and structures in Town are located on single family lots by private ownership. The Town will need to put into effect a program to notify and keep up on these private owners to maintain their structures.

Recommend: *Less record keeping and reporting requirements for the Annual Report. Annual Report should include problems and solutions and not unnecessary reporting requirements.*

Section 2.3.7.d -Chloride Reduction: _Most municipalities already are trying to limit salt/chloride usage. The cost of road salt and deicers is a large portion of the winter storm budgets. Any responsible DPW director or winter road program manager is looking to reduce the costs in all areas that are practical. There is no objection to installing computers on the truck spreaders and training the operators in best management practices nor do we object to the EPA providing Best Management Practices or guidance suggestions; however, reducing salt usage below what is practical with the current technology is irresponsible and to do this exposes the motorists to hazardous conditions and the municipalities to legal action.

Recommend: *Let the Town determine the usage of sands and salts for safe conditions.*

Summary

The Town of Walpole supports the goal of preventing pollutants from discharging to our waterways however EPA's unfunded mandates require an abundance of Town resources for investigations, reporting and policing is unrealistic. . In order for the Permit to be successful in preventing the discharge of pollutants to the maximum extent practicable, the 2014 Permit should be revised to allow the Town additional time to meet requirements once the permit is issued. The Permit should have more flexibility in reporting and reduce the amount of documentation required within the Annual Reports. The Permit needs to be consistent with existing regulations that already work well and allow for more time to plan and implement new protocols.

Regional planning agencies and regional Stormwater partnerships should be funded and encouraged to assist municipalities with the planning, mapping, data collection and information analysis required for this permit which is similar from municipality to municipality. As the permit is written it will be difficult for the Town and other municipalities to meet the deadlines with their limited staff and resources available.

Thank you for the opportunity to comment on the Draft Massachusetts Small MS4 General Permit. If there are any questions regarding our comments please contact, Landis Hershey, Walpole Conservation Agent or Maggie Walker, Walpole, Town Engineer.

Sincerely,

James A. Johnson
Town Administrator

Attachment:/Tighe & Bonds Comment Letter

CITY OF WALTHAM
Engineering Department

Stephen A. Casazza, P.E.
City Engineer

December 23, 2014

Ken Moraff, Director
Office of Ecosystem Protection
U.S.EPA
5 Post Office Square - Suite 100
Boston, MA 02109-3912

David Ferris, Director
Division of Watershed Management
Department of Environmental Protection
One Winter Street
Boston, MA 02108

RE: 9/30/14 Draft NPDES MS4 General Stormwater Permit Number MAR041000 – Comments submitted by the City of Waltham, MA

Dear Mr. Moraff and Mr. Ferris:

On behalf of the City of Waltham, the City of Waltham Engineering Department (the "City") has reviewed the above-referenced Draft NPDES MS4 General Permit and associated Fact Sheet (the "Draft Permit") and has concerns regarding some of the provisions of the Draft Permit as currently proposed. These concerns are outlined in the following comments which are generally presented in the order in which the issue appears in the Draft Permit.

1. **Page 2 - Item 1.3 (i) The structural controls for disposal of stormwater into the ground may be subject to Underground Injection Control (UIC) regulation requirements.**

Under the current City requirements for development/redevelopment, the stormwater runoff generated requires ground water infiltration on-site through structural means such as concrete drywells that typically are deeper than they are wider. Also, where necessary, on-site infiltration of sump pump discharges through dry wells is being implemented as part of the City's on-going Sump Pump Amnesty Program.

Submitting individual UIC permits for the structures already installed and to be installed in the future by private residents, developers and the City would be extremely onerous and result merely in a paper exercise. The City recommends that these structures be exempted from the permit requirements.

2. Pages 9 and 10 - Item 2.1 Pursuant to Clean Water Act 402(p)(3)(B)(iii), this permit includes provisions to ensure that discharges from the permit tee's small MS4 do not cause or contribute to an accidence of water quality standards, in addition to requirements to reduce the discharge of pollutants to the maximum extent practicable.

The cited section of the Clean Water Act (the "Act") makes no mention of water quality standards. Instead, it establishes Maximum Extent Practicable ("MEP") as the standard to which pollutants must be removed from municipal MS4s. The City disagrees with EPA's interpretation of section 402(p)(3)(B)(iii) of the Federal Water Pollution Control Act. EPA interprets this section to mean they can impose water quality based effluent limitations and that this provision overrules the MEP standard for municipal stormwater discharges. A reading of this section of the Act clearly shows that EPA's interpretation is incorrect. The language in section 402(p)(3)(B)(iii) of the Act is clear that MEP governs pollution control requirements for municipal stormwater discharges. Section 402(p)(3)(B)(iii) of the Act states that controls to reduce the discharge of pollutants to the MEP include management practices, control techniques and systems, design and engineering methods, and such other provisions as the Administrator determines appropriate for the control of pollutants. The "such other provisions" clause is within the broader context of the MEP standard, not separate from it as EPA tries to imply in the Fact Sheet and permit. The proper wording throughout the permit that would be consistent with the Act would be for the permitee to meet water quality standards to the maximum extent practicable. Furthermore, EPA lacks legal authority to render an interpretation of Massachusetts water quality standards.

3. Pages 11 and 12 - Item 2.2.1 The municipality shall meet the requirements of Appendix F, Part A.I with respect to the reduction of phosphorus discharges from their MS4.

The required Waste Load Allocation (WLA) for Total Phosphorus reductions for the City of Waltham is 51%. Under any circumstances, achieving these reductions will be daunting if not impossible given the amount of already developed area with minor scope for redevelopment that provides limited opportunities for the installation of the permit recommended structural BMPs. Most troubling is that the TMDLs which produced these figures relied on outdated data and studies that are dated and of questionable validity in 2008.

The City has completed a calculation for the baseline Phosphorus quantity estimations and submitted it to the EPA. A copy of this memorandum is attached to this comment letter. This memorandum also calculates the amount of revised phosphorus reduction requirements that are significantly lower than estimated by the EPA.

Consequently, the City requests that the EPA review the attached memorandum and review/revise the EPA TMDL Model for Phosphorus with an updated WLA for Waltham as well as other municipalities within Charles River Basin.

4. Pages 25-37 - Item 2.3.4 Illicit Discharge Detection and Elimination (IDDE Program)

The proposed IDDE Program requirements under the Draft Permit are impractical especially for completing the wet weather monitoring and completing the construction work required to eliminate any illicit discharge connections within the stipulated time frames. Given the requirements of Public Bidding to award construction contracts, the City will require an extension of time to meet the Draft Permit requirements.

5. Page 42 - Item 2.3.6 The permittee shall estimate the annual increase or decrease in the number of imperviousness area (IA) and directly connected impervious area (DCIA) from the initial baseline provided by EPA.

The requirement to calculate then annually update the directly connected impervious area (DCIA) measurement from the initial baseline provided by EPA seems unreasonable and of little value. We understand the link between impervious area and stormwater quality but also realistically recognize that for large urban areas like Waltham the change in IA and DCIA may be insignificant. The DCIA measurement, updated at some regular frequency, may be helpful to developing communities as a way of tracking trends and making the public aware of impervious area impacts, however, for a large urban very-developed area such as Waltham that is and has been substantially impervious, it is an effort that would be very expensive, time and resource consuming while producing minimal benefits. We do not expect that on a year to year basis there will be a measurable decrease in impervious area in the City of Waltham. The City requests that this requirement be removed or , alternatively, be waived for highly developed municipalities such as Waltham.

6. Page 44- Item 2.3.7 The permittee shall establish a schedule that the frequency of routine cleaning will ensure that no catch basin at anytime will be more than 50 percent full.

Under the current Permit Requirements, the City has a very rigorous plan to clean the sediment from the catch basins. The proposed language for cleaning and monitoring sediment depths in catch basins to make sure none of them have sediment depths greater than 50% at any time is going to be impractical given the thousands of catch basins City-Wide. This requirement will put significant financial burden while requiring personnel resources that are already stretched thin. The City will have to hire a Consultant to manage

the catch basin cleaning and monitoring program on an on-going basis and issue bids for the cleaning services. Also, in order to meet the full intent of the proposed language every single catch basin needs to be monitored for depth in almost real-time. The language of this permit requirement will need to be modified.

In conclusion, the City would like to submit that the proposed permit requirements are an unfunded mandate that will put a severe financial burden ultimately on the residents especially given the current state of the economy. The EPA and the DEP do not offer any financial incentives to support the well intentioned requirements of the Draft Permit.

Should you have any further questions, please feel free to contact me at 781-314-3831.

Sincerely,

Stephen A. Casazza, P.E.
City Engineer

cc: Newton Tedder, US EPA—Region 1
Honorable Jeannette A. McCarthy, Mayor

Attachment: Memo – Draft Total Phosphorus Calculations

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MWH

BUILDING A BETTER WORLD

MEMORANDUM

DATE: September 20, 2011

TO: Todd Borci, U.S. EPA

CC: Stephen A. Casazza, City Engineer, City of Waltham

FROM: David Bedoya, MWH
Jeff Schmidt, MWH

SUBJECT: Draft Total Phosphorus Calculations Using 2010 Conditions in Waltham, MA

1 Background

According to the Draft North Coastal General Permit for Stormwater Discharges From Small Municipal Separate Storm Sewer Systems in Massachusetts (draft permit), the City of Waltham is responsible for reducing its EPA-estimated total phosphorus (TP) annual loading to the Charles River by 62.6%. The TP loading baseline provided by EPA was calculated with 1999 land use conditions.

The draft permit requires the City to update, if data is available, its phosphorus contributions using more up to date information. Consequently, the City of Waltham has updated the calculations of the estimated TP loads reported in the *Final TMDL for Nutrients in the Lower Charles River Basin* report of June, 2007 (TMDL Report). Several factors were considered when adjusting the TP loading values and are listed below:

1. Available 2010 land use data.

2. TP sampling data from the United States Geological Survey (USGS) in the Stony Brook Reservoir, which discharges directly into the Charles River.

3. The existence of stormwater collection areas within Waltham which are tributary to treatment systems such as preserved natural wetlands.

4. Private property, on-site stormwater treatment in new development and redevelopment.

The following memorandum provides an overview of the adjustment calculations undertaken by the City and the resulting total phosphorus loads using 2010 conditions.

2 TP Loading Baseline Based on 2010 Conditions

2.1 *TP Loading Modifications Based on Land Use Change*

Land use data from the 2010 Waltham GIS Database was used to update the phosphorus loading calculations originally presented in the TMDL Report, which is based on 1999 land use data. A comparison of the 1999 and 2010 land use and total annual phosphorus load calculations is presented below in Table 1. The TMDL Report presents the total annual phosphorus loading from the City of Waltham to the Charles River watershed as 2,447 kg/yr (1999 land use), while the 2010 land use analysis results in a total annual phosphorus load of 2,412 kg/yr, a reduction of 35 kg/yr.

Table 1 Land Use Phosphorus Loading Comparison Table

Land Use Type as listed in the TMDL Report	MassGIS Land Use Covers for Each Land Use Type	TP Export Rates (KG/Ha-y)	Area-2010 (Ha)	TP Load - 2010 (Kg/y)	Area-1999 (Ha)	TP Load -1999 (Kg/y)
Commercial	Commercial	1.70	339.24	575.68	158.07	268.24
Industrial	Industrial + Mining + Transportation	1.47	258.41	380.12	501.11	737.14
HD residential	High Density + Multi-Family	1.13	1049.52	1187.01	1010.15	1142.48
MD Residential	Medium Density Residential	0.57	222.87	126.15	298.58	168.99
LD Residential	Low Density Residential + Sparse or Very Low Density	0.05	21.76	0.98	53.02	2.39
Agriculture	Cropland	0.51	18.53	9.36	32.64	16.48
Forest	Agric. Perennial +Forest +Forested Wetland	0.13	884.01	114.92	709.18	92.19
Open land	Agric. Pasture + Open Land + Recreation + Public or Transitional	0.03	509.62	17.33	541.10	18.40
			Total	2411.55		2447.21

2.2 Phosphorus Loading from the Stony Brook Watershed within Waltham

In 2006, the United States Geological Survey (USGS) collected water samples at different points of the Stony Brook Reservoir drainage area, which includes the Hobbs Brook or Cambridge Reservoir. The USGS analyzed the samples for total nitrogen and phosphorus, among other constituents (Smith, 2008). A significant portion of the City of Waltham territory (approximately 6.44 square miles) is tributary to the Stony Brook watershed. The Stony Brook Reservoir's outlet discharges directly into the Charles River and is the lowest point of the watershed. The

USGS sampling data was used to calculate the TP loading from the portion of the Stony Brook watershed within Waltham to the Charles River.

As a first step, the 2010 land use based TP loading from the Waltham area tributary to the Stony Brook Reservoir was calculated. Table 2 below outlines this calculation. The area within Waltham tributary to the Stony Brook Reservoir is approximately 1,447.5 Ha (excluding waterbodies) and the resulting TP loading from this area is 1,183.3 kg/year.

Table 2. TP Loading Calculations in the Stony Brook Area in Waltham Using 2010 Land Use Data

Land Use	*Area (Ha)*	*Export rate (Kg/Ha/Year)*	*TP Load (Kg/y)*
Commercial	228.20	1.70	387.95
Forest	448.58	0.13	58.32
Forested Wetland	27.55	0.13	3.58
High Density Residential	343.63	1.13	388.31
Industrial	95.57	1.47	140.48
Junkyard	2.58	1.13	2.92
Low Density Residential	5.54	0.05	0.28
Medium Density Residential	97.44	0.57	55.54
Mining	3.87	1.47	5.69
Multi-Family Residential	27.85	1.13	31.47
Non-Forested Wetland	14.38	0.13	1.87
Open Land	2.89	0.03	0.09
Participation Recreation	1.92	0.03	0.06
Pasture	1.70	0.03	0.05
Powerline/Utility	11.55	0.03	0.35
Spectator Recreation	0.63	0.03	0.02
Transitional	5.46	0.03	0.16
Transportation	71.03	1.47	104.41
Urban Public/Institutional	55.84	0.03	1.68
Very Low Density Residential	1.33	0.05	0.07
TOTAL	**1,447.55**		**1,183.28**

The second step consisted of subtracting the 2010 land use based TP load calculations from the Stony Brook watershed within Waltham to the 2010 city-wide land use based phosphorus calculations. The following equation shows the results after performing this operation:

City-wide TP load (kg/y)		**2,411.55**
	-	
TP load from the Stony Brook drainage area within Waltham (kg/y)		**1,183.28**
TP load from Waltham areas outside of the Stony Brook watershed (kg/y)		**1,228.27**

The third step consisted of calculating the TP loading from the portion of the Stony Brook watershed within Waltham based on USGS sampling data. The calculated load was then added back to the TP loads generated from Waltham areas outside of the Stony Brook watershed.

Median TP concentrations (in mg/L) and total annual flow (MG) were available for the two Stony Brook Reservoir tributaries (Stony Brook at Rt. 20, Station 1104460 and Unnamed Tributary to the Stony Brook Reservoir, Station 1104475). These values were used to calculate a flow-weighted, average TP concentration for the Stony Brook Reservoir. Subsequently, the annual TP loading to the Charles River was calculated using the annual volume of water discharged from the reservoir dam outlet (Station 1104480) and the calculated flow-weighted, average TP concentration in the reservoir. Table 3 provides the results of this stage of calculations. The location of the referenced TP and flow monitoring stations are presented in Figure 1.

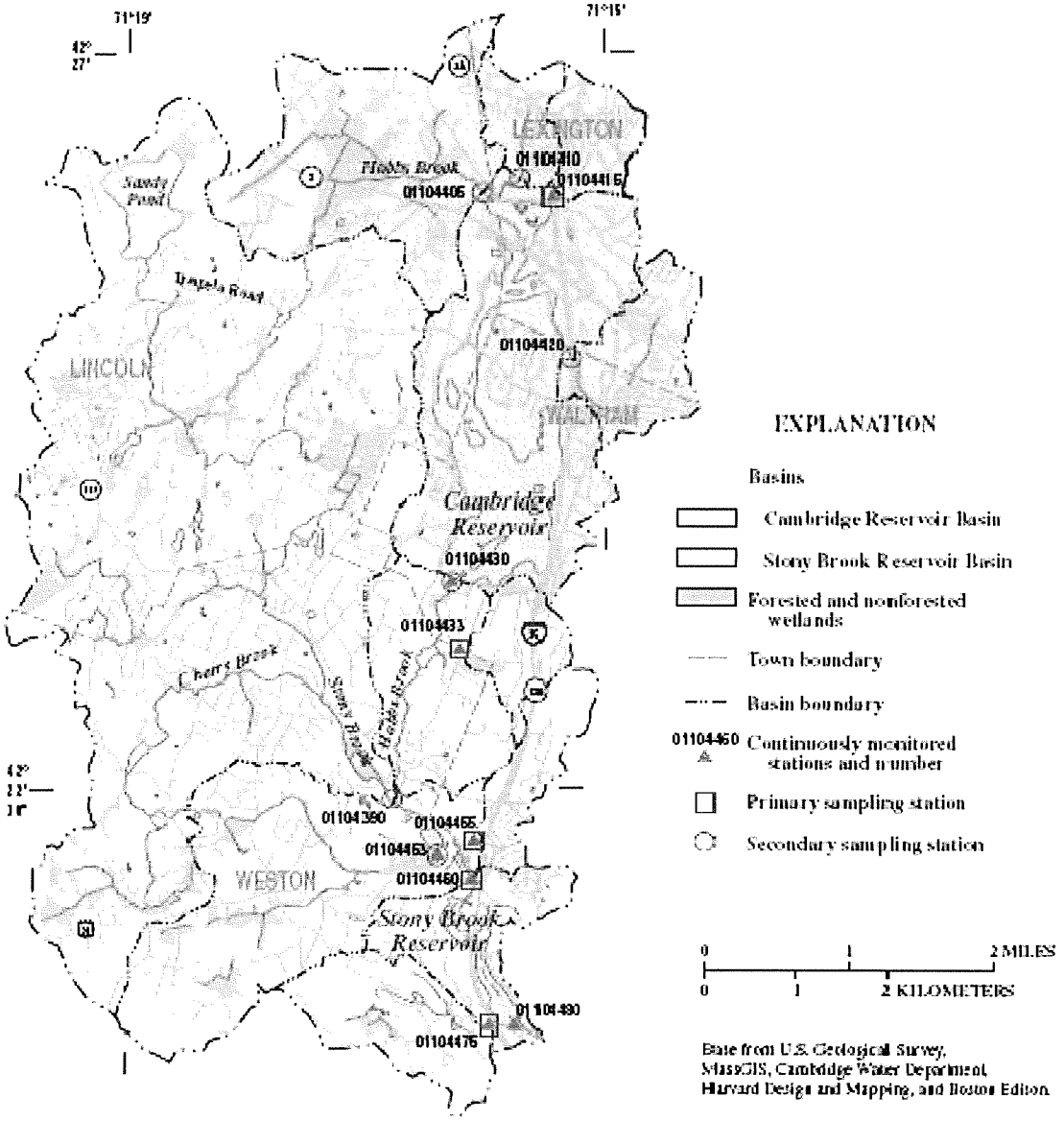

Figure 1. Stony Brook watershed with location of USGS sampling stations (from Smith, 2008)

Table 3. TP Loading Calculations from the Stony Brook Watershed

USGS Sampling Station Name	Station #	Median TP conc. (mg/L)	Recorded annual flow (MG)	Annual TP loading to Charles River (Kg/y)
Stony Brook at Rte 20	1104460	0.01	13,933.00	----
Unnamed tributary to Stony Brook Reservoir	1104475	0.03	427.00	----
Stony Brook Reservoir Dam near Waltham	1104480		6,963.00	276.51
Weighted TP Conc. in Stony Brook Reservoir (mg/L)		0.01		

The TP loading contribution from the portion of watershed within Waltham was calculated by multiplying the calculated watershed TP loading (276.51 Kg/y) by the percentage of the Stony Brook watershed area within Waltham (6.44 over 23.70 square miles or 27%). The TP loading from the Waltham portion of the Stony Brook watershed is 75.14 kg/year (See Table 4 below). This value was then added to the 2010 land use based TP loading from areas outside of the Stony Brook drainage area, which represents the 2010 annual TP loading updated baseline. Results are presented in Table 4.

Table 4. Waltham's 2010 Charles River TP Loading Baseline

	Whole watershed annual TP loading (kg/year)	Total watershed area (sq-mi)	Portion of the watershed within Waltham (sq-mi)	Total TP loading from Waltham (kg/year)
Stony Brook watershed	276.51	23.70	6.44	75.14
Waltham area outside of the Stony Brook watershed	1,228.27	7.16	7.16	1,228.27
2010 BASELINE TOTAL	1,504.78	30.86	13.6	**1,303.39**

3 Total Phosphorus Load Deductions from Wetlands and On-Site Stromwater Treatment

3.1 Wetland Systems

Using the City of Waltham's GIS database, all areas discharging into natural wetland areas were identified and delineated. Phosphorus loading reductions due to wetland treatment systems were calculated using EPA's *Methods to Calculate Load Reductions for Structural Storm Water Best Management Practices at a Designated Discharge (DD) Site.* EPA-provided phosphorus removal performance curves for engineered gravel wetlands were used to calculate phosphorus deductions from existing natural wetlands. For these calculations, an average wetland depth of four feet was assumed.

A total of 27 wetland areas outside of the Stony Brook watershed were identified. These areas collect flows from 674 acres of land, out of which 213 are impervious and 461 pervious. Based on land use type, total phosphorus loading to each wetland was calculated using the export rates listed in the EPA document mentioned in the paragraph above. Results from these calculations are summarized in Table 5.

Table 5. Phosphorus Treatment Performance Calculations in Natural Wetland Areas

Wetland No.	Wetland Area (acres)	Maximum Vol. from Contributing Area (in)	TP Removal Performance	Inflow TP Mass (lb/yr)	Outflow TP Mass (lb/yr)
1	44.71	85.73	66%	21.37	7.27
2	4.26	11.66	66%	15.55	5.29
3	4.79	2.91	66%	51.38	17.47
4	6.33	19.96	66%	16.05	5.46
5	4.61	11.73	66%	17.07	5.80
6	0.83	4.73	66%	12.76	4.34
7	1.30	5.67	66%	13.06	4.44
8	2.17	3.93	66%	23.39	7.95
9	1.70	9.61	66%	11.07	3.76
10	5.49	2.64	66%	95.13	32.34
11	2.68	3.83	66%	19.3	6.56
12	2.04	6.72	66%	11.03	3.75
13	1.46	3.2	66%	17.23	5.86
14	1.68	2.86	66%	21.47	7.30
15	0.33	9.73	66%	1.76	0.60
16	1.59	7.61	66%	9.1	3.09
17	0.12	0.6	51%	10.44	5.12
18	2.05	5.76	66%	10.99	3.74
19	2.64	352	66%	0.49	0.17
20	0.31	2.38	66%	4.59	1.56
21	1.28	3.68	66%	10.99	3.74
22	14.31	23.45	66%	16.51	5.61
23	3.00	6.74	66%	18.45	6.27
24	4.92	13.38	66%	8.69	2.95
25	0.28	2.1	66%	8.43	2.87
26	0.08	0.73	55%	7.11	3.20
27	0.27	0.84	58%	20.92	8.79

TOTAL (lb/yr)	*474.33*	*165.29*
TOTAL (Kg/yr)	*215.35*	*75.04*
TP MASS REDUCTION (lb/yr)	*309.30*	
TP MASS REDUCTION (Kg/yr)	*140.42*	

3.2 On-Site Stormwater Treatment

In 2001, as part of the construction permit application process, the City of Waltham established an on-site drainage policy for new development and redevelopment. The policy states that for any work other than interior or utility work covering over 150 square feet, "all drainage must be retained/recharged onsite for a 100 year storm with no connection to the city system". Flow from these residential and commercial lots would not reach the City's drain system and therefore, would not be tributary to the Charles River basin.

The City's records were searched for all residential and commercial properties which applied for and obtained a permit after 2001. Approximately 742 properties were identified and information including property size (square feet) and type of drainage structure installed was noted for each property. The total area of permitted property since 2001 was calculated to be approximately 347 acres (236 acres of residential property and 111 acres of commercial property).

The average residential lot had 38% impervious area while the average commercial lot had 68% impervious area. An assumption was made regarding the percentage of impervious area which drained onsite; 50% and 65% on residential and commercial properties respectively. Average percentages of impervious area for each land use were calculated using GIS parcel information from the City of Waltham database. No deductions were calculated for the pervious areas in these lots.

Annual phosphorus loading rates were obtained from the EPA's documented *Method to Calculate Annual Phosphorus Load for the Designated Discharge (DD) (Attachment 1 to Appendix D)*. For commercial properties, the commercial impervious phosphorus load export rate of 2.23 lb/acre/year was used. In order to determine the residential phosphorus loading rate, an area weighted average of the High, Medium and Low-density impervious residential annual phosphorus load export rates was calculated (2.23, 1.34, and 0.89 lb/acre/year, respectively). The weighted, average residential phosphorus export rate was equal to 2.05 lb/acre/year. Table 6 presents all of the assumptions, the annual treated loading calculations, as well as the calculated reduction in phosphorus loading.

Table 6. On-Site Drainage Calculations

Land Use	Total on-site drainage area (acres)	Average percent impervious	Assumed % of impervious area draining on-site	Impervious area loading rate (lb/acre/Year)	Total treated annual loading (lb/year)
Residential	236.11	38	50	2.05	92.15
Commercial	110.90	68	65	2.23	109.31
				TOTAL (lb/year)	201.46
				TOTAL (Kg/year)	91.46

4 Updated Phosphorus Loading Reduction Requirements

The deductions outlined in this document were subtracted from the 2010 conditions baseline to calculate the current phosphorus contribution from the City of Waltham to the Charles River (1,071.63 kg/year) and the resulting, revised reduction requirements. Results are presented in Table 7.

Table 7. Summary of Updates to the Waltham's TP Contribution to the Charles River and Reduction Requirements

	2010 Phosphorus Loading Baseline				Deductions		Adjusted Values	
Adjustment Source:	City-wide (Land Use 2010)	Stony Brook watershed within Waltham (2010 Land Use)	Stony Brook watershed within Waltham (USGS)	2010 final baseline	On-site drainage	Wetland treatment	Updated TP loading	Updated , necessary TP loading reduction
TP load (Kg/year)	2,411.5	(-) 1,183.3	(+)75.1	**1303.4**	(-) 91.5	(-) 140.4	**1071.6**	**156.0**

Therefore, according to the presented calculations, an additional reduction of 156 Kg/year of TP is required to achieve EPA's TP loading goal of 916 kg/yr. This represents an additional 6% of the original baseline TP loading of 2,447 Kilograms of TP/year or an additional 15% of the updated TP loading baseline of 1,072 kg/y.

Sources

Smith, K.P., 2008, Hydrologic, water-quality, and meteorological data for the Cambridge, Massachusetts, drinking-water source area, water year 2006: U.S. Geological Survey Open-File Report 2008–1175, 164 p.

Massachusetts Department of Environmental Protection & U.S. Environmental Protection Agency. Total Maximum Daily Load for Nutrients In the Lower Charles River Basin, Massachusetts CN 301.0. June, 2007.

DRAFT GENERAL PERMIT FOR STORMWATER DISCHARGES FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS IN MASSACHUSETTS NORTH COASTAL WATERSHEDS, 2010.

TOWN OF WATERTOWN

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February 27, 2015

Mr. Newton Tedder
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Environmental Protection Agency
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BY E-MAIL: Tedder.Newton@epa.gov

RE: Comments on the 2014 Draft Massachusetts MS4 Permit
Docket ID No. FRL-9917-31-Region-1; Document No. 2014-23262

On behalf of the Town of Watertown, we would like to provide comments on the draft General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4).

In particular, the Town of Watertown has serious concerns with the Charles River Watershed Phosphorus TMDL requirements of the permit. We cannot support the permit as written and respectfully request a number of issues be studied in further detail and modified as needed. Though discussed in greater detail in the comments below, they are summarized here:

- The phosphorus reduction requirements are based on crude computer modeling using many assumptions.
- The EPA has not studied whether the required phosphorus reductions are technically or economically feasible in Watertown.
- The EPA is requiring a phosphorus reduction that may exceed the maximum extent practicable. It is unclear what authority the EPA has to do so.
- The cost to implement the phosphorus control plan, if feasible, is completely unknown. The only cost information provided by EPA is based on estimates from three suburban Upper Charles River communities and is not applicable to a dense urban community like Watertown.
- The EPA has no responsibility to track actual improvements to water quality over time in order to substantiate the permit requirements and evaluate progress.
- The permit disadvantages densely-developed communities such as Watertown due to higher phosphorus reduction requirements, higher implementation costs, and a reduced ability of the community to pay for implementation; it favors new development over redevelopment.

The next section of this letter provides detailed comments on the Charles River Watershed Phosphorus TMDL requirements, as described in Appendix F of the permit, followed by specific comments related to the remainder of the general permit.

Appendix F—Charles River Phosphorus TMDL Requirements

General Discussion

The proposed permit sets specific requirements to reduce phosphorus sources throughout the Charles River Watershed. They are based on the respective Total Maximum Daily Load (TMDL) studies for the Upper and Lower Charles River. The TMDLs set wasteload allocations and specify phosphorus reductions for each community in the Charles River watershed in order to address water quality impairments caused by an overabundance of phosphorus in discharges to the river system.

The phosphorus loads in the TMDL were developed based on estimated land uses and assumed export coefficients (pounds per unit time) associated with those land uses. By knowing the different types of land uses and export coefficients, the phosphorus loading was estimated for each community. However, that does not mean that the EPA knows how much phosphorus comes from the MS4. To our knowledge, no actual assessment of the actual, observed phosphorus loading from the Town of Watertown MS4 has been performed by the EPA. We question the validity of basing such an expensive and administratively complex component of the proposed permit based on the many assumptions used to develop the TMDL.

The EPA assumes that water quality goals will be met when each MS4 achieves the required phosphorus reductions, which are based solely on the need to achieve water quality improvements and do not consider whether the reductions are technically feasible or cost-effective. Section 402(p)(3)(B)(iii) of the Clean Water Act states that municipal discharge permits shall require "controls to reduce the discharge of pollutants to the maximum extent practicable." Typically the term "maximum extent practicable" includes certain limitations, including the limits of technology and cost/benefit analysis. In our opinion, the phosphorus reduction requirement may exceed the maximum extent practicable.

As discussed in the permit, the phosphorus reduction requirements of the permit are to be met by developing a phased phosphorous control plan over a period of 20-years. There are incremental phosphorous reductions required at the end of each phase and the total phosphorus reduction must be met at the end of the 20-year schedule. The phosphorus control plan consists of structural and non-structural controls to reduce phosphorus from stormwater. These controls can be subdivided into three categories: ongoing source reduction measures, such as enhanced street sweeping and yard waste collection, performed by the MS4; control measures, such as infiltration or bioretention systems, installed by private property owners in conjunction with new development or redevelopment; and control measures installed by the MS4 on public property or within the right-of-way. A fourth category, requiring private property owners to retrofit their property is noted in some sections of the permit, but it is unclear if it is specifically required.

Watertown is a densely developed, built-out community and there are many challenges that will make it difficult to meet the phosphorous reduction requirement using the three control measures:

- Enhanced street sweeping, catch basin cleaning, and other non-structural BMPs, even if provided to the maximum extent, would only provide a small fraction of the total required phosphorous reduction required by the EPA, based on the credit calculations specified in the permit.

- The Town already requires aggressive water quality treatment of stormwater when sites are redeveloped, but only a fraction of parcels will be redeveloped in a 20-year time period. About half of the Town's land use is high density single- and two-family residential with very limited redevelopment potential.
- Narrow right-of-ways and dense development limits the ability to provide treatment at the source.
- Almost all of the Town's outfalls are located on parkland not under the care and control of the Town, meaning end of pipe treatment may be limited.
- Most Town controlled open spaces and buildings contain intensive uses and a large fraction are cemeteries where structural stormwater controls would be inappropriate.

In addition to these challenges, the costs of the phosphorus control plan are a complete unknown. The cost information presented by the EPA is based on a 2011 study, *Sustainable Stormwater Funding Evaluation for the Upper Charles River Communities of Bellingham, Franklin, and Milford, MA*. We note that the Upper Charles River communities are very different in land use than Lower Charles communities such as Watertown. As shown in the table below, these communities consist mainly of forested and other open spaces, with development primarily consisting of low and medium density residential uses. Watertown is the one of the most densely developed community in the Commonwealth, and consists of over 50-percent high density residential development and 30-percent commercial and industrial uses.

From Attachment 1—Fact Sheet Massachusetts Small MS4.

Community	Commercial	Industrial	High Density Residential	Medium Density Residential	Low Density Residential	Highway	Open land	Agr.	Forest
Bellingham	4%	5%	6%	6%	7%	3%	5%	2%	62%
Franklin	3%	4%	2%	14%	13%	2%	4%	3%	56%
Milford	5%	5%	9%	18%	6%	3%	6%	0%	49%
Watertown	23%	7%	52%	0%	0%	0%	12%	3%	3%

In fact, many of the approaches discussed by the EPA are simply not achievable in densely developed communities such as Watertown. For example, the permit notes that considerable savings can be made by eliminating unnecessary impervious surfaces. One referenced project includes reducing the road width in a residential subdivision from 32-feet to 28-feet; in Watertown, which has significant on-street parking due to high density residential land use, the current average road width is less than 25-feet. Another type of project referenced is the removal of a paved cul-de-sac and installation of a rain garden in its place; there are fewer than five cul-de-sacs in the Town of Watertown.

The fact that conditions in Watertown are so different from the conditions in the study area raises the question of whether any of the study results apply. This includes both the feasibility of attaining the phosphorus reduction requirement as well as the cost of implementation.

According to the Upper Charles River study, the estimated capital cost to achieve the TMDL phosphorous load reduction in the three study communities was $181 million. EPA used an optimization process that is not included in the documentation to reduce these costs and make them appear more palatable. The optimization reduced the total implementation cost to $84 million among the three communities. According to EPA, the average unit cost for phosphorous removal is $41,000/kg-phosphorus removed.

Watertown is required by the TMDL to remove 613 kg/yr of phosphorous. Using the unit cost noted by EPA, this represents a $25.1 million cost to the Town. We believe the cost to Watertown could be significantly higher, in the range of $35 to $50 million. This does not even include ongoing operational costs for increased street sweeping, catch basin cleaning, etc.

Specific Comments

1. The information provided in the permit documentation leaves far too much unknown for municipalities. The EPA must have an honest conversation with communities about the phosphorus control plan. This includes, first, whether the phosphorus reduction requirements are technically feasible and second, what the anticipated implementation costs are in dense urban communities. One step towards achieving this would be to reproduce the work of the Upper Charles River study in Lower Charles River communities.

2. The EPA needs to set a reasonable requirement for phosphorus reduction in each community based on the actual ability to reduce phosphorus loads at an acceptable cost. As it is not clear what regulatory authority EPA has to require controls that exceed the maximum extent practicable, the required total phosphorus reduction requirement should be based on the maximum extent practicable instead of a prescribed total phosphorous load reduction.

3. As EPA has not determined whether the required total phosphorus reductions are technically and economically feasible in each community, each community should identify what level of phosphorus reduction can be reasonably implemented within the 20-year timeframe based on a cost-benefit analysis with the goal of identifying the maximum extent practicable. This requires that each community develop a long-term phosphorus control plan in the first planning phase instead of a series of 5-year plans. The long-term plan should be evaluated and updated every five years.

4. The land use data used to define baseline phosphorus load and reduction requirements are from 2005. In addition to physical changes in land use that have occurred in the subsequent 10 years, a number of large properties have been redeveloped and provided infiltration BMPs prior to discharge into the MS4. In the phosphorus control plan, the MS4 should be able to take credit for all phosphorus reductions achieved since the TMDL was issued.

   Furthermore, the EPA states that land use information shall be submitted along with the year 4 annual report for consideration for future permit requirements and that the phosphorus reduction requirement in the permit must be used in all planning until changes are later approved by the EPA. This creates a significant amount of uncertainty for permittees as they move forward with a 20-year plan. The MS4 should be able to submit updated land use information as soon as it is available for immediate consideration by EPA.

5. In addition to credits for structural and non-structural BMPs implemented by the MS4, the phosphorus control plan should also look at anticipated changes in land use in the community and how these will impact phosphorus loads. The community should be able to take a credit for anticipated phosphorus reductions due to private redevelopment.

6. Page 32 of the Fact Sheet states that "the achievement of the required phosphorus load reductions will necessitate phosphorus load reductions being accomplished on private properties that drain to the MS4 and the Charles River system. Consequently, implementation in these communities would also involve coordination with private property owner." The EPA should clarify the intent of this statement. Does the EPA intend to require communities to make property owners install BMPs on private property outside of a new development/redevelopment regulatory review and permitting process? It is not clear what authority a municipality would have to do so.

7. EPA has analyzed and reached conclusions about the financial impacts of the phosphorous control plan on community budgets in a vacuum. Regardless of the funding source, MS4s have other operational and capital needs. These often include significant expenditures to repair failing infrastructure and provide additional flood mitigation that cannot be deferred and have economic or public safety consequences. Flexibility is required to consider the priority of the phosphorus control plan in relation to the other needs of the MS4. To the extent that such efforts can be combined, this should be encouraged.

8. How does EPA intend to tie the improvements made by the MS4s to actual improvements in water quality in the Charles River? Does the EPA have measurable goals for actual water quality improvement that it anticipates at the end of the 5, 10, and 15-year permit terms? EPA should commit to reviewing water quality data at the end of each permit term and determining if anticipated improvements to water quality are being made. Both the TMDL and the phosphorus control plan schedule should be reconsidered at the end of each permit term based on the actual water quality improvement achieved as well as the ability of the MS4s to implement their phosphorous control plans.

9. EPA must consider the environmental justice, economic equity, and smart growth issues inherent in the phosphorus reduction requirements of the permit. Lack of consideration of the needs of dense communities in developing the permit is itself an equity issue that EPA has created and needs to address.

    - Communities with higher phosphorus reduction requirements tend to be densely developed, older, "inner core" communities such as Watertown (62.4%), Somerville (62.0%), and Arlington (64.1%). Suburban communities, such have Weston (32.1%), Dover (21.6%), and Walpole (23.6%) have significantly lower requirements.
    - The communities with higher reduction requirements also have far less open space, significantly higher density, and older infrastructure relative to other communities. Implementation of the phosphorus control plans will place a greater burden on the inner core communities relative to others, due to more limited implementation options, inherently higher construction costs, and often limited resources that must compete with the need to maintain and upgrade existing infrastructure.
    - Densely developed communities tend to have a larger number of environmental justice neighborhoods. Many of the more densely developed communities have lower incomes relative to less intensively developed suburban communities. The implementation costs may be higher per household, yet the ability to bear the additional financial burden may be lower.
    - The costs of achieving phosphorus reductions during redevelopment of private property will be higher in denser communities relative to new development. The permit creates an economic disincentive for redevelopment of existing urban centers in favor of new development.
    - As previously discussed, the costs for implementation of the plan have not been studied in the inner core communities, but it can be inferred from EPA's own documentation that they will be substantially higher.

10. *Appendix F, Attachment 2—Phosphorus Reduction Credits for Selected Enhanced Non-Structural BMPS*: The requirements to obtain the fertilizer phosphorus credit are burdensome to the point of being unachievable. In order to earn the credit, the permittee must certify on an annual basis that no fertilizers containing phosphorus have been applied in any area in the watershed. An example is provided where an MS4 has determined that approximately 60% of lawns are fertilized in Town in order to estimate its phosphorus reduction credit. Please provide additional guidance on how a municipality can certify that no fertilizers containing phosphorus are applied in any area of the municipality and also how to perform surveys to identify the percent of lawns fertilized. What actions would the EPA take to corroborate such certifications and surveys?

11. *Appendix F, Attachment 3—Phosphorus Reduction Credits for Selected Structural BMPs*: While it is not possible to document phosphorus reduction credits for all structural BMPs, most of the BMPs discussed are not well-suited to highly constrained locations. We believe that the EPA should identify phosphorus removal credits for BMPs that are used in dense urban environments, for example, particle separators, green roofs, and phosphorus removal cartridges/inserts.

Other Permit Provisions

12. *Section 1.7.4 (a)—Public notice of NOI*: The permit does not specify what party is responsible for addressing and responding to public comments received in response to the Notice of Intent. As EPA is publishing the public notice, it should be responsible to respond to comments. Furthermore, the EPA only provides the option to grant authorization, extend the public comment period, or deny authorization under the general permit and require an individual permit. This doesn't appear to provide the EPA or the MS4 the flexibility to obtain or provide additional information that may be required in order for the EPA to issue coverage to an MS4 under the general permit.

13. *Section 2.3.2(e)—Education program*: We agree with the intent of the EPA public education and outreach requirements of Section 2.3.2 of the proposed permit, particularly the provisions for targeted outreach based on community concerns. However, we are concerned about the assessment requirements in paragraph (e), which will require the Town to provide evidence that the educational goals of the program have been achieved and to evaluate the effectiveness of the educational messages. In our opinion, these requirements are vague and need to be clarified.

    The Town relies on its staff and volunteers to provide education and outreach to the community. We do not have a public relations or market research department. Anything beyond a qualitative assessment of effectiveness is not reasonable, in our opinion. As the permit has recommended topics to be included in the education program and media to distribute them, it should also recommend metrics to evaluate them.

    Although we understand the EPA's desire that each community develop messages tailored to its needs, we believe it is extremely inefficient to require each of the over 260 traditional MS4s subject to the permit to develop tailored educational programs. A more cost-effective approach would have EPA, MA DEP, or other organizations evaluate the effectiveness of different education programs, and for MS4s to be responsible for selecting and implementing the programs that meet the needs of their communities.

14. *Section 2.3.4.4—Sanitary Sewer Overflows*: Reference should be made to the MA DEP Sanitary Sewer Overflow Bypass Notification Form. We also believe the requirement in Paragraph (d) to report all SSOs should be modified so that only SSOs that impact the MS4 are identified.

15. *Section 2.3.4.6—System Mapping*: Mapping of private stormwater treatment structures should be recommended. Private stormwater treatment structures may discharge to the MS4.

16. *Section 2.3.6(a)(ii)(a)—stormwater retention*: This section requires stormwater management systems on new and redeveloped sites to either retain the first inch of runoff from all impervious surfaces on site or provide the level of pollutant removal equivalent to bioretention on the first inch of runoff from all impervious surfaces on site.

    a. It must be acknowledged that this level of treatment may not be achievable on linear projects such as road reconstruction projects. Available space within right-of-ways is limited by adjacent properties, sidewalks, and underground utilities. We note that paragraph (b) of this section requires the permittee to assess current street design to reduce impervious cover and support low impact development designs. We recommend that linear projects be wholly exempted from this requirement.

    b. As written, this requirement appears to include the entire impervious area of a redevelopment project. Meeting this requirement would significantly increase costs to the developer. While we sympathize with the intent of the requirement, it may act as a barrier to redevelopment of brownfield sites. We believe that this requirement should apply only to the impervious areas disturbed during redevelopment, and that any areas of a larger redevelopment project that will not be altered should be exempt from the requirements.

    c. This section sets different standards than those set forth in the existing MADEP Stormwater Management Policy. Having two sets of standards will cause conflict and confusion for MS4s and developers. If the EPA desires more stringent standards than those already promulgated by MADEP, then it should work to affect changes within the existing State regulatory framework instead of attempting to supersede them with different, conflicting requirements.

    d. Although well-intentioned, aspects of this requirement are extremely problematic from an urban planning perspective. The Town desires to preserve and in some instances increase density in certain areas. In Watertown Square, for example, zoning allows for full lot building coverage to create an urban fabric. Requiring redevelopments in urban centers to meet the recharge and treatment requirements standards directly conflicts with core community goals, may actually discourage development in these areas, and will have negative economic impacts on these areas in the form of reduced development potential. It should be noted that one BMP that might be employed on a full lot building is a green roof; it appear that there is no consensus as to whether green roofs provide phosphorus removal.

17. *Section 2.3.6(d)—Directly Connected Impervious Area (DCIA)*: additional clarification should be given as to what constitutes DCIA. Many stormwater management systems provide partial infiltration of stormwater up to a particular design storm, but retain an overflow connection to the MS4.

18. *Section 2.3.7(a)—Operations and Maintenance Programs*: this section requires written operations and maintenance procedures for municipal activities, including parks and open space, buildings and facilities, and vehicle and equipment areas. These plans are required within the first year of the permit term. This is

an aggressive schedule, given the need for site-specific plans. We recommend that four years be provided for full compliance with this requirement.

19. *Section 2.3.7(b)—Catch Basin Cleaning Program*: The data collection requirements for catch basin cleaning are onerous and burdensome and not commensurate with the benefit provided. We recognize that catch basin cleaning is an important part of municipal operations and does provide a water quality benefit to the MS4. The permit requires the MS4 to track the volume or mass of material removed from each catch basin draining to water quality limited waters. For Watertown, this would require us to track the volume or mass removed from each of our approximately 3,200 catch basins. This would result in significant additional costs to the Town and would not necessarily provide any water quality benefit. We request that the requirement to track volume or mass of material removed from each catch basin be eliminated.

20. *Section 2.3.7(f)—Cleaning of Storm Drainage Systems*: Clarification on what constitutes the storm drain system, for purposes of identifying inspection and maintenance procedures, is required. Does this mean pipes? Pipes provide the means of conveyance of flow and it is unusual for an MS4 to actively inspect them. Inspection of drain pipes, beyond what is required through the IDDE requirements, would be costly and not provide any additional water quality benefit.

Thank you for the opportunity to comment on this proposed permit.

Sincerely,

Matthew I. Shuman, P.E.
Town Engineer

cc: Fred Civian, MassDEP Stormwater Coordinator
Michael J. Driscoll, Town Manager
Steven Magoon, Assistant Town Manager
Thomas Tracy, Assistant Town Manager
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TOWN OF WEBSTER
MASSACHUSETTS

350 Main St. Webster, MA.01570

February 25, 2015

Newton Tedder
U.S. EPA Region 1
5 Post Office Square – Suite 100
OEP06-4
Boston, MA 02109-3912

RE: Town of Webster Comments on 2014 Draft Massachusetts MS4 Permit

Dear Mr. Tedder:

The Town of Webster has been working diligently with our engineering consultant, Tighe & Bond, and our surrounding communities through the Central Massachusetts Regional Stormwater Coalition to review the Draft Massachusetts MS4 Permit. Through these two entities and our own review, we offer the following comments and concerns:

1. The Town retains the right to appeal any provision of the Final Massachusetts MS4 Permit as allowed by law and regulation.
2. The timelines for compliance will be very challenging and likely unachievable. The detailed cost for compliance must be established so that a funding source may be derived and approved by local governing bodies. This will likely take more than a year, even if funding is approved through the first vote. Please consider extending all compliance timelines for at least 12 months to allow communities time to finalize cost estimates and establish funding prior to performance of compliance efforts.
3. Compliance with the proposed requirements to address the Long Island Sound nitrogen TMDL will be very costly with unknown benefits. Preparing a Nitrogen Source Identification report will be incredibly time consuming and expensive. If EPA is saying communities in the watershed must reduce nitrogen, the planning process should focus on what is feasible and what potential load reductions are possible from various practices. This is a better use of our time and money. Please revise the requirement to reflect this. In addition, please consider allowing the Municipality to determine the best measures to achieve loading reductions overall, whether it be structural or non-structural practices. There will be minimal opportunities to install structural BMPs, if any. Regardless of feasibility, once a location is found, obtaining funds, designing, permitting, and constructing structural BMPs will take much longer than a year to complete. Please consider revising the permit to extend timeframes by at least five years to allow time for these efforts.
4. Do the individual TMDL reports, the 303 (d) list, EPA's tables in the permit, or another document govern interpretation of TMDL and impaired waters applicability? While Webster is included in the draft permit requirements to address the Long Island Sound TMDL for Nitrogen, none of the Town water bodies or waterways are impaired by nitrogen. Please address this issue in the final permit. Also, please clarify EPA's rational and authority to broadly impose nitrogen reduction requirements in unimpaired tributaries in our watershed and please revise the permit to reflect necessary changes.

5. Webster began installing select outfall identifiers and found the work to be difficult, costly, and not beneficial to the program. Each outfall identifier cost approximately $13 in materials, plus the cost of labor to place the markers. Finding the correct label and installing the markers in the ground with the specialty driving tool was time consuming. It is expensive to label every outfall with no apparent

direct water quality benefit for this effort. Identifying outfalls by using our drainage system maps and GIS locations is much more useful for Webster than placement of physical outfall identifiers. Please consider revising the final permit to remove the requirement to physically label outfalls and interconnections and instead allow outfall labels/numbers to be included in the effort to develop an accurate drainage system map and complete outfall/interconnection inventory.

6. IDDE screening and sampling will be costly and time consuming and bear very limited benefits in lower priority catchment areas/outfalls. The IDDE effort should focus on which catchments are likely to have illicit discharges and which ones are unlikely to have illicit discharges. Then the likely catchments should be prioritized by severity. Please consider requiring screening and sampling programs for only high priority locations. Please consider putting an annual cap on catchment investigations based on the number of points inspected (such as outfalls, manholes, interconnections) to level the playing field across communities.
7. We are very concerned about the manhole inspection methodology that requires investigation of each key junction manhole within the MS4, even where no evidence of an illicit discharge is observed at the outfall. This requirement is onerous with little potential benefit to improve water quality for the amount of effort, and will put our staff and contractors at safety risk during the work, require police details, and cause traffic. Please consider revising this section of the permit to only apply the manhole inspection methodology when evidence of an illicit discharge is observed at the outfall.
8. Meeting the wet weather screening and sampling requirements by the deadlines specified in the permit will be an all-consuming effort for Town staff and our consultants each Spring, particularly when nearly all catchment areas have sewer lines and infrastructure greater than 40 years old. Please consider reducing the wet weather screening requirements in conjunction with an annual cap on catchment investigations referenced in our previous comment (6). Please also consider extending the wet weather monitoring period to include summer and fall to give us more time to get to the structures.
9. Stormwater management for new development and redevelopment projects is currently consistent with the Massachusetts Stormwater Handbook, the Wetland Project Act and associated regulations. Please consider removing the requirements related to retaining 1" or providing the equal amount of pollutant removal. EPA should work with MassDEP in a public process to vet the technical components of the proposed requirement, feasibility, and revise the Massachusetts Stormwater Handbook instead of adding this requirement to the MS4 general permit.
10. The requirement that a catch basin sump be not more that 50% full will be very difficult to physically manage in the field. Towns with aging infrastructure have a wide variety of sump depths. At a minimum please consider revising this standard to cite a distance from pipe invert to top of sediment as the controlling factor. Overall, this is an onerous requirement. Please considering revising the permit to require annual catch basin cleaning, or for a reduction in frequency, using a benchmark. Also, please consider how increased sweeping reduces need to clean catch basins and revise the permit accordingly.
11. The draft permit contains numerous reporting milestones and report content requirements. Please consider including, in the final permit, a complete timeline chart and specific reporting checklists.

The Town of Webster is committed to improving stormwater discharge quality and maintaining environmental permit compliance. We ask that you consider these comments and those of our surrounding communities in preparation of the final permit.

Sincerely,

John F. McAuliffe
Town Administrator - Town of Webster

TOWN OF WELLESLEY
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February 26, 2015

United States Environmental Protection Agency
Office of Ecosystem Protection (OEP05-1)
5 Post Office Square – Suite 100
Boston, Massachusetts, 02109-3912

Attn: Newton Tedder

Sent via email to Tedder.Newton@epa.gov on February 27, 2015

REFERENCE: COMMENTS TO THE DRAFT SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS PERMIT

Dear Mr. Tedder:

Please accept these comments on the draft General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4). While Wellesley is a strong supporter of the goals that the existing and proposed NPDES MS4 permit seek to achieve, we are nevertheless concerned about the cost and practicality of the measures proposed. The Town also believes that the proposed permit lacks an adequate scientific basis for establishing the target phosphorous reductions and, as written, will produce mostly an administrative work product, rather than practical solutions or true improvements to actual water quality. This is a major concern for the community. Our comments on specific sections include:

Section 2.1.1 and Appendix F: Phosphorous Control Plan.

According to Appendix F, Wellesley is required to achieve a 49% reduction in phosphorous loading as compared to existing conditions. The land use data selected to define the baseline phosphorous load and reduction requirements are from 2005. We believe that any rational assessment of current phosphorous contributions from Wellesley and surrounding communities needs to be based on more current data, and that it is unreasonable to rely on data that are essentially a decade out of date. At a minimum, however, if EPA insists on requiring the reduction rates proposed, permittees should be given credit for all phosphorus removal efforts completed since 2005.

Additionally, the draft permit does not appear to make any assessment of a community's ability to achieve the proposed reduction rates. In Wellesley, for example, it appears that non-structural solutions will represent less than a third of the Town's target reductions. Thus, achieving a 49% reduction in phosphorous loading will require a significant capital investment in Low Impact Development ("LID") projects. However a mojority of the land owned by the Town where stormwater systems are located are roadways with a defined right of way, where implementation of LID projects will be cumbersome. The near-term future will involve purchasing equipment and services for items such as vacuum-style street sweeping equipment, increased catch basin cleaning and disposal, organic waste and leaf litter collection, and development and implementation of public and private phosphorous control plans coupled with LIDs to revert paved areas to pervious ones, to install green roofs and to narrow roadways. This will add significant costs to the Department of Public Work's operations.

The Town believes that EPA should assess and target practical solutions to high phosphorous levels, rather than imposing a generic set of requirements that may not be suitable for all communities. Specifically, Wellesley has very active organic fertilizer education and pesticide reduction programs that, in combination with the 2010 law reducing phosphates in some detergents and the more recent lawn fertilizer phosphorus reduction law, may already be achieving the proposed goals.

Section 2.1.1 and Appendix F Attachment 2: Collection Systems.

The draft permit fails to define "collection" and "gather and remove" as used in Appendix F Attachment 2. Wellesley is a "drop off" community for all solid waste, household hazardous waste and leaf/lawn waste. Yet it is unclear whether Wellesley's current program would comply with the requirements of Attachment 2 of Appendix F.

Section 2.3.2: Targeted Education.

Wellesley has been consistently active with public education and involvement. Our Natural Resources Commission, Trails Committee, Sustainable Energy Committee, Board of Selectmen and several planning and permitting boards have issued coordinated and frequent notices related to the importance of stormwater management. The DPW staff has made presentations at the public schools and participated in annual stencil programs with the school children. The Town has established a 24-hour stormwater hotline. While the Town believes that the community is benefiting from these efforts, there is no indication that they have resulted in measurable improvements.

Section 2.3.4.5: Field Labels.

The draft permit requires the permittee to affix a physical label on all MS4 outfalls. The Town has made significant effort both in GIS and in field-proofing the data it has accumulated. The Town has also invested in asset management and can respond on demand to situations while in the field. With these tools, the Town believes that the cost to install and maintain field labels is unnecessary.

Section 2.3.4 and Section 2.3.7: Training.

The draft permit expands on training requirements, which will result in significant costs to the Town. We believe that there are opportunities for regional workshops or mass-produced training modules, possibly developed under the guidance of the EPA.

Section 2.3.4.7: Increased Sampling.

The draft permit outlines a regimen of dry- and wet-weather sampling, but EPA has provided no evidence or rationale to justify such a requirement. Our discussions with communities already implementing a wet-weather testing program suggest that the data collected are erratic and not useful for identifying potential areas for improvement.

In addition, the draft permit requires the Town to observe and evaluate key junction manholes "progressively" based upon System Vulnerability Factors, to conduct confirmatory testing, and to monitor interconnection points. Wellesley's entire system contains at least one System Vulnerability Factor and will therefore require both wet- and dry-weather monitoring. In addition, the Town has numerous interconnection points with surrounding communities, the MBTA and MassDOT. The permit requires 80% of this work to be complete within three years and 100% within five years. This schedule is too aggressive. Furthermore, the Town estimates that such sampling will result in costs of $250-300 per test, plus labor, at each location, far more than the benefit to be derived from the effort. EPA should revise the draft permit's sampling methodology to weigh more realistically its financial impact on permittees.

Section 2.3.6: Increased Municipal Responsibility for Private Stormwater Systems.

The draft permit requires that municipalities conduct inspections, create systems to track performance, and perform post-construction monitoring of LID and Best Management Practices ("BMP") systems installed on private property. The Town's current practice (which is based on the State's policy under the Undeground Injection Control program) registers locations and owners, but refrains from explicitly making owners and operators responsible for their systems. If the proposed language stands, some of this responsibility will apparently be shifted to permittees; this may lead to difficult legal contests and expensive engineering analysis. This work will be in addition to the annual inspections of all municipally owned BMP systems, a list that has doubled over the last five years in Wellesley.

Section 2.3.6 and Section 2.3.7: Discontinuity between Wellesley's built environment and some new permit objectives.

The draft permit requires municipalities to conduct analyses associated with reducing impervious areas and other LID projects. Wellesley's network of storm drains is largely built out, and there is little room or opportunity to make significant strides toward the program's goals. The Town has robust regulations governing redevelopment that, in the last ten years, have resulted in the installation of 41,500 sq.ft. of pervious pavement, 41 infiltration systems, five rain gardens and several locations with rain barrels or other rain

water re-use systems, and several grit/oil separators. Ten of the large infiltration systems are on Town-controlled land.

Notably, Wellesley has direct experience with actual phosphorus management at Morses Pond and can attest that the effort requires both professional expertise and significant investment to achieve meaningful results. Additionally, the community is currently undertaking the Fuller Brook Path Preservation project that includes stormwater features such as bio-filtration. Significantly, this project represents over eight years of work collecting public comments, obtaining the required permits, and issuing contracts to complete the work. When completed, the community will have spent approximately $8 million.

While the Town will continue to pursue such installations, the draft permit fails to take into consideration that such improvements are generally achievable only in connection with public and private redevelopment projects. The Town believes that it is unwise to insist on the pursuit of such installations in circumstances where there are no obvious economic incentives and no clear benefit to be derived by the property owner.

These sections also include new standards for stormwater treatment that appear to be inconsistent with the MassDEP Stormwater Management Handbook. In particular, Wellesley would like clarification on the requirement to retain one inch of stormwater since the current practice for all applications has been 0.5 inches unless a higher pollutant load or an environmental sensitive area applies. More importantly, the draft regulations should be clear on what standard is expected for redevelopments, as these are frequent applications in Wellesley. The EPA needs to specify if the retainage requirement is related to the net change in impervious area or if a maximum extent practicable guideline is appropriate. We have three colleges within our borders; a standard that requires one inch of recharge for their impervious area will make any proposed additions cost prohibitive. We also believe that exemptions for road reconstruction and repaving are necessary.

The Town's experience with the BMP selection process is that the pressures of land value and economic redevelopment have resulted mostly in subsurface infiltration and groundwater recharge systems. It is unclear how these systems (which, in some cases, can sever runoff from large parking and roof areas) will be accounted for in future caclulations of impervious areas and directly connected impervious areas. We recommend that the EPA provide more specific information, and consider regional workshops on the topic of directly connected impervious areas.

Section 2.3.7.b: Stormwater Pollution Prevention Plan (SWPPP)

The draft permit will require SWPPP for all publically owned facilities. In Wellesley, this will span several jurisdictional bodies. The Town is concerned that this work cannot be completed within the required two-year time frame due to the need to contract with experts and obtain the requisite funding.

General Comments.

In addition to the section-specific comments above, we offer the following general comments and thoughts on the draft permit:

The Town continues to be concerned that the draft permit is written in a one-size-fits-all form. It does not reflect the diversity among the MS4 communities, the level of progress during the first phase, or (most importantly) any community-specific data. Wellesley is a community of approximately 26,600 people, consisting largely of residential neighborhoods located about 13 miles west of Boston in the lower Charles River basin. The Town has made consistent and significant investments in stormwater infiltration and groundwater recharge over the last decade. The Town's efforts related to public education and participation are strong and storm drain maintenance activities including catch basin cleaning, street sweeping, pipe cleaning and replacement are at all-time highs. The Town continuously strives to position our community as a steward of sound environmental investments. We are the Commonwealth's first municipality to become an EPA Green Power Partner Community. We are currently constructing one of the region's larger brook and park restoration projects. We operate an active phosphorous reduction system at Morses Pond. However, we must also be cognizant of our obligation to deliver quantifiable improvements.

It is worth noting that this draft permit will increase the number of required written programs, polices, procedures, self assessments, and reports. Some components of the permit require reporting on items that are covered by existing regulation, which will require duplicate efforts. These requirements all come with a cost; yet they yield little in genuine water quality benefits. We urge you to streamline reporting where possible and to focus on achievable performance goals.

Academics and scientists at Worcester Polytechnic Institute have reviewed the permit and concluded that implementation costs are a significant concern. Preliminary projections indicate that compliance with this permit's terms and conditions will cost Wellesley between $700,000 and $900,000 per year. The Town has reviewed estimates that indicate it may cost between $550,000 to $650,000 just to comply with the phosphorous-control elements of the permit, which may exceed $2,000 per pound of phosphorous theoretically removed. The Town doubts that this is the most strategic way to restore impaired waterways.

The timelines associated with the permit also seem unrealistic. Many of the requirements are front-loaded, giving communities that require staffing changes and increased funding a sizable problem. Clearly the draft permit does not reflect the likely need to prepare for and obtain approval from Town Meeting. The Town strongly suggests that EPA and MassDEP initiate a public awareness campaign related to the need for the expansion to the program, its expected costs and its environmental benefits. Further, if this a priority area for the EPA, consideration of grant funds must be made. These efforts would go a long way to communities obtaining support for the MS4 program.

The Town of Wellesley is committed to improvement of its waterways. However, the Town urges EPA to take our concerns seriously and to engage in an inclusive and thorough dialog with municipal permittees before finalizing the permit.

Thank you for the opportunity to present our concerns.

Very truly yours,

David J. Hickey, Jr., P.E.
Town Engineer

Cc: F. Civian, Mass DEP Stormwater Coordinator
M. Pakstis, Director
D. Cohen, Asst. Director
H. Larsen, Executive Director
State Representative, A. Peisch
Senator, C. Creem

February 25, 2015

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Boston, MA 02109-3912

Sent via email to Tedder.Newton@epa.gov on February 25, 2015

Attention: Comments on the 2014 Draft Massachusetts MS4 Permit Docket ID No. FRL-9917-31-Region-1; Document No. 2014-23262

Dear Mr. Tedder;

The Central Massachusetts Regional Stormwater Coalition (CMRSWC) is a group of 28 towns including my Town of West Boylston, most of which are regulated under the United States Environmental Protection Agency's (the Agency's) 2003 NPDES Phase II Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit. The CMRSWC was formed in 2011 as a regional partnership to manage stormwater programs and ensure the long-term protection of water resources. Working as a group has allowed the CMRSWC to develop tools to expand our stormwater management practices, collectively protect shared resources, and meet the requirements of the 2003 Massachusetts MS4 Permit in an efficient and cost-effective manner.

This coalition has also created an effective forum for collaboration, communication, and discussion among the municipal representatives that attend the regular meetings of our Steering Committee and with other stormwater collaboratives in the Commonwealth of Massachusetts and New England. It is at several of these meetings and at related events that the CMRSWC has discussed the proposed Draft 2014 Massachusetts MS4 Permit that was released for public comment by the Agency on September 30, 2014, hereafter referred to as "the proposed Permit".

The following pages outline the concerns that members of the CMRSWC have with the proposed Permit. While I have specifically mentioned our general concerns, other members of the CMRSWC will go even further to address more specific concerns which apply to unique sections of the proposed Permit. Where appropriate, we have provided suggestions for replacement language (or clarification) that would better align the proposed Permit with other MS4 Permits in New England, or have outlined provisions, concepts, or metrics we believe are more suitable or feasible (for in-the-field implementation).

1) The members of the CMRSWC are supportive of proposed Permit provisions that will directly result in improved water quality, but object to those that are administrative or arbitrary, and that will not have a direct bearing on water quality.

2) We encourage the Agency to update its own guidelines about how regulated communities are expected to balance compliance with the Permit (in its final form) with the ability to afford that compliance without experiencing economic hardship. Since 1997, the Agency has generally considered a maximum combined annual water and wastewater bill of 4.5% of mean household income (MHI)- 2% for drinking water and 2.5% for wastewater services- to be affordable. In their May 2013 "Affordability Assessment Tool for Federal Water Mandates" report, the United States Conference of Mayors, the American Water Works Association, and the Water Environment Federation (see *Attachment B*) argue that MHI is a poor indicator of economic distress, bears little relationship to poverty within the community, does not capture variation across diverse populations, and does not account "for the historical and future trends of a community's economic, demographic, and/or social conditions", especially during recessions and recovery from them, such as Massachusetts is presently experiencing. Municipal revenues are decreasing, and further restrictions on development or redevelopment are not in the best interest of communities struggling to maintain the level of service expected by residents.

   Even so, if we were to use MHI as the basis for evaluating a community's ability to afford a stormwater management program to comply with the proposed Permit, the 4.5% MHI cap would easily be exceeded if stormwater costs were included- along with drinking water and wastewater- in the calculation. This is true whether a community funds its program traditionally through the tax base or has developed a sustainable funding mechanism such as a stormwater utility or stormwater enterprise fund. In some rural Massachusetts towns, the cost of stormwater compliance will exceed the cost of wastewater compliance and the total cost for compliance with water regulations may well be closer to 10% of MHI. Leaders and administrators in these towns will have a difficult task, indeed, to convince their residents and business owners that some of the provisions in this proposed Permit will result in water quality improvements commensurate with the expense.

   Finally, several members of our community have calculated (or begun the process of calculating) their increased cost of compliance with the proposed Permit as compared to the 2003 MS4 Permit. In 2014, as part of an ongoing partnership between the CMRSWC, the Massachusetts Department of Environmental Protection (MassDEP), and the Worcester Polytechnic Institute's Integrated Qualifying Project (IQP) program, three of our member communities (Holden, Millbury, and Southbridge) participated in a project to quantify current and projected stormwater program costs (see *Attachment C*). The IQP report team assumed that provisions the proposed Permit would be implemented as drafted, and evaluated the cost of new and expanded provisions as well as maintaining compliance with other Permit provisions. Among the conclusions, the IQP report team calculated the annual costs for implementation of the proposed Permit for the towns of Holden ($258,790), Millbury ($753,173), and Southbridge ($343,008). These projected costs represent increases of 39%, 30%, and 28% over current annual stormwater program budgets, respectively, and do not include other one-time or intermittent costs (such as capital expenditures like equipment), or the costs of design and construction of projects that may be required to eliminate illicit discharges. Even allowing for the imprecision inherent in a project of this scale, the consistency in comparative relative increases calculated for three communities tells a story that will be repeated across the Commonwealth.

   We all agree that clean water supports our communities in many, many ways; notwithstanding this, the absence of guidance on how to best afford the increased costs of stormwater management cannot be ignored.

3) We encourage the Agency to include flexibility in the final Permit with respect to the date on which the Permit in its final form will become effective in each community. Flexibility in setting the effective date will allow each town the opportunity to budget for Year 1 and Year 2 tasks, specifically, within the municipal budget cycle, which will likely be out of sync with the Permit cycle. In the last few years, many communities have been telling their leaders and residents that the new Permit would be out "soon" based on updates from the Agency, with the target issue date moving over the course of several municipal budget cycles. Many of these leaders will face reluctance, skepticism, and frustration when proposing increased stormwater program budgets, and will need to re-educate their decision makers about why these increases are required.

4) We believe that many provisions in the proposed Permit do not lend themselves to implementation over a five-year Permit term, at least in a way that is affordable for the regulated communities and that results in meaningful improvements to water quality. Instead, we propose that the Agency extend the schedule for several specific provisions, such as development and implementation of a catchment delineation, over a ten-year period. The Commonwealth of Massachusetts has in place a statutory framework that allows for such an extended timeline as a Compliance Schedule within a NPDES Permit. Indeed, the Agency has taken advantage of this extended schedule in the proposed Permit for the Catchment Investigation Procedure (see Section 2.3.4.8(c)(iii), IDDE Program Implementation Goals and Milestones, Page 37). This compromise will comply with Clean Water Act 402(b)(1)(B) while providing flexibility for the regulated communities. Where we believe this extended schedule is appropriate, we hereafter refer to it in subsequent comments as a "10-year Compliance Schedule".

5) When describing dry weather and wet weather screening and sampling and outfall/interconnection screening, the proposed Permit frequently refers to "detectable levels of chlorine". It should be noted that chlorine is detectable in most if not all outfalls and at perimeter of many of Massachusetts' surface water bodies using many field kits available today, and this detection limit is likely to become lower (identifying smaller and smaller concentrations of chlorine) as technology improves. Treated drinking water entering a stormwater system is the potential source the chlorine indicator is intended to highlight. However, chlorine in drinking water is highly volatile, and decomposes quickly once discharged to a surface water body and exposed to sunlight and the ambient atmosphere. If all outfall samples would demonstrate "detectable levels of chlorine", but the chlorine will degrade quickly within a water body, this parameter ceases to be useful as a screening tool.

   We request that the chlorine parameter either be removed from all sections discussing screening methodologies, or that a numeric threshold be established- based on peer-reviewed data- that can correlate a specific elevated detected chlorine concentration to a potential illicit discharge, such as a grey water connection (or the absence of elevated bacteria) or a cross-connection (in the presence of elevated bacteria).

6) We have observed that many provisions in the proposed Permit include the development of a written program, written inventory, written report, written procedures, or other "written" documentation. These proposed provisions counter a shift on the part of many regulated communities to cloud-based infrastructure management systems, such as the online mapping and inspection platform used by our 28 members. Many communities use these cloud-based tools because they work with mobile devices, reduce paperwork, and allow data to be added to a management system in real-time. These tools reduce the amount of inefficient administrative time to enter information into a form or spreadsheet and typically allow towns to create work orders from the field for follow-up or maintenance activities. The data is every bit as useful and accessible and can be readily queried into reports to provide summaries and snapshots.

   Managing operations and maintenance procedures through cloud-based systems such as the one the CMRSWC uses is also more effective- if a change is made to a procedure or form on our

platform, that change is available immediately to all users in all 28 communities without the need to print new forms, distribute them to all members, and inform our many, many users that the new form shall be used. These workflow improvements should be considered to be enhancements, and encouraged as they are consistent with federal efforts to reduce paperwork and not "overburden the public with federally sponsored data collections", mentioned as the goal of the Paperwork Reduction Act.

We also know that many regulatory agencies like municipalities to maintain hard copies of documents at multiple locations, even though this practice does not lead to improved use of these documents. The *absence* of large volumes of paperwork doesn't mean that a community isn't implementing something any more than the *presence* of many binders means that a community is effectively utilizing the programs in them. Decreasing the use of paper in our work environment is also environmentally preferable.

It is important for both the Agency and the public to realize that increased use of technology and cloud-based tools allows local governments to work more efficiently and respond to their needs and requests more efficiently.

This modernization should be encouraged, and we request the Agency to incorporate flexibility for many of the "written" submittals requested to be implemented as modules within asset management platforms, and allow the permittee to demonstrate by other methods that these procedures, inventories, etc... exist and are being utilized.

7) We strongly encourage the Agency to engage in conversations and workshops that lead to development of a Final MS4 Permit that MassDEP is willing to sign onto. The alternative to a joint Permit, outlined by the Agency's Thelma Murphy at a meeting of the Northern Middlesex Stormwater Collaborative in Lowell, MA on December 4, 2014, would be two separate Massachusetts MS4 Permits: the current 2003 Massachusetts MS4 Permit would continue to be enforced by MassDEP, and the new Final Massachusetts MS4 Permit would be enforced by the Agency. Mayhem would ensue due to administration, operations and maintenance, and coordination duplication resulting from each of the Commonwealth's regulated communities being subject to two separate, parallel MS4 Permits. In practice, progress toward improving water quality would likely stop as legal challenges were filed, which is not in the best interest of any party involved.

This coordination should begin as soon as possible to reach a version of the permit agreeable to both organizations and compliant with the Clean Water Act, Massachusetts' Surface Water Quality Standards, and associated supporting documentation, so that water quality improvement activities across the Commonwealth can be focused and consistent.

Thank you for the opportunity to present these brief comments to you. Please know that the Town of West Boylston also supports the Specific Comments offered by the larger organization as well.

With regards,

TOWN OF WEST BOYLSTON

LEON A. GAUMOND JR.
Town Administrator

TOWN OF WESTBOROUGH
MASSACHUSETTS

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December 29, 2014

Mr. Newton Tedder
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RE: Town of Westborough, MA Comments on Draft Massachusetts Small MS4 Permit

Dear Mr. Tedder,

The Town of Westborough appreciates the opportunity to review and comment on the Draft Massachusetts Small MS4 General Permit made available in September 2014. As you may or may not know, the Town of Westborough commented on the first draft permit via letter to Ms. Kate Renahan dated January 5, 2011. We applaud the fact that this "2nd" draft of the permit recognized some of our earlier comments and the concerns of others by making time frames more manageable, as well as making the permit more directed to communities in various watersheds. However the level of detail required remains substantially higher than anticipated. As a result, the funds required to meet the permit and to continue the maintenance which is mandated greatly exceed what the Town can acquire for funding.

As we did in the review of the first draft, the following numbered comments provide some specific examples of areas within the draft permit which we see as problems. In most cases we have provided a specific recommendation with the numbered comment. We ask that you review these comments and recommendations for consideration when issuing the final permit. You will note that comments 1-3 remain verbatim per our first review. Many of the remaining comments are similiar:

1) The cost of implementation will be a significant burden to the Town. The Town has many high priority needs competing for limited available funding. The new

requirements contained in the Draft General Permit amount to unfunded federal and state mandates with the burden of implementation falling upon local communities.

2) The Town believes that regulatory changes should be promulgated at the state or federal level, not the local level. There are many reasons why this makes more sense than requiring municipalities to promulgate their own regulations.
   a) Watersheds contain more than one municipality, and conversely one municipality may be contained within two or more watersheds. Therefore a regulation promulgated by one community may be contradictory to those promulgated by another community.
   b) Local ordinances are not easily enforceable and do not have the strength of state or federal laws.
3) Section 1.9 contains several sections outlining information required for Special Eligibility Determinations involving endangered species, specific habitats and historical properties within each community. So, in essence, one branch of the Federal government is asking the community to inform the other branch (the EPA) of the requirements of the other Federal branch and asking the community to perform the coordination. The permitting authorities should coordinate the reviews by these agencies within the comment periods and with particular future milestones in mind, and all comments should be funneled through the permitting agencies to the applicants via formal comments.
4) Section 1.10 of the Draft General Permit has been revised so that the written Stormwater Management Program (SWMP) must be completed within one year following the Town's receipt of authorization from EPA to discharge under the Permit. The Town finds this timeline much more reasonable than the original120 days. Nevertheless, in Section 1.10 c, the permittee is "encouraged to maintain an adequate funding source for the implementation of this program." Adequate funding means that a consistent source of revenue exists for the program. Furthermore, a "consistent source of revenue" implies a funding mechanism such as a stormwater utility assessing user fees. This type of program could require years to develop and implement, normally requiring multiple levels of review and approval from town boards and committees, town counsel, town meetings or general elections, and sometimes the state legislature. At a time when communities are not flush with money, and when most communities do not have enterprise funds for addressing stormwater infrastructure needs, the financial obligations of the proposed regulations may be insurmountable.
5) Section 2.3.2 requires that public education and outreach materials be provided, having each community create their own language and graphics for brochures, websites, signs, etc. We maintain that this method is an inefficient use of resources. We continue to maintain that the majority of the information on non-structural controls which may be implemented by the public is generic and can be provided in a series of templates to communities. We do note that the current draft contains a link to for outreach materials and contend that a few versions of this information could be developed depending on the size and demographics of each community or depending on the watershed. Templates could include areas where communities can input information specific to their locations. Proving these templates would greatly reduce duplicate efforts and costs.

6) Section 2.3.4.6 requires a map of the MS4 system to be completed in 2 years. The level of detail and information required (i.e. individual catchment areas for each outfall) is substantially more than what has been obtained or required for the current permit. It is much more reasonable to require this map be completed by the end of the permit term.
7) Section 2.3.6.d outlines requirements to measure and monitor changes in impervious area and is an interesting academic exercise, however provides little benefit to the municipality. The rate of land development in Westborough may be significantly slower compared to other communities as the Town is nearing full-build-out conditions. This results in significantly lower rates of changes in impervious area (IA) and directly connected impervious area (DCIA). This exercise will be burdensome and will take staff away from more valuable functions. As we noted in the 2010 draft permit, if change in impervious surface over time is a metric of interest to Federal and State regulators then perhaps every 10 years the regulators can utilize advances in satellite imagery or other statewide GIS data to track this information. Municipalities should not be charged with gathering data that does not provide them with useful information.
8) Section 2.3.7. outlines a myriad of categories and requirements for Good House Keeping in municipal ways and facilities as well as providing operation and maintenance plans for various facilities. As we noted in our first draft review and we re-emphasize in this comment letter we are not in the business of collecting data for scientific study and the level of sophistication to collect data with truck driver/laborers is somewhat limited. Furthermore, this section requires that within one (1) year from the effective date of the permit, written operations and maintenance procedures for municipal activities be developed. The Town anticipates that significant effort in planning and coordination with various Town departments is needed and requests that full Permit Term (5 years) be granted for this effort.
9) Section 2.3.7.b. requires that SWPPPs be developed and implemented for maintenance garages, public works facilities, transfer stations, and other waste handling facilities. The Town recommends that a comprehensive SWPPP that covers all of the facilities be required rather than developing individual SWPPPs for each of the facilities. Developing and implementing individual SWPPPs will result in significant cost burden to the Town. The term "waste handling facilities" needs clarification.
10) Section 4.3 and the IDDE requires outfall monitoring and reporting each year in both wet and dry weather conditions. As we noted in our 2010 draft review, this requirement will result in significant costs and is not likely to produce data that could be used to significantly improve the water quality. This should be lowered to a more achievable level, such as 10% per year, starting with known problem areas. Because of the unpredictability of stormwater quality, wet weather monitoring is likely to be of little value. Such monitoring should be kept to a minimum. Only dry weather running outfalls should be tested. Our town does not have combined sewer and does not feel that it is warranted to spend time and money on this expensive task including: establishing a plan, testing, analysis, documentation and reporting.

As we noted previously, many of the individual requirements on their own would be achievable. However, requiring so many varied tasks of each community during a five-year permit cycle is unrealistic and is potentially setting communities up for failure to comply. If communities are presented with a permit they can meet, they are more likely to successfully invest the necessary funds and labor into implementation. For this permit cycle, the program should be pared down to a list, approximately one half of what is identified to make them achievable goals that build on but do not exponentially increase the efforts required to comply with the 2003 permit.

Sincerely,

Lisa C. Allain, P.E.
Assistant Town Engineer

Carl J. Balduf, P.E., P.L.S
Town Engineer

CC: J. Malloy, Town Manager
J. Walden, DPW Manager

TOWN OF WESTFORD
ENGINEERING DEPARTMENT

PAUL M. STARRATT, P.E.
Town Engineer
JEREMY R. DOWNS, P.E.
Assistant Town Engineer

February 26, 2015

Mr. Newton Tedder
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Boston, MA 02109-3912

RE: Draft NPDES General Permit Comments

Dear Mr. Tedder:

The Westford Engineering Department has prepared the following comments for your consideration. In addition to these comments, we are also supportive of the letter prepared by the Northern Middlesex Stormwater Collaborative, of which Westford is a founding member, and the comments submitted by our stormwater consultants at Tighe & Bond, especially as those comments relate to linear construction, redevelopment and reporting.

Regarding 2.3.6 Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management) Part 2.3.6.a.ii.(a) 1.-2., Page 40:

Please consider the benefits of resolving conflicts between the MADEP Stormwater Standards and the USEPA MS4 Permit – Pursuant to its authority under the Massachusetts Clean Waters Act, M.G.L.c. 21, §§ 26-53, and the Wetlands Protection Act, M.G.L .c. 131, § 40, the Massachusetts Executive Office of Energy and Environmental Affairs published the Handbook as guidance for the effective treatment of stormwater runoff and has served as the stormwater standard for Commonwealth communities since 1997.

The 2003 MS4 permit required that each jurisdiction enact a local ordinance in order to establish stormwater management practices for both construction and post-construction activities. In order to stay current with engineering standards and practices, many jurisdictions referred directly to the Massachusetts Stormwater Handbook (Handbook) and the Massachusetts Stormwater Standards (MSS) in their respective ordnances and regulations.

This approach was adopted in Westford because of our expectation that the Handbook and MSS would evolve over time and stay current with best management practices as agreed upon by Massachusetts stormwater stakeholders. It has always been understood that any amendments or revisions to the MADEP standards would be the result of an open and robust dialogue between environmental advocates, engineers, developers, contractors, State and local jurisdictions and the Massachusetts public at large. It was also understood that Westford was committing itself to the

consensus of these stormwater stakeholders, and that our local ordinances would automatically evolve with MADEP standards.

The Draft MA MS4 General Permit, as currently written, creates several conflicts with the Massachusetts Stormwater Standards. In 2.3.6.a.ii.(a) 1.-2., there is a 1-inch retention or treatment requirement on new or re-developed sites. This represents a significant departure from the MSS infiltration requirement that is based on hydrological soil type. While treatment of the first inch of runoff is demonstrably beneficial to both water quality and quantity issues, such a radical transition over a single permit period will produce unintended consequences as will be demonstrated below by example.

The implementation of better retention or treatment requirements is more likely to be successful and embraced at the local level if it is transitioned in responsible phases. This could easily be accomplished by referencing the MSS and Handbook, as done in 2.3.6.a.ii.(d), so that the aforementioned public process is driving the transition and not a mandate from the USEPA.

It is disingenuous to believe that the Commonwealth of Massachusetts stormwater community is not going to evolve and make changes to improve its regulations and guidance documents in a way, manner and time that gives each stakeholder some ownership and a personal investment in those changes. In fact, the process of change has already been initiated by the release of the draft permit and it will reach its natural conclusion after a healthy and meaningful exchange of ideas. The end result will be a shared objective of reducing the discharge of stormwater pollutants.

A secondary and more beneficial result of this stakeholder driven process could be a renewed effort for Massachusetts to obtain delegated authority over National Pollutant Discharge Elimination System programs. The release of the draft permit has highlighted the disadvantages of not having delegated authority, and has brought to the attention of smaller jurisdictions like Westford that it is time for a grassroots change in how Massachusetts is reacting to the Federal Clean Water Act.

In the event that the USEPA cannot realize the benefits of resolving conflicts with the MADEP Handbook and MSS, we respectfully request that, at a minimum, the following changes be adopted in the final permit language:

That Part 2.3.6., be revised to include a provision under redevelopment for compliance equal to the maximum extent practicable as defined by MADEP. If redevelopment projects are blindly subjected to the 1-inch retention or treatment standard, than the redevelopment of various sites will be made economically unattainable and the opportunity for making improvements to the maximum extent practicable on such sites will be lost.

For example, the Westford Planning Board recently issued a Notice of Decision (PB 1420 SPR SWM WRPOD) dated October 21, 2014, for a redevelopment project as shown on the attached and annotated plan sheets. The project, locally known as Brookside Village, involved demolishing an existing cold storage building and a paved parking lot situated in a Water

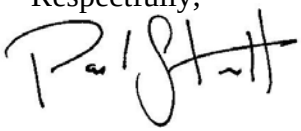
Resource Protection Overlay District. The project site is immediately adjacent to one of Westford's most important water resources, the Stony Brook. The redevelopment portion of the project will include 14 housing units, a private way, and significant improvements to the treatment of stormwater. More notably, this redevelopment project will result in a net decrease of more than one acre of impervious area on a site that directly abuts a sensitive water resource.

Because of the existing and naturally occurring soil conditions on this particular site, infiltration of the first 1-Inch of runoff would not be possible. In order to make this project economically feasible, 14 housing units were required to justify the costs of purchasing the land, demolishing the existing building, design, permitting and construction of the homes. If the developer was required to exchange multiple homes to facilitate stormwater BMPs in order to satisfy the 1-Inch retention or treatment standard, the redevelopment would not have been feasible on this site.

Because we were able to apply the MADEP maximum extent practicable standard, we were able to work with the developer's design team to make substantial improvements to the quality and quantity of stormwater runoff and reduce the impervious area on the site by more than one acre. The Draft MA MS4 General Permit, as currently written, would take away our ability to deliberate, review and approve redeployment projects like Brookside Village.

Thank you for your considerable efforts in making the public hearing and comment period as open, honest, fair and very engaging as it has been under your leadership. We are hopeful that the USEPA will realize the benefits of allowing the MADEP Handbook and MSS to continue being the standard in Massachusetts and letting the those standards evolve through a stakeholder driven process that is equally open, honest, fait and engaging.

Respectfully,



Paul M. Starratt, P.E.
Town Engineer

cc: Town Manager Jodi Ross

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LEGEND

- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED CONTOUR
- EDGE OF RIVER
- EDGE OF RIVERFRONT AREA
- EXISTING FLOOD PLAIN
- EXISTING TREELINE
- PROPOSED TREELINE
- 100' RIVERFRONT AREA
- 200' RIVERFRONT AREA
- EXISTING STONE WALL
- EXISTING WETLAND
- WETLAND/RIVERFRONT FLAG
- 25' BUFFER ZONE
- 50' BUFFER ZONE
- 100' BUFFER ZONE
- EASEMENT
- PROPERTY LINE
- EXISTING PAVEMENT
- EXISTING RETAINING WALL

STONY BROOK

N/F TOWN OF WESTFORD

STONY BROOK

100' YEAR FLOOD PLAIN ELEV. 154 (NAVD 1988)

EXISTING HEADWALL 12" INV=150.00

12" CPP S=0.023

EXISTING SEDIMENT TRAP INV=151.30 (in) INV=151.15 (out)

EXISTING DMH-2 RIM=157.25 INV=151.85 (in) INV=151.85 (out)

12" CPP S=0.014

EXISTING CB-3 RIM=156.46 INV=152.66

12" CPP S=0.054

EASEMENT TO BENEFIT LOT A 4,580 S.F.

12" CPP S=0.005

EXISTING DMH-1 RIM=157.32 INV=152.72 (in) INV=152.72 (out)

N/F NABNASSET MILL PARTNERS, L.L.C. (LOT B)

EXISTING CB-2 RIM=156.94 INV=153.24

12" CPP S=0.012

12" CPP S=0.022

EXISTING TWIN GRATE CB-1 RIM=157.75 INV=154.00

EXISTING I2 RCP OUTLET INV=153.10

EDGE OF FLAGGED RIVERFRONT

EDGE OF WATER PER TOWN TOPOGRAPHIC MAPS

LOT A
143,600± S.F.
3.3± Ac.

EXISTING PAVED PARKING AND LOADING AREA

EXISTING BUILDING

EXISTING 12" RCP

100' RIVERFRONT AREA

200' RIVERFRONT AREA

100' WETLAND BUFFER

50' WETLAND BUFFER

25' WETLAND BUFFER

PAVED SWALE CENTERLINE

EXISTING PAVED SWALE

ELECTRIC HANDHOLE

EXISTING BITUMINOUS DRIVEWAY

EASEMENT TO BENEFIT LOT B 12,259 S.F.

EXISTING LIGHT POST (TYP)

N/F DELVECCHIO, JOHN M.

D.H. (FND.)

EDGE OF WETLAND

N/F CARTER, ROGER H.

N/F GROCHMAL, DORIS

EXISTING CB-4 RIM=160.24

EXISTING STONE WALL

N/F THE 108 REALTY TRUST

N/F OLIVER, LAURIE J.

N/F CHAUHAN, RAKESH S.

N/F FLETCHER, H.E.

N/F CAMMELLERI, VINCE

BROOKSIDE ROAD

IMPERVIOUS PAVEMENT (TYPICAL)

IMPERVIOUS BUILDING (TYPICAL)

EXISTING CONDITIONS

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General Notes

1. Existing topographic information was obtained from the Westford GIS Department.
2. Existing boundary information was taken from the plan referenced below.
3. The subject property is located in the Business (B) Zoning District.
   - Min. Area: 40,000 s.f.
   - Min. Frontage: 200 ft.
   - Front Yard: 35 ft.
   - Side Yard; 15 ft.
   - Rear Yard: 30 ft.

PLAN REFERENCES
M.N.R.D. BOOK 142, PLAN 120

DEED REFERENCE
M.N.R.D. BOOK 27921, PAGE 4

RECORD OWNER
STONY BROOKSIDE LLC
487 GROTON ROAD
WESTFORD, MA 01886

ASSESSORS REFERENCES
MAP 070 PARCEL 0116 0000

0 30' 60' 90'
SCALE IN FEET

COMMONWEALTH OF MASSACHUSETTS
MARK A SLEGER
No. 34407
REGISTERED PROFESSIONAL ENGINEER
9/30/2014

BY	REVISIONS	DATE
MAS	TOWN ENGINEER COMMENTS	9/30/201
TAO	TOWN & DEP COMMENTS	9/2/2014
MAS	ELIMINATE 1 UNIT	7/1/2014

EXISTING CONDITIONS PLAN
BROOKSIDE VILLAGE
8 BROOKSIDE ROAD
WESTFORD, MA

ALAN
ENGINEERING, L.L.C.
288 LITTLETON ROAD, SUITE 31
WESTFORD, MA 01886
(978) 577-6444
alan.eng@verizon.net

PREPARED FOR:
STONY BROOKSIDE, L.L.C.
487 GROTON ROAD
WESTFORD, MA 01886

JOB NO: 1094	DWG NO: 1384
JUNE 20, 2014	2 of 9
SCALE: 1" = 30'	

STREET TREES PLANTING LEGEND

SYMBOL	PLANT SPECIES
	AMERICAN RED BUD
	BRADFORD PEAR
	RED MAPLE

NOTE: PLANT QUANTITIES AND LOCATIONS MAY BE MODIFIED IN THE FIELD BASED ON SITE CONDITIONS.

STONY BROOK

N/F TOWN OF WESTFORD

STONY BROOK

STONY BROOK

100 YEAR FLOOD (ELEV. 154 NAVD 1988)

IMPERVIOUS BUILDING (TYPICAL)

IMPERVIOUS PAVEMENT (TYPICAL)

N/F NABNASSET MILL PARTNERS, L.L.C. (LOT B)

EASEMENT TO BENEFIT LOT A 4,580 S.F.

STABILIZED GRASS ACCESS ROAD (REMOVE EXISTING PAVEMENT)

EXISTING BITUMINOUS DRIVEWAY

EASEMENT TO BENEFIT LOT B 12,259 S.F.

PROPOSED BITUMINOUS DRIVEWAY

PROPOSED LIGHT POST (TYP)

PROPOSED POST & RAIL FENCE

PROPOSED FILTER BERM

PROPOSED VEGETATED SWALE

PROPOSED RIPRAP CHECK DAM

PROPOSED RIPRAP SLOPE

PAVED LIP

EDGE OF WETLAND

PROPOSED TREE (TYP)

PROPOSED PRESBY ENVIRO-SEPTIC LEACH AREA

PROPOSED POST & RAIL FENCE

PROPOSED 6' TALL VINYL FENCE

PROPOSED INTERMITTANT STREAM

PROPOSED EDGE OF WETLAND

EXISTING FLAGGED WETLAND

BROOKSIDE ROAD

N/F DELVECCHIO, JOHN M.

N/F CARTER, ROGER H.

N/F GROCHMAL, DORIS

N/F OLIVER, LAURIE J.

N/F CHAUHAN, RAKESH S.

N/F FLETCHER, H.E.

N/F CAMMELLERI, VINCE

TRUST

N71°59'09"E 374.74'

N71°56'49"E 295.32'

S71°20'36"W 316.4'

S71°20'36"W 207.00'

N69°16'06"E 209.99'

N86°39'18"E 111.30'

S80°38'16"W 267.55'

S86°30'16"W 80.00'

N03°46'09"W 200.00'

PROPOSED CONDITIONS

	EXISTING CONDITIONS	PROPOSED CONDITIONS
LAND USE	WAREHOUSE	RESIDENTIAL
BUILDING AREA	36,370 SF	18,460 SF
PAVEMENT AREA	52,160 SF	26,100 SF
TOTAL IMPERVIOUS AREA	88,530 SF	44,560 SF
% IMPERVIOUS (TOTAL SITE)	62%	31%
% GREEN SPACE (TOTAL SITE)	38%	69%

PROJECT RESULTS IN A NET DECREASE OF MORE THAN ONE ACRE OF IMPERVIOUS AREA

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General Notes

1. Existing topographic information was obtained from the Westford GIS Department.
2. Existing boundary information was taken from the plan referenced below.
3. The subject property is located in the Business (B) Zoning District.
   - Min. Area: 40,000 s.f.
   - Min. Frontage: 200 ft.
   - Front Yard: 35 ft.
   - Side Yard; 15 ft.
   - Rear Yard: 30 ft.
4. The homes in this development will be served by Town Water and a common subsurface sewage disposal system.
5. This site was granted a variance from the Westford Zoning Board of Appeals to allow the construction of a multi-family development in a Business zone, and to allow for more than one principal residence on a single lot.

PLAN REFERENCES
M.N.R.D. BOOK 142, PLAN 120

DEED REFERENCE
M.N.R.D. BOOK 27921, PAGE 4

RECORD OWNER
STONY BROOKSIDE LLC
487 GROTON ROAD
WESTFORD, MA 01886

ASSESSORS REFERENCES
MAP 070 PARCEL 0116 0000

0 30' 60' 90'
SCALE IN FEET

COMMONWEALTH OF MASSACHUSETTS
MARK A. SLEGER
No. 34407
REGISTERED PROFESSIONAL ENGINEER
9/30/2014

BY	REVISIONS	DATE
MAS	TOWN ENGINEER COMMENTS	9/30/2014
TAO	TOWN & DEP COMMENTS	9/2/2014
MAS	ELIMINATE 1 UNIT	7/1/2014

SITE LAYOUT PLAN
BROOKSIDE VILLAGE
8 BROOKSIDE ROAD
WESTFORD, MA

ALAN ENGINEERING, L.L.C.
288 LITTLETON ROAD, SUITE 31
WESTFORD, MA 01886
(978) 577-6444
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PREPARED FOR:
STONY BROOKSIDE, L.L.C.
487 GROTON ROAD
WESTFORD, MA 01886

JOB NO: 1094 | DWG NO: 1384
JUNE 20, 2014
SCALE: 1" = 30'

TOWN OF WESTWOOD
COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

TODD KORCHIN, *DPW DIRECTOR* JEFFREY BINA, P.E., *TOWN ENGINEER*

BRENDAN RYAN, *STREETS & GROUNDS SUPERINTENDENT*

February 24, 2015

Newton Tedder,
US EPA—Region 1,
5 Post Office Square—Suite 100, Mail Code—OEP06-4,
Boston, MA 02109-3912

Re: Town of Westwood comments on the Draft NPDES MS4 permit

Dear Mr. Tedder:

The Town of Westwood, Department of Public Works, has reviewed the EPA's Draft NPDES MS4 permit for stormwater discharges in our Town. The Town overall is supportive of your efforts to improve the quality of stormwater discharge to our wetlands and rivers and has been working to maintain and improve our stormwater infrastructure. However, we have some serious concerns on the implementation of the new permit and submit to you the following comments for your consideration in developing the final permit.

GENERAL COMMENTS

NOI Form: The amount of detailed information required to complete the new electronic NOI Form is extensive and includes information that, in the previous permit cycle, was provided in the Stormwater Management Plan (SWMP). Having a detailed understanding of all the proposed BMPs that will be used to meet the six minimum measures, as well as those to be used to meet the water quality based effluent limitations, within 90 days is impractical. The NOI submittal should be scaled back to provide only basic information relative to storm sewer system and leave the more detailed descriptions of the proposed BMPs to meet the six minimum measures and water quality based requirements for the SWMP, which permittees have up to a year to complete.

Timeline: First Year Requirements: The number of major activities and related Plans that needed to be completed in the first year of the Permit is impractical. Our review of the permit indicates that there are over ten major plans or action items need to be completed in the first year after issuance of the final permit, or sooner:

NOI preparation
SWMP preparation
Inventory of municipally-owned parks, buildings, facilities and equipment
O&M plans for municipal facilities
Inventory of the Town's infrastructure requiring rehab and/or repair
Sanitary Sewer Overflow (SSO) inventory
Outfall/Interconnection Inventory (including condition assessment)
Phosphorus Control Plan (PCP)
Updated IDDE Plan
SWPPP(s) for relevant municipal facilities
Updated written protocols for erosion control inspections and infrastructure maintenance

Comment: We suggest that the time frame to complete these activities, especially the O&M Plans, outfall/interconnection inventory and condition assessment, PCP and SWPPP preparation be extended to at least two years from the effective date.

Pollutant Load Calculations - Appendix F and Appendix H: There is a significant amount of work to complete the calculations, tracking and accounting to address impaired waters. It will be difficult for many municipalities to prepare all this information and complete the data management relative to pollutant load reductions and credits without a consultant or full time staff member. **Comment:** EPA should provide significant support to municipalities if they are to prepare this information on their own. Training sessions and outreach assistance is recommended.

SECTION SPECIFIC COMMENTS

Section 1.9.1 - Documentation Regarding Endangered Species: Before submitting an NOI for coverage, applicants must determine whether they meet the ESA eligibility criteria for following the steps in Appendix C of the permit. **Comment:** Is EPA confident that Fish and Wildlife will have the resources to respond in a timely manner to the many communities that will need this review as part of developing their NOI? Is it reasonable to think that communities can meet this requirement within the 90 day NOI time period?

Section 1.9.2 - Documentation Regarding Historic Properties: It is unclear what documentation will be needed to demonstrate no impact to historic properties. The screening procedure outlined in Appendix

D suggests that any subsurface excavation activity related to the stormwater program, which is highly likely as part of any future repair, upgrade or replacement of stormwater infrastructure, will require consultation with SHPO to certify that there will no impact to historic properties and the documentation of this consultation/certification must be included in the NOI and the SWMP in order to be eligible for permit coverage. **Comment:** The SHPO certification requirement regarding subsurface excavation activity imposes two major problems: 1) the extent of possible future repairs and related excavation activity will not be fully understood at the time of NOI submittal, and; 2) to obtain SHPO certification for each potential excavation activity will result in extensive added coordination time, costs and project delays if field investigations are required to obtain this certification. Also, is EPA confident that SHPO will have the resources to respond in a timely manner to the many communities that will need this review as part of developing their NOI?

Section 2.1.2.b Prohibition for Increased Discharges to Impaired Waters: This section states that there shall be no net increase in discharges from the MS4 to impaired waters listed in Categories 5 or 4B on the most recent Massachusetts Report of Integrated waters unless the permittee demonstrates there is no net increase in loading for the specific impairment and provides documentation in the SWMP. This requirement is also inconsistent with the language in Appendix F Sections IV and V which states that stormwater management for new and redevelopment shall be required to optimize pollutant removal for the pollutant of concern but not necessarily prohibit any additional increase. **Comment:** In the absence of a TMDL, we feel that there is not sufficient basis for requiring no net increases and places an unnecessary burden on the MS4.

Section 2.2.1 – Discharges to Impaired Water Bodies with an Approved TMDL: Tables F-1 and F-2 of Appendix F indicate that various Towns would have phosphorus reductions targets as high as 50% or more. **Comment:** Given that the reported phosphorus removal efficiencies are generally in the range of 40 and 65 percent for structural stormwater BMPs and much lower for non-structural measures, this would essentially mean that nearly all or a large majority of existing IC area would need to be treated with structural BMPs. This is not only impractical given the wide range of site constraints that will be encountered in implementing stormwater retrofit BMPs but would also be quite costly. We suggest that EPA provide guidance for municipalities to realistically meet the targets including increased credits for non-structural measures if they are considered truly worthy actions.

Section 2.3 - Requirements to Reduce Pollutants to the Maximum Extent Practicable (MEP):
Comment: Completing the multitude of requirements included in this section in a 5-year permit cycle is not realistic. We suggest that the number of requirements be reduced substantially and be spread over two permit cycles or allow up to 10 years to complete the requirements of this section.

Section 2.3.4.7.iii – Priority Ranking: This section states that the initial illicit discharge potential assessment and priority ranking based on existing information shall be complete within one year from the effective date of the permit. **Comment:** Since the drainage mapping will not be complete until two years after the permit effective date and since much of the ranking is based on this information, we

suggest that a two and a half or three year time frame be required instead to align with the mapping schedule instead of asking the town to develop the ranking once based on current information and then updating it based on the more detailed information one year later.

Section 2.3.4.7.d.iv – Written illicit Discharge Detection and Elimination Program: This section states that "The permit does not require a minimum rainfall event prior to wet weather screening. However, the purpose of wet weather screening and sampling under the IDDE program is to identify illicit discharges that may activate or become evident during wet weather." **Comment:** Wet weather sampling is extremely costly and difficult to implement, especially when limited to 4 months of the year as specified. Unless there is clear evidence that there is a wet weather contamination threat, wet weather sampling should not be mandated. Bacteria levels in stormwater are highly variable and individual samples could easily show a spike which could falsely indicate an illicit connection. This could be extremely costly to try to track down with no results. It is requested that EPA provide: data on past wet weather sampling results (Phase I permits) that would show the number of outfalls sampled during wet weather for which illicit connections were found that were not also found during the dry weather screening process, cost of the stormwater sampling for all the outfalls sampled, percentage illicit connections that had wet weather contamination, not stormwater contamination found that was not indicated during dry weather sampling, and Source of the contaminants found (i.e. one time dumping verses continuous illicit connection).

Section 2.3.4.7.e.ii – Catchment Investigation Procedure: This section describes the manhole inspection methodology. **Comment:** We feel that it excessive amount of work to investigate every junction manhole if there is no dry weather flow or indication of any illicit discharges. Investigating upstream of outfalls requires work in the middle of roads, sidewalks, private property and will require police details and substantial field work and disruption. Time and money may be better spent on training municipal staff and contractors during their regular field work and maintenance, as well as the focused educational materials regarding what is an illicit connection for the residents/businesses/property owners. We request EPA provide data showing that investigating upstream drainage systems when there is no evidence of illicit connections at the outfalls results in the identification of illicit connections worthy of the associated cost.

Section 2.3.4.7.g– Follow-up Screening: This section requires follow up screening (dry weather with additional wet weather where performed previously) once every five years after the initial review. **Comment:** We request EPA provide evidence that spending this on-going expense will have a significant water quality impact.

Section 2.3.6(d) – Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management: This section states "All BMPs installed as part of the site's stormwater management system shall be constructed in accordance with the Massachusetts Stormwater Handbook Volume 2, Chapter 2." **Comment:** The Massachusetts Stormwater Handbook is outdated for many of the changing BMP design features. Some BMPs such as permeable pavements are not even included in the Handbook. Other states are developing more updated design handbooks in response to TMDLs and stormwater requirements such as Rhode Island and the Chesapeake Bay area states. In addition, limiting designers to meeting the Stormwater Handbook will discourage designers to

install BMPs that do not meet the standards but still provide treatment (as indicated by the pollutant treatment curves). The wording should be changed to reference the MA Stormwater Handbook as well as EPA and other state manuals with recent updates that provide good BMP design guidelines.

Section 2.3.6.d.: This section requires permittee to track impervious area and disconnected impervious area each year. **Comment:** Requiring a municipality to have an accurate database of the impervious cover broken down by what is directly connected or disconnected is an onerous requirement without an explanation of the use or benefit of such detailed data. Statewide and/or regional impervious cover datalayers provide a much more cost effective estimate of impervious cover for the purpose planning, understanding trends, and identifying hot spots.

Section 2.3.7.a/b – Operations and Maintenance Programs and Stormwater Pollution Prevention Plan (SWPPP): This section requires written O&M procedures for the municipal facilities that have specific activities listed within the first year and SWPPPs within the first two years. **Comment:** This requirement includes collecting, organizing and updating information on each facility and will be difficult to effectively complete within one/two years, in addition to the other first years tasks. We suggest extending the time for completion of these documents to three years.

Appendix H, Attachment 1 – Street Sweeping and Catch Basin Cleaing Credits: The credits included in the permit are based on information from Center for Watershed Protection Street Sweeping program in the Chesapeake Basin, dated 2008. **Comment:** The credits provided for street sweeping are extremely low and there is not mention in the permit of the extensive benefits of street sweeping for removing extensive amounts of debris and sediment in addition to actual pollutant loads. The credits do not provide incentive to utilize this source control method that not only removes contaminants and trash, it also contribute to the long term longevity of the BMPs that are listed as most valuable for phosphorus removal; infiltration BMPS. We recommend that this be researched further including the region specific USGS street sweeping study completed recently in Cambridge Massachusetts to determine the appropriate credits. If, in fact, the water quality benefit is shown to have such an insignificant impact then these costly practices should not be required.

Appendix F Section 2 Reporting: The equation used to calculate yearly phosphorus loads requires the permittee to estimate the amount of development that has occurred since 2005. **Comment:** This is an unreasonable estimate expected for a Town to perform. We suggest that TMDL standards to apply to today's level of development or that EPA update Tables F1 and F2 to reflect conditions at the date of the finalize permit.

Appendix F, Attachment 1 and 2: The loading rate table 2-1 indicates in a footnote to assume Hydrologic Soil Group (HSG) D soils if soils are unknown to estimate pervious loading rates. Attachment 1 text on page 1 says to assume HSG C/D. **Comment:** Please clarify. We suggest to assume C soils or use the surrounding soil types as an indicator. HSG D and C/D are too conservative for our region. Suggest only including this table in one location to avoid confusion.

Appendix F Attachment 3 Semi-Structural/Non-structural BMP Performance Credits: The section states that the cumulative runoff reduction is being used to estimate cumulative phosphorus load

reduction credit for the semi-structural/non-structural BMPs which have an infiltration benefit by disconnecting IA and providing soil amendments to increase permeability. **Comment**: The infiltration BMP curves show that phosphorus reductions are greater than runoff volume reductions. Therefore, it is conservative to use runoff volume as a direct surrogate when in fact phosphorus reductions are likely higher. We suggest an additional phosphorus treatment factor in addition to solely the runoff reduction.

Appendix F Attachment 3 Table 3-18: The porous pavement BMP performance table gives credits based on the depth of filter course. **Comment:** We would expect that the credit would be dependent on the relative watershed size to filter course depth. Please clarify.

Appendix F Attachment 3 Table 3-21: Table 3-21 references a "Grass Swale" when BMP is called a "Water Quality Wet Swale" in the main text. **Comment**: The different naming and design descriptions are confusing. Is the BMP meant to be wet or dry swale? Are there results if the swale is not underdrained? This BMP gets very poor performance. A slightly modified swale designs could get much better results and should be included and encouraged.

We realize a tremendous amount of effort has been put in to drafting this new permit and would appreciate the EPA review of our comments for potential incorporation into the final permit. Thank you for the opportunity to submit comments.

Sincerely,

Todd Korchin
DPW Director

Town of Weymouth
Department of Public Works

Kenan Connell
Director of Public Works

120 Winter Street
Weymouth, MA 02188

781-337-5100
FAX 781-337-6940

Susan M. Kay
Mayor

75 Middle Street
Weymouth, MA 02189

781-335-2000
FAX 781-335-3283

December 23, 2014

Mr. Newton Tedder
US EPA
5 Post Office Square – Suite 100
Boston, MA 02109-3912

RE: Weymouth, Massachusetts
Comments on the Draft Small MS4 General Permit

Dear Mr. Tedder:

Thank you for providing the Town of Weymouth with the opportunity to comment on the Draft Small MS4 General Permit. The Town shares the EPA's committent to the protection of our natural resources and appreciates the effort that has been expended by the EPA's staff for this purpose.

The Town of Weymouth has reviewed the Draft Permit and offers the following comments.

General Comments

- It is the Town's firm belief that the proposed regulations contained within the draft MS4 permit will be overly burdensome to this community. The costs to administer and implement the minimum controls measures required to comply will far exceed the Town's current budget. The permit, as drafted, would create a significant administrative burden for the Town that would detract from its ability to provide direct benefits to water quality through such activities as increased street sweeping, increased catch basin cleaning, and improvements to our drainage system. Essential programs will need to be reduced or eliminated in order to comply.

- The permit, as drafted, will require MS4 communities to be responsible for controlling, regulating and maintaining discharges from private and state owned properties that are not within its direct control. The Town does not have the authority to enter private property without an obvious violation on a property. The permit should be modified to not hold MS4s liable for third party stormwater contributions.

- The Town of Weymouth is concerned that the draft permit has not taken into account the water quality improvements and effectiveness of the efforts already implemented by municipalities under the 2003 permit.

- Taking into consideration the extensive list of deadlines specified in the permit, a chronological list of all the permit's requirements and associated deadlines would be extremely useful to MS4s when developing implementation schedules.

Part 1.4 Non-Stormwater Discharges

We question why basement sump pump discharges are not included in the list of non-stormwater discharges allowed under the permit. Water from crawl space pumps is included in the list, but is a rare occurrence in most municipalities. We recommend adding basement sump pump discharges to the list under this section of the permit.

Part 1.7.2 Notice of Intent

The Notice of Intent (NOI) will require a significant effort to develop and outline a program in compliance with the permit, as drafted. The development of the Stormwater Management Plan (SWMP) is directly affected by the commitments outlined in the NOI therefore it may be more efficient to develop the NOI at the same time as the SWMP. We recommend the deadline for submitting the NOI be extended to one (1) year from the effective date of the permit to allow the development of the NOI and SWMP to coincide.

Part 1.9.1 Documentation Regarding Endangered Species

The Town of Weymouth objects to Part 1.9.1 and Appendix C that requires permittees to determine eligibility under the Endangered Species Act (ESA). Per 50 C.F.R. § 402.08, "the ultimate responsibility for compliance with Section 7 remains with the Federal agency." It is the EPA's responsibility to ensure that General Permit complies with ESA requirements and the EPA should undertake that responsibility prior to issuing the final permit. Part 1.9.1 should be deleted from the Permit.

Part 2.1.1 Requirement to Meet Water Quality Standards

This section of the permit requires that all discharges from the MS4 causing an exceedance of water quality standards shall be eliminated within 60 days of becoming aware of the condition contributing to the violation. Depending upon the source of the exceedence and time of year when the exceedence is identified, the 60 day timeframe required to identify and eliminate a source of a violation could be unrealistic and unachievable, A source that is identified as being private will only add to the complexities (legal) of the Town's ability to remedy a potential issue. We suggest the permit should not specify a timeframe, but require any violations to be identified in the annual report along with a summary of the steps the municipality has taken or will take to eliminate the violation.

Part 2.1.2.b Increased Discharges

This section of the permit states that "there shall be no increased discharges from the MS4 to impaired waters" unless it can be demonstrated "that there is no net increase in loading." No best management practice (BMP) is 100% efficient, therefore new or additional stormwater flow to impaired waters will be in non-compliance. This section of the draft permit is overly restrictive and would severely limit the Town's ability to approve new development projects. We suggest the EPA require compliance under Part 2.1.2.b to the maximum extent practicable.

Part 2.3.3 Public Education and Outreach

Weymouth questions the need to include developers in education and outreach efforts. Site development plans prepared by professional engineers and filed by developers are reviewed by the Town to ensure compliance with federal, state and local regulations. It is the Town's opinion that it is unnecessary to include developers in an education and outreach program.

Part 2.3.4.2.b Elimination of Illicit Discharges

This section of the permit states "discharges from an MS4 that are mixed with an illicit discharge are not authorized by the permit (Part 1.3.a) and remain unlawful until eliminated." As long as an effective IDDE program is in place and any illicit discharges have been identified, along with reasonable schedules for removal, the presence of such discharges should not constitute an ongoing violation of the permit. We suggest it would be more appropriate to consider illicit discharges unlawful unless the MS4 has demonstrated a reasonable effort to develop a schedule to identify and remove the source.

Part 2.3.4.4 Sanitary Sewer Overflows

Under separate regulations, municipalities are required to notify the MassDEP, EPA and other regulatory agencies of all SSO discharges. Therefore reporting and tracking SSOs under the MS4 Permit is unnecessary and redundant. It is our opinion that SSOs should not be regulated under this permit.

Part 2.3.4.7 Written Illicit Discharge Detection and Elimination Program

The permit states "the written IDDE program shall be completed within one (1) year of the effective date of the permit." The preparation of an effective IDDE program is dependent upon the completion of system mapping, which is two (2) years as specified under Section 2.3.4.6. We recommend the deadline for completing the IDDE program follow the deadline for completing system mapping. A deadline of three (3) years for completion of the IDDE program is suggested.

Part 2.3.4.7.g Follow-up Screening

The Town questions the requirement for a follow-up screening within 5 years. Under 2.3.4.7.g a confirmatory outfall or interconnection screening shall be conducted within one (1) year of removal of all identified illicit discharges, with a follow-up screening within five (5) years as required under Part 2.3.4.7.g. If the results of a confirmatory screening are satisfactory, a follow-up screening within 5 years is unnecessary. We request the permit be modified to include a waiver of Part 2.3.4.7.g when the results of confirmatory screening determines the identified illicit discharge has been successfully removed.

Part 2.3.7.a Operations and Maintenance Program

Please consider revising Part 2.3.7.a to allow municipalities the ability to develop Operations and Maintenance (O&M) Programs with a focus on permittee owned facilities (specified under Part 2.3.7.a.i – 2.3.7.a.iii) located within catchment areas draining to impaired water bodies. Also, taking into consideration the implementation timeframes proposed under the draft permit, we request the timeframe for developing O&M programs be extended to two (2) years for facilities located within catchment areas draining to impaired water bodies and five (5) years for all other permittee owned facilities.

Part 2.3.7.a.iii Infrastructure Operations and Maintenance

The Town of Weymouth DPW is responsible for maintaining approximately 4,500 catch basins. The requirement to describe actions taken for every catch basin found to be more than 50% full during two consecutive cleanings/inspections, in addition to recording/reporting the volume of material removed from each catch basin, is an unnecessary burden on the DPW. The Weymouth DPW already keeps a log of catch basins cleaned, and summarizes the total number of catch basins cleaned and total volume of material removed in the annual reports. The reporting requirements, as written in the draft permit, will impose unnecessary and burdensome tasks on municipalities that will result in slowing down work and increasing costs. We recommend the reporting requirements for catch basins under Part 2.3.7 be limited to the total number of catch basins cleaned and total volume removed.

Additionally, the requirement to sweep uncurbed streets is not practical. Sweeping streets that do not have curbing is inefficient since sand and debris are washed to the shoulder. The requirement to sweep uncurbed streets should be removed from the permit.

Part 4.3.b Outfall Monitoring Reporting

This section states "The permittee shall document all monitoring results each year in the annual report.....The annual report shall include all of this information and data for the current reporting period and for the entire permit period." The meaning of "all monitoring results" needs to be clarified. Does the EPA want copies of the lab reports included in the annual report? We recommend this section be revised to require the annual report include a tabulated summary of the monitoring results.

Summary

The Town of Weymouth wishes to support and enhance clean water and to mitigate wherever possible those areas where stormwater impacts it. However, we are concerned that without acknowledgement of available funding the permit will pose an unreasonable hardship on municipalities. The cost of compliance will likely require municipalities to divert limited resources away from activities that will directly benefit water quality.

The Town of Weymouth appreciates the opportunity to comment on the 2014 Draft Small MS4 General Permit and your consideration of the comments summarized above. We hope that these comments and the comments provided by other municipalities will result in a final permit which supports improvements to water quality while being mindful of scarce funding sources. We urge the EPA to consider modifications to the draft permit that will make it more sustainable and reasonable for municipalities.

If you should have any questions or wish to discuss our comments, please feel free to contact Town Engineer Andrew (Chip) Fontaine, P.E. by phone at 781-337-5100 x43718 or email at cfontaine@weymouth.ma.us.

Respectfully,

Susan M. Kay
Mayor

Kenan Connell
Director of Public Works

JJD/apf

cc: file

Town of Winchester

Richard C. Howard,
Town Manager

Board of Selectmen
71 Mt. Vernon Street
Winchester, MA 01890
Phone: 781-721-7133
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February 26, 2015

USEPA – Region 1
Attn.: Newton Tedder
5 Post Office Square – Suite 100
Mail Code: OEP06-4
Boston, Massachusetts 02109-3912

Re: Town of Winchester Comments on the Draft Massachusetts NPDES MS4 General Permit

Dear Mr. Tedder,

The Town of Winchester has reviewed the draft "General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts", recently issued for public comment by the Environmental Protection Agency (EPA). Based on our detailed review of the draft permit, we are providing comments on various portions of the permit, along with our recommendation as to how those items can be clarified or improved.

As a general comment, the Town would like to express its overriding concern for the scope of the requirements outlined in this draft permit, particularly those associated with the Illicit Discharge Detection and Elimination (IDDE) Program. These proposed requirements represent a substantial change from the first phase of the permit, which expired in 2008. They will have a significant negative impact on the Town's operating budget and will strain the Town's already limited resources. For example, for the upcoming FY16, the Town's Capital Planning Committee received approximately $9 million worth of project requests from various Town departments, including drainage improvements, road and sidewalk repairs, building maintenance, and other infrastructure-related projects. For the same fiscal year, the Town was able to fund only $1.6 million of these project needs. Over the next five years, our Capital Planning Committee estimates that there will be approximately $45 million worth of capital requests made, with only a small portion being able to be funded each year. This does not include other significant infrastructure projects that were already slated for proposed override votes, such as implementation of portions of the Town's Flood Mitigation Program.

While the Town supports EPA's goals of improving the quality of our stormwater and ultimately our receiving waterbodies, we request that the EPA reconsider the scope of these draft permit requirements and provide additional time for municipalities to budget, fund, and complete the proposed tasks.

Detailed comments on the specific permit requirements are provided below:

General Comments:

1. *Comment*: As noted above, the cost to comply with many of the permit requirements (e.g. the requirements for those MS4s that discharge to TMDLs and/or water quality limited waters, and the IDDE requirements) is significant. Additional funding assistance programs should be established and made available to MS4s. Without some financial backing as a sign of commitment, municipal officials may have difficulty convincing local voters and decision makers to fund the needed stormwater programs, which in Winchester will likely come at the cost of other critical infrastructure needs. We urge EPA to request that a dedicated funding source be made available to all municipalities covered by the NPDES MS4 permitting program to help with its implementation.

2. *Comment*: The permit has many requirements for written programs, policies, procedures, and reports that do not always appear to have water quality benefits. Significant financial and staff resources will be required to prepare and submit all of the required written documents. EPA does not have the staff to perform a timely review of the required documentation. With limited resources, the focus of permits should be on performance, not documentation.

   Recommendation: An efficiency and effectiveness review should be performed on the entire permit, preferably by an outside party who can assist the EPA in prioritizing those items where written documentation and annual reporting will provide a measurable benefit. The permit should be revised to reflect these improvements.

3. *Comment:* First Year Requirements & Timeline. The number of major activities and related plans that need to be completed in the first year of the Permit is impractical. Our review of the permit indicates that there are over ten major plans or action items that municipalities need to complete in the first year after issuance of the final permit, or sooner.

   Recommendation: We suggest that the timeframe to complete these activities, especially the O&M Plans, and outfall/ interconnection inventory and condition assessment, be extended to at least two years from the effective date.

4. *Comment:* A substantial number of the permit requirements are complex and difficult to fully digest even from a thorough reading the draft permit and its appendices. In order to minimize the cost of compliance, many municipalities may try to implement as many of the permit tasks as possible without the assistance of consultants or other outside parties.

   Recommendation: We recommend that EPA provide targeted training sessions and outreach assistance to municipalities on each of the respective minimum control measures to ensure a thorough understanding of the permit and reporting requirements. Templates and other standardized forms and/or documents that can be utilized by all municipalities should be provided to minimize costs to Town and ease EPA's review time.

Section Specific Comments:

5. *Comment:* Section 1.7.2 (and Appendix E). Page 4. The amount of detailed information required to complete the NOI Form is extensive and includes information that, in the previous permit cycle, was provided in the Stormwater Management Plan (SWMP). Having a detailed understanding of all the proposed Best Management Practices (BMPs) that will be used to meet the six minimum measures, as well as those to be used to meet the water quality based effluent limitations, within 90 days is impractical.

Recommendation: The NOI submittal should be scaled back to provide only basic information, leaving the more detailed descriptions of the proposed BMPs and water quality based requirements for the SWMP, which permitees have up to a year to complete.

6. *Comment*: Section 1.7.4. Page 5. This latest draft permit still does not define the responsibility for addressing and responding to public comments received in response to the Notice of Intent. The permit needs to state whether the MS4 or the EPA will be responsible for this task.

7. *Comment*: Section 2.3.4.4. Page 26. Sanitary sewer overflows (SSOs) are already prohibited and regulated at both the Federal and State level under existing mechanisms governing wastewater facilities. Including SSOs in the MS4 permit results in the Permitee being regulated by multiple permits for the same issue. This will cause confusion, expenditure of unnecessary resources, and potentially conflicting requirements for compliance.

   Recommendation: The MS4 permit should only contain discussion related to SSOs potentially contributing to illicit discharges and that they should be investigated, eliminated, and documented under the IDDE Program.

8. *Comment*: Section 1.9.2. Page 6& 7. It is unclear what documentation will be needed to demonstrate no impact to historic properties. The screening procedure outlined in Appendix D suggests that any subsurface excavation activity related to the stormwater program, which is highly likely as part of any future repair, upgrade or replacement of stormwater infrastructure, will require consultation with State Historic Properties Office (SHPO) to certify that there will no impact to historic properties and the documentation of this consultation/ certification must be included in the NOI and the SWMP in order to be eligible for permit coverage.

   Recommendation: The SHPO certification requirement regarding subsurface excavation activity imposes two major problems: (1) the extent of possible future repairs and related excavation activity will not be fully understood at the time of NOI submittal, and (2) to obtain SHPO certification for each potential excavation activity will result in extensive added coordination time, costs and project delays if field investigations are required to obtain this certification.

9. *Comment*: Section 2.1.2.b. Page 10 & 11. This section states that there shall be no net increase in discharges from the MS4 to impaired waters listed in Categories 5 or 4B on the most recent Massachusetts Report of Integrated Waters unless the permitee demonstrates there is no net increase in loading for the specific impairment and provides documentation in the SWMP. This requirement is inconsistent with the language in Appendix F Sections IV and V, which states that stormwater management for new and redevelopment shall be required to optimize pollutant removal for the pollutant of concern but not necessarily prohibit any additional increase.

   Recommendation: In the absence of a TMDL, we feel that there is not sufficient basis for requiring no net increases, as this requirement places an unnecessary burden on the MS4.

10. *Comment*: Section 2.3.4.5. Page 26. It is not clear whether outfall/interconnection inventories completed prior to the effective date of the new permit will count toward compliance.

    Recommendation: This section should be revised to indicate that prior inventories are acceptable as long as they meet the requirements of Section 2.3.4.5.

11. *Comment*: Section 2.3.4.7.c.i & 2.3.4.8.c.i. Pages 30 & 37. The definition of, and implementation milestones for 'Problem Catchments' significantly disadvantage MS4s

that have proactively undertaken outfall sampling in advance of it being required by this permit. Proactive MS4s with sampling data, especially those in urban areas, will have far more outfalls that must be designated as Problem Catchments, which are given a maximum of five years to complete IDDE. Conversely, MS4s that have made no effort to sample their outfalls will have no (or very few) Problem Catchments, and are given 5-10 years to complete IDDE. As written, the permit punishes proactive MS4s, particularly those in urban areas, by requiring far more stringent IDDE milestones than those for MS4s that have not performed sampling.

Recommendation: The definition and implementation milestones for 'Problem Catchments' need to be revised to remove this inequity.

12. *Comment*: Section 2.3.4.7.c.iii. Page 31. The initial illicit discharge potential assessment and priority ranking must be completed within one year from the effective date; however, mapping of the MS4 infrastructure and Catchment Delineations will not be completed until two years from the effective date of the permit. The current mapping requirement from the 2003 permit only included MS4 outfalls and, thus, is insufficient "existing" mapping with which to complete the required 2.3.4.7.c.iii assessment/ranking.

   Recommendation: The required catchment assessment and ranking in 2.3.4.7.c.iii needs to align with the mapping, having a completion date of two years from the effective date of the permit.

13. *Comment*: Section 2.3.4.7.d.iv. Page 32. This section states that "The permit does not require a minimum rainfall event prior to wet weather screening. However, the purpose of wet weather screening and sampling under the IDDE program is to identify illicit discharges that may activate or become evident during wet weather." Wet weather sampling is extremely costly and difficult to implement. Unless there is clear evidence that there is a wet weather contamination threat, wet weather sampling should not be mandated. Bacteria levels in stormwater are highly variable and individual samples could easily show a spike, which could falsely indicate an illicit connection. This could be extremely costly to try to track down with no results.

   Recommendation: It is requested that EPA provide: data on past wet weather sampling results that show the number of outfalls sampled during wet weather for which illicit connections were found that were not also found during the dry weather screening process; the cost of the stormwater sampling for all the outfalls sampled; the percentage of illicit connections that had wet weather contamination; non-stormwater contamination found that was not indicated during dry weather sampling; and source of the contaminants found (*i.e.* one time dumping verses continuous illicit connection). This data should be used to determine the cost effectiveness of the proposed wet-weather sampling program.

14. *Comment*: Section 2.3.4.7.d.iv. Page 32. If wet weather sampling is required, the limitation on when wet-weather screening should take place "(March to June)" does not make sense for IDDE. Although wet-weather screening may help identify illicit discharges that only occur during peak flows, whether it should be performed in conjunction with high or low groundwater is determined by the System Vulnerability Factors (SVFs) outlined on page 33 and 34. For example, if the SVFs indicate structural defects and exfiltration potential, high groundwater would actually inhibit the investigation. In this case sampling should be performed during a heavy rainfall event at low groundwater. Conversely, if the SVFs indicate capacity restrictions and SSO potential, then sampling during high groundwater would be appropriate.

   Recommendation: The permit should be revised to state that wet-weather sampling should be performed during conditions appropriate for the identified SVFs for each catchment area, and provide examples similar to those above to assist MS4s in making an informed decision about when to sample.

15. *Comment*: Section 2.3.4.7.d.iv. Page 32. If wet weather sampling is required, the requirements related to the wet-weather monitoring are not provided in sufficient detail. Inspection must be performed during wet weather, defined as sufficient intensity to produce a discharge. However, it is not clear whether a discharge must be observed at every outfall to achieve compliance. Does the Permitee have to return to an outfall repeatedly until a discharge is observed, even if it was monitored during a substantial rainfall event? To require the Permitee to mobilize staff, equipment, and laboratory services an unlimited number of times to observe flow at each outfall places an unreasonable burden on the Permitee.

    Recommendation: The permit should be revised to provide specific minimum storm parameters, for rainfall amount and antecedent conditions. The minimum storm event should be one sufficient to anticipate discharges at all functional outfalls. The requirement for discharges to be observed at every outfall should be eliminated.

16. *Comment*: Section 2.3.4.7.d.v. Page 32. Based on the response from Newton Tedder at the MS4 Information Session on 10/28/14, analysis for conductivity is being required as a measure of salinity. Requiring both salinity and conductivity testing for the same purpose is a waste of MS4 resources.

    Recommendation: The permit should be revised to require either salinity or conductivity, but not both. In addition, the permit needs to state the applicable benchmark and required action for the chosen parameter, as is provided for other sampling parameters in Section 2.3.4.7.d.vi.

17. *Comment*: Section 2.3.4.7.d.v & 2.3.4.7.vi. Pages 32 & 33. The level of accuracy for each required sampling parameter is not provided. For example, at what detection level is chlorine to be considered "detectable" in Section 2.3.4.7.vi.

    Recommendation: The permit must be revised to clarify the required level of accuracy for each sampling parameter.

18. *Comment*: Section 2.3.4.7.e. Page 34. The System Vulnerability Factor for "any sanitary sewer and storm drain infrastructure greater than 40 years old in medium and densely developed areas" is too inclusive. In New England, where most infrastructure is typically in excess of 40 years old, this SVF serves as a "catch all" to require wet-weather sampling in virtually all catchment areas. Infrastructure age, by itself, is not an indicator of illicit potential. For example, some of the oldest brick masonry sewers in New England are in better condition than those built 40 or more years later. It is other factors, such as poor structural condition or prior use as a combined sewer, that are the source of elevated illicit potential, not solely the age of the infrastructure.

    Recommendation: This SVF should be revised to include only those sewers and drains that are known to have specific concerns, not all sewers and drains older than an arbitrarily selected age.

19. *Comment*: Section 2.3.4.7.e. Page 33. The System Vulnerability Factor for "crossing of storm and sanitary sewer alignments" is too inclusive. On streets with both sanitary sewers and storm drains, the likelihood that a catch basin connection crosses a sanitary sewer or a sanitary sewer service connection crosses a storm drain is extremely high. This would mean that nearly all catchments would trigger this vulnerability factor and therefore require wet weather sampling.

    Recommendation: This SVF should be revised to include only those catchments that are known to have specific concerns, and not all catchments where storm and sanitary sewer alignments cross.

20. *Comment*: Section 2.3.4.7.e. Page 34. The System Vulnerability Factor for "any sanitary sewer infrastructure defects such as leaking service laterals, cracked broken or offset sanitary infrastructure...or other vulnerability factors identified through Infiltration/Inflow Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations." is too inclusive. Again, in New England, where infrastructure is typically in excess of 40 years old, most sewers have some defects, which again would mean that nearly all catchments would trigger this vulnerability factor and therefore require wet weather sampling. In most cases, individual sewer defects do not portend illicit connections.

    Recommendation: This SVF should be revised to include only those catchments that are known to have specific concerns related to the sewer system, and not all catchments with sewers that have minor cracks and offset joints.

21. *Comment*: Section 2.3.4.7.e.ii. Page 34. This section describes the manhole inspection methodology. We feel that it is an excessive amount of work to investigate every junction manhole if there is no dry weather flow or indication of any illicit discharges. Investigating upstream of outfalls requires work in the middle of roads, sidewalks, private property and will require police details and substantial field work and disruption.

    Recommendation: We request that EPA provide data showing that the investigation of upstream drainage systems when there is no evidence of illicit connections at the outfalls results is worthy of the associated cost.

22. *Comment*: Section 2.3.4.7.g. Page 36. This section requires follow up screening (dry weather with additional wet weather where performed previously) once every five years after the initial review.

    Recommendation: We request that EPA provide evidence showing that spending this on-going expense will have a significant water quality impact, particularly in drainage areas that are fully built-out with little to no new construction performed within that five-year period.

23. *Comment*: Section 2.3.4.7 f & g. Pages 35 & 36. The second paragraph of Section f contains the same requirements as Section g, except for the timeline.

    Recommendation: The permit should be revised to either delete one of the paragraphs, or clarify the intended difference between the two requirements.

24. *Comment*: Section 2.3.4.8.c. Page 36. The permit requires that the IDDE Catchment Investigation Procedure be implemented in "every catchment of the MS4, even where dry weather screening does not indicate evidence of illicit discharges." If there is no evidence of any sewer input at an outfall, IDDE field investigation is a waste of resources.

    Recommendation: This requirement should be changed to say that outfall screening or sampling, whichever is appropriate, should be repeated some number of times at varying times/conditions to confirm there is no sewer input. If no sewer input is confirmed during dry and wet weather screening or sampling, IDDE field investigation should not be required.

25. *Comment*: Section 2.3.4.8.c.i-iii. Pages 36 & 37. The milestones stated for the IDDE effort in 2.3.4.7 are unrealistic for urban MS4s. For some MS4s with ongoing IDDE programs, it has taken many years to locate and remove the illicit connections from even one catchment area, let alone 100% of catchment areas. This is especially burdensome in areas where nearly every outfall will exceed the benchmarks for at least one IDDE sampling parameter or System Vulnerability Factor. The current permit requires IDDE to be completed for the entire MS4 within ten years. This requirement is both cost-prohibitive and infeasible based on permit requirements.

Recommendation: The permit should be revised to allow MS4s additional time to locate illicit discharges. It is recommended that EPA extend the timeframe for completing the Catchment Investigation Procedure in 100% of the area served by all MS4 catchments from within ten (10) years of the permit effective date to within twenty (20) years of the permit effective date. The permit should also indicate that as long as the MS4 is making reasonable efforts to locate the source of the discharge the MS4 will be in compliance, even if the source is not located within the allotted timeframe.

26. *Comment*: Section 2.3.6.a.ii.a. Page 40. As written, the requirement to retain/treat the first one inch of rainfall applies to "runoff from all impervious surfaces on site." Without a definition for the term "site" (see comment below), this implies runoff from the entire parcel on which the one-acre-or-more disturbance occurs. It is not reasonable or cost-feasible to require a large parcel to treat runoff from "all impervious surfaces" on that parcel when they disturb only a small portion of it. Take, for example, a large university whose campus occupies hundreds or even thousands of acres. If they were to disturb one acre, the current permit would require them to retrofit the drainage system throughout the entire campus to retain/treat the first inch of runoff.

    Recommendation: Language in this section needs to be revised to limit the regulated area to all impervious areas within the development or redevelopment area, not the entire parcel. Alternatively (or additionally), the definition of "site" needs to define that it refers to the area within the limits of work for a development, redevelopment, or other construction project. Additionally, "redevelopment" needs to be clarified to exclude paving and reconstruction of roadways, as including regular road maintenance would result in an unreasonable burden on municipalities.

27. *Comment*: Section 2.3.6.a.ii. Page 40. This section sets different standards than those existing in the MassDEP's Stormwater Policy and associated handbooks. Having two sets of standards will cause conflict for MS4s and developers, and will likely subject communities to legal action. In addition, it may set up different standards for different permit granting authorities, for example from the Conservation Commission, who enforces the MA Stormwater Policy, and the Zoning Board of Appeal (ZBA) or Planning Board who may enforce these standards under the site plan review process. The current ordinances/bylaws of most MS4s adopted during the original permit round reference the MA Stormwater Standards.

    Recommendation: If the EPA wants more stringent standards, this should be done by working with the MassDEP to affect changes to existing State regulations instead of enacting a second, different, conflicting set of requirements through the MS4 permit. The regulations of MassDEP and EPA must be coincident or it will be an absolute nightmare for municipalities charged with enforcing these regulations.

28. *Comment*: Section 2.3.6.b&c. Page 41. Both of these sections require review of local bylaws. It is not cost-effective to perform two separate reviews and prepare two separate "assessments" related to the reduction of impervious area.

    Recommendation: Sections b and c should be combined into one assessment report, covering both of the desired reviews.

29. *Comment*: Section 2.3.6.d. Page 40. This section states that "All BMPs installed as part of the site's stormwater management system shall be constructed in accordance with the Massachusetts Stormwater Handbook Volume 2, Chapter 2." The Massachusetts Stormwater Handbook does not include many of the emergent and changing BMP design features. Some commonly used BMPs, such as permeable pavements, are not even included in the Handbook. Other states are currently developing updated design handbooks in response to TMDLs and other stormwater requirements, including Rhode Island and the Chesapeake Bay area states.

Recommendation: We recommend that the wording be changed to reference the MA Stormwater Handbook, as well as EPA, and other state manuals with recent updates that provide acceptable BMP design guidelines.

30. *Comment*: Section 4.3. Page 51. Now that outfall monitoring has been incorporated into Section 2.3.4.7, there is no need for a separate Section 4.3.

    Recommendation: Requirements stated in Section 4.3 should be incorporated into Sections 2.3.4.7 or 4.4, as appropriate.

31. *Comment*: All Appendices. The appendices do not contain proper page numbering.

    Recommendation: Page numbers should include a reference to the Appendix (e.g., "A-21") so as to avoid duplication with the main permit document.

32. *Comment*: Appendix A. No definition is provided for the following critical terms: Directly Connected Impervious Area, Disturbance, Illicit Discharge, Increased Discharger, Redevelopment, or Site. Interpretation of these terms could be a significant source of controversy for MS4s, especially for municipal boards and committees charged with implementation of the requirements for new development and redevelopment.

    Recommendation: Definitions of these terms should be added to Appendix A.

33. *Comment*: App. H.II. The Town of Winchester has two (2) impaired water bodies that list phosphorus as the cause of impairment (Aberjona River and Wedge Pond). The Town of Winchester also has two (2) impaired water bodies (Upper Mystic Lake and Winter Pond) where dissolved oxygen saturation/dissolved oxygen and nutrient/eutrophication biological indicators, respectively, are listed as the cause of impairment. In Appendix G, the permit indicates that at least one of the monitoring parameters for each of these pollutants (dissolved oxygen saturation/dissolved oxygen and nutrient/eutrophication biological indicators) is total phosphorus. In the permit, it is unclear as to whether all four of these water bodies are potentially impaired for phosphorus, and therefore subject to the requirements of Appendix H.II, or if only the Aberjona River and Wedge Pond are subject to these requirements.

    Recommendation: The permit should be modified to clarify whether it is exclusively the pollutant causing the impairment that triggers the requirements for water quality limited water bodies outlined in Appendix H or whether the monitoring parameter is also a factor. It is recommended that the permit clearly identify in Appendix H.II, all water quality limited water bodies and their tributaries where phosphorus is the cause of the impairment.

34. *Comment*: App. H.II.1.c. For discharges to water quality limited water bodies where phosphorus is the cause of the impairment, the permit requires that the permitee plan and install a minimum of one structural BMP as a demonstration project within the drainage area of the water quality limited water body within six years of the permit effective date. For MS4s that have multiple water bodies that are impaired for phosphorus located in close proximity to one another, completion of two demonstration projects is an unnecessary duplication of effort.

    Recommendation: It is recommended that the permit be modified to indicate that communities with more than one (1) water body impaired for phosphorus require only one demonstration project within six years of the permit effective date.

35. *Comment*: App. H I.2, II.2, III.4, IV.5, V.5. To require the collection of at least 30 flow-weighted samples over a period of 2-3 years from each stormwater outfall discharging (or tributary to) an impaired water in order to demonstrate that the discharges meet water quality standards is excessive and cost-prohibitive.

Recommendation: All of these sections of the permit should be revised to require sampling of outfalls during not more than ten rainfall events. The EPA should provide a list of rainfall events during which outfall sampling must be performed.

36. *Comment*: Appendix I. Multiple Sections. Appendix I should not be included in the permit document, but should be provided as a reference/example document. The protocol presented is not required by the permit and is only one of *many* methods that could be used by MS4s to comply with IDDE requirements. Because this protocol is specific to a single method, some of the information it includes is incorrect. For example, holding times presented in Appendix I, Attachment 1, Table 1 are listed incorrectly due to an assumption that analyses are being performed onsite (see Specific Conductance, which actually has a holding time of 28 days, not "Immediate").

    Information presented in Appendix A, Table 1 and Step V, are also not appropriate for inclusion in a NPDES permit. The parameters and thresholds presented in Table 1 are already included as Section 2.3.4.7.d.vi. The information regarding instrumentation is reference material and should not be included in a permit. Step V should be removed in its entirety, because it does not belong in a permit. It should be in a Fact Sheet or reference/example document.

    Recommendation: The permit should be revised to delete Appendix I in its entirety. EPA should provide an online source to the IDDE protocol in Section 2.3.4.7.

The Town of Winchester thanks you for the opportunity to comment on the draft permit requirements. It is our hope that at the end of this public comment period EPA will work closely with municipalities and state officials to address these issues and modify the permit in a way that is sensitive to the financial constraints facing Massachusetts communities, while at the same time making progress towards improved water quality.

Very truly yours,

Richard C. Howard
Town Manager

cc: Senator Jason Lewis
Senator Patricia Jehlen
Representative Michael Day
Jay Gill, DPW Director
Beth Rudolph, Town Engineer

Tedder, Newton

From: Laurie Wodin <lwodin@yahoo.com>
Sent: Sunday, December 07, 2014 10:08 PM
To: Tedder, Newton
Subject: New permit for stormwater runoff pollution

Dear Mr. Tedder.

I understand that the EPA has recently drafted a new permit that will require cities and town to greatly lessen pollution from stormwater runoff into streams and rivers. I hope you can support strong protections for water quality and this new permit and process.

Thank you.

Laurie Wodin
Upton, MA

DEPARTMENT OF PUBLIC WORKS AND PARKS

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February 25, 2015

Newton Tedder
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Re: Massachusetts Small MS4 Draft General Permit Comments

Dear Mr. Tedder:

The City of Worcester Department of Public Works & Parks (DPW&P) appreciates the opportunity to comment on the Small MS4 Draft General Permit for Massachusetts. The City is regulated through an individual NPDES permit for its stormwater discharges and will not be eligible for coverage under this general permit. However, it is expected that the next individual MS4 permit issued to the City will contain many of the same provisions and requirements stipulated in this draft general permit. DPW&P therefore believes it will be impacted by the language contained within this draft general permit and is compelled to offer comments for the record. We also believe our comments will help inform Region 1 of many of the concerns that municipalities have with the prescriptive and unreasonable requirements being considered. We hope Region 1 will pay close attention to these and other comments offered by municipalities and organizations representing municipal interests and revise the final permit to make it reasonable, considerate of the realities of municipal operations and finances, and consistent with statutory limitations on municipal stormwater pollution control stipulated in the Clean Water Act.

General Comments:

DPW&P supports the goal of the Clean Water Act but we find the requirements in the MA Small MS4 General Permit to be overly prescriptive, burdensome and unachievable for most communities.

The schedules set forth in the draft permit are not reasonable or feasible when considered in the context of municipal realities. Schedules for some aspects of the permit may appear reasonable but become unreasonable when the permit is viewed in its entirety and it becomes clear that schedules for most parts of the permit overlap.

The permit, as drafted, would create a significant administrative burden for municipalities that would detract from their ability to provide direct benefits to water quality through such concrete activities as increased street sweeping, increased catch basin cleaning and removal of illicit discharges. The permit goes overboard in terms of monitoring, measuring and quantifying changes in pollutant loads. More environmental progress would be gained if communities could focus resources on actual, physical improvements to stormwater systems and not on pollutant accounting. Per the Clean Water Act municipalities are obligated to remove pollutants from stormwater to the maximum extent practicable and

that should be the objective of the permit. The ongoing assessment of receiving waters is a function of MassDEP, not individual communities.

Many of the deadlines provided in the draft permit do not allow sufficient time to allocate funding within set municipal budget cycles to complete the tasks required. No item in the permit should be required to be completed during the first permit year except the preparation of the Stormwater Management Plan (SWMP).

There should be language within the permit that references EPA's Integrated Planning framework and how integrated planning can be utilized to address a community's stormwater/MS4 requirements. That language should be specific about how an integrated planning approach could be applied through the permit and how permit conditions, including implementation schedules, would be modified under an integrated plan.

Section-Specific Comments:

1. Section 2.1 Water Quality Based Effluent Limitations and 2.1.1-Requirement to Meet Water Quality Standards: Section 2.1 (page 9) states that "Pursuant to Clean Water Act Section 402(p)(3)(B)(iii), this permit includes provisions to ensure that discharges from the permittee's small MS4 do not cause or contribute to exceedances of water quality standards...". Similarly, the Fact Sheet, at page 4, states "Section 402(p)(3)(B)(iii) of the CWA also authorizes EPA to include in an MS4 permit 'such other provisions as [EPA] determines appropriate for the control of ... pollutants'" and that "[t]his provision forms a basis for imposing water quality-based effluent limitations (WQBELs)" citing to *Defenders of Wildlife v. Browner.* 191 F.3d 1159 (9th Cir. 1999), and EPA's preamble to the Phase II regulations, 64 Fed. Reg. 68722, 68753, 68788 (Dec 8, 1999); and at page 16, that "EPA interprets this latter clause (i.e. "such other provisions as [EPA] determines appropriate for the control of . . . pollutants" at Section 402(p)(3)(B)(iii) of the CWA) to authorize the imposition of water quality based effluent limitations." This interpretation distorts entirely the meaning of CWA Section 402(p)(3)(B)(iii) and the intent of Congress in enacting this provision, and is incorrect. When Section 402(p) of the CWA was added in 1987, it established a comprehensive new scheme for regulation of stormwater. It differentiated the technology-based requirements for MS4s relative to the rest of the NPDES program by creating a new "maximum extent practicable standard," in contrast to the traditional BAT/BCT standard that applied to industrial stormwater and other wastewater discharges. The opening clause of CWA § 402(p)(3)(b)(iii) states that, unlike industrial stormwater permits, MS4 permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable . . . ." A subordinate clause states that such controls shall include "management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants." Each of those controls is subject to the limitation in the first clause that they shall be required "to the maximum extent practicable." EPA's interprets this provision contrary to its plain meaning and in a manner which suggests that the final clause referring to "such other provisions as the Administrator or the State determines appropriate" is independent and coequal with the requirement to reduce pollutants to the "maximum extent practicable." Region 1's reading distorts the syntax of § 402(p)(3)(B)(iii) and the intent of Congress in enacting this provision.

   The Region also suggests, incorrectly, that the Ninth's Circuit's opinion in *Defenders of Wildlife v. Browner* supports this misreading of the statute. While in dicta at the end of its decision, the court suggested that the "such other provisions" clause allowed EPA the discretion to include "either management practices or numeric limitations" in MS4 permits, the court did not say that the

discretion to include numeric limitations or to require compliance with water quality standards could be exercised without regard to the "maximum extent practicable" limitation in the statute. That issue was not presented by the facts of the case before it, and it was not addressed in the court's opinion. Had the court so ruled, it would have been contrary to the plain language of the statute and subject to reversal on appeal.

Federal courts have consistently ruled that the MEP standard is the only standard that MS4 discharges are required to meet. *Natural Resources Defense Council, Inc. v. U.S. EPA*, 966 F.2d 1292, 1308 (9th Cir. 1992) (CWA § 402(p)(3)(B) "retained the existing, stricter controls for industrial stormwater dischargers but prescribed new controls for municipal storm water discharge); *Defenders of Wildlife v. Browner*, 191 F.3d 1159, 1165 (9th Cir. 1999) (CWA § 402(p)(3)(B) "replaces" the requirements of § 301 with the MEP standard for MS4 discharges, and it creates a "lesser standard" than § 301 imposes on other types of discharges); *Environmental Defense Center v. EPA,* 319 F.3d 398 (9th Cir. 2003), vacated, rehearing denied by, and amended opinion issued at 344 F.3d 832 (9th Cir. 2003) (CWA "requires EPA to ensure that operators of small MS4s 'reduce the discharge of pollutants to the maximum extent practicable'"); *Mississippi River Revival, Inc. v. City of St. Paul,* 2002 U.S. Dist. LEXIS 25384 (N.D. Minn. 2002) ("the CWA specifically exempts municipal storm water permittees" from the requirement to ensure that water quality standards are met).

In addition, EPA's citation to the Preamble to the Phase II regulations, 64 Fed. Reg. 68722, 68753, 68788 (Dec. 8, 1999) to support its interpretation of Section 402(p)(3)(B)(iii) of the CWA as authorizing the imposition of water quality based effluent limitations is disingenuous. The Preamble to the Phase II rule at 64 Fed. Reg. 68788, states only that EPA disagrees with commentators who challenged EPA's interpretation of the CWA as requiring water quality based effluent limits for MS4s. The Preamble gives no legal rationale. Like the fact sheet, at page 4, the Preamble to the Phase II rule cites to *Defenders of Wildlife*. As noted above, *Defenders of Wildlife* does not support the proposition that EPA can require MS4 operators to comply with WQBELs regardless of practicability.

EPA has taken the position in the defense of the Phase II rule in *Environmental Defense Center* that:

> MS4 requirements... rest on the "maximum extent practicable" ("MEP") standard which CWA Section 402(p)(3)(B)(iii), 33 U.S.C. § 1342(p)(3)(B)(iii), prescribes for Section 402(p) municipal storm sewer permits. 40 CFR § 122.34(b). Thus, while the regulations suggest numerous ways in which small MS4s ought to control their stormwater discharges, *the MS4s are not, in the end, required to do anything that is not "practicable."* 2000 U.S. 9th Cir. briefs 70014, 70020 (June 26, 2001). (Emphasis supplied)

Given the plain language of Section 402(p)(3)(B)(iii), any application of the Phase II rule to require that MS4 discharges need to meet WQBELs regardless of "practicability" would be *ultra vires.*

The cited section of the Clean Water Act makes no mention of water quality standards. Instead, it establishes Maximum Extent Practicable (MEP) as the standard to which pollutants must be removed from municipal MS4s. The language in section 402(p)(3)(B)(iii) of the Act is clear that MEP governs pollution control requirements for municipal stormwater discharges. Section 402(p)(3)(B)(iii) of the Act states that controls to reduce the discharge of pollutants to the MEP include management practices, control techniques and systems, design and engineering methods,

and such other provisions as the Administrator determines appropriate for the control of pollutants. The "such other provisions" clause is within the broader context of the MEP standard, not separate from it as EPA tries to imply. The proper wording throughout the permit that would be consistent with the Act would be for the permittee to meet water quality standards to the maximum extent practicable. For Congress to include such language in the Act is clear and unassailable evidence that lawmakers understood that there are limitations in the ability of municipalities to meet water quality standards in stormwater discharges. These limitations are spelled out in the statutory standard of MEP applied only to municipal stormwater discharges. NPDES stormwater permits for municipalities will continue to be contentious as long as EPA refuses to recognize that the MEP standard applies as the only mandate for pollutant removal from MS4s. Water quality standards and TMDL waste load allocations may be goals but are not the required standards that must be achieved in municipal stormwater.

2. Section 2.1.2 Increased Discharges: New and additional stormwater flow to impaired waters regardless of concentration would be prohibited under this draft permit. This requirement could only be overcome by demonstrating that the pollutant of concern is not present in the new/increased discharge or that the total load of pollutants to the impaired waters will not increase. Even the most innocuous "new discharge", say a new single family home with a driveway and stormwater-minimizing design, will produce some pollution and will add some additional load, be it insignificant, to a receiving water. The language in this section could thus be interpreted to mean no new development in MS4 areas draining to impaired waters. Many urban areas of Massachusetts have nothing but impaired waters. This section could effectively preclude new development in such communities. That is an impact that goes far beyond EPA and federal authority. This language must be modified to stipulate thresholds on new/additional pollutant loads being significant and not merely all new loads.

3. Section 2.2.1.b (pages 11-15) and Appendix F, Part A: The permit requires compliance with TMDL waste load reductions associated with stormwater. It mandates a progressive reduction in pollutant loads with 100% reduction achieved within 15 years. The permit neglects to recognize that most TMDL's developed for Massachusetts waters are lacking in sound science and are instead based on very generic models of watershed loading. In many cases there is a dearth of actual sampling data from the TMDL regulated waters or data may be 25 or more years old. Even in the more rigorous Charles River TMDL for phosphorus, the model used to determine needed phosphorus reduction produced results that are not supported by actual test data. The TMDL's which drive pollutant removal requirements in the draft permit are wholly inadequate for this purpose and cannot legitimately justify specific pollutant load removal for the vast majority of waters. To be consistent with the Clean Water Act and avoid reliance on unsubstantiated pollutant load reductions, municipalities should be required to remove the pollutant of concern to the maximum extent practicable by implementing feasible BMPs, including structural and non-structural measures, that have been demonstrated through generally accepted research to be effective at removing that pollutant. Municipalities cannot do any more than what is feasible and should not be squandering limited resources chasing highly tenuous pollutant "numbers".

4. Section 2.2.1.c (pages 15-17) and Appendix F, Part B: Massachusetts municipalities should not be held to comply with out-of state TMDL requirements. TMDLs are determined by state environmental agencies. While there may be an "open" regulatory process for TMDL development it is highly unlikely that process and its requisite public notification was extended to potentially impacted communities outside of the state. The interests of Massachusetts municipalities were not represented by anyone during TMDL development in Rhode Island, Connecticut, New York, Vermont or New Hampshire. Massachusetts cities and towns are now

being subjected through this draft permit to regulatory programs in other states to which they had no opportunity to participate. Even within Massachusetts, the majority of TMDLs were developed in the early 2000's at a time when their link to future stormwater permits was unknown. Massachusetts TMDLs, with few exceptions, were offered as stand-alone documents with little bearing on anything that a municipality would be required to do. Had it been clear that these documents would have substantial and costly implications for cities and towns the TMDL development process would have fallen under much greater scrutiny and the haphazard, unscientific way they were created would likely have been challenged. The TMDL program in Massachusetts is so hopelessly flawed in terms of science and public process that it should not be utilized for NPDES permitting at all, let alone be the primary focus of a MS4 general permit.

5. Section 2.2.2 Discharges to Certain Water Quality Limited Waters Subject to Additional Requirements (pages 17-22) and Appendix H: This section assumes that there has been sound and defensible science used to determine the cause of impairments of numerous water bodies. That has rarely been the case. State agencies including Massachusetts DEP have rarely had the resources to perform legitimate water quality investigations of lakes, ponds and rivers. Very often an assessment of a water body is based on the most cursory information (visual observation of weeds or algae) and lacks the detailed sampling and analysis needed to truly determine conditions and causes. Yet this unscientific assessment will now result in communities expending significant resources developing nitrogen source identification reports and phosphorus source identification reports along with the planning, implementation and tracking of structural BMPs for removal of these pollutants. For some communities, the "water quality limited waters" driving these added expenses could be 75 miles downstream. It is ludicrous to imagine that stormwater generated in a small community of 5,000 people could have a significant impact on a coastal bay nearly 100 miles distant yet that is what is being described in this section. There needs to be both better science and common sense applied before cities and towns are held to "fix" problems that often do not exist.

6. Section 2.3.2 Public Education and Outreach: While EPA provides more time to conduct the public education program in this draft of the permit, it is important to keep in mind that the majority of the public does not understand how stormwater can become polluted and how it can contribute to water quality issues. Most of the public still believes that catchbasins in their roads transport stormwater to a treatment facility prior to discharge. In addition, most people do not understand the concept of a watershed, or the concepts related to the water cycle (rainfall, runoff, infiltration, and evapotranspiration). A significant amount of awareness-raising must be done across the United States prior to an individual community education/outreach campaign in order to truly stimulate behavior changes in the general public. Many municipalities see a large influx of visitors during the tourist season and thus education must extend well beyond the immediate locality to be truly effective. Stormwater education is a national need and should be spearheaded by EPA nationally through a consistent education campaign and not simply left to municipalities.

7. Section 2.3.4 Illicit Discharge Detection and Elimination (IDDE) Program (pages 25-37: Overall the IDDE program as described is highly prescriptive and very burdensome. While IDDE is necessary and valuable for a strong stormwater management program the extent to which a municipality can comply with the edict mandated in the draft permit is questionable. The schedule mandated by the permit is unreasonable for an initiative that constitutes a major capital project requiring significant expenditures and coordination. The described program needs to be tempered by the Maximum Extent Practicable standard and thus subject to that which is feasible.

8. Section 2.3.4.1 Definitions and Prohibitions (page 25): EPA needs to modify its definitions to differentiate illicit discharges caused by mis-connected sewer laterals or direct introduction of contaminants into the MS4 by illegal dumping from those caused by systemic failures within the sanitary sewer or MS4. It is one thing to track, identify and remove an illicit connection but altogether different to track, identify and correct a failed sanitary sewer or similar system defect. The former are generally easy to locate and repairable within a relatively short time while the latter are extremely difficult to locate and repair and may involve wholesale replacement of large parts of the sanitary sewer collection system. The language in section 2.3.4 implies a "one size fits all" approach to IDDE and it clearly is not in terms of locating and removing the illicit discharge.

9. Section 2.3.4.4 a through e: This Sanitary Sewer Overflow reporting requirement is redundant and should be removed from the Small MS4 permit. MassDEP already requires SSO reporting through statewide regulations. For purposes of this MS4 permit, the term SSO needs to be defined. Relative to stormwater management and MS4 permitting the only SSO that should be considered are those that discharge through a stormwater outfall into a receiving water. SSOs that enter basements or are contained on street surfaces or upland areas have no link to an MS4.

10. Sections 2.3.4.5 and 2.3.4.6 (page 26-28): Outfall and interconnection inventory and system mapping are necessary and valuable components of stormwater management. However, the timeframe to complete these more detailed studies is likely inadequate, especially for smaller communities that may lack GIS and GPS capabilities. Communities should identify feasible schedules for completing this work within their SWMP.

11. Section 2.3.4.7.d.i (page 32): DPW&P objects to the requirement that the permittee adopt a screening and sampling protocol consistent with a January 2012 draft document (EPA New England Bacterial Source Tracking Protocol). If this protocol is to be used in a regulatory context as proposed for this permit it should be subject to rule making, peer reviewed and scrutinized by others outside of the Agency and become a Final, not a draft, before making its use mandatory. Otherwise, the draft document may be useful as a suggested reference only.

12. Section 2.3.5 – Construction Site Stormwater Runoff Control, and 2.3.6 – Stormwater Management and New Development and Redevelopment (Post Construction Stormwater Management). These provisions require permittees to develop, implement and enforce a program to reduce pollutants and any stormwater runoff discharge to the MS4. EPA has no authority to make local land-use decisions by compelling permittees to make specific choices with regard to ordinances or other regulatory mechanisms. EPA is exercising federal land-use mandates on a local basis in violation of the 10th Amendment of the Constitution.

    These provisions would also apply to public road reclamation and resurfacing projects involving more than ¼ mile of 30 foot wide pavement (approximately 1 acre equivalent). By doing so, this permit would cripple local road maintenance budgets by effectively requiring redesign and construction of entirely new stormwater collection and control systems for all but the smallest road resurfacing project. Maintaining safe, passable roads is among the highest priorities of local government and one that is currently grossly underfunded. Taking limited funds and utilizing them for stormwater improvements for virtually every significant resurfacing project will greatly curtail meaningful improvements to local roads. Resurfacing and pavement maintenance projects should be exempted from this requirement to meet stormwater standards. The standards might be applicable to road reconstruction projects but only to the extent that they are practicable.

13. Section 2.3.6.d (pages 42-43) Directly Connected Impervious Area: The requirement to monitor and track impervious cover is a burdensome and inappropriate requirement for most municipalities. It has the appearance of a research effort and not a tool that will benefit stormwater management by the community. Compiling and tracking impervious area will require manpower and costs that would be better utilized implementing better stormwater control systems. If Region 1 is that interested in tallying impervious cover acreage, it should directly fund and coordinate with colleges and universities to accomplish the task through graduate and undergraduate GIS projects.

    Region 1's effort to regulate impervious surfaces raises the legal issue on whether such surfaces are "point sources" under the NPDES permit program. Impervious surface, on its own, cannot be subject to regulation under the NPDES permit program because impervious surfaces are neither a "point source" nor a "pollutant." Instead, it is a feature of the landscape that indirectly influences how water is carried on and off land. Congress predicated the stormwater permitting program and Section 402(p) of the CWA on "point source" discharges of "pollutants" from certain categories of dischargers, including MS4s and industrial activities. If Region 1 were to interpret "point source" to include impervious surfaces, it renders that term meaningless and contrary to Congressional intent to define the term and distinguish between "point sources" and "nonpoint sources." In addition, Region 1's authority to control pollutant discharges does not encompass the ability to mandate land-use decision-making. While local authorities can develop a regulation, for example, to limit impervious surfaces or other stormwater flows into the MS4, EPA is limited to regulating the discharge of pollutants from the MS4 and cannot force MS4s to do what EPA is not otherwise authorized to do, including imposing restrictions on local land use decisions. While on November 26, 2014, EPA released a guidance memorandum in which it asserts authority to mandate retention standards based upon the amount of impervious surface at a site, that authority is necessarily limited to discharges from MS4 storm system (i.e., the "point source") into navigable waters. In short, impervious surfaces are not "point sources" under the NPDES permit program. CWA Section 304 prohibits unauthorized point source discharges, but Congress left the regulation of nonpoint source pollution to the states.

    The City of Worcester Department of Public Works & Parks appreciates the opportunity to comment on the Massachusetts Small MS4 Draft General Permit. We urge Region 1 to consider modifications to the permit that will make it environmentally and economically sustainable for municipalities and consistent with the limitations set forth in the Clean Water Act.

Sincerely,

Paul Moosey

Paul J. Moosey, P.E.
Commissioner

CC: Edward M. Augustus, Jr., City Manager
Senator Edward Markey
Senator Elizabeth Warren
Congressman James McGovern
Lieutenant Governor Karyn Polito
Secretary Matthew A. Beaton
DEP Commissioner Martin Suuberg

Comprehensive Cost Analysis of the 2014 Massachusetts MS4 Permit

An Interactive Qualifying Project Report

Submitted to the Faculty of

WORCESTER POLYTECHNIC INSTITUTE

in partial fulfillment of the requirements for the

Degree of Bachelor of Science

By

Eric Correia Michael Giroux Cameron Peterson

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Worcester Community Project Center

Sponsored By: Massachusetts Department of Environmental Protection

Abstract

Stormwater runoff is one of the leading causes of water pollution in the United States. The MS4 permit reduces pollution by regulating the runoff of pollutants into stormwater drains. With the assistance of the MassDEP and the Worcester Community Project Center, we sought to provide the Massachusetts towns of Southbridge, Holden, and Millbury with a cost analysis for implementation of the 2014 draft MS4 permit. In order to achieve this goal, we learned the details of the 2003 permit and 2014 draft permit, interviewed town officials, and performed water quality sampling. After creating our cost analysis, we provided our subject towns with findings and recommendations assessing the feasibility of implementing the permit, and suggestions for best practices each town uses to manage stormwater.

Acknowledgements

We would like to thank our sponsor, the Massachusetts Department of Environmental Protection, for their support and assistance throughout our project. In particular, we would like to thank Frederick Civian, Andrea Briggs, Stella Tamul, and Cheryl Poirier. We would especially like to thank Frederick Civian for his ongoing commitment to answer any questions we had, for helping us produce our cost sheet, and for appearing in our video.

Next, we would like to thank the representatives from Holden, Millbury, and Southbridge, who were extremely generous in allowing us to interview them and perform outfall tests. From Holden, we would like to thank Isabel McCauley, John Woodsmall, and Pamela Harding. We are especially grateful to John Woodsmall for appearing in our video, and to Isabel McCauley for taking us out to all of the outfalls we tested. From Millbury, we would like to thank Robert McNeil and Cindy Allard for allowing us to interview them, and for showing us a smoke test demonstration. From Southbridge, we would like to thank Heather Blakeley, Ken Pickerin, and Mark DiFronzo for allowing us to conduct our interviews and sampling.

Additionally, we would like to thank Robert Lowell and Larry Pistrang from the Department of Conservation and Recreation (DCR) for allowing us to interview them and gain from their experience. We would also like to thank Kelley Freda from the DCR, for contributing a detailed cost estimation.

We would also like to thank the Central Massachusetts Regional Stormwater Coalition, in particular Aubrey Strause and Matthew St. Pierre for giving us data, answering our questions, and allowing us to attend steering committee meetings.

Finally, we would like to thank our advisors Corey Dehner and Anne Ogilvie for their ongoing support and dedication to the success of our projects. Thank you for pushing us to

perform to the best of our ability no matter what happened during the term. We would also like to thank you for the various donuts, pizzas, and coffee to keep us going along the way.

Executive Summary

Background

Water Pollution affects an enormous number of water bodies in the United States. "In 2006, there were over 15,000 beach closings or swimming advisories issued due to bacterial levels exceeding health and safety standards" (Council, 2008). Much of this pollution is due to stormwater runoff. Stormwater runoff occurs when water becomes displaced by weather and flows over impervious surfaces, such as roads and roofs. When stormwater flows over these surfaces, it often collects pollutants such as oils, nutrients, ammonia, sediments, and heavy metals (EPA, 2012). These pollutants can have environmental, aesthetic, and economic ramifications on surface bodies of water. In order to combat stormwater runoff, the United States Environmental Protection Agency (USEPA) has created a system to move stormwater runoff into nearby bodies of water through what is known as Municipal Separate Storm Sewer Systems (MS4). Unfortunately, while these systems are useful for draining stormwater runoff, they are also very effective at directing pollutants into water bodies.

Before 1972, stormwater runoff and sewage drained through the same pipe, which led to frequent overflows (Robert B. Stegmaier, 1942). These overflows led to the pollution of topsoil, and the need for a better solution became apparent. This situation led to the creation of the Clean Water Act (CWA) in 1972 (Andreen, 2003a). In 1990, the USEPA first released the MS4 permit as part of the CWA. The MS4 permit allows municipalities to regulate the discharge of pollutants into stormwater drains. The MS4 permit defines six minimum control measures to reduce pollution caused by stormwater runoff. These control measures are:

1) Public Education
2) Public Involvement and Participation
3) Illicit Discharge Detection and Elimination (IDDE)
4) Construction Site Runoff Control

5) Post-Construction Runoff Control
6) Pollution Prevention and Good Housekeeping

Municipalities fulfill these control measures with Best Management Practices (BMPs). These BMPs can include street sweeping, waste collection, and outfall sampling. The implementation of these BMPs cost municipalities money. Massachusetts has been regulated under the same MS4 permit since 2003. Even though this permit expired in 2008, the USEPA continued to administer it indefinitely until they were able to release a new permit. On September 30, 2014, the USEPA released the 2014 draft MS4 permit. This new draft permit is much more detailed than the 2003 permit and has much more stringent regulations. Due to this increased level of regulation, the 2014 draft MS4 permit will cost much more to implement than the 2003 MS4 permit.

The Massachusetts Department of Environmental Protection (MassDEP), in collaboration with Worcester Polytechnic Institute (WPI), developed this project in order to assess the cost of implementing the 2014 draft MS4 permit in three Massachusetts towns: Southbridge, Holden, and Millbury. Our subject towns are part of the Central Massachusetts Regional Stormwater Coalition (CMRSWC). As of the 2014 fiscal year, The CMRSWC consists of communities that share resources for stormwater management, such as water sampling kits and GPS mapping equipment. Our goal for this project was to provide a comprehensive analysis of the cost of implementing the 2014 draft MS4 permit in Southbridge, Holden, and Millbury Massachusetts.

Methodology

In order to achieve our goal of providing a comprehensive analysis of the cost of implementing the 2014 draft MS4 permit in Southbridge, Holden, and Millbury Massachusetts, we utilized the following methodology.

1) Became educated on the details of the 2003 MS4 permit and 2014 MS4 permit
2) Assessed what Holden, Millbury, and Southbridge, Massachusetts have done to meet the requirements of the 2003 MS4 permit
3) Identified Holden, Millbury, and Southbridge's total current expenditures for stormwater management
4) Identified what changes each of our subject towns will have to make in order to comply with the requirements of the 2014 MS4 permit
5) Provided a detailed analysis of the complete costs for each town to comply with the requirements of the 2014 MS4 permit
6) Created an informational video to explain the costs of implementing the 2014 MS4 permit

Throughout our project, we used various research methods such as document analysis, field work, and interviews in order to learn about the cost of compliance with the MS4 permit. By analyzing various background documents about stormwater management, including the 2003 MS4 permit and 2014 draft MS4 permit, we were able to learn about the need for stormwater management as well as the BMPs typically used to manage stormwater.

We conducted interviews with various municipal officials, including public works directors, fire chiefs, town engineers, and members of town conservation commissions. These interviews allowed us to learn about our subject towns' stormwater programs and the costs associated with these programs. We also conducted an interview with the Department of Conservation and Recreation (DCR), which allowed us to estimate costs of BMPs, which town officials could not provide to us.

During our project, we also performed field work, which included outfall sampling using the CMRSWC kits, using dry and wet weather screening forms, and using the geographical information system (GIS) maps of our subject towns. This fieldwork allowed us to gain a more accurate understanding of the amount of labor involved with screening outfalls, which ultimately assisted us in completing our cost analysis.

After we completed our goals and objectives, we were able to provide findings and recommendations to our subject towns.

Findings and Recommendations

Finding 1: The 2014 draft MS4 permit may cost too much for the towns to effectively implement

The costs associated with stormwater management are very high, yet many towns have a limited budget for stormwater. The MS4 permit may cost too much for towns to individually implement. For implementation of the 2014 draft MS4 permit, Holden should expect to spend $258,790 annually, Millbury should expect to spend $753,173 annually, and Southbridge should expect to spend $343,008 annually.

Recommendation 1: Effective regionalization will allow towns to better implement their stormwater management programs

Due to the high cost of implementing the 2014 draft MS4 permit, we recommend that the towns regionalize. Regional organization, such as through the CMRSWC, can reduce the cost of many materials related to stormwater management.

Finding 2: Using innovative funding techniques can help the towns spend less from their general funds on stormwater management

The CMRSWC has received funding from the Community Innovation Challenge (CIC) grant. The first year of the Coalition's existence was fully funded by the CIC grant program and the subsequent two years of grant funding supplemented the Coalitions expenditures. In FY2014, member towns paid 4,000 dollars to continue as members of the Coalition. Millbury has begun applying for other grants to support implementation of BMPs, which may save them money over time.

Recommendation 2: The towns should seek alternative sources of funding such as additional grants beyond the CIC

Due to the reduction of CMRSWC funding from the CIC, we recommend that the towns apply for other grants. These grants can include the 604(b) grant from the MassDEP. The Towns should apply to these grants as quickly as possible, and the Coalition should lobby for additional future funding from the USEPA and MassDEP.

Finding 3: Using innovative stormwater management techniques can help the towns save money and thus implement the permit more effectively

Millbury uses innovative stormwater BMPs, such as a school art contest, to fulfill the public participation control measure. These BMPs allow Millbury to implement the MS4 permit effectively and at a low cost.

Recommendation 3: The towns should strive to utilize innovative stormwater management techniques

Millbury's use of creative BMPs has saved them money in implementing the MS4 permit. We encourage other towns to do the same, as they may be able to come up with BMPs, which are more efficient and cost-effective than their current BMPs.

Finding 4: Towns that communicate with other towns, even to a small extent, can more effectively manage and fund their stormwater management programs

A previous IQP group from WPI demonstrated that the CMRSWC towns spend less money on stormwater management than towns that work independently. This type of collaboration can also help generate more innovative BMPs, which will save the towns money.

Recommendation 4: Regionalization can help towns save money by sharing information and resources

We recommend that the towns regionalize and attempt to share information and resources. This practice will help them implement the 2014 draft MS4 permit more effectively.

Finding 5: In each of our subject towns, stormwater management information was divided amongst different departments

In many of our subject towns, there was not one person fully dedicated to stormwater management. Multiple departments in each town were responsible for implementing the stormwater management programs. As a result, we often had to request information from more than one department in each town.

Recommendation 5: Having a central source of stormwater management should allow for easier implementation of future MS4 permits and make continuous compliance easier for the towns

We recommend that the towns research the feasibility of either creating a position dedicated to managing stormwater information, or making this responsibility part of a single position. If smaller towns cannot afford to pay for this position, we recommend that multiple towns share a person dedicated to stormwater information. This practice will make it easier to implement the MS4 permit in the future.

Finding 6: The IDDE control measure will be a significant contributor to the increase in cost between the 2003 and 2014 draft MS4 permits

The 2014 draft MS4 permit has many more requirements than the 2003 MS4 permit, especially in the IDDE control measure. Much of the increase in cost between the two permits will be due to the increased stringency of the IDDE measure. The IDDE measure will also have more detailed requirements for practices such as outfall sampling with water testing kits.

Recommendation 6: The CMRSWC should have one person in charge of keeping track of and maintaining the sampling kits

When we performed sampling in the field, the sampling kits were often disorganized and had expired components, which slowed down our work. Having the kits intact will make it easier to sample, and will thus save money on sampling costs.

Finding 7: The current Asus tablet in use by the CMRSWC is slow and ineffective

When we used the tablet in the field, it was often slow to load. Town employees often complained about the delay. When we used a new smart phone, we did not see this delay. The delay caused by the old technology costs the towns in the CMRSWC money on labor costs.

Recommendation 7: The towns should use software, which can collect data offline and then upload it to an online database later, as well as a tablet, which is more up to date. This would allow the DPW workers to work more efficiently, thus saving the town labor costs

We recommend that the Coalition should purchase a new tablet, such as an Apple iPad. The labor costs that the tablet will save will pay for the cost of the tablet very quickly.

Other Recommendations

The Massachusetts Department of Environmental Protection should research the potential of providing standardized materials available to Massachusetts municipalities

Many of the control measures of the permit, such as public education and public involvement and participation, require municipalities to create similar documents. If the MassDEP could create standardized templates for these requirements, it could reduce the cost to towns, as well as give them more time to focus on eliminating pollutants.

The CMRSWC should streamline and update the digital forms. This practice would reduce the time needed to inspect outfalls, thus saving money

While we performed fieldwork in Holden, we found that the dry and wet weather forms had categories relating to pollutants, which are not regulated by the MS4 Permit. These extra categories made the forms time-consuming to fill out. Collecting this additional information causes the towns to spend increased labor costs. By updating the forms, the CMRSWC can reduce labor costs for the towns.

Recommendations for Future Research

We recommend that future project groups research the cost of implementing Total Maximum Daily Load (TMDL) requirements in towns. These requirements may generate a very large cost, which has not been researched well. We also recommend that future research groups

attempt to eliminate some of the biases, which may have appeared in our research. These biases stemmed from our limited sources of budget data, and as a result, some of our cost figures may be inaccurate. We recommend other project groups eliminate this bias by finding multiple sources for town budget data.

Conclusion

The findings and methods that we present should help the towns understand and prepare for the financial implications of implementing the 2014 draft MS4 permit. The towns will have to work hard to comply with this new permit, but this effort will be worth protecting people and the environment from the negative effects of stormwater runoff. Among our most important recommendations, we emphasize the benefits of regionalization, the use of innovative stormwater management and funding techniques, and the centralization of stormwater management in each town. We also recommend that the towns reach out to the MassDEP for advice on implementing the 2014 draft MS4 permit. Although the task of effective stormwater management is daunting, the towns can plan to effectively manage stormwater, thus protecting human health and the environment.

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2.3 History of Stormwater Management	Cameron Peterson, Michael Giroux
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2.4 The Municipal Separate Storm Sewer System Permit	Michael Giroux
2.4.1 Public Education & Outreach	Michael Giroux
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2.5 The MassDEP and the Central Massachusetts Regional Stormwater Coalition	Eric Correia
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WPI	Worcester Polytechnic Institute
MS4	Municipal Separate Storm Sewer System
MassDEP	Massachusetts Department of Environmental Protection
DCR	Department of Conservation and Recreation
CMRSWC	Central Massachusetts Regional Stormwater Coalition
USEPA	United States Environmental Protection Agency
CWA	Clean Water Act
BMP	Best Management Practice
GPS	Global Positioning System
GIS	Geographical Information System
IDDE	Illicit Discharge Detection and Elimination
NPDES	National Pollutant Discharge Elimination System
U.S.	United States
NWQIR	National Water Quality Inventory Report
E. Coli	Escherichia coli
PCB	Polychlorinated biphenyl
TMDL	Total Maximum Daily Load
EIA	Effective Impervious Area
HAB	Harmful Algal Blooms
LID	Low Impact Designs
FWPCA	Federal Water Pollution Control Act
NEETF	National Environmental Education and Training Foundation
CIC Grant	Community Innovation Challenge Grant

SWPPP	Stormwater Pollution Prevention Plan
SWMP	Stormwater Management Program
DPW	Department of Public Works
CCTV	Closed Circuit Television
EPG	Environmental Partners Group
MassEEA	The Massachusetts Environmental and Energy Agency
MassDFG	Massachusetts Department of Fish and Game
CSO	Combined Sewer Overflow
TDS	Total Dissolved Solids

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1.0 Introduction

Pollution affects a staggering number of water bodies in the United States. "In 2006 there were over 15,000 beach closings or swimming advisories issued due to bacterial levels exceeding health and safety standards" (Council, 2008). A 2012 United States Environmental Protection Agency (USEPA) study evaluating 57% of the lakes, reservoirs, and ponds in the United States found that 97.5% of the examined water bodies contained unacceptable levels of pollution (USEPA, 2012).

One illustrative example of the extent of water pollution is in Ohio's Cuyahoga River. The water pollution in the Cuyahoga River was so profound that the river has actually caught on fire multiple occasions, as Figure 1 illustrates. In the 1960s, industries used the river as a dumping ground for contaminants such as oil, industrial waste, sludge, and sewage.

Figure 1. Cuyahoga River on Fire

(Greater Elkhart County Stormwater Partnership)

In 1969, one of these fires captivated national attention, and caused a chain of events, which spawned the creation of the Clean Water Act (EPA, 2013). The Cuyahoga river fires are just one of many cases of such extreme water pollution.

Water displaced by the weather events, also known as stormwater runoff, pollutes the surface waters of the United States. Stormwater runoff occurs when stormwater flows over an impervious surface, an area that water cannot pass through, such as house roofs, streets, and

parking lots. As the stormwater flows over these surfaces, it often collects pollutants such as oils, sediment, and heavy metals (EPA, 2012). These pollutants are detrimental to aquatic life, which in turn, affects the people in the surrounding areas. Pollutants such as nutrients can cause severe harm to aquatic life through the formation of algal blooms. These are alga blooms that become harmful under certain conditions including light availability and an abundance of nutrients. These harmful algal blooms can damage aquatic plants by blocking sunlight and depleting nutrients from the water, which can kill aquatic fauna (Kuentzel, 1969). Beyond the flora and fauna, stormwater runoff pollution also erodes natural structures such as deltas as illustrated in Figure 2.

Figure 2. Example of sediment runoff (Lehman, 2010)

To combat the issue of stormwater runoff, the USEPA created a system to move stormwater runoff into nearby bodies of water this is known as Municipal Separate Storm Sewer Systems (MS4s). In order to minimize stormwater flow over impervious surfaces, the design of the area around MS4s incorporates efficient methods of directing stormwater into the MS4s. The issue with moving the stormwater runoff directly into the bodies of water is that the pollutants that the stormwater runoff carries end up in the body of water.

To mitigate the impact of stormwater runoff, the USEPA has created an MS4 permitting system. The USEPA categorizes these permits are as either MS4 or National Pollutant Discharge Elimination System (NPDES). NPDES permits are a more general category of permits, which apply to facilities that have a wastewater output. The MS4 permits fall under the category of the

NPDES permits, but MS4 permits deal with requirements more specific to stormwater runoff (US EPA, 2014b). Figure 3 shows a simplified example of an MS4. The MS4 permit contains measures, which help mitigate the impacts of stormwater runoff. (USEPA, 2014c)

The MS4 permit contains six minimum control measures that permittees must follow in order to maintain compliance with the permit. These six measures provide general guidelines for stormwater management and public education. On September 30, 2014, the USEPA issued a new draft MS4 permit for permit holders in Massachusetts. In Massachusetts, the USEPA issues the MS4 permit. In the meantime, the Massachusetts Department of Environmental Protection (MassDEP) acts as the cosigner, while the USEPA enforces the permit.

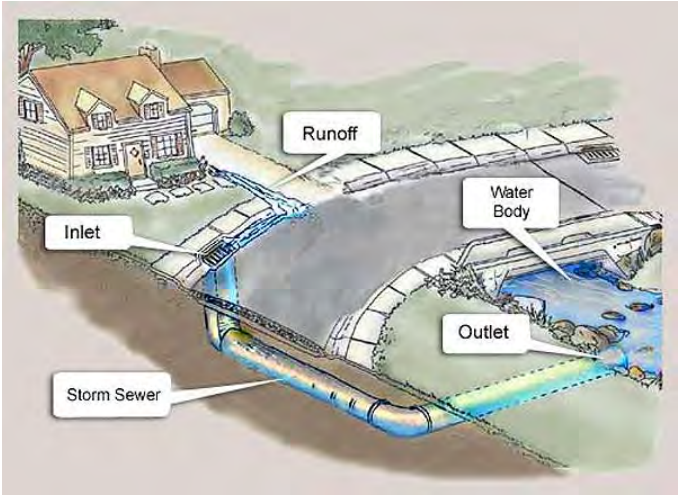

Figure 3. Example of a simple MS4 (Bardstown, 2014)

The MassDEP has developed this project requesting assistance from students with Worcester Polytechnic Institute's (WPI) Worcester Community Project Center. Our project was specifically aimed to assist the Central Massachusetts towns of Holden, Millbury, and Southbridge in understanding the costs of updating to the new 2014 draft MS4 permit. The goal of this project was to assess various municipalities' stormwater management practices for compliance with the MS4 permit, and provide a detailed analysis of the financial cost needed to fulfill the requirements of the 2014 draft MS4 permit. In addition to the cost analyses, we created

an informational video to help selectmen and town meeting members understand the implications of both stormwater runoff and the new MS4 permit requirements.

In chapter 2, we provide a detailed overview of stormwater runoff and its effects, the history and details of the MS4 permit, our sponsor the MassDEP, and the role of the Central Massachusetts Regional Stormwater Coalition (CMRSWC). In chapter 3, we describe the methodology we used to learn the details of the 2014 MS4 Draft permit and assess the total financial expenditures for compliance with its requirements. In our final two chapters, chapter 4 and 5, we outline our findings and provide recommendations for future research to the CMRSWC, the MassDEP, and the towns we worked with, Holden, Millbury, and Southbridge based on our findings.

We hope that this project will have a lasting and meaningful impact on stormwater management in Central Massachusetts. With the assistance of the MassDEP and CMRSWC, we hope our efforts help Central Massachusetts' municipalities prepare for the MS4 permit and protect the waters of the United States (U.S.) from pollution.

2.0 Background

2.1 Introduction

Rainwater runoff poses a serious risk of pollution to the world's surface water bodies. Impervious manmade surfaces such as roads and sidewalks drain pollutants into local water bodies after rain events occur. These pollutants, which can include chemicals, oils, metals, sediment, and bacteria, can directly affect human health by polluting local sources of drinking water (Gaffield, Goo, Richards, & Jackson, 2011). We discuss stormwater runoff and its impacts in more detail in section 2.2 of this chapter. To fully understand the problem of stormwater that the United States (U.S.) faces, we discuss the history of stormwater management in section 2.3

of this chapter. To help mitigate the impacts of stormwater, the United States Environmental Protection Agency (USEPA) released Municipal Separate Storm Sewer System (MS4) permit. This permit helps municipalities reduce pollution in water bodies by using effective stormwater management, which we discuss in more detail in section 2.4 (USEPA, 2014f). The Massachusetts Department of Environmental Protection (MassDEP), a Massachusetts state agency, helps municipalities navigate the intricacies of the MS4 permit. The MassDEP served as our sponsor throughout our project; we introduce them in section 2.5. We discuss the Central Massachusetts Regional Stormwater Coalition (CMRSWC), formed in 2012 to help communities meet the requirements of the MS4 permit (Spain, 2014); in section 2.6.

2.2 Stormwater Runoff

There is a difference between stormwater and stormwater runoff. Stormwater is the water that falls from storms or that which snowmelt produces. Stormwater runoff is the water that travels along impervious surfaces and gathers pollutants. The USEPA defines stormwater runoff as "generated when precipitation from rain and snowmelt events flows over land or impervious surfaces and does not percolate into the ground" (USEPA, 2014g). An impervious surface is a surface which water cannot pass through, such as asphalt and roofs. The stormwater runoff that flows over these impervious surfaces often collects pollutants that contaminate the stormwater and passes those contaminants into local water supplies. Contaminated stormwater runoff may contain oils, nutrients, and sediment. The oils, which usually come from leaking vehicles or car washing, are toxic to aquatic life. The nutrients that come from fertilizer and sewage overflow cause an unnatural increase in the growth of unwanted plant life, which depletes the oxygen in the body of water, causing aquatic life to die (EPA, 2012).

Sediment pollutants are found when land around the water body starts to erode, causing sediment to gather on aquatic life that lives close to the bottom of the water body, which prevents sunlight from getting to the plants (EPA, 2012).

In an effort to mitigate the impacts of stormwater runoff, municipalities may make land use changes, pass by-laws, and/or focus on public education. Municipalities mitigate the impacts of polluted stormwater runoff through Best Management Practices (BMP) and compliance with the MS4 permit, which we explain in section 2.4 below. When land use planners do not consider stormwater runoff, there can be serious environmental, aesthetic, and financial ramifications.

2.2.1 Environmental Impacts of Stormwater Runoff

Stormwater runoff is one of the top causes of water pollution in the U.S. today (Blair et al., 2014). Every two years, the USEPA releases a National Water Quality Inventory Report (NWQIR) on two groups of water bodies: rivers and streams, and lakes, reservoirs, and ponds. The NWQIR is the primary tool that the USEPA uses to keep the public, as well as Congress, informed about the quality of U.S. surface water. The USEPA monitors these bodies of water by regularly testing for various contaminants. These tests primarily look for contaminants such as fecal coliform, Escherichia Coli

Figure 4. Watershed

(S. R. W. Coalition, 2014)

(E. coli), polychlorinated biphenyls (PCB) in fish tissue, total phosphorus, and examine the concentration of dissolved oxygen. Based on these indicators and scientifically determined established safe levels, the USEPA determines if the body of water is impaired (Council, 2008). The USEPA breaks up the different municipalities by watersheds when issuing these reports to the public.

A watershed is the area where all of the connected rivers and ponds merge into one body of water as we illustrate in Figure 4. The Blackstone Watershed encompasses towns around Worcester, Massachusetts and municipalities to the south east of Worcester. In the 2012 NWQIR, the USEPA assessed 28.3% of Rivers and Streams; in the Blackstone watershed, 63.8% were impaired. The majority of the impairment was due to a lack of total maximum daily load (TMDL) management. TMDL is the total maximum amount of pollutants that can be discharged into a body of water while remaining safe for the water's intended use such as swimming or fishing (USEPA, 2013b). Since stormwater has caused so much pollution to bodies of water, the USEPA requires municipalities to use TMDLs, which the state creates, to help restore water bodies from over-pollution (USEPA, 2013b).

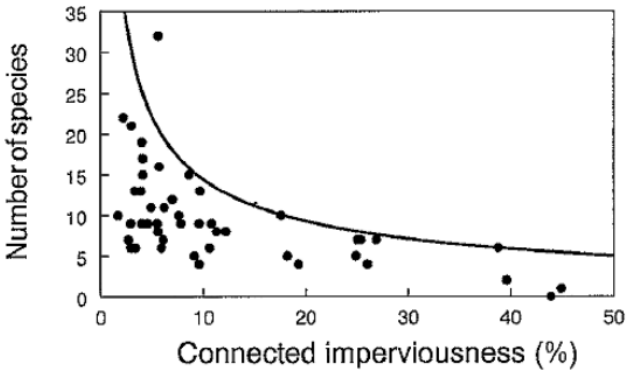

Figure 5: Species vs. EIA

(Council, 2008)

As more areas become urbanized, the amount of impervious area increases. The U.S. is experiencing a urbanization trend of increased urban population; the urban population went from 79.0% in 2000 to 80.7%

in 2010 (Bureau, 2012). This change would increase the Effective Impervious Area (EIA), causing more pollutants to run off into the local bodies of water.

The USEPA performed a study on surface water bodies, assessing, among other things, the amount of different fish species that inhabit that body of water. As Figure 5 illustrates, as the percent of imperviousness increases, the number of fish species in the area exponentially decreases. Figure 5 demonstrates a correlation between the amount of EIA and the presence of bio diverse aquatic system. This correlation is explained by an increase in pollution in the local area, causing the fish to either be poisoned by various pollutants or to suffocate on those same pollutants (Council, 2008).

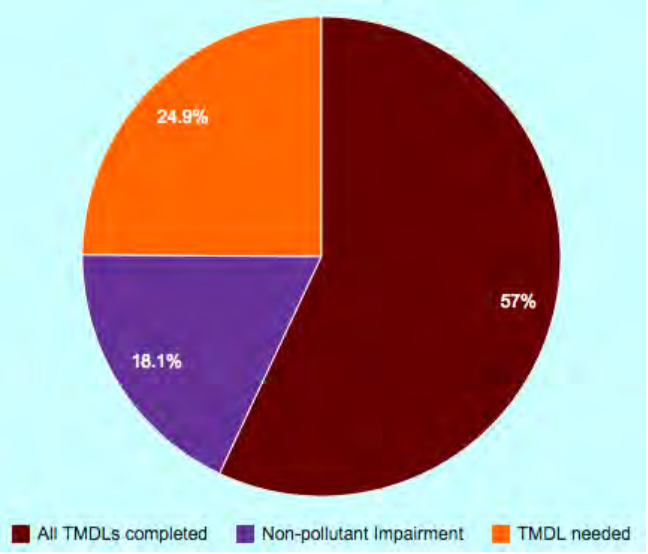

Figure 6. Causes of Lake Impairment (USEPA, 2012)

In addition, in 2012, the USEPA evaluated 57% of lakes, reservoirs, and ponds in the Blackstone watershed area. In this study, the USEPA found that of the 57% evaluated, 97.5% of the lakes, reservoirs, and ponds were impaired. In this case, however, only 24.9% of the lakes, reservoirs, and ponds needed a TMDL to be set in place (Council, 2008). THE USEPA also cited non-pollutant impairment as a problem in the lakes, reservoirs, and ponds in the Blackstone watershed, as seen in Figure 6. Non-stormwater pollutant impairment occurs when unregulated sources of non-stormwater pollution impair a body of water, such as turbidity (US EPA, 2014a).

The pollutants themselves are not the only problem with stormwater flowing into local water bodies untreated. Harmful algal blooms (HABs) are of great concern for aquatic life. HABs not only reduce water clarity, but they also deplete the oxygen in the water, which in turn can kill the natural life in the body of water. Since the HABs create a layer of colored algae on top of the water body, they also have a negative effect on the aesthetics of the water body. In addition, as the water becomes an eyesore, the tourism in the area also is likely to drop (Andersen, 2009).

2.2.2 Low Impact Designs

Low Impact Designs (LIDs) are a way to, "simulate natural hydrologic conditions, by gradually recharging groundwater and slowing runoff that flows to collection systems and receiving water systems" (MassDEP, 2014).

Figure 7. Bioswale

(Service, 2005)

Some of these methods include bioswales, green roofs, and infiltration or retention basins. People who design these areas usually create these designs as LIDs. A LID is a way that the designers try to address stormwater runoff by reducing the amount of impervious surface area and working with the natural landscape. LID includes stormwater BMPs, which we will explain in the next paragraph. LID can also be applied to redesigning areas; in that case, the LID would work more towards rebuilding the landscape rather than working with the existing area (Cahill, 2012).

BMPs are methods and designs that towns use to mitigate the effects of stormwater runoff. Some common BMPs include grassy swales, rain barrels, and vegetated roofs. *Grassy swales* are similar to the bio swales that we will discuss in the next paragraph, except the designers just use grass rather than other plant life. *Rain barrels* collect rainwater from roof runoff. Rather than dumping the runoff into the streets, the rain barrels allow the owner to use the water for watering plants or just dispersing on the ground so that the runoff naturally filters through the ground. *Vegetated roofs* are the same as extensive *green roofs*, which we will discuss later in this section.

Figure 8. Green Roof

(Division, 2014)

Bioswales can be an alternative method to using stormwater drains or simply to augment the drains. Workers place plants and foliage around an area, which is slightly lower than the area around it, as seen in Figure 7. The stormwater then flows into the bioswale, and the plants filter the stormwater for low flow storms. For larger storms, bioswales can direct the flow of stormwater into nearby drainage systems, however average bioswales can handle storms up to 4.3inches per 24hour period (Service, 2005). *Green Roofs* are a layer of dirt and plant life on the roof of a building. This layer above the roof provides shade to the roof, preventing it from reaching extremely hot temperatures; instead, the plant life absorbs most sunlight, which will normally heat the roof (Division, 2014). The layer of dirt also acts as a

Figure 9. Retention Basin

(USGS, 2004)

filtration system for light storms as seen in Figure 8. There are two types of green roofs, intensive and extensive. Intensive is similar to a roof garden, where the plant life is usually flowers, trees, and general garden plants in separate pots. Extensive roofs consist of a layer of dirt and rugged vegetation, which needs little to no maintenance (Division, 2014).

Figure 10. Infiltration Basin (University, 2011)

Infiltration and retention basins filter stormwater in a similar manner. An infiltration basin takes stormwater from the surface, trickles it down slightly below the surface of the ground, and dissipates the stormwater over a larger area, as Figure 9 illustrates. A retention basin is similar to an infiltration system, but instead of keeping the stormwater underground, it turns the stormwater into an artificial lake or pond, which drains slowly, but at a fixed rate, as Figure 10 illustrates (Mays, 2001).

LID	Average Cost
Green Roof (Intensive)	$10/ft^2
Green Roof (Extensive)	$25/ft^2
Rain Barrels	$216
Grassy Swales	$30/ft^2
Bioswales	$16.25/ft^2
Infiltration Basin	$4,500
Retention Basin	$7,500

Table 1. Comparison of LIDs

These methods of handling and filtering stormwater are just some of the ways that engineers and building planners handle the issue of stormwater runoff. Businesses work to mitigate stormwater runoff when it has an economic impact on their business. Below is Table 1[1], which compares the average costs of implementing each of the LIDs mention in this section. In the next section, we discuss the economic impacts of stormwater.

[1] (Brennan, 2014; Center, 2007; Division, 2014; PennsylvaniaDEP, 2006; USEPA, 2013a)

2.2.3 Economic Impacts of Stormwater Management

The goal of improved stormwater management raises questions about cost. Towns use many LID measures to effectively reduce the impact of stormwater runoff. The implementation of these LID measures, i.e. swales, permeable pavement, filter strips, and infiltration trenches, increases the cost of construction projects, as implementation requires careful planning and additional work. However, the economic benefits of these LIDs may in fact defray the cost of their implementation.

The BMPs, which towns use to comply with the requirements of the MS4 permit, can require a large initial financial input. For example, the town of Millbury, Massachusetts estimated that they spent about $75,000 on street sweeping during the 2013 fiscal year (Spain, 2014). The towns must understand the expenditures related to stormwater management in order to effectively fulfill the requirements of the MS4 permit.

Despite the increased cost of construction projects, LIDs can actually save towns money over time. The use of these LIDs minimizes the extent to which stormwater runoff impairs water quality. If there are fewer impaired water bodies, then towns spend less money on treating the water bodies. LIDs may also reduce the effects of flood damage, and eliminate the need for water treatment facilities (Thurston & EnvironetBase, 2012). LID measures can also save money by reducing construction cost. For example, a parking garage can cost approximately $20,000 per space to build. An open parking lot with non-impervious surfaces, however, can cost as little as $2,000 per space to build (Cahill, 2014). In this case, the use of an LID does not just reduce the construction cost; it also reduces the amount of runoff that needs to be treated.

2.3 History of Stormwater Management

October 2012 marked the 40th anniversary of the 1972 Amendments to the Federal Water Pollution Control Act, better known as the Clean Water Act (CWA). Many decades of surface

water pollution preceded the CWA, and some of the causes of pollution are rooted in the industrial surge of the previous two centuries. Unsanitary conditions and polluted drinking water led to health issues, such as yellow fever and cholera (Andreen, 2003b). Even in rural areas, water pollution was a problem. Most towns simply integrated any stormwater management systems into their sewer system. Easy to implement as a combined system, these constructs only involved the conveyance of water away from highly populated areas (Robert B. Stegmaier, 1942). Due to their combined nature, these systems were highly prone to overflow, contaminating topsoil and surrounding water bodies with raw sewage waste (Joseph-Duran, Jung, Ocampo-Martinez, Sager, & Cembrano, 2014). In 1948, the conclusion of World War II allowed the federal congress to bring focus onto more domestic issues. The massive industrial output of the war had taxed rivers, and funding for wastewater treatment had dropped during the years of conflict (Andreen, 2003a).

2.3.1 Evolution of the Clean Water Act

The 1948 Federal Water Pollution Control Act (FWPCA) served as a precursor to the CWA, which would undergo many revisions before the federal government expanded the CWA in 1972. The National Pollution Discharge Elimination System (NPDES) is a permit system added into the FWPCA with the 1972 amendments. Created by the Subcommittee on Air and Water Pollution of the Senate Committee on Public Works, the permit specifies what pollutant discharges the towns must manage. The permitting program specifies that discharges of a pollutant from a point source into a navigable waterway are prohibited unless the discharger has a NPDES. Specifically, the NPDES permit regulates point source discharges of pollutants into surface waters. A point source is defined by the CWA as "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel [etc.] from which

pollutants are or may be discharged" (U.S.C § 1251, (2014)). Originally, the USEPA intended the NPDES to regulate industrial wastewater and municipal sewage as this was the most abundant sources of liquid pollution (Tyer, 1993). Legislative amendments to the FWPCA in 1977, 1983, and 1987 increased the pollutants regulated under the CWA. As these regulations expanded, the EPA decided to implement stormwater management through a separate permit. Under the 1987 amendments, the Municipal Separate Storm Sewer System (MS4) came into being (MINAN, 2005). The CWA has since then expanded to cover many more pollutants than in its original conception.

2.3.2 What is the NPDES Stormwater Program

One of the main reasons that the USEPA put NPDES permits in place was to regulate how many pollutants can be safely discharged into surface waters (USEPA, 2014d). Congress charged the USEPA with administering the NPDES permit program. Congress first established this program with the enactment of the 1972 amendments to the FWPCA. The USEPA can also authorize state and local governments the power to administer the requirements of the CWA by what is called primacy authority (USEPA, 2014h). Massachusetts, however, does not have primacy authority to enforce the CWA so Massachusetts created its own set of laws that mirror the USEPA's laws. Generally, only industrial, municipal, and commercial facilities have to comply with the NPDES permits since they are the primary dischargers of pollutants into surface waters via point sources. Individuals, generally, do not have to get NPDES permits since their wastewater flows through the sewage system or septic tank.

The types of material that NPDES permits regulate are discharged pollutants from point sources. The CWA defines a point source as a pipe, ditch, channel, tunnel, conduit, well, landfill, etc. (U.S.C § 1251, (pg. 214) (2014)). A point source is a source of runoff that only has a single

point of release. A good example of a point source is a chemical treatment plant that uses a chemical to treat their product and then pumps out any of the runoff from their process into a local river. That pipe, which takes the runoff out of the plant, would be a point-based source, as Figure 11 illustrates.

Conversely, the other source of pollution comes from non-point sources. Non-point sources are sources of water pollution, which do not have a point of release such as rainwater and snow melting. Once the stormwater runoff and the melting snow travel into the local MS4s, the runoff becomes a point source, therefore falling under the regulatory authority of the NPDES permit program. A good example of a point source and a non-point source of pollution is Figure 11.

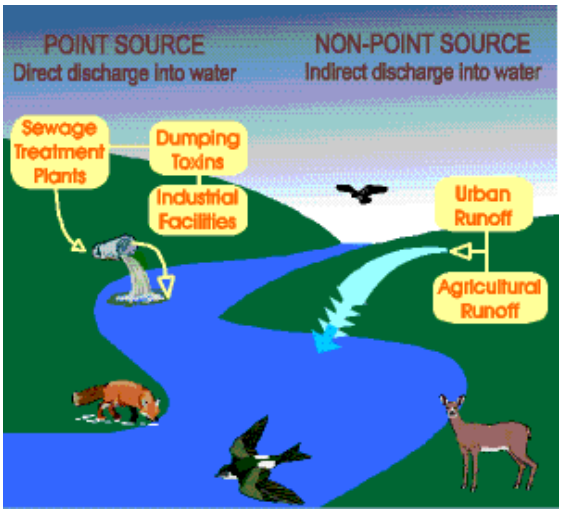

Figure 11. Point and Non Point Sources of Pollution

(College, 2014)

The USEPA and other government bodies, which have primacy authority, require companies and businesses to apply for these NPDES permits when they want to discharge any pollutant into a navigable surface water body through a point source (U.S.C § 1251, (2014))

2.4 The Municipal Separate Storm Sewer System Permit

As part of the CWA, the USEPA issued the MS4 permit in 1990 to reduce the impacts of storm water runoff. The government issues these permits with the sole purpose of addressing the large amounts of stormwater runoff that storms generate. These systems receive stormwater

runoff from the environment, and transport it into nearby bodies of water. These systems do not treat water; they only convey it from impermeable surfaces. With these permits, towns can regulate non-point discharges as point source discharges through the MS4, and create broad stormwater management programs. In 1990, at the inception of the MS4 permitting program, the USEPA issued phase-I MS4 permits on a per-city basis (USEPA, 2014h). These first permits contain measures tailored to individual municipalities, as many large cities had different requirements.

The primary requirement to qualify for a phase-I permit is that the town has a population of at least 100,000. In Massachusetts, there are 2 towns of this size: Boston and Worcester (Massachusetts, 2014b). The phase-II MS4 permit applies to smaller towns with a population of less than 100,000 and contains broad regulations so that it can be applicable to any small municipality. In total, the USEPA has issued approximately 7,450 MS4 permits across the United States from 1990 to 2014 (USEPA, 2014h) (USEPA, 2014b). At their core, these phase-II MS4 permits all integrate practices known as the six minimum control measures. The six minimum control measures are: Public Education, Public Involvement, Illicit Discharge Detection & Elimination, Construction, Post-Construction, and Pollution Prevention/Good Housekeeping.

Although the 2003 MS4 permit has expired, the six minimum control measures remain the primary focus of the 2014 MS4 permit draft. In the following sections, we outline the six minimum control measures and describe some of the BMPs that towns can use to comply with each control measure in the 2014 MS4 permit draft.

2.4.1 Public Education & Outreach

The first minimum control measure addresses the need for public education. Public education plays an important role in reducing pollution levels. Towns can meet the requirements through BMPs such as educational pamphlets, media campaigns, and workshops

The National Environmental Education and Training Foundation (NEETF) found that in 2005, 78% of Americans did not know that runoff from lawns, roads, and agricultural land is the most common source of water pollution. Of further concern, 47% of the public believes that industry accounts for most water pollution (USEPA, 2014b). In order to correct these misconceptions, this control measure requires municipalities to educate the public on the impacts of stormwater runoff and offer residents information on mitigation strategies they can implement at home.

2.4.2 Public Involvement and Participation

The second minimum control measure requires the municipality to form a working partnership with members of the community (USEPA, 2014b). A common way that municipalities fulfill the requirements of this control measure is to create volunteer programs, which engage the public in reducing the pollution caused by stormwater runoff. These programs offer opportunities for volunteers to mark storm drains and participate in cleanup and monitoring programs, as well as to create watershed groups and conservation corps teams (USEPA, 2014b). The officials of each municipality design these opportunities to integrate directly with stormwater programs. When towns implement and utilize this control measure correctly, they can involve the community and create self-monitoring environmental conservation groups.

2.4.3 Illicit Discharge Detection and Elimination

The third minimum control measure deals with the threat of stormwater contamination. Although the MS4 system carries stormwater, it does not treat the stormwater. The MS4 permit defines an illicit discharge as any discharge that is not entirely composed of stormwater. The MS4 stormwater drains are particularly vulnerable to foreign pollutants; the stormwater runoff in these MS4 systems may contain pathogens, nutrients, and various other pollutants. The phase-II MS4 permit requires four primary programs in this control measure, beginning with a full diagram of the MS4 system (USEPA, 2014b). The second program requires the municipality to create a legislative ordinance prohibiting discharges based on pollutant type (USEPA, 2014b). The third is the implementation of reporting techniques such as hotlines, onsite notifications, and outfall water tests (USEPA, 2014b). The fourth is an educational program on the dangers of these illicit discharges (USEPA, 2014b). When used effectively, these programs work to create a system that is both reactive in response to spills and proactive through prevention via education and enforcement.

2.4.4 Construction Site Stormwater Runoff Control

The fourth minimum control measure deals with construction-site stormwater runoff. Of the public works projects that adversely affect the health of a water system, construction site runoff is particularly detrimental. These effects stem from the sediment dissolved in the runoff, including dirt, sand, and other fine particles. When these concentrations of the sediment particles settle in waterways, they block sunlight, and can suffocate many forms of aquatic life (USEPA, 2014a). Phase-II MS4s require the municipalities they regulate to formulate a program to reduce pollutant stormwater runoff for construction exceeding one acre of land. This requirement is

comprised of six components. Collectively, they ensure that construction groups know of their management obligations for proper stormwater pollution management.

2.4.5 Post-Construction Stormwater Management

The fifth minimum control measure refers to post-construction stormwater management. In practice, this control measure is not a continuation of the previous control measure, but a different control measure to monitor BMP effectiveness, as well as the continued prevention of pollution. This control measure is implemented primarily through inspections of on-site facilities, and structures responsible for stormwater management. With these practices in place, areas with new development can continue to manage stormwater runoff pollution after construction has finished.

2.4.6 Pollution Prevention and Good Housekeeping

The final control measure is responsible for the housekeeping of a municipality's stormwater management program. In order for municipalities to maintain good operating conditions within municipal-owned facilities such as the Department of Public Works (DPW) and schools, they must construct a rigorous system of upkeep management. These components can consist of road maintenance and repairs, automobile fleet maintenance, landscape maintenance, as well as building upkeep. Pollution prevention practices can include activities such as street sweeping and storm drain system cleaning (USEPA, 2014e).

2.4.7 General Practices and Municipal Individuality

In order to account for thousands of different municipalities, the MS4 permit authors designed the six minimum control measures to be applicable to any possible situation. Independent of environmental conditions or area development, these measures have to be

comprehensive. Unfortunately, these phase-II MS4 permits rely on a large degree of self-reliance and proactive involvement by the municipalities, but there are resources available to help with this. In order to assist Massachusetts municipalities with MS4 permit compliance, the MassDEP has created a Stormwater Handbook, which contains resources about how a city or town can comply with the minimum control measures (MassDEP, 2014). Additionally, the Massachusetts Watershed Coalition, an organization dedicated to protecting and restoring Massachusetts watersheds, is able to provide many materials to their members, such as brochures and standard operating procedures (Coalition, 2014). However, the officials of each municipality must ultimately take responsibility to implement the practices in the six minimum control measures.

The MassDEP manages a system of computer checks and administering programs for stormwater management in Massachusetts. If the system flags a municipality for irregular readings or reports, inspection by MassDEP officials becomes necessary (Civian, Sept. 26, 2014). Implementation of these control measures requires the municipalities to spend a large amount of money, which raises budget concerns for the 2014 MS4 Draft permit.

2.5 The MassDEP and the Central Massachusetts Regional Stormwater Coalition

The MassDEP is the Massachusetts environmental agency charged with making sure Massachusetts has clean air and water (Massachusetts, 2014a). The central office of the MassDEP serves the entirety of Worcester County (MassDEP, 2013). The MassDEP assists the CMRSWC by providing them with numerous guidance documents, which teach the municipalities how to fulfill the requirements of the MS4 permit (CMRSWC, 2014b). In collaboration with the MassDEP, we sought to provide a cost analysis of implementing the new 2014 MS4 permit in three Massachusetts municipalities. During this project, we worked with

two primary contacts from the MassDEP: Frederick Civian, Statewide Stormwater Coordinator for the MassDEP, and Andrea Briggs, Deputy Regional Director of the Central MassDEP.

2.6 Central Massachusetts Regional Stormwater Coalition

Central Massachusetts is one of many regions in Massachusetts whose municipalities seek to effectively implement the 2014 MS4 permit. The CMRSWC helps its members achieve this goal. The CMRSWC, formed in 2012, initially consisted of 13 municipalities (Spain, 2014). Due to the success and utility of the CMRSWC, it has expanded to 30 municipalities by 2014. All of the municipalities within the CMRSWC are subject to regulations from the USEPA, which require the municipalities to mitigate the impacts of stormwater runoff (CMRSWC, 2014c).

The municipalities within the CMRSWC receive numerous benefits because of their collaboration. The municipalities can share stormwater management tools, such as Leica units and water quality testing kits, thus reducing cost (Coalition, 2014). Their collaboration also reduces redundancies in stormwater management projects, thus allowing the municipalities to use money more efficiently. Although the CMRSWC members try to collaborate as much as possible, the individual towns are ultimately responsible for utilizing the tools developed by the CMRSWC in order to comply with the MS4 permit (Spain, 2014).

2.6.1 Funding of the CMRSWC

The CMRSWC receives funding from the Community Innovation Challenge (CIC) Grant. Massachusetts Governor Deval Patrick started the CIC grant program in 2012 in order to ease the taxpayer burden of community improvements (Massachusetts, 2013a). The CMRSWC received $310,000 in 2012 to help implement the 2003 MS4 permit (Massachusetts, 2013b). The CIC Grant provided the CMRSWC with $105,000 for the 2013 fiscal year. This grant did not cover the total cost of the CMRSWC's efforts, thus each municipality had to provide $2,800 in order to supplement the cost (Spain, 2014). For the 2014 fiscal year, the CIC Grant provided the

CMRSWC with $80,000 (CMRSWC, 2014a). The grants are awarded in December, so at the current time the CMRSWC does not know if they have secured funding for next year.

2.6.2. Organizational Involvement in the CMRSWC

The CMRSWC operates with the help of various agencies and companies. The government agencies, which support the CMRSWC, include the MassDEP, the Massachusetts Department of Conservation and Recreation (DCR) and the USEPA. The CMRSWC also receives support from the private consulting firms of Tata & Howard and Verdant Water. The companies which provide services to the CMRSWC include Maine Technical Source, HACH Company Chemetrics, and People GIS (CMRSWC, 2014d).

2.6.3. Stormwater Consultants

The CMRSWC receives support from the private consulting firms of Tata & Howard and Verdant Water. Tata & Howard is an engineering firm which provides consulting for the management of wastewater, stormwater, and hazardous waste (Tata&Howard, 2014a). Tata & Howard also helped create a system which collects inspection data and maps runoff patterns within the CMRSWC (Tata&Howard, 2014b). Verdant Water operates from Scarborough, Maine, and focuses on industrial and municipal stormwater management. Verdant Water provides Stormwater Pollution Prevention Plans (SWPPPs), Illicit Discharge Detection and Elimination (IDDE) assistance and water quality screening.

The use of these private consulting services to fulfill components of the MS4 permit requires the municipalities to spend a large amount of money. We had to take the cost of these services into account in order to construct our cost analysis. In the next chapter of our report, we describe our methodology for creating our cost analysis.

2.7 Goals and Objectives

In collaboration with the MassDEP and the CMRSWC, we sought to provide the towns of Southbridge, Holden, and Millbury, Massachusetts with a comprehensive analysis of their cost of compliance with the new 2014 MS4 permit.

In order to achieve this goal, we:

1. Became educated on the details of the 2003 MS4 permit and the new 2014 MS4 permit
2. Assessed the degree to which Millbury, Holden, and Southbridge have met the requirements of the 2003 MS4 permit
3. Researched Millbury, Holden, and Southbridge's total current expenditures for stormwater management
4. Identified what changes each of the aforementioned towns will have to make to comply with the requirements of the new 2014 MS4 permit
5. Provided a detailed analysis of the complete costs each town will need to defray in order to comply with the requirements of the new permit.
6. Created an educational video to explain the costs of implementing the 2014 MS4 permit

We discuss our methodological approach to accomplishing these objectives in detail in chapter 3.

3.0 Methodology

3.1. Introduction

In collaboration with the Massachusetts Department of Environmental Protection (MassDEP) and the Central Massachusetts Regional Storm Water Coalition (CMRSWC), we provided the towns of Millbury, Holden, and Southbridge, Massachusetts with a comprehensive analysis of the cost of compliance with the new 2014 Municipal Separate Storm Sewer System (MS4) permit. We focused our project objectives on determining the current and future cost of stormwater management in the subject towns. The MassDEP and CMRSWC proposed this project to increase municipal and agency understanding of the cost of compliance with the MS4 permit; The MassDEP will not use this information for enforcement of the MS4 permit. The MassDEP recruited us to address this problem as independent consultants. The United States Environmental Protection Agency (USEPA) released the new 2014 draft MS4 permit on September 30, 2014. In order to accomplish our goal and objectives, we created the following methodology.

The main goal of our project was to gather information from the towns of Holden, Millbury, and Southbridge Massachusetts in order to help them identify the financial costs of implementing the 2014 MS4 permit draft when it eventually comes into effect. Below we discuss each of the objectives we achieved in order to accomplish our project goal.

3.2. Objective 1: Became educated on the details of the 2003 MS4 permit and the 2014 MS4 permit

In order to create a complete cost analysis of compliance with the 2014 Massachusetts draft MS4 permit, we first sought to understand the requirements of 2014 MS4 permit draft. Understanding the permit also involved an in-depth analysis of the expired 2003 MS4 permit that

the towns have to maintain compliance until the new permit goes into effect. The USEPA issued each of the towns a Phase II permit, as their populations do not exceed 100,000 people (US EPA, 2014).

We analyzed the content of the 2003 MS4 permit minimum control measures so that we would each become more familiar with the minimum control measures. We then contrasted the requirements of the 2003 MS4 permit with those of the 2014 MS4 Draft Permit. As we researched the requirements that are a part of the 2003 MS4 permit, we determined how the permit changed from the 2003 version to the 2014 version with the help of Fred Civian. In addition, we analyzed previous reports written by groups that have worked with the MS4 permit. We interviewed Worcester Polytechnic Institute (WPI) students Xinping Deng, Nicholas Houghton, Haoran Li, and Joseph Weiler, who completed the previous MS4 related project, to gain a better understanding of how to create a cost analysis and work with the towns. We also interviewed them to better understand the efforts that have gone into implementing the permit. After analyzing both permits and interviewing the past IQP group, we were better able to approach the task of creating a cost analysis for our subject towns, see Appendix A for a list of interview questions.

3.3. Objective 2: Assessed what Millbury, Holden, and Southbridge have done to meet the requirements of the 2003 MS4 permit

In order to achieve this objective, we reviewed annual stormwater reports, conducted interviews, and conducted fieldwork. Even though the 2003 MS4 permit expired, understanding what the towns have done to comply with the permit requirements helped us increase our understanding of the additional measures and costs the towns will need to take to maintain compliance once the USEPA implements the 2014 MS4 Draft permit.

In our subject towns, we interviewed Department of Public works (DPW) directors such as Heather Blakeley, John Woodsmall, and Rob McNeil. We also interviewed other municipal officials such as Mark DiFronzo Southbridge's fire chief, Isabel McCauley Holden's Town Engineer, a Conservation Commission member from Southbridge Ken Pickerin, and Pamela Harding Holden's Town Planner. We conducted these interviews to determine what each town currently does to comply with the 2003 MS4 permit. Through our sponsors at the MassDEP, we contacted these towns in order to set up interviews with the municipal officials that oversee compliance with MS4 permit requirements. We focused these interviews on each municipality's efforts to comply with the six minimum control measures. In addition, we asked the interviewees to provide us with any documentation of expenditures, which we used to determine their town's costs. See Appendix A for examples of the interview questions that we asked each of the towns.

The expense reports from the consultants, DPW, and highway department, which the officials provided to us, did not encompass all of the town's expenditures, so we also used these interviews and fieldwork to obtain a more complete understanding of the expenditures. We conducted this fieldwork in order to determine the man-hours needed to conduct sampling tests on site. We used this data for information regarding procedures, costs, and methods used to fulfill the 2003 MS4 permit.

3.4. Objective 3: Identified Millbury, Holden, and Southbridge's total current expenditures for stormwater management

Once we collected data detailing the practices that our subject towns use to manage their stormwater runoff, we aggregated our data to create a cost analysis. Millbury, Holden, and Southbridge are members of the CMRSWC, which utilizes the expertise of the environmental consulting firms Verdant Water and Tata & Howard. We analyzed cost data from any

expenditure that occurred before release of the 2014 draft MS4 permit, but after 2012 to get a general idea of expenses. We analyzed all expenditures from the experience reports mentioned in the previous objective because towns often do more than they report to manage stormwater but are not necessarily aware of the task coming under the rubric of one of the 2003 MS4 permit minimum control measures (Deng, Houghton, Li, & Weiler, 2014). These tasks could include street sweeping, public education, volunteer organizations, and hazardous waste cleanup.

Many municipalities hire construction contractors to make changes to existing Best Management Practices (BMP), if required, or to keep up with maintenance on the town's BMPs. These construction companies may not be a frequent cost, but towns may still face these costs, or similar as-needed costs, while they manage their stormwater. We spoke with stormwater consultants Matthew St. Pierre of Tata & Howard and Aubrey Strause of Verdant Water in order to get a better understanding of how much these municipalities have spent on stormwater management. We also interviewed the municipal officials that oversee the stormwater management programs such as the Directors of the DPW as mentioned in the previous objective. Andrea Briggs put us in contact with them during the course of the project. By interviewing both of these groups of people, we were able to assess stormwater management spending using multiple sources. Drawing on the research that we conducted in the previous objective, we analyzed the methods, which the towns used, and the cost of each method, in order to calculate a total amount that the towns spend on stormwater management.

To compile the data that we gathered from our subject towns, Ms. Strause and Mr. St. Pierre provided us with a chart that the previous IQP group had put together and that Ms. Strause and Mr. St. Pierre had updated, the chart can be seen in Appendix B. This chart had many common costs of towns and ways that towns pay for stormwater management. Once Ms. Strause

provided us with the chart, she was able to take the areas that we were looking at and add them to the chart. By using this chart, towns will be able to directly compare the data that we gathered with the data that the towns would gather from their own cost analyses.

Using the information that we gained from identifying Southbridge, Holden, and Millbury's current expenditures and the previous objective, we were able to compile data from all three municipalities and create a cost analysis.

3.5. Objective 4: Identified what changes each of the subject towns will have to make to comply with the requirements of the 2014 draft MS4 permit

In order to accomplish this objective, we used the knowledge gained in accomplishing objectives one, two, and three to begin calculating the cost of compliance with the 2014 MS4 permit. We performed research to determine the BMPs that the municipalities already have in place to comply with the 2003 MS4 permit. This research included a detailed analysis of the town's annual stormwater reports. In addition, we conducted interviews with town officials and stormwater consultants who have worked with the towns. Examples of the interview questions we used can be found in Appendix A. By identifying what Best Management Practices (BMPs) the towns already use, we were able to determine whether, and in what manner, our subject towns will need to expand their stormwater management efforts to meet the requirements of the 2014 MS4 permit.

In order to identify the necessary changes, we conducted interviews with municipal officials in each town. We also spoke with Frederick Civian; Regional Stormwater Coordinator of the MassDEP. These interviews provided us with insight into each town's level of preparedness toward meeting the requirements of the 2014 MS4 permit.

Ultimately, this objective helped us gain a comprehensive understanding of the financial cost of implementing the 2014 MS4 permit in each municipality. By understanding the BMPs each town uses, we were able to assess what changes they need to make, and by extension, the financial cost of implementing each change. We created a checklist of the common practices such as street sweeping, distribution of pamphlets, and outfall mapping that municipalities use to comply with stormwater permits, and combined this with a similar chart given to us by Mr. St. Pierre and Ms. Strause. We discuss our cost analysis in further detail in objective 5.

3.6. Objective 5: Provided a detailed analysis of the complete costs for each subject town to comply with the requirements of the 2014 draft MS4 permit

In order to complete this objective, we first determined the changes each town will need to make in order to comply with the 2014 draft MS4 permit, as we described in objective four. We then computed the financial cost of the implementation of these changes. In order to perform our cost analysis, we spoke with Mr. St. Pierre, Ms. Strause, and Mr. Civian. These people were able to provide us insight into the typical cost of implementing BMPs, which fulfill the MS4 permit. We were able to determine what equipment each town has, such as street sweepers, outfall mapping equipment, and signage, through interviews that we conducted with municipal officials. The CMRSWC possesses some of this equipment, which the municipalities can use, therefore eliminating the need for the towns to buy and maintain their own equipment. We also determined the human resources each municipality can provide to manage stormwater. This knowledge allowed us to determine the labor costs. This knowledge also allowed us to determine if the towns will need to hire contractors or additional personnel in order to supplement their workforce. Once we had a list of all of the costs of stormwater management from the subject

towns, we were able to estimate the total cost of meeting the requirements of the 2014 draft MS4 permit.

In order to assist us with our cost analysis, Mr. Civian provided us with a chart, which listed every regulation of the 2014 draft MS4 permit. This chart is utilized in Appendices D, E, and F where we used it for each of our three subject towns. We divided this chart into eight separate sheets. Seven of the sheets individually detail the requirements of the six minimum control measures, as well as miscellaneous requirements such as submitting a Notice of Intent (NOI). Within each of these sheets, we divided the costs into annual costs, one-time costs, and intermittent costs, and calculated a total for each. We then took the totals from each of the seven sheets and compiled them into an eighth master sheet. This chart allowed us to create a comprehensive analysis of implementing the 2014 draft MS4 permit in each of our subject towns.

3.7. Objective 6: Created an informational video to explain the costs of implementing the 2014 MS4 Draft permit

Over the course of the project term, we gathered photos, videos, and interviews from Fred Civian, Andrea Briggs, and John Woodsmall and compiled them into an informational video. By gathering this material, we were able to highlight the challenges and importance of stormwater management. These challenges include raising funds and garnering public support for stormwater management.

In order to create this video, we first created an outline. During the outlining process, we reached out to Frederick Civian, Andrea Briggs, Matthew St. Pierre, and Aubrey Strause in order to generate ideas for the content of our video. We then borrowed video recording equipment from WPI's Academic Technology Center (ATC). This equipment included a digital camera, monopod, tripod, GoPro, and a shotgun microphone. We used the GoPro to gather underwater

footage of the outfalls. The shotgun microphone allowed us to eliminate ambient noise from cars during our filming in the field. We also borrowed wireless clip-on interview microphones to get clear audio during our interviews. Once we acquired the equipment, we then began to create our video. We filmed our fieldwork, which included our use of the water sampling kits. We then conducted interviews with stormwater experts that we had contacted previously.

4.0 Cost Analysis

4.1 Introduction

One of our major findings details the benefits of regionalization to effectively implement the 2014 draft Municipal Separate Storm Sewer System (MS4) permit. Due to the high costs that we describe in this chapter, towns should consider joining an established coalition, such as the Central Massachusetts Regional Stormwater Coalition (CMRSWC), or starting a new coalition to serve their specific region.

After completing objectives one through four of our methodology, we were able to construct our cost analysis. In this cost analysis we detail both current stormwater expenditures for the towns of Southbridge, Holden, and Millbury, and potential costs of compliance with the new requirements of the 2014 MS4 Draft permit requirements.

After calculating the current expenditures of our towns, we sought to predict the cost of implementing the 2014 draft MS4 permit in our subject towns. In order to assist us with this portion of our cost analysis, Frederick Civian provided us with a spreadsheet, which lists each of

the requirements of the 2014 draft MS4 permit. We divided this table by the six minimum control measures of the MS4 permit, and then used the resulting spreadsheet to predict the cost of implementing each requirement in our subject towns. See the spreadsheets we used in Appendices D, E, and F.

In this chapter, we first provide some background information on the towns of Holden, Millbury, and Southbridge, Massachusetts. Then we discuss the results of our 2003 MS4 permit and 2014 draft MS4 permits cost analyses. We then explain the results of our comparative analysis of the three subject towns' current costs of implementing the 2003 permit requirements. Next, we describe the results of our comparative analysis of Holden, Millbury and Southbridge's estimated cost of compliance with the 2014 draft MS4 permit requirements.

4.2 Background Information on Millbury, Holden and Southbridge, Massachusetts

The three subject towns for the cost analysis are all located within Central Massachusetts. Despite their similar geographic location as seen in Figure 12, the subject towns vary in size, budget, and population. Southbridge, Massachusetts has a population of approximately 16,800, while Holden has a population of about 17,600, and Millbury has a population of about 13,300.

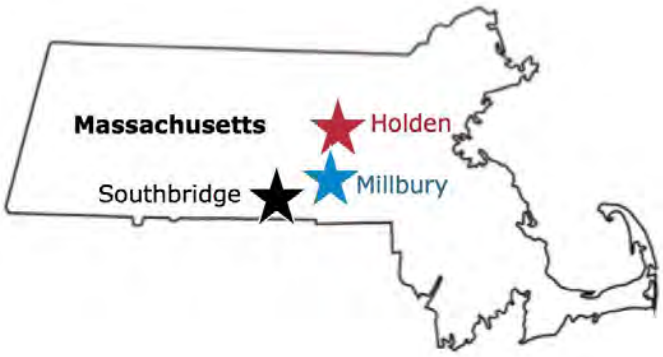

Figure 12: Town Locations in Massachusetts

The towns' geographic area and percentage of impervious surface area also varied. With a higher impervious surface area comes a more expensive stormwater management program since there is more area for the stormwater runoff to run along. As the runoff runs along

impervious area it collects pollutants and the more polluted the runoff becomes. This requires the towns to take more of an effort to reduce the pollution, which leads to a high cost for stormwater management. As our subject towns cover more geographic area, their budget increases except in Southbridge, which has a larger budget than Holden even though Southbridge is significantly smaller. Millbury has the highest percentage of impervious surface area even though they have the smallest total area, which significantly increases their stormwater management costs.

The form of town government can have a large effect on how long towns take to implement the new draft requirements for stormwater management. Both Millbury and Holden have open town meetings as their primary form of government, whereas Southbridge has a Council and an Alderman as their government structure. When we spoke with Robert McNeil, he told us that having open town meetings could cause regulations to take longer to pass since the meetings are open to the public. This, however, does allow for much more public involvement and participation.

Town	Form of Government	Population	Town Budget	Area	Percent Impervious
Southbridge	Council and Alderman	16,799	56,739,257	20.9mi^2	8.69%
Holden	Open Town Meeting	17,636	52,774,844	36.2mi^2	7.04%
Millbury	Open Town Meeting	13,305	39,018,827	16.3mi^2	13.09%

Table 2: Town Information

4.2.1 Current Cost of Public Education and Outreach

The Public Education control measure requires towns to educate their population about the issues the town faces with regard to stormwater and to offer opportunities for the residents to participate in stormwater-related activities. In Table 3, we show how much Southbridge, Holden, and Millbury currently spend on the Public Education control measure.

Town	Population	Cost
Southbridge	16,799	$10,952
Holden	17,636	$1,000
Millbury	13,305	$566

Table 3: Public Education Costs by Town

A first glance at Table 3 may indicate that Southbridge does much more for this control measure than the other towns, but that is not entirely the case. Much of Southbridge's cost comes from the pamphlets and brochures that they create and distribute to their residents. Both Holden and Millbury have savings of about $6,000 annually since they utilize the resources provided to them by the Central Massachusetts Regional Stormwater Coalition (CMRSWC). Holden also uses pamphlets and brochures comply with this control measure, but since they use materials from the CMRSWC, they only have to pay for distribution. Millbury distributes its public education material digitally through their Department of Public Works (DPW) website, saving on distribution and printing costs. Any town that is trying to maintain compliance with this control measure should utilize any already existing education materials, thereby saving money on design, especially if the town is part of the CMRSWC.

Southbridge also holds hazardous waste removal days in order to gather hazardous waste from households. This practice increases the amount Southbridge spends on this public education, but this helps prevent this waste from appearing in runoff, which in the end saves Southbridge money. This practice of preventative action is an example of what other towns can try as a cost-reduction effort.

4.2.2 Current Cost of Public Involvement and Participation

The next minimum control measure is Public Participation. Public Participation requires that towns comply with their own town meeting requirements. The United States Environmental Protection Agency (USEPA) designed this minimum control measure to allow the public to have a voice in the creation of town specific stormwater ordinances and regulations as required by the MS4 permit. In Table 4, we show the costs associated with maintaining compliance with the 2003 MS4 permit for each town.

Town	Cost
Southbridge	$0
Holden	$0
Millbury	$0

Table 4: Public Participation Costs by Town

The table has zero costs for each town, since this control measure only requires that the towns offer a place and time for people to comment and look at the regulations and ordinances before the town puts them into effect. Towns comply with most of this control measure by following basic town meeting requirements laid out outside of the MS4 permit.

4.2.3 Current Cost of Illicit Discharge Detection and Elimination (IDDE)

As illustrated by Table 5, the subject towns have a wide range of costs associated with implementing the 2003 MS4 permit IDDE control measure. Some of the requirements of the IDDE control measure include developing a storm sewer system map and creating a plan to detect and eliminate illicit discharges.

Town	Cost
Southbridge	$2,452
Holden	$3,520
Millbury	$4,678

Table 5: IDDE Costs by Town

Southbridge, Holden, and Millbury have all completed the mapping requirements of the 2003 MS4 permit. Therefore, the towns have not had to map their town in a couple years. The current costs associated with the IDDE control measure in Southbridge reflects outfall sampling since outfall sampling accounts for 97% of the money the town spends on this control measure. Millbury complies with this requirement by using a Best Management Practice (BMP) that includes use of a closed circuit television (CCTV) system and vacuum truck to remove blockages from their storm drain system. This takes up about 86% of the combined cost for this control measure.

Holden also spends much of their money on use of the vacuum truck totaling about 64% of their total costs for this control measure. Isabel McCauley the senior civil engineer for Holden, and John Woodsmall, the director of the department of public works (DPW) for Holden,

estimate that Holden typically spends $3,000-$4,000 per occurrence on the removal of illicit discharges and had to remove one illicit discharge this past year.

We must note, however, that our costs for Holden were based only on data which Ms. McCauley and Mr. Woodsmall were able to provide to us. Environmental Partners Group (EPG) performs many of Holden's costs associated with the IDDE control measure, including outfall mapping and water quality screening. Financial invoices from Holden detailed the town's annual expenditures on EPG services since 2007 at $119,000. However, the invoice descriptions do not specify exactly what service is associated with each line item. Therefore, it was difficult for us to discern between annual costs and one-time costs. We were unable to connect with EPG to obtain a more detailed cost breakdown.

4.2.4 Current Cost of Construction Site Runoff

As illustrated in Table 6, the costs associated with implementing the construction site runoff control measure of the 2003 MS4 permit in Southbridge, Holden, and Millbury is low. The 2003 MS4 permit requirements for this control measure include developing a plan to reduce the discharge of pollutants from construction sites.

Town	Cost
Southbridge	$0
Holden	$0
Millbury	$350

Table 6: Construction Site Runoff Control Cost by Town

Our three subject towns implement this control measure using volunteers from their conservation commissions. The volunteers conduct most of the site inspections for the towns. The use of these volunteers is an excellent way to enforce this control measure without costing the towns any additional money. Another reason the cost of implementing this control measure is so low is that contractors must eliminate any violations at their own expense, as Pamela Harding

of Holden (Holden Senior Planner) and Ken Pickerin (Conservation Commission member) of Southbridge described to us in our interviews.

Our subject towns also already have sediment control ordinances in place. These ordinances do not cost any money to the towns as they are laws, which are already in place, and they do not need to be developed by town lawmakers. Although we did not learn of the particular details of these ordinances, they are similar in the fact that they require sediment and erosion control measures at construction sites.

4.2.5 Current Cost of Post-Construction

Differently from the previous control measure, the USEPA designed the Post Construction Site Stormwater Runoff control measure to ensure continuing pollution prevention, as well as BMP functionality, after construction has been completed. In the 2003 MS4 permit, this control measure states that the permittee must develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb land greater than one acre and discharge into the municipal system (US EPA, 2013). Beyond this function, the control measure requires towns to have an ordinance addressing post-construction stormwater runoff, plans for BMP longevity, and that any control measure the towns put in place will prevent or minimize impacts to water quality (US EPA, 2013).

Town	Cost
Southbridge	$0
Holden	$1,760
Millbury	$0

Table 7: Post Construction Costs by Town

In calculating the costs for each town, we sought to determine what funds the towns spent for stormwater management after they completed development projects. Based on the cost estimation sheets developed in *Cost Analysis For The MS4 Permits* (used in Appendices A, B,

and C) we have found that the annual cost for this control measure is $0 for Southbridge, $1,760 for Holden, and $0 for Millbury as illustrated in Table 7.

These costs can be explained by the ways in which each town implements the post construction site regulations. A representative from Southbridge, Ken Pickerin, is part of the local conservation commission. The Southbridge Conservation Commission (ConCom) is a group of volunteers who inspect construction sites, as well review construction site plans for construction projects. In Southbridge, the ConCom volunteers complete all of the Post-Construction Stormwater Management control measure requirements. Consequently, Southbridge's cost of compliance with the Post-Construction Stormwater Management control measure is zero (Ken Pickerin, 2014).

The town of Holden handles this differently, because they are within the Wachusett watershed and the Department of Conservation and Recreation (DCR) performs a number of the required elements of this control measure without any cost to the town (Robert Lowell, 2014). The $1,760 annual cost is from collaborative efforts between the Department of Conservation and Recreation (DCR) (paid by their agency), and Holden DPW workers paid under Holden. Because of this, Holden does have a notable cost of $1,760 to pay its workforce.

In Millbury, developers of a construction project handle the cost of the post construction control measure for that project. As part of the requirements for development within Millbury, a developer must pay for all required inspection programs themselves (Robert McNeil, 2014). This method is aligned with some of the innovative funding techniques Millbury utilizes, which we discuss in Section 5. Developers who secure the appropriate grants to fund the projects perform many of the projects in the town. As part of the grant, the developers pay for the costs of the post-construction control measures as well.

4.2.6 Current Cost of Good Housekeeping

The final requirement in the 2003 MS4 permit is Good Housekeeping. The USEPA designed this control measure to minimize or prevent the effects of stormwater runoff from municipal operations (US EPA, 2013). Generally, this means the towns must implement maintenance activities, inspection procedures for structural controls, employee training, and the upkeep of BMPs. In the implementation of this control measure, the towns have varying costs.

The annual cost for complying with this control measure for Southbridge is $255,200, while the annual cost for Holden is $180,246, and the annual cost for Millbury is $555,123, as illustrated in Table 8. There is a large degree of variation between the towns on cost of current good housekeeping practices. However, this large variation in expenditures is not unique to these three towns.

Town	Cost
Southbridge	$255,200
Holden	$180,246
Millbury	$555,123

Table 8: Good Housekeeping Costs by Town

In 2011, the USEPA conducted an analysis of the cost of complying with the good housekeeping control measure and found similar results. In this analysis the USEPA found that the Massachusetts towns of Bellingham, Franklin, and Milford, good housekeeping expenditures had a difference of $791,000 between the highest and lowest costs for existing programs (Committee, 2011).

In the town of Southbridge, good housekeeping costs are primarily due to catch basin cleanings, salt and sand road management, a leaf collection program, and an employee training program. Of Southbridge's $255,200, 85% is due to the salt and sand road management, BMP maintenance schedule, street sweepings, and the cleaning of catch basins and outfalls every two years.

In Millbury, the town maintains a schedule of yearly catch basin and outfall cleanings, as well as street sweeping, and the use of salt in their roadway management. Their roadway

management constitutes 83% of the cost for complying with this control measure in Millbury, and represents the largest cost in Millbury's entire stormwater management program. While these costs are part of stormwater management, the actions are not for the stormwater management alone. A few of these procedures are part of other departments, such as the Highway Department (Robert McNeil, 2014), and so the costs do not accurately represent the total budget for a municipality.

4.2.7 Total Current Cost Comparison

When we combined the current costs of the control measure, we were able to obtain an estimation of the total costs of compliance for each town. In implementing their stormwater program, the town of Southbridge spends an estimated $268,604 annually, as illustrated in Table 9. The town of Holden spends an annual $186,526 to fund their stormwater management program, as we illustrate in Table 9. Our third town of Millbury annually spends $584,960 on 2003 MS4 compliance as we illustrate in Table 9. We compiled these total costs from available information provided by the towns.

Town	Cost
Southbridge	$268,604
Holden	$186,526
Millbury	$584,960

Table 9: Total Annual Costs by Town

Based on our research, each town appears to go above what is required for the 2003 MS4 permit, but the magnitude of this differs by town.

For example, Millbury cleans its catch basins and outfalls annually, while Holden cleans them every two years. Despite these differences, both towns maintain compliance with the permit, and do so through different methods. Between each municipality, there are differing divisions of stormwater management responsibility. In our experience interacting with each town, they divide their stormwater management programs amongst multiple departments. Because of this, there is a degree of reporting bias in our cost estimation for each town. These

biases are because different town representatives in different towns are all looking for or maintaining and providing different records. This means that towns may have over or underreported what their actual costs were, even with this, we hope that they can be used by towns in comparing the costs for different categories, if not the total costs.

4.3 Comparative Cost Analysis of 2014 MS4 Draft Permit

In this section, we analyze the cost of compliance with the 2014 draft MS4 permit. We discuss each of the minimum control measures and the costs associated with them on a town-by-town basis in the sections below. To complete the analysis we created a system of charts and created estimations with the assistance of Frederick Civian. The charts detail the costs of each of the requirements of the 2014 draft MS4 permit. There are columns in the charts for information about the control measure, the estimated cost of the specific requirement, the reference number to the MS4 Draft permit, and a justification for our estimation. Within the charts, and this section, we use three different frequencies of costs to describe when costs are applicable: annual, one-time, and intermittent.

Annual costs are costs that the towns will have to spend every year to maintain compliance, such as submitting an annual report, and yearly street sweeping. One-time costs include costs that towns have to pay for only once either in the beginning of the permit term or at some point during the permit term. One-time costs include mapping outfalls, submitting a notice of intent, and labeling outfalls. Finally, intermittent costs are costs that occur inconsistently, such as removing an illicit discharge. Appendices A, B, and C contain the completed cost sheets for Southbridge, Holden, and Millbury.

4.3.1 Future Public Education and Outreach Cost

In the 2014 MS4 Draft permit, requirements for the Public Education minimum control measure have increased. Specifically, in addition to the 2003 MS4 permit Public Education

requirements, the 2014 MS4 Draft permit requires towns to measure the effectiveness of their messages, such as educational materials released to the municipality public. Lawrence Pistrang, Environmental Analyst with the Wachusett Watershed DCR, explained that it will cost towns approximately $8,820 to comply with the measuring effectiveness requirement under this control measure. In both Holden and Millbury, the additional cost of assessing the effectiveness of Public Education control measure would increase their cost by over eight times what they spend currently in this control measure. The increase in cost for would amount to double the town's present expenditures on Public Education. The Public Education minimum control measure has small low-cost administrative tasks, but the bulk of the cost comes from continuing the education efforts and adding an evaluative component to the program.

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$19,242	$0	$0
Holden	$9,908	$0	$0
Millbury	$12,106	$0	$0

Table 10: Estimated Public Education Costs

Table 10 shows the cost of compliance of each of the towns, and as we can infer from the values present in the table, the annual costs have increased by 75.2% for Southbridge, 890% for Holden, and 2003% for Millbury. To save money on this control measure, the towns can reuse education materials that already exist within the town or the CMRSWC. The towns can also reduce costs by sharing the metrics and tools used to analyze the effectiveness of their education.

By regionalizing, and working with other towns, every town can save money since towns do not have to work complete these minimum control measures on their own.

4.3.2 Future Public Participation Cost

The Public Participation control measure changed little between the 2003 MS4 permit and the 2014 draft MS4 permit. Consequently, the towns will not have to expend any additional costs to maintain compliance with this control measure. Table 11 shows the expected costs of this minimum control measure based on our estimated costs to update and maintain compliance. The costs do not change for any of the towns since the requirements changed only slightly, the changes that did occur were minor administrative tasks such as adding a section in the annual report, which describes this control measure, and requiring that towns comply with public notice requirements outside of the MS4 permit.

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$0	$0	$0
Holden	$0	$0	$0
Millbury	$0	$0	$0

Table 11: Estimated Public Participation Costs

4.3.3 Future IDDE Cost

The IDDE control measure of the 2014 MS4 Draft permit represents a large portion of the cost associated with the permit. Much of this cost is due to more stringent requirements, including mapping, outfall sampling, and priority ranking outfalls. These requirements will

generate many material and labor costs, as the towns will have to sample all of their outfalls, while they currently only sample a small fraction of them.

As we show in Table 12, Millbury and Southbridge share similar annual costs on implementing the IDDE control measure of the 2014 draft MS4 permit. However, Holden's cost is much lower. The main reason for this difference is the variation in number of outfalls between

Town	Annual Cost	One-Time Cost	Intermittent Costs	Number of Outfalls
Southbridge	$19,242	$304,006	$50,440	206
Holden	$7,872	$314,494	$50,440	144
Millbury	$11,523	$306,833	$76,730	267

Table 12: Estimated IDDE Costs

the towns. Much of the annual cost for the IDDE control measure is due to the need for the towns to sample all of their outfalls. Southbridge and Millbury have 206 and 267 outfalls respectively, while Holden only has 144 outfalls.

The one-time cost of implementing the IDDE control measure is similar between our three subject towns. This similarity is because most of the one-time requirements are applicable to all of the towns. For example, all of the towns will be required to update their mapping system, which will cost approximately the same amount for all three towns, as they have a similar number of outfalls to map. The towns will also be required to develop an IDDE ordinance, as well as priority ranking catch basins based on conditions and other factors(US

EPA, 2014a). These requirements are of similar cost as the towns all have a similar number of catch basins, and similar resources from which to develop the ordinance.

The intermittent costs listed are very similar between the towns because many of these intermittent costs are indeterminable at this point. Consequently, for comparison purposes, we operated under the assumption that each town will have to treat one illicit discharge per year. We explain our assumptions in more detail in Appendices D, E, and F.

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$0	$770	$0
Holden	$0	$770	$0
Millbury	$350	$858	$0

Table 13: Estimated Construction Site Costs

4.3.4 Future Construction Site Runoff Cost

As we demonstrate in Table 13, the towns are almost identical in the cost that will be required for them to implement the construction site runoff control measure of the 2014 draft MS4 permit. There is only one annual cost associated with this control measure, which is to continue implementing the construction ordinance from the 2003 MS4 permit. Because of this, the town's only have to spend a minimal amount of funds in maintaining this already-establish construction ordinance. Since Millbury is the only town that actually has to spend money to implement this requirement, they are the only town with a future cost associated with it.

The one-time costs of the construction site runoff control measure are all administrative tasks, which should take a similar amount of labor from each town to implement. There is no intermittent cost associated with implementing this measure in any of the towns, as there is only

one intermittent requirement of this control measure, which is to develop and implement a construction site runoff program. In all of the subject towns, the responsibility of this cost primarily falls on independent contractors working on town projects. We found that every town official we spoke informed us that when stormwater runoff issues are found on-site, the responsibility for correcting these issues falls to the developer.

4.3.5 Future Post-Construction Costs

The 2014 MS4 Draft permit, contains numerous additional requirements for the post-construction site runoff minimum control measure. Some of these new requirements include the development, implementation, and enforcement of a post-construction stormwater program for new developments and redevelopments (US EPA, 2014a). Frederick Civian assisted us in analyzing this control measure, and making estimations for the completion of individual items as we demonstrate in Appendices D, E, and F. For the town of Southbridge, we estimated that to implement the requirements of the Post Construction control measure would require an annual cost of $5,280, as we show in Table 14. This cost is joined by a $1,496 cost to update from 2003 MS4 requirements, and an

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$5,280	$1,496	$7,436
Holden	$5,280	$1,496	$7,436
Millbury	$5,280	$1,496	$7,480

Table 14: Estimated Post Construction Costs

estimated $7,436 in intermittent costs as we show in Table 14. We have estimated that Holden will need to pay $5,280 annually, $1,496 in one-time costs, and $7,436 in intermittent costs as we illustrate in Table 14. We estimate our third town, Millbury, will need to pay $5,280 annually, $1496 in one-time costs, and $7,436 in intermittent costs as we show in Table 14. These are all estimated costs that each town should expect to pay, but they may be different depending on how the town plans to implement it. For example, Millbury could expect to reduce its costs by following its current grant funding system. If Millbury imparts these costs onto developers funded by grants, they will be significantly lower (Rob McNeil, 2014). Similarly, if Holden utilizes DCR services; they may be able to forgo some of these costs as well (Robert Lowell, 2014). This section needs some additional detail so we understand where each of the separate costs is coming from.

4.3.6 Future Good Housekeeping Costs

In the new 2014 draft MS4 permit, the Pollution Prevention and Good Housekeeping control measures represent an on average 20% increase in annual costs in comparison to the 2003 MS4 permit cost of compliance. This is because there are many new and specific requirements for this draft permit, where municipalities have to be far more specific in their practices to comply with the permit. We based these cost on our estimates provided in part by Mr. Civian.

We have estimated that the town of Southbridge will have an annual Good Housekeeping cost of $283,458, a onetime cost of $6,292, and an intermittent cost of $0 as illustrated in Table 15. The town of Holden will need to expend an estimated $220,562 annually, as well as $6,292 in one-time costs, but similarly to Southbridge, Holden will have $0 in intermittent costs as

illustrated in Table 15. We have estimated that the town of Millbury will need to pay an annual cost of $693,578, a one-time cost of $6, 292, and no intermittent cost we illustrate in Table 15.

We deduce these costs based on what the towns currently expend in good housekeeping compliance for the 2003 MS4 permit. The 2003 MS4 permit costs, shown in Table 7, represent the current costs for compliance for the subject towns. In the case of annual costs, the largest contributors for this value in each town were their current snow and ice road management. This is a requirement that the USEPA did not update from the 2003 MS4 permit to the 2014 MS4 permit draft.

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$283,458	$6,292	$0
Holden	$220,562	$6,292	$0
Millbury	$693,578	$6,292	$0

Table 15: Estimated Good Housekeeping Costs

The annual cost for Millbury is an estimated 275% increase from the average cost of Holden and Southbridge As mentioned earlier in Section 2.4.7, such a large deviation should not come as a surprise. After being interviewed, DPW Director for Millbury Rob McNeil provided us with the costs of salt, the largest contributor to this control measure cost as seen in Appendix F, in the 2014 Fiscal Year.

4.3.7 Total Future Cost Comparison

Beyond the cost of compliance with each of the control measures, there are many miscellaneous requirements that are located elsewhere in the permit. These requirements include: the submission of a notice of intent, total maximum daily load requirements, and the development of a stormwater management program. These costs are difficult to estimate, as some of them have not been performed before (such as meeting Total Maximum Daily Load requirements), and are not implemented as numbers in our cost sheets located in Appendices A (Southbridge 2003 Cost Analysis), B (Holden 2003 Cost Analysis), and C (Millbury 2003 Cost Analysis). The annual miscellaneous costs in each individual town are $15,168, $2,376 in one-time costs and $0 in intermittent costs we illustrate in Table 16 and Appendices A, B, and C. When all of the values in Tables 10 through 15 of this chapter have been summed up in Table 17, we estimate Southbridge's annual cost of compliance with the 2014 Draft MS4 permit to be $343,008 per year. We have also estimated their one-time cost for the 2014 MS4 permit to be $314,940, which we included in Table 17. In terms of intermittent costs, we expect the towns of Southbridge and Holden to have to pay $57,876 per year as we illustrate in Table 17. We estimate the town of Millbury to need to pay $84,210, as indicated in Table 17. In the Town of Holden, their annual costs are $258,790, their one-time costs are $325,428, and their

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$15,168	$2,376	$0
Holden	$15,168	$2,376	$0
Millbury	$15,168	$2,376	$0

Table 16: Estimated Miscellaneous Costs

intermittent costs are $57,876 as we include in Table 17. In the Town of Millbury, we expect the annual costs to total $753,173, their one-time costs to total $320,231, and their intermittent costs to total $84,210 per year, as illustrated in Table 17. These costs reflect the current stormwater management programs in each town that will continue, as well as a multitude of new requirements. We calculated these cost estimates in direct collaboration with Frederick Civian.

Town	Annual Cost	One-Time Cost	Intermittent Costs
Southbridge	$343,008	$314,940	$57,876
Holden	$258,790	$325,428	$57,876
Millbury	$753,173	$320,231	$84,210

Table 17: Estimated Total Costs

5.0 Findings and Recommendations

5.1 Introduction

Having completed our goals, objectives, and cost analysis, we were able to develop many findings and recommendations for the towns of Southbridge, Holden, and Millbury, Massachusetts, the Central Massachusetts Regional Stormwater Coalition (CMRSWC), and other Massachusetts towns. In this chapter, we discuss the results of our research and recommendations for the CMRSWC and the towns so they can be adequately prepared for the 2014 Municipal Separate Storm Sewer System (MS4) draft permit. Our findings detail the cost of implementing the 2014 draft MS4 permit, as well as the difficulties associated with implementing the draft permit in our subject towns. Despite our rigorous methods, our research may not have revealed all potential costs of compliance with the new draft permit. Therefore, the towns should read our cost analysis as an estimate guideline or starting point. We believe, however, that our findings will be accurate and can help our towns effectively implement the 2014 draft MS4 permit.

5.2 Finding 1: The 2014 MS4 permit may cost too much for the towns to effectively implement

Southbridge, Holden, and Millbury, Massachusetts all struggle to finance elements of their stormwater management programs. Currently, Southbridge spends an estimated $ 326,118 annually on their stormwater programs. Comparatively, the towns of Holden and Millbury spend approximately $150,232 and approximately $647,475 respectively on their annual stormwater budgets. We have compiled these reports from information that individual town representatives have provided us as well as our own observations. We also obtained financial information from town archives, such as 2014 annual stormwater reports from each town. In order to ensure the validity of each wage, capital cost, and reoccurring cost, we obtained each value from

representatives of their respective towns. In cases where we could not find specific details, we translated financial estimates for certain services and programs from one town to another and checked the numbers with Frederick Civian, Stormwater Coordinator for the Commonwealth of Massachusetts.

Based on the reports that each town has provided us, each of our subject towns are experiencing difficulties in meeting these requirements, both financially, and with enough workers. Heather Blakeley, the Director of the Southbridge Department of Public Works (DPW), has expressed concern for the town's ability to fund its stormwater management program. Southbridge is running into difficulty with Proposition 2.5, which prevents towns from increasing taxes by more than 2.5% per year, and citizens can vote to reject an increase in taxes. This issue makes compliance with new MS4 requirements more difficult (Heather Blakely, 2014). Based on our interview, Southbridge is especially concerned with the lack of available labor. There are a large number of new requirements in the current MS4 Draft permit, and Southbridge does not have the dedicated labor force to tackle so many new programs (Heather Blakely, 2014).

John Woodsmall, the Director of the DPW in Holden, has expressed similar concerns. He has stated, "A lot of it depends on what the final format of the permit will be, and what the magnitude is in the increase in costs. We're able to absorb some but not too much generally. If it's substantial then that's going to be a real concern." (John Woodsmall, 2014).
Millbury's DPW director Robert McNeil has also indicated a similar situation. He said, "Particularly since it's still in draft form, we have not made any effort to determine the cost of the changes. So I think part of this whole effort, the hope is to work through that. Either [our IQP team] Figure out where the gap is, or what's changing, or work through the [CMRSWC] to

determine what those costs are" (Robert McNeil, 2014). Mr. McNeil also stated in our interview that of all the preparations, funding lacks the most assistance, even though funding is the backbone for the whole system.

After collecting financial data from each town, we were able to create a cost estimate for each town's stormwater management costs as we show in the Finding 1. These cost estimates represent their total costs of compliance with the 2003 MS4 based on currently available information. We were able to contact representatives in the Massachusetts Department of Conservation and Recreation (DCR) during our project. We interviewed Robert Lowell, Stormwater Manager for the DCR, and Lawrence Pistrang, Environmental Analyst for the DCR. They were able to provide us with cost estimates for educational programs, as well as guidelines for estimating the costs of certain requirements. With these resources, we were able to construct a separate cost estimation of complying with the 2014 MS4 Draft permit for Southbridge, Holden, and Millbury. Appendix H contains the blank cost sheets, Appendix D for contains the completed sheets for Southbridge, Appendix E contains the completed sheets for Holden, and Appendix F for Millbury. In total, we expect an annual cost increase of 28% for Southbridge, 39% for Holden, and 30% for Millbury. These costs do not take into account the one-time costs for each town to update mapping systems, ordinances, and other one-time programs. Based on these increases in cost and the current state of the stormwater management programs in each town, we believe that the requirements in the 2014 MS4 Draft permit may cost too much for towns to effectively implement.

5.3 Recommendation 1: Effective regionalization will allow towns to better implement their stormwater management programs

If towns can regionalize their stormwater management programs, they will be able to implement the 2014 MS4 permit more effectively and at a lower cost. In our findings, we have

determined that towns can more effectively manage and fund their stormwater programs if they are part of a regional organization. In our study, the CMRSWC unified 30 towns by providing them an effective and centralized stormwater management resource. With the CMRSWC, the members do not have to produce many of the materials required under the 2014 MS4 Draft permit. Our project did not involve municipalities that were not part of a Coalition. Based on our interviews with DCR representatives and Massachusetts Stormwater Coordinator Frederick Civian, a municipality not part of a regional organization would need to expend an excess of $9,433 to develop these materials in house or hire a contractor. We discuss the benefits of regionalization further in finding 4 and recommendation 4.

5.4 Finding 2: Using innovative funding techniques can help the towns spend less from their general fund on stormwater management

With the new draft permit having so many new requirements, towns will have to use innovative funding techniques such as grants, stormwater taxes, or stormwater utilities to fund all of the necessary changes. When funding large construction projects, towns look outside of the town for assistance. Many towns, however, do not look for additional funding outside of their town for stormwater management. When we interviewed the directors of the DPW in Southbridge and Holden, Heather Blakely and John Woodsmall respectively, both said that they have a line item in the town's general fund that funds the stormwater management program. In addition, when we asked how they planned to fund the required changes, both said they would just seek additional funding from the town. However, our other subject town Millbury did not use the same funding strategy as Southbridge and Holden. Millbury uses a unique method of partially funding their stormwater management, which we learned about when we spoke with the Millbury's DPW director Robert McNeil.

As all towns do, Millbury has contractors bid for projects within the town, such as replacing pipes, building new municipal buildings, and repairing municipal buildings. As a part of this system, Millbury asks some of the contractors to write grant requests for the town. If the town gets the grant, then the town gives the project to the contractor. This is an innovative way for both the town and the contractor to benefit; the town has the project completed with all of, or some of the grant money, and the contractor gets the contract. Innovative ways of funding stormwater management are becoming increasingly necessary, as the Community Innovation Challenge (CIC) grant continues to decrease the amount of funds that the CMRSWC receives.

The CIC grant is an innovative way to get community projects off the ground, but the state government established the grant program to start the projects, not sustain the projects, so every year the funding decreases. The CMRSWC is in its 3rd year of CIC funding, and the funding decreased by 62.9% in the first year and 30.4% in the second year. Therefore, the Coalition should explore other ways to fund their efforts. The CMRSWC member towns help the CMRSWC continue to operate by contributing annual dues. Some towns in the CMRSWC are considering implementing a stormwater tax or a stormwater utility, and in some cases that will be necessary. However, by using innovative funding methods, towns can minimize the amount that their residents have to pay for these measures.

5.5 Recommendation 2: The towns should seek alternative sources of funding such as additional grants beyond the CIC

As we mentioned in Finding 2, towns should start to seek new ways of funding stormwater management. When the United States Environmental Protection Agency (USEPA) releases a new MS4 permit, towns are going to have to find ways to fund the permit, and their current method of funding stormwater management through the general fund can only work for a limited amount of time. Some towns in the CMRSWC have talked about implementing a

stormwater tax, but according to Southbridge's DPW director Heather Blakeley, town residents will be hesitant to vote for this tax. This reservation may be due to the citizens' lack of information of the need for and importance of stormwater management. Another method for funding the necessary changes to stormwater management is to create a stormwater utility. This is most likely the best option for many towns, since it is a small increase in cost to the property owners: $11 per single-family household or some similar number. Gathering this money from all of the properties in the town would significantly help towns pay for stormwater management (USEPA, 2009). The stormwater utility allows the town to gather funding based on a factor such as impervious surface or total area, or just a flat rate. A utility would also not have to through the town approval process, so it may be easier for towns to implement.

As we mentioned in Finding 2, Millbury has contractors look for grants that the town could apply for and has the contractors do the application for the town as part of bidding for a project. This way, the towns can source funding for stormwater management outside of their town with little effort, according to Robert McNeil. When we interviewed Mr. McNeil, he told us that the contractor does almost all of the work in this process, which means that even if the town does not get the grant they did not spend much time and money applying for it. The contractor does most of the actual work and it pays off for them if they can manage to get the grant for the town, since the town is much more willing to fund the project with grant money.

A few examples of grants the towns could apply for is the 604(b) grant from the Massachusetts Department of Environmental Protection (MassDEP), Wastewater grants from the Massachusetts Environmental and Energy Agency (MassEEA), and River Revitalization Grants from the Massachusetts Department of Fish and Game (MassDFG). The 604(b) grant program through the MassDEP serves to help towns determine issues in their current stormwater

management systems. The River Revitalization grant from the MassDFG directs the grant at towns for revitalizing rivers in the towns. The towns should apply for funding as quickly as possible before these funds go away. The Coalition should also lobby for additional future funding from the USEPA and the MassDEP

5.6 Finding 3: Using innovative stormwater management techniques can help towns save money and thus implement the MS4 permit more effectively

Millbury utilizes many innovative methods of stormwater management, which helps them save money in implementing the MS4 permit. During our interview with Millbury's DPW director Robert McNeil, we learned about many of these innovative techniques. Millbury has begun the process of removing sump pump lines from their sewer system and directing them into the stormwater system. The town initiated this process in order to prevent combined sewer overflows (CSOs). In anticipation of the increased flow volume from this project, Millbury has begun installing larger drainpipes. These pipes are much larger than they need to be to handle the flow volume from the current project. The town has installed these larger pipes in case they ever decide to tie more discharges into the stormwater system. If Millbury had installed pipes that were only of adequate size to handle the flow volume from the current project, then they would need to perform additional construction if they ever decided to tie more discharges into the stormwater system. Since Millbury has installed these larger pipes, they have eliminated the need to perform additional construction in the event that they decide to increase the flow volume through the stormwater system. Therefore, by anticipating the need for future construction, Millbury will save money over time, thus reducing their costs for stormwater management.

Millbury also saves money by performing innovative public participation programs. The town promoted an art contest to raise awareness of stormwater management in both their middle school and high school. The middle school art contest involved the entire 5^{th} and 6^{th} grade classes

in Millbury's public schools. The high school art contest targeted about 25 students (Rob McNeil, 2014). However, Mr. McNeil expressed interest in targeting the entire high school, which holds students from 7th through 12th grades, in the future. The town rewarded some of the students by allowing them to paint their artwork on the town's snowplows. The art contest was an effective way to target a large number of people. In addition, the contest only involved about four hours of labor from the town DPW. By keeping the cost of fulfilling the public participation control measure low, the town can focus more of their monetary resources on implementing the Illicit Discharge Detection and Elimination (IDDE) control measure, anticipated to be the most costly requirement of the 2014 draft permit.

5.7 Recommendation 3: The towns should strive to utilize innovative stormwater management techniques

As we have discussed in finding 3, the towns can save money by using innovative stormwater management techniques. The 2014 draft MS4 permit allows for a degree of creativity when designing BMPs. The permit allows the permittee to add a Best Management Practice (BMP) to their Stormwater Management Program (SWMP) at any time. If the towns strive to generate creative ideas, they may end up creating a new BMP, which is far more effective than any BMP, which is currently in use. Therefore, generating innovative ideas can be a tremendously helpful way to reduce the cost of implementing the 2014 draft MS4 permit.

5.8 Finding 4: Towns that communicate with other towns, even to a small extent, can more effectively manage and fund their stormwater management programs

In gathering data for our financial report, we have found that there is a lack of communication and sharing of information between towns to improve their stormwater management programs. Within the municipalities of the CMRSWC, there is a group called the Steering Committee, which meets on a monthly basis to discuss stormwater management within their municipalities. During our IQP term, we were able to attend two of these meetings, and in

both of these meetings, we noted the attendance of DPW Director for Millbury, Robert McNeil, DPW Director for Holden, John Woodsmall, and Town Engineer from Holden, Isabel McCauley. In addition, we noted the attendance of ten other members. These members represented other towns within the Coalition, and from the roster of attendees, we noted representatives from Auburn, Leicester, Millbury, Northborough, Shrewsbury, and Spencer. Of the thirty towns in the CMRSWC, only about 25% of towns were represented. Although there are many new members to the CMRSWC, this still represents a low level of communication between towns on this topic, even among towns that are members of a dedicated stormwater coalition. Despite this, the collaboration within the CMRSWC has benefitted all members. Based on our cost analysis efforts seen in Appendices D, E, and F, towns can save approximately $9,433, not including the thousands in a Global Positioning System (GPS) mapping tools such as a Leica, in the implementation of the new permit as members of the CMRSWC.

In our meetings with representatives within the towns of Millbury and Southbridge, we have found that some cost-saving practices of one town may not appear in another. For example, Southbridge prints and mails all of their public education materials, but Millbury uses digital materials from the CMRSWC. Using the materials from the CMRSWC and digitally distributing them, Millbury saves the $6,500 that Southbridge spends on postage. Millbury also has undertaken a way to gather grant funding that was unique among our subject towns the municipalities. Even though both of these towns are part of the CMRSWC, they were unaware of these cost saving techniques that they could apply to their own stormwater management programs.

In working with these towns in the CMRSWC, we have found that even though they do not always communicate their own techniques, they are able to save money through CMRSWC

membership. There are some requirements within the 2014 MS4 draft that require significant investment within a town, but other requirements that will have little or no financial cost. We found this particularly evident in the Public Education minimum control measure. This control measure requires information materials, such as pamphlets, brochures, or information on a website. Additionally, there are requirements such as a sump pump discharge policy, a municipal Stormwater Pollution Prevention Plan (SWPPP), and various ordinances that do not necessarily need to be uniquely tailored to every municipality. The CMRWSC has templates for these materials, and municipalities can save money by using these materials provided as opposed to developing their own.

5.9 Recommendation 4: Regionalization can help towns save money by sharing information and resources.

The CMRSWC is a great example of towns working together to help each other with stormwater management. Not every town needs to join the same coalition, but towns should form coalitions with neighboring towns to share knowledge and tools. The small $4,000 cost of membership to the CMRSWC more than covers the amount that the towns would normally spend on consultants, testing kits, mapping tools, and educational messages. All towns have to map their MS4 system and test their outfalls. This mapping does not have to happen every year, so a single town buying this equipment would be highly inefficient. Additionally, having to purchase water quality testing kits individually would also be a financial burden, based on the seven different factors to test for in the 2014 MS4 permit draft (US EPA, 2014a).

In the CMRSWC, there are monthly steering committee meetings where members talk about current issue in stormwater management as well as issues that they are facing in their town. This is a great place for the person who is in charge of stormwater to learn more from their peers and discuss the current methods of stormwater management. Towns looking to form their

own coalition should look to the CMRSWC as a model or if they are in the region, they should look into joining the CMRSWC.

5.10 Finding 5: In each of our subject towns, stormwater management information was divided amongst different departments

Since the USEPA released the 2014 draft MS4 permit, the towns recognized the increased importance of updating their stormwater management programs. However, some towns struggle to find all of their stormwater management data. Neither Millbury, Southbridge, nor Holden had a centralized source of stormwater management information. In Southbridge, Heather Blakeley knew some of the general costs of stormwater management, but had to send us to Ken Pickerin for information on the conservation commission and to the fire chief Mark DiFronzo for information on hazardous waste removal. Mr. Pickerin and Mr. DiFronzo both dealt with stormwater management indirectly, which led to some confusion as to what information we needed from them. In Holden, we spoke with Isabel McCauley and John Woodsmall, both of whom were knowledgeable on the stormwater management relating to their jobs, but had to send us to town planner Pamela Harding for information on the conservation commission. In our towns, we eventually received the data that we needed, but always after talking with many different people and looking at many different cost sheets. The people we interviewed were often located between different departments in the town.

In Millbury when we interviewed the director of the DPW, Robert McNeil, he had to check for some of the stormwater data, given that he is in charge of the whole department and there is not a single place for that information. However, the numbers he provided to us were from all from different parts of the town's records, which was the case for all three of our subject towns. Many requirements of the 2003 MS4 permit are likely to be performed by multiple departments, such as ordinance creation and street sweeping being two completely different

programs requiring completely different personnel. For all three of our subject towns, these records were not located in a single place, because the required tasks of stormwater management were handled by multiple departments.

5.11 Recommendation 5: Having a central source of stormwater management would allow for easier implementation of future MS4 permits and make continuous compliance easier for the towns.

Based on our previous finding, having a single person in charge of stormwater management, for example, a stormwater coordinator, would make compliance much easier for towns. According to the Department of Conservation and Recreation's (DCR) Stormwater Coordinator Robert Lowell, the USEPA classifies the Wachusett Watershed as a non-traditional MS4 system. Therefore, looking at the Wachusett Watershed DCR for stormwater management is not too different from looking at a town; there are just some different requirements. When interviewing Mr. Lowell, he was able to access information easily because of his position. Since Mr. Lowell is in charge of stormwater management for the Wachusett Watershed DCR, he had intimate knowledge of how many of the requirements the DCR are meeting and what their plans were for the future with the new 2014 draft MS4 permit. If towns were able to replicate what the Wachusett Watershed DCR does with a stormwater manager, then they would be in a much better position for the any future MS4 permits. We recommend that towns research the feasibility of either creating a full-time position to manage stormwater, or make it part of an already-existing position within the municipality. We realize that small towns may not be able to afford this option, and we suggest some towns research the potential of Regional Stormwater Coordinators. These could be Stormwater Managers for multiple municipalities, whose wages are paid in part by each municipality the manage stormwater for. This option may allow smaller

municipalities to be able to consolidate their stormwater management information within their municipal budget.

5.12 Finding 6: The IDDE control measure will be a significant contributor to the increase in cost between the 2003 and 2014 draft MS4 permits

The IDDE control measure of the 2014 draft MS4 permit will cause a significant increase in the cost of implementation in onetime costs. When researching the permits, we found that the IDDE control measure is much longer and has many more requirements in the 2014 draft MS4 permit than in the 2003 MS4 permit. These more stringent requirements will cause a significant increase in the cost of compliance with the MS4 permit, as we illustrate in Table 18. For example, the town of Southbridge should anticipate a large increase in the cost of testing their outfalls. Southbridge has 206 outfalls. In the 2014 fiscal year, they sampled 25 outfalls. Under the 2003 permit, this effort is enough to fulfill the permit requirements. However, the 2014 draft MS4 permit requires each town to sample all of their outfalls, which will result in an eightfold increase in cost for the town. Many of the other permittees will likely face the same challenge as Southbridge and have to increase their sampling work. Massachusetts's towns should anticipate much higher costs in order to fulfill the new requirements of the IDDE measure.

Town	2003	2014 Draft
Southbridge	$3,520	$7,872
Holden	$4,678	$11,523
Millbury	$2,452	$19,242

Table 18: Annual Cost Comparison of IDDE

5.13 Recommendation 6: The CMRSWC should have one person in charge of keeping track of and maintaining the field sampling kits.

One issue that we often faced during our project was with the field sampling kits. The kits often had disorganized and expired components. For example, there was one day we could not run the ammonia test in the field because of expired components. If town workers discover expired components while they sample in the field, this would delay their opportunity to run the test. The workers would have to take the time to find new components and return to their sampling locations. This delay would raise the labor costs for the towns. It was also difficult to find some of the kits. There was one day we had to travel to Oxford in order to find the Total Dissolved Solids (TDS) meter and the Turbidity test. As we discuss in finding 6, the condition of the sampling kits often made it difficult to perform the tests in the field. The kits often had expired components or were in many different locations. If one person was in charge of tracking and maintaining the kits, the CMRSWC would save time trying to find kits and would not have to perform repeat sampling days at outfalls. Therefore, having one person in charge of the kits will save the CMRSWC money.

5.14 Finding 7: The current Asus tablet in use by the CMRSWC is slow and ineffective

When we were in Holden doing outfall testing, we used the tablet from the CMRSWC, which towns use for mapping and data collection. The tablet was not able to connect to the Internet without Wi-Fi, which made it difficult to use in the field. The current solution to that issue is to have an AT&T wireless hotspot to create a mobile hotspot for the tablet. This was not always reliable since the mobile hot spot could be lost or be out of range of the tablet.

The next issue that we learned about with the tablet system was the software. According to Isabel McCauley, Holden's Town Engineer, the software was slow on the tablet and was hard

for the DPW workers to use. When we used the CMRSWC tools on the tablet in the field, we saw this delay. However, when we tried the same tools on one of our smart phones, an iPhone 5, the tools worked smoothly. The screen of the iPhone was smaller than that of the tablet, but the CMRSWC's software was clearly not the issue, the issue was with the tablet.

5.15 Recommendation 7: The towns should use software, which can collect data offline and then upload it to an online database later, as well as a tablet, which is more up to date. This would allow the DPW workers to work more efficiently, thus saving the town labor costs

There are many issues with using the current CMRSWC tablet. Sometimes there just is no cellular signal, which a new tablet could help with, but not be able to completely fix. For this issue, we recommend that the CMRSWC develop an offline mode for the tablet so that anyone using the tablet can collect data and save it so that when the tablet can connect to the network, either via Wi-Fi or via a cellular network, the tablet can upload any data it saved while in offline mode.

Since the tablet is almost three years old, and there are new tablets that would work better, we recommend that the CMRSWC buy a new tablet on which to use their software. Buying a tablet would decrease the amount of time that anyone using the tablet has to wait for loading and reloading when the tools crash. There are tablets that have built-in cell signal receptors, which may be better so the hot spot is not lost and there is a better signal. The combination of the mobile hotspot and the older tablet causes unnecessary frustration and loss of time. When buying the new tablet, the CMRSWC should invest in model that will be durable and will function well over time and with many different users.

For this purpose, we recommend that the CMRSWC purchase a low-end Apple iPad, since they run much better and have a much better life span compared to an Asus tablet. A low-end iPad would cost about $530 for the lowest end full iPad with a diagonal screen size of 9.7in.

A cheaper option is an iPad Mini, which costs $380 with a diagonal screen size of 7.87in. Either of those options would easily out-perform the current Asus tablet. The Asus tablet costs about $250 with a screen size of about 7in and lasted probably two good years. With either iPad they would continue to function well into four years after they are purchased. While working on the current Asus tablet, we lost about four minutes per outfall having to wait for pages to load and reloading pages. If a town is paying a DPW employee $22/hour to use this tablet and they lose four minutes per outfall, they are losing about $2 per outfall. Since the town has to go to each outfall for some of the new requirements approximating 145 outfalls a town, the town is losing $290 due to the cost of the inadequate technology. Just in that savings from one town, the CMRSCW is making the money back in timesaving, especially since the CMRSWC distributes the tablet to many different towns.

5.16 Other Recommendations

5.16.1 The Massachusetts Department of Environmental Protection should research the potential of providing standardized materials available to Massachusetts municipalities

Based on our findings, we believe the MassDEP should consider making available a collection of materials that municipalities could use for their permit compliance when administering the new 2014 MS4 permit. Within the requirements of the 2014 draft MS4 permit, there are many line items that municipalities must develop and implement. These materials primarily consist of those in the Public Education and Public Involvement control measures, such as pamphlets, brochures, and public notices. Beyond these two control measures there are still a number of material requirements, including Stormwater Pollution Prevention Plans (SWPPPs), outfall-screening procedures, and construction site stormwater plans. These materials will require a significant investment from municipalities to implement (See Appendices D, E, and F for cost estimations in our subject towns). In one case, Mr. Lowell provided our team with a high-end

cost estimate for complying with the Public Education requirement. Based on the requirements of the current MS4 Draft permit, a high-end public education program for a town of approximately 17,000 individuals costs an estimated $19,787 annually (Robert Lowell, 2014). This cost can be different, depending on how the municipality chooses to implement certain requirements. Some towns like Millbury are working to abolish paper materials completely (Robert McNeil, 2014). In regards to the Central Massachusetts Regional Stormwater Coalition (CMRSWC), these materials are made by the CMRSWC for its member municipalities, and are available as part of the paid membership to the CMRSWC. Beyond this Coalition, there is also the Massachusetts Watershed Coalition. Formed in 1991, this Coalition works with community partners across Massachusetts in order to protect and restore watershed ecosystems across the state (Coalition, 2014). As part of its goal, the Mass Watershed Coalition also provides information and other services relating to stormwater to many communities in the state (Coalition, 2014). In the 2014 MS4 Draft permit, Most of the requirements are not specific to individual municipalities. The USEPA made the MS4 permit to be applicable to many different municipalities, and the materials that are required are similarly nonspecific to any municipality. With special attention paid to the success of Coalitions distributing materials, it may be highly beneficial for the MassDEP to develop certain materials in-house, as opposed to municipalities developing them themselves. These would be materials like standard operating procedures, ordinances, and other administrative tools that are required under the 2014 draft permit. The MassDEP should certainly not force municipalities to use these materials, but the materials should be available in electronic and physical forms. Even if only a few towns make use of these materials, they could potentially save tens of thousands of dollars.

5.16.2 The CMRSWC should streamline and update the digital forms. This practice would reduce the time needed to inspect outfalls, thus saving money

While we performed outfall sampling in Holden, we completed wet and dry weather sampling forms. We spent roughly ten minutes per outfall in order to complete these forms. As noted by Matthew St. Pierre of Tata & Howard, these forms have many additional categories. These categories include test results for pollutants that are not regulated by the MS4 permit. It is worth noting that, by having categories that go beyond the regulations of the MS4 permit, the CMRSWC can create a cleaner and less polluted environment. The detail of these forms illustrates the CMRSWC's admirable commitment to protecting the environment. However, the cost of implementing the 2014 draft MS4 permit is significant, and will likely strain many towns' budgets. If the CMRSWC updates these forms and removes the categories unrelated to the draft MS4 permit, it will save the town workers time, and thus streamline the process of outfall sampling. These times savings will also save the towns labor costs.

The CMRSWC should also utilize these updated forms on their digital system. Digital sampling forms are easy to upload to a database or the CMRSWC's website. When we were performing field work in Holden, Ms. McCauley demonstrated how to complete the dry and wet weather sampling forms on the CMRSWC tablet and then upload them to the CMRSWC website. Having a database of these forms makes it easy to see trends in pollution, both within a single town, and between towns, which have shared watersheds. Therefore, the database makes it much easier to perform outfall sampling and inspections, thus saving money. A previous IQP group detailed the efficiency of uploading digital forms to the People GIS database using the Leica tablet. This process circumvented the need to submit the forms outside of the field, and also prevented municipal employees from making repeated trips to outfalls in order to inspect

them (Barat, Chin, & Feraco, 2012). Therefore, the use of a digital database makes sampling and inspection easier and more efficient.

5.16.3 Recommendations for Future Research

In the future, we recommend project groups perform an assessment of the cost of implementing Total Maximum Daily Load (TMDL) measures. According to Frederick Civian, the cost of implementing TMDL measures could be overwhelmingly significant for the towns. Although not much research has been done on TMDL, the USEPA has shown the extent of these costs. The USEPA estimated the cost of implementing TMDL requirements in Bellingham, Franklin, and Milford Massachusetts at $23,595,000, $62,810,000, and $67,363,000, respectively (Group, 2011). A proper assessment of these costs could prove to be valuable to the USEPA, as well as the towns, in the future.

We also recommend future project groups attempt to fill the gaps in our research. We received most of our data from the town officials, with few outside sources except for the DCR. We attempted to contact Environmental Partners Group for information about Holden, but we were unable to reach them. In addition, we had to estimate many of our costs. These factors made our cost numbers difficult to verify as being accurate. Because of this lack of verification, some of our data could have resulted in bias. We recommend that future research groups find a method to eliminate some of the biases in our data, such as by finding budget data from multiple sources.

6.0 Conclusion

Stormwater runoff is one of the leading contributors to water pollution in the United States. In order to combat this pollution, the United States Environmental Protection Agency

(USEPA) created the Municipal Separate Storm Sewer System (MS4) permit. On September 30, 2014, the USEPA released the 2014 draft MS4 permit. Once the USEPA releases the permit in full, towns throughout Massachusetts will have to comply with it, which will lead to substantial spending increases.

In our cost analysis chapter, we discuss the predicted annual costs of complying with the 2014 draft MS4 permit in our subject towns of Holden, Millbury, and Southbridge. From our cost analysis, we predict an annual cost of implementing the 2014 draft MS4 permit of $258,790 for Holden, $735,629 for Millbury, and $343,008 for Southbridge. These costs represent an increase in the annual cost of implementation from the 2003 MS4 permit of 39% for Holden, 26% for Millbury, and 28% for Southbridge.

These cost increases are significant, and we propose several potential methods for defraying the cost increases of effectively implementing the 2014 Draft MS4 to individual towns. In addition, we recommend that towns reach out to the Massachusetts Department of Environmental Protection (MassDEP) for advice on implementing the permit. In our findings and recommendations chapter, we provide recommendations to towns, and the Central Massachusetts Regional Stormwater Coalition (CMRSWC) for effective implementation of the 2014 draft MS4 permit. Among our most important recommendations, we emphasize the benefits of regionalization, the use of innovative stormwater management and funding techniques, and centralization of stormwater management in each town.

The task of effective stormwater management is daunting. However, by implementing the proper procedures, the towns can plan effectively manage stormwater management, thus protecting human health and the environment.

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Appendix A

Public Education and Outreach	Materials			Consultant	Legal	Staff Labor									Total cost
						Technician/ Equipment Operator		Foreman		Administrative		Director			
	Costs per unit	Multiplier	Total Materials Cost	Total	Total	Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Pamphlets/Brochures to residents	6500	1	$6,500.00											$0.00	$6,500.00
Pamphlets/Brochures to businesses	0		$0.00											$0.00	$0.00
Meetings	0		$0.00											$0.00	$0.00
Poster	0		$0.00											$0.00	$0.00
Video	0		$0.00											$0.00	$0.00
Newspapers	500	1	$500.00											$0.00	$500.00
Signs	0		$0.00											$0.00	$0.00
Broadcasting	0		$0.00											$0.00	$0.00
Develop collection program for hazardous waste	0		$0.00							22	80	40	40	$3,360.00	$3,360.00
Develop school curriculum and distribute to schools	1		$0.00			23	4							$92.00	$92.00
Educational training materials	0		$0.00											$0.00	$0.00
Media campaign	500	1	$500.00											$0.00	$500.00
Website	1		$0.00											$0.00	$0.00
Total															**$10,952.00**

Public Involvement and Participation	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Mark storm drains	0		$0.00											$0.00	$0.00
Stormwater telephone hotline	0		$0.00											$0.00	$0.00
River, stream and pond cleanups	0		$0.00											$0.00	$0.00
Native tree and shrub planting	0		$0.00											$0.00	$0.00
Classroom education program	0		$0.00											$0.00	$0.00
Prepare press releases	0		$0.00											$0.00	$0.00
Develop and implement composting program	0		$0.00											$0.00	$0.00
Coordinate Household Hazardous Waste collection events	1		$0.00											$0.00	$0.00
Form citizen watch groups to identify polluters	0		$0.00											$0.00	$0.00
Educational outreach materials	0		$0.00											$0.00	$0.00
Roadside cleanup day	0		$0.00											$0.00	$0.00
Catch basin stenciling/ medallion installation	0		$0.00											$0.00	$0.00
Poster contest for students	0		$0.00											$0.00	$0.00
Stormwater management committee	0		$0.00											$0.00	$0.00
Trash Removal	1		$0.00											$0.00	$0.00
Public meeting to discuss stormwater management plan	0		$0.00											$0.00	$0.00
Total															**$0.00**

		Materials		Consultant	Legal	Staff Labor									Total cost
IDDE Program	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Outfall mapping (Not Completed yearly)	20000	0	$0.00											$0.00	$0.00
Catch basin mapping (Not completed yearly)	20000	0	$0.00											$0.00	$0.00
Map structural BMPs	0		$0.00											$0.00	$0.00
Illicit discharge prohibition ordinance	0		$0.00											$0.00	$0.00
Incorporate information into public education	0		$0.00											$0.00	$0.00
Identify department to take stormwater calls	0		$0.00											$0.00	$0.00
Develop employee training program to identify discharges	0		$0.00											$0.00	$0.00
Host IDDE communication meeting with other Town Departments	0		$0.00											$0.00	$0.00
Water quality screening with field kits	30	25	$750.00			23	52							$1,196.00	$1,946.00
"Sewage sniffing dogs"	0														
CCTV System (camera and equipment)	0														
Vac truck and equipment	0														
Elimination of identified illicit discharge	0		$0.00											$0.00	$0.00
Bylaw prohibiting non storm water discharges into storm sewer system	0		$0.00											$0.00	$0.00
Program to evaluate and report on cond. after illicit material removed	0		$0.00											$0.00	$0.00
Develop stormwater management program web based GIS system	0		$0.00											$0.00	$0.00
Retention Ponds	1		$0.00											$0.00	$0.00
Disposal of Waste	0		$0.00			23	22							$506.00	$506.00
IDDE plan and implementation activities	0		$0.00											$0.00	$0.00
Total															**$2,452.00**

	Materials			Consultant	Legal	Staff Labor									Total cost
Construction Site Stormwater Runoff Control	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Develop erosion control regulations	0		$0.00											$0.00	$0.00
Conduct inspections for erosion controls	0		$0.00											$0.00	$0.00
Identify department to take stormwater calls	0		$0.00											$0.00	$0.00
Inform public of upcoming projects	0		$0.00											$0.00	$0.00
Develop and implementation site plan review process for sites	0		$0.00											$0.00	$0.00
Implement construction inspection program with fines for violations	0		$0.00											$0.00	$0.00
Develop construction inspection program and inspect	0		$0.00											$0.00	$0.00
Implement pre construction review of SW plan for site	0		$0.00											$0.00	$0.00
Develop and implement erosion and sediment control ordinances	0		$0.00											$0.00	$0.00
Total															**$0.00**

Post Construction Stormwater Management	Materials			Consultant	Legal	Staff Labor									
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Develop BMP regulation	0		$0.00											$0.00	$0.00
Develop and implementation inspection program	0		$0.00											$0.00	$0.00
review existing BMPs	0		$0.00											$0.00	$0.00
Develop inspection program of installed BMPs	0		$0.00											$0.00	$0.00
Zoning	0		$0.00											$0.00	$0.00
Urban forestry	0		$0.00											$0.00	$0.00
Eliminate curbs and gutters	0		$0.00											$0.00	$0.00
Conduct inspections of BMPs within 1st year of operation	0		$0.00											$0.00	$0.00
Develop operation and maintenance procedures for structural BMPs	0		$0.00											$0.00	$0.00
Total															**$0.00**

Good House Keeping and Pollution Prevention	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Clean catch basins	1		$2,500.00			23	672	32.5	120			50	24	$20,556.00	$23,056.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Number of basins cleaned, per year															
Street sweeping	1		$5,000.00			23	1376	32.5	80	22	8	50	24	$35,624.00	$40,624.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Curb miles swept, per year															
Road salt/sand management	150000	1	$150,000.00			23	40	32.5	40					$2,220.00	$152,220.00
Has equipment been calibrated?	yes														
Leaf collection program	1		$2,500.00			23	1280	32.5	64					$31,520.00	$34,020.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Snow removal procedures	1		$0.00					32.5	40			50	40	$3,300.00	$3,300.00
Develop an inspection and maintenance Plan	0		$0.00											$0.00	$0.00
Evaluate alternative vehicle washing options	0		$0.00											$0.00	$0.00
Develop and implement maintenance schedules for BMPs	0		$0.00											$0.00	$0.00
Employee training program	1		$0.00			23	40	32.5	8			50	16	$1,980.00	$1,980.00
Management program for fertilizer and pesticide application	0		$0.00											$0.00	$0.00
Training: fertilizer and pesticide applicators	0		$0.00											$0.00	$0.00
Training: Maintenance and repair for municipal vehicles	0		$0.00											$0.00	$0.00
Sump pump discharge policy	0		$0.00											$0.00	$0.00
Municipal SWPPP	0		$0.00											$0.00	$0.00
Total															**$255,200.00**

Grand Total **$268,604.00**

Appendix B

Public Education and Outreach	Materials			Consultant	Legal	Staff Labor									Total cost
						Technician/ Equipment Operator		Foreman		Administrative		Director			
	Costs per unit	Multiplier	Total Materials Cost	Total	Total	Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Pamphlets/Brochures to residents	500	1	$500.00											$0.00	$500.00
Pamphlets/Brochures to businesses	500	1	$500.00											$0.00	$500.00
Meetings	0		$0.00											$0.00	$0.00
Poster	0		$0.00											$0.00	$0.00
Video	0		$0.00											$0.00	$0.00
Newspapers	0		$0.00											$0.00	$0.00
Signs	0		$0.00											$0.00	$0.00
Broadcasting	0		$0.00											$0.00	$0.00
Develop collection program for hazardous waste	0		$0.00											$0.00	$0.00
Develop school curriculum and distribute to schools	0		$0.00											$0.00	$0.00
Educational training materials	0		$0.00											$0.00	$0.00
Media campaign	0		$0.00											$0.00	$0.00
Website	0		$0.00											$0.00	$0.00
Total															**$1,000.00**

	Materials			Consultant	Legal	Staff Labor									Total cost
Public Involvement and Participation	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Mark storm drains			$0.00											$0.00	$0.00
Stormwater telephone hotline	0		$0.00											$0.00	$0.00
River, stream and pond cleanups	0		$0.00											$0.00	$0.00
Native tree and shrub planting	0		$0.00											$0.00	$0.00
Classroom education program	0		$0.00											$0.00	$0.00
Prepare press releases	0		$0.00											$0.00	$0.00
Develop and implement composting program	0		$0.00											$0.00	$0.00
Coordinate Household Hazardous Waste collection events	0		$0.00											$0.00	$0.00
Form citizen watch groups to identify polluters	0		$0.00											$0.00	$0.00
Educational outreach materials	0		$0.00											$0.00	$0.00
Roadside cleanup day	0		$0.00											$0.00	$0.00
Catch basin stenciling/ medallion installation	0		$0.00											$0.00	$0.00
Poster contest for students	0		$0.00											$0.00	$0.00
Stormwater management committee	0		$0.00											$0.00	$0.00
Public meeting to discuss stormwater management plan	0		$0.00											$0.00	$0.00
Total															**$0.00**

	Materials			Consultant	Legal	Staff Labor									Total cost
IDDE Program	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Outfall mapping	0		$0.00											$0.00	$0.00
Catch basin mapping	0		$0.00											$0.00	$0.00
Map structural BMPs	0		$0.00											$0.00	$0.00
Illicit discharge prohibition ordinance	0		$0.00											$0.00	$0.00
Incorporate information into public education	0		$0.00											$0.00	$0.00
Identify department to take stormwater calls	0		$0.00											$0.00	$0.00
Develop employee training program to identify discharges	0		$0.00											$0.00	$0.00
Host IDDE communication meeting with other Town Departments	0		$0.00											$0.00	$0.00
Water quality screening with field kits	0		$0.00											$0.00	$0.00
"Sewage sniffing dogs"	0		0											0	0
CCTV System (camera and equipment)	0		0											0	0
Vac truck and equipment			0			22	160							3520	3520
Elimination of identified illicit discharge (last done in 2011)	4000	0	$0.00											$0.00	$0.00
Bylaw prohibiting non storm water discharges into storm sewer system	0		$0.00											$0.00	$0.00
Program to evaluate and report on cond. after illicit material removed	0		$0.00											$0.00	$0.00
Develop stormwater management program web based GIS system	0		$0.00											$0.00	$0.00
IDDE plan and implementation activities	0		$0.00											$0.00	$0.00
Total															**$3,520.00**

	Materials			Consultant	Legal	Staff Labor									Total cost
Construction Site Stormwater Runoff Control	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Develop erosion control regulations	0		$0.00											$0.00	$0.00
Conduct inspections for erosion controls	0		$0.00											$0.00	$0.00
Identify department to take stormwater calls	0		$0.00											$0.00	$0.00
Inform public of upcoming projects	0		$0.00											$0.00	$0.00
Develop and implementation site plan review process for sites	0		$0.00											$0.00	$0.00
Implement construction inspection program with fines for violations	0		$0.00											$0.00	$0.00
Develop construction inspection program and inspect	0		$0.00											$0.00	$0.00
Implement pre construction review of SW plan for site	0		$0.00											$0.00	$0.00
Develop and implement erosion and sediment control ordinances	0	1	$0.00											$0.00	$0.00
Total															**$0.00**

Post Construction Stormwater Management	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	
Develop BMP regulation	0		$0.00											$0.00	$0.00
Develop and implementation inspection program	0		$0.00											$0.00	$0.00
review existing BMPs	0		$0.00											$0.00	$0.00
Develop inspection program of installed BMPs	0		$0.00											$0.00	$0.00
Zoning	0		$0.00											$0.00	$0.00
Urban forestry	0		$0.00											$0.00	$0.00
Eliminate curbs and gutters	0		$0.00											$0.00	$0.00
Conduct inspections of BMPs within 1st year of operation	0		$0.00			22	80							$1,760.00	$1,760.00
Develop operation and maintenance procedures for structural BMPs	0		$0.00											$0.00	$0.00
Total															**$1,760.00**

Good House Keeping and Pollution Prevention	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Clean catch basins	0		$0.00			22	320							$7,040.00	$7,040.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Number of basins cleaned, per year															
Street sweeping	0		$0.00			22	480							$10,560.00	$10,560.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Curb miles swept, per year															
Road salt/sand management	150000	1	$150,000.00			23	40	32.5	40					$2,220.00	$152,220.00
Has equipment been calibrated?															
Leaf collection program	0		$0.00											$0.00	$0.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Snow removal procedures	0		$0.00											$0.00	$0.00
Develop an inspection and maintenance Plan	0		$0.00											$0.00	$0.00
Evaluate alternative vehicle washing options	0		$0.00											$0.00	$0.00
Develop and implement maintenance schedules for BMPs	5956.39	1	$5,956.39											$0.00	$5,956.39
Employee training program	0		$0.00											$0.00	$0.00
Management program for fertilizer and pesticide application	0		$0.00											$0.00	$0.00
Training: fertilizer and pesticide applicators	0		$0.00											$0.00	$0.00
Training: Maintenance and repair for municipal vehicles	0		$0.00											$0.00	$0.00
Sump pump discharge policy	0		$0.00											$0.00	$0.00
Municipal SWPPP	0		$0.00											$0.00	$0.00
Audits	4470	1	$4,470.00											$0.00	$4,470.00
Total															**$180,246.39**

Grand Total **$186,526.39**

Appendix C

Public Education and Outreach	Materials			Consultant	Legal	Staff Labor									Total cost
						Technician/ Equipment Operator		Foreman		Administrative		Director			
	Costs per unit	Multiplier	Total Materials Cost	Total	Total	Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Pamphlets/Brochures to residents	0	0	$0.00											$0.00	$0.00
Pamphlets/Brochures to businesses	0	0	$0.00											$0.00	$0.00
Meetings	500	1	$500.00											$0.00	$500.00
Poster	0	0	$0.00											$0.00	$0.00
Video	0	1	$0.00											$0.00	$0.00
Newspapers	0	0	$0.00											$0.00	$0.00
Signs	0	1	$0.00											$0.00	$0.00
Broadcasting	0	1	$0.00											$0.00	$0.00
Develop collection program for hazardous waste	0	1	$0.00							22	3			$66.00	$66.00
Develop school curriculum and distribute to schools	0	0												$0.00	$0.00
Educational training materials	0	1	$0.00											$0.00	$0.00
Media campaign	0	0	$0.00											$0.00	$0.00
Website	0	1	$0.00											$0.00	$0.00
Total															**$566.00**

Public Involvement and Participation	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Mark storm drains	0	1	$0.00											$0.00	$0.00
Stormwater telephone hotline	0	0	$0.00											$0.00	$0.00
River, stream and pond cleanups	0	1	$0.00							0	0			$0.00	$0.00
Native tree and shrub planting	0	0	$0.00											$0.00	$0.00
Classroom education program	0	0	$0.00											$0.00	$0.00
Prepare press releases	0	0	$0.00											$0.00	$0.00
Develop and implement composting program	0	0	$0.00											$0.00	$0.00
Coordinate Household Hazardous Waste collection events	0	0	$0.00							22	3			$66.00	$66.00
Form citizen watch groups to identify polluters	0	0	$0.00											$0.00	$0.00
Educational outreach materials	0	0	$0.00											$0.00	$0.00
Roadside cleanup day	0	1	$0.00											$0.00	$0.00
Catch basin stenciling/ medallion installation	0	1	$0.00											$0.00	$0.00
Poster contest for students	3000	1	$3,000.00							22	8			$176.00	$3,176.00
Stormwater management committee	0	0	$0.00											$0.00	$0.00
Public meeting to discuss stormwater management plan	*0*	*0*	$0.00											$0.00	$0.00
Total															**$3,242.00**

IDDE Program	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Outfall mapping	0	1	$0.00											$0.00	$0.00
Catch basin mapping	0	1	$0.00											$0.00	$0.00
Map structural BMPs	0	1	$0.00											$0.00	$0.00
Illicit discharge prohibition ordinance	0	1	$0.00											$0.00	$0.00
Incorporate information into public education	0	0	$0.00											$0.00	$0.00
Identify department to take stormwater calls	0	0	$0.00											$0.00	$0.00
Develop employee training program to identify discharges	0	1	$0.00											$0.00	$0.00
Host IDDE communication meeting with other Town Departments	0	0	$0.00											$0.00	$0.00
Water quality screening with field kits	0	1	$0.00											$0.00	$0.00
"Sewage sniffing dogs"	0	0													
Elimination of identified illicit discharge	0	1	$0.00											$0.00	$0.00
Bylaw prohibiting non storm water discharges into storm sewer system	1	0	$0.00	2500		22	20			20	20	50	20	$1,840.00	$4,340.00
Program to evaluate and report on cond. after illicit material removed	0	0	$0.00			22	4							$88.00	$88.00
Develop stormwater management program web based GIS system	0	0	$0.00											$0.00	$0.00
IDDE plan and implementation activities	250	1	$250.00											$0.00	$250.00
Total															**$4,678.00**

Construction Site Stormwater Runoff Control	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Develop erosion control regulations	0	1	$0.00											$0.00	$0.00
Conduct inspections for erosion controls	0	1	$0.00	350										$0.00	$350.00
Identify department to take stormwater calls	0		$0.00											$0.00	$0.00
Inform public of upcoming projects	0		$0.00											$0.00	$0.00
Develop and implement site plan review process for sites	0		$0.00											$0.00	$0.00
Implement construction inspection program with fines for violations	0		$0.00											$0.00	$0.00
Develop construction inspection program and inspect	0		$0.00											$0.00	$0.00
Implement pre construction review of SW plan for site	0		$0.00											$0.00	$0.00
Develop and implement erosion and sediment control ordinances	0		$0.00											$0.00	$0.00
Total															**$350.00**

Post Construction Stormwater Management	Materials			Consultant	Legal	Staff Labor									
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Develop BMP regulation	0	1	$0.00											$0.00	$0.00
Develop and implementation inspection program			$0.00											$0.00	$0.00
review existing BMPs			$0.00											$0.00	$0.00
Develop inspection program of installed BMPs	0	1	$0.00											$0.00	$0.00
Zoning			$0.00											$0.00	$0.00
Urban forestry			$0.00											$0.00	$0.00
Eliminate curbs and gutters			$0.00											$0.00	$0.00
Conduct inspections of BMPs within 1st year of operation	0	1	$0.00											$0.00	$0.00
Develop operation and maintenance procedures for structural BMPs			$0.00											$0.00	$0.00
Total															**$0.00**

Good House Keeping and Pollution Prevention	Materials			Consultant	Legal	Staff Labor									Total cost
	Costs per unit	Multiplier	Total Materials Cost			Wage	Hours	Wage	Hours	Wage	Hours	Wage	Hours	Total Staff Labor	Total cost
Clean catch basins	21.5	610	$13,115.00			22	610							$13,420.00	$26,535.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Number of basins cleaned, per year	1210														
Street sweeping	75	600	$45,000.00			35	600							$21,000.00	$66,000.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Curb miles swept, per year															
Road salt/sand management	105.76	4505	$476,448.80											$0.00	$476,448.80
Has equipment been calibrated?															
Leaf collection program			$0.00											$0.00	$0.00
Approach (circle one)	OWN EQUIPMENT	VENDOR	**Include vendor costs or equipment maintenance costs, annual**												
Snow removal procedures			$0.00											$0.00	$0.00
Develop an inspection and maintenance Plan	2000	1	$2,000.00											$0.00	$2,000.00
Evaluate alternative vehicle washing options			$0.00											$0.00	$0.00
Develop and implement maintenance schedules for BMPs			$0.00			22	120							$2,640.00	$2,640.00
Employee training program	0	0	$0.00											$0.00	$0.00
Management program for fertilizer and pesticide application	1000	1	$1,000.00											$0.00	$1,000.00
Training: fertilizer and pesticide applicators			$0.00	500										$0.00	$500.00
Training: Maintenance and repair for municipal vehicles			$0.00	1000										$0.00	$1,000.00
Sump pump discharge policy			$0.00											$0.00	$0.00
Municipal SWPPP			$0.00											$0.00	$0.00
CCTV System (camera and equipment)	8000	1													8000
Vac truck and equipment	0	1	0											0	0
Total															**$576,123.80**

Grand Total **$584,959.80**

Appendix D

Control Measure	Estimated Annual Costs	Estimated One-time Costs	Estimated Intermittent Costs
Public Education and Outreach	$19,860	$0	$0
Public Involvement and Participation	$0	$0	$0
Illicit Discharge Detection and Elimination Program	$19,242	$304,006	$50,440
Construction Site Stormwater Runoff Control	$0	$770	$0
Post Construction Stormwater Management	$5,280	$1,496	$7,436
Good Housekeeping	$283,458	$6,292	$0
Non-Control Measure			
Miscellaneous	$15,168	$2,376	$0
Totals	**$343,008**	**$314,940**	**$57,876**

KEY:

Yearly	No. = Reference Number
Once	BMP/Admin = Is the requirement completed with either a BMP or Administrative work
As Needed	X Requirement = The short name for a requirement
	Requirement = Section in the 2014 MS4 permit draft
	Cost = Cost of completing the requirement
	Justification = List of methods used to complete the requirement, as well supporting data from sources
	In Place (Y/N) = Is the requirement listed currently in place

No.	BMP/Admin	Public Education and Outreach Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	Continue public education program required by 2003 permit	2.3.2 a	$10,952	Pamphlets (6500), Hazardous Waste Collection (3360), Newspaper Article (500), Media Campaign (500), Develop a curriculum for school system (92)	Yes
2	Admin	*Define goals, express specific messages define audience for each message	2.3.2 a	$44	2hrs @ $22/hr	No
3	Admin	*Identify parties responsible for each message	2.3.2 a	$22	1hr @ $22/hr, once a year for 8 years	No
4	Admin	*Develop and send out two separate messages for each of 4 different audiences	2.3.2 c	$22	1hr @ $22/hr	No
5	Admin	*Show evidence that messages are achieving results	2.3.2 e	$8,820	DCR explanation for assessing effectiveness	No
6	Admin	*Identify method used to evaluate effectiveness of messages	2.3.2 e	$0	Included in No. 5	No
7	Admin	*Put in annual report the methods of distribution and methods to assess effectiveness	2.3.2 g	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$19,860
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Public Involvement and Participation Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*Comply with state public Notice requirements	2.3.3 a	$0	Minimal cost, can post on website	No
2	Admin	Provide annual opportunity for public to participate in review and implementation of SWMP	2.3.3 b	$0	In compliance with public meeting requirement	Yes
3	Admin	*Put in annual report these public participation activities	2.3.3 c	$0	See Miscellaneous No. 50	Yes

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Illicit Discharge Detection and Elimination Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Eliminate any illicit discharge to the stormwater system as expeditiously as possible	2.3.4.2	$25,000	Varies depending on severity of infraction average cost, actual cost may vary	Yes
2	BMP	*Identify who is responsible for any such discharges	2.3.4.2	$0	Included in No. 1	Yes
3	Admin	*If elimination takes more than 60 days, establish an expeditious schedule for elimination	2.3.4.2	$44	2hr @ $22/hr for scheduling	Yes
4	Admin	*If more than 60 days, report dates of identification and schedules in annual report	2.3.4.2	$0	See Miscellaneous No. 50	Yes
5	BMP	Implement measures to control non-stormwater discharges if they add significant pollution	2.3.4.3	$25,000	Varies depending on severity of infraction around 25000-50000	No
6	Admin	*Identify all known locations where SSOs have discharged to the MS4 in last 5 years	2.3.4.4 b	$44	2hrs @ $22/hr if records are available	No
7	Admin	*For each such SSO discharge, include date and time, location, volume, suspected cause	2.3.4.4 b	$44	2hrs @ $22/hr to determine the information	No
8	Admin	*Also include whether each entered any surface water and what corrective actions were taken	2.3.4.4 b	$0	Included in No. 7	No
9	Admin	*Also include corrective measures planned and implementation schedule	2.3.4.4 b	$0	Included in No. 7	No
10	Admin	*Maintain the SSO inventory as part of the SWMP and the Annual Reports	2.3.4.4 b	$0	See Miscellaneous No. 50	No
11	Admin	*Provide oral and written notice to EPA and MassDEP for any SSO occurrence	2.3.4.4 c	$44	2hrs @ $22/hr for informing EPA/MassDEP orally/written	Yes
12	BMP	*Develop an inventory of each MS4 outfall, including location, interconnections, and condition (different only in that it requires the condition of the outfall)	2.3.4.5	$1,133	15min/outfall (includes travel), 206 outfalls, @ $22/hr	No
13	Admin	*Update inventory annually to include monitoring program	2.3.4.5 b	$0	See Miscellaneous No. 50	No
14	BMP	*Physically label all MS4 outfall pipes	2.3.4.5 b	$1,183	10min/outfall (includes travel), 206 outfalls, @ $22/hr, + materials ($2 stick per outfall + spraypaint + sharpie)	No
15	Admin	*For each outfall list unique identifier, receiving water, date of most recent inspection	2.3.4.5 c	$0	Included in No. 14	No
16	Admin	*Also include dimensions, shape, material, physical condition and indicators of non-SW discharges	2.3.4.5 c	$0	Included in No. 14	Yes
17	BMP	*Revise existing map of stormwater system within 2 years of effective date of the permit	2.3.4.6	$250,000	Enough new requirements to have to add new data elements, cost assuming outside contracting and implementation into GIS map	No
18	BMP	*Map shall include all outfalls, pipes, manholes, catch basins, interconnections, open channels	2.3.4.6 a i	$0	Included in No. 17	No
19	BMP	*Also include all municipally-owned BMPs (e.g., retention basins, oil/water separators, etc.)	2.3.4.6 a i	$0	Included in No. 17	No
20	BMP	*Also include catchment delineation and all waters listed on the 303(d) or 305 (b) list	2.3.4.6 a i	$0	Included in No. 17	No
21	BMP	*Also include municipal sanitary sewers or combined sewer systems	2.3.4.6 a ii	$0	Included in No. 17	No
22	BMP	*Include various recommended elements	2.3.4.6 a iii	$0	Included in No. 17	No
23	BMP	*Update the map to reflect newly discovered information and corrections or modifications	2.3.4.6 b	$1,144	1hr/week @ $22/hr for continuous additions to stormwater systems	No
24	Admin	*Report on the progress toward completion of the map in each annual report	2.3.4.6 c	$0	See Miscellaneous No. 50	Yes
25	BMP	*Write an Illicit Discharge Detection and Elimination (IDDE) program document (Discrete, specifically mentions the document must be written out)	2.3.4.7	$10,000	Complete redevelopment of the program, review and upgrades	No
26	Admin	Adopt an IDDE ordinance	2.3.4.7 a	$1,430	Change ordinance, 13 weeks @ 5hrs/week @ $22/hr, has to go to different committees	Yes
27	Admin	*Program shall clearly identify IDDE responsibilities and provide description of areas of responsibility	2.3.4.7 b	$0	Included in No. 25	No
28	BMP	*Assess and priority rank each catchment into one of 4 possible categories (soupped up from previous "priority" mark in 2003)	2.3.4.7 c i	$13,200	Approx. 1200 catch basins, approx. 30 min/basin @ $22/hr	No
29	Admin	*Priority rank each catchment within each category (except those "excluded") using 8 factors (soupped up from previous "priority" mark in 2003)	2.3.4.7 c ii	$26,400	Approx. 1200 catch basins, approx. 1hr/basin @ $22/hr	No
30	Admin	*Gather all information needed for the 8 screening factors (e.g., industrial areas > 40 years old)	2.3.4.7 c ii	$0	Included in No. 29	No
31	Admin	*Complete ranking using existing information within 1 year; update in annual report	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
32	Admin	*In annual report include summary of evidence of known/suspected illicit discharges by catchment	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
33	Admin	*Also include corrective measures and schedule for correcting each illicit discharge	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
34	Admin	*Develop written procedure for screening and sampling of outfalls	2.3.4.7 d	$0	$0 with CMRSWC Membership	Yes
35	Admin	*Include procedures for sample collection, use of field kits and storage and conveyance of samples	2.3.4.7 d i	$0	Included in No. 34	Yes
36	BMP	*If outfall is inaccessible, report the first accessible upstream structure	2.3.4.7 d ii	$0	Possible time extensions, no cost	Yes
37	BMP	*Perform dry weather screening when and how prescribed; identify in annual report any follow-up needed	2.3.4.7 d iii	$2,266	206 outfalls, approximately 30min/outfall @ $22/hr	Yes
38	BMP	*Perform wet weather screening when and how prescribed	2.3.4.7 d iv	$0	Included in No. 39	Yes
39	BMP	*Sample at minimum for 7 listed factors	2.3.4.7 d v	$15,656	206 outfalls, done by contractor, $30/outfall, $23/hr, 2hrs/outfall Testing Kits (0) b/c CMRSWC membership	Yes
40	Admin	*Catchments with specified septic or other results shall be listed as "High Priority" catchments	2.3.4.7 d vi	$44	2hrs @ $22/hr, if records are available	No
41	BMP	*Develop written Catchment Investigation Procedure including review of maps and historic records	2.3.4.7 e	$352	16hrs @ $22/hr	No
42	BMP	*Also include manhole investigation methodology and procedures to confirm sources of illicit discharges	2.3.4.7 e	$0	Included in No. 41	No
43	BMP	*For each catchment review sanitary sewer and storm sewer construction plans; prior work on either	2.3.4.7 e i	$88	Assuming 4 catchments, 1 hr/catchment @ $22/hr	No
44	BMP	*Also review Health department records for septic system or sanitary sewer system failures or complaints	2.3.4.7 e i	$0	Included in No.43	No
45	Admin	*Identify and record any of the 12 System Vulnerability Factors (e.g., infrastructure > 40 years old)	2.3.4.7 e i	$0	Included in No.43	No
46	Admin	*Document and annually report presence or absence of the 12 System Vulnerability Factors for each catchment	2.3.4.7 e i	$0	Assuming using WPI spreadsheet, otherwise about 10min per catchment	No
47	Admin	*Include these required elements of written manhole investigation and catchment investigation procedures	2.3.4.7 e ii	$0	$0 since CMRSWC Membership	No
48	Admin	*Include these required elements in written dry weather investigation procedure	2.3.4.7 e ii a	$0	Included in No. 47	No
49	Admin	*Include these required elements in written wet weather investigation procedure	2.3.4.7 e ii b	$0	Included in No. 47	No
50	Admin	*Develop procedures to isolate and confirm illicit sources (e.g., dye testing, smoke testing, caulk dams, etc.)	2.3.4.7 e iii	$176	8hrs @ $22/hr, for scheduling	Yes
51	Admin	*In annual report, for each illicit source list the location, its source, description of the discharge	2.3.4.7 f	$0	See Miscellaneous No. 50	No
52	Admin	*Also list date and method of discovery, date of elimination, mitigation or enforcement action	2.3.4.7 f	$0	Included in No. 51	No
53	Admin	*And estimate volume of flow reduced	2.3.4.7 f	$0	Included in No. 51	No
54	BMP	*One year after illicit discharge removal, perform confirmatory screening; wet, dry or both	2.3.4.7 f	$132	$22/hr 30min/screening, approximately 1.5hr/illicit, assuming 3 illicit	Yes
55	BMP	*Schedule follow up screening within 5 years after confirmatory screening	2.3.4.7 g	$132	$22/hr 30min/screening, approximately 1.5hr/illicit, assuming 3 illicit	No
56	BMP	*Develop and implement procedures to prevent illicit discharges and SSOs	2.3.4.7 h	$0	$0 since CMRSWC Membership	No
57	Admin	*Complete and report dry weather screening and sampling of High and Low Priority outfalls within 3 years	2.3.4.8 a	$0	Included in No. 37 and No. 38	No
58	Admin	*"All data shall be reported in each annual report . . ."	2.3.4.8 a	$0	See Miscellaneous No. 50	No
59	Admin	*Begin implementation of 2.3.4.7 d work no later than 15 months	2.3.4.8 b	$0	Deadlines, See No. 38 and 37	No
60	Admin	*Implement and report Catchment Investigation Procedure in every catchment . . .	2.3.4.8 c	$0	Deadlines, See No. 28	No
61	Admin	*In a minimum of 80% of the MS4 area serviced by Problem Catchments within 3 years and 100% within 5 years	2.3.4.8 c i	$0	Deadlines, See No. 28	No
62	Admin	*For all catchments where sampling indicates sewer input within 5 years	2.3.4.8 c ii	$0	Deadlines, See No. 28	No
63	Admin	*In 40% of all area served by all MS4 catchments within 5 years and in 100% of 4 area in 10 years	2.3.4.8 c iii	$0	Deadlines, See No. 28	No
64	Admin	*Track progress toward these milestones in each annual report	2.3.4.8 e	$0	See Miscellaneous No. 50	No
65	Admin	*Define or describe indicators for tracking program success; demonstrate efforts to locate illicit discharges	2.3.4.9	$176	8hrs @ $22/hr	No
66	Admin	*Also include percent and area in acres evaluated; volume of sewage removed; place in annual report (more detailed, 2003 only asks to measure progress)	2.3.4.9	$0	See Miscellaneous No. 50	No
67	Admin	provide annual training to employees involved in IDDE program	2.3.4.10	$0	$0 since CMRSWC Membership	Yes
68	Admin	*Include type and frequency of training in the annual report (2003 -> The program must include an employee training component)	2.3.4.10	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$19,242
Estimated One-time Costs	$304,006
Estimated Intermittent Costs	$50,440

No.	BMP/Admin	Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Continue to implement construction ordinance work from 2003 permit; expand to include 1 acre or more	2.3.5 a	$0	Volunteer based program	Yes
2	BMP	Develop and implement a construction site runoff program	2.3.5 c	$0	See No. 3-12	Yes
3	Admin	An ordinance that requires sediment and erosions controls and for other wastes at construction sites	2.3.5 c i	$22	1hrs @ $22/hr, for review of current document	No
4	Admin	Adopt written procedures for inspections and enforcement of the ordinance within 1 year (2003 -> (g.) Procedures for inspections and enforcement of control measures at construction sites.)	2.3.5 c ii	$44	2hrs @ $22/hr, for review of current document	No
5	Admin	*Document the procedures and responsibilities to implement in the SWMP	2.3.5 c ii	$88	4hrs @ $22/hr	No
6	Admin	*Include requirements for site operators to implement BMPs (e.g., reduce disturbed area, protect slopes, etc.)	2.3.5 c iii	$88	4hrs @ $22/hr	No
7	Admin	*Include requirements for site operators to control other wastes	2.3.5 c iv	$88	4hrs @ $22/hr	No
8	Admin	*Develop written procedures for site plan review and inspection and enforcement within 1 year (003 -> nearly same, now has time requirement)	2.3.5 c v	$88	4hrs @ $22/hr	No
9	Admin	*Include pre-construction review, consideration for protection of water quality impacts, LID components	2.3.5 c v	$88	4hrs @ $22/hr	No
10	Admin	*And receipt of information from the public, inspections during and after BMP installation (now covers post construction)	2.3.5 c v	$88	4hrs @ $22/hr	No
11	Admin	*And "qualifications necessary to perform the inspections"	2.3.5 c v	$88	4hrs @ $22/hr	No
12	Admin	*And procedure for tracking the number of site reviews, inspections and enforcement actions	2.3.5 c v	$88	4hrs @ $22/hr	No
13	Admin	*All to be included in the annual report	2.3.5 c v	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$0
Estimated One-time Costs	$770
Estimated Intermittent Costs	$0

No.	BMP/Admin	Post Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*develop implement and enforce a post-construction SW program for new developments and redevelopments	2.3.6 a	$0	depends on previous program, should already be in place	Yes
2	Admin	*adopt or amend a local ordinance to control projects that disturb an acre or more	2.3.6 a ii	$176	Already in place, but 8hrs @ $22/hr if not	Yes
3	BMP	*retain and/or treat first inch of runoff; where technically feasible do retention first	2.3.6 a ii a	$1,760	80hrs @ $22/hr, assumes no controversy and 4 people working	No
4	BMP	*"from all impervious surfaces on site"	2.3.6 a ii a	$0	Included in No. 3	No
5	Admin	*sites with soil contamination problems or at industrial sites shall not include any infiltration BMPs	2.3.6 a ii b	$0	Rule, does not require anything to be implemented, Possibly need Attorney	No
6	Admin	*infiltration systems near environmentally sensitive areas must include shutdown and containment systems	2.3.6 a ii c	$0	Rule, does not require anything to be implemented	No
7	Admin	*all BMPs must be constructed in accordance with the MA Stormwater Handbook	2.3.6 a ii d	$0	Rule, does not require anything to be implemented	Yes
8	Admin	*this system shall include development of a long term O&M plan to inspect and repair BMPs	2.3.6 a ii e	$0	Rule, does not require anything to be implemented	No
9	Admin	*systems shall be designed "to avoid disturbance of areas susceptible to erosion and sediment loss"	2.3.6 a ii f	$0	Rule, does not require anything to be implemented	Yes
10	BMP	*systems shall require submittal of as-built drawings that depict all on site controls	2.3.6 a iii	$1,100	Submitted by construction company, 50hrs @ $22/hr, if it's new	No
11	Admin	*shall have procedures to ensure O&M, such as dedicated funds, escrow accounts or management contracts	2.3.6 a iii	$4,576	5hrs w/ an attorney, 208hrs @ 22/hr, legal authority adds complexity and cost	No
12	Admin	*may include annual self-certification program	2.3.6 a iii	$0	Included in No. 11	No
13	Admin	*annual report shall include measures that the permittee has done to meet these requirements	2.3.6 a iii	$0	See Miscellaneous No. 50	Yes
14	BMP	*w/in 3 years document current street design and parking rules that affect creation of impervious cover	2.3.6 b	$1,320	60hrs @ $22/hr	No
15	BMP	*shall be used by permittee to determine if changes "can be made to support low impact design options"	2.3.6 b	$0	Included in No. 14	No
16	BMP	*if changes can be made, assessment shall include recommendations and proposed schedules to adopt changes	2.3.6 b	$0	Included in No. 14	No
17	BMP	*permittee "shall implement all recommendations . . ."; assessment must be placed in the SWMP	2.3.6 b	$0	Included in No. 14	No
18	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 b	$0	See Miscellaneous No. 50	No
19	BMP	*w/in 4 years assess local rules to determine feasibility of allowing green roofs, water harvesting and LID BMPs	2.3.6 c	$880	40hrs @ $22/hr	No
20	Admin	*assessment shall indicate if and under what circumstances these practices are allowed	2.3.6 c	$0	Included in No. 19	No
21	BMP	*if practices not allowed, determine what hinders use of these practices and what changes can be made	2.3.6 c	$0	Included in No. 19	No
22	BMP	*provide a schedule of implementation of recommendations	2.3.6 c	$0	Included in No. 19	No
23	BMP	*"permittee shall implement all recommendations, in accordance with the schedules . . ."	2.3.6 c	$0	Included in No. 19	No
24	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 c	$0	See Miscellaneous No. 50	Yes
25	Admin	*estimate the annual increase or decrease in Impervious Area and Directly Connected Impervious Area	2.3.6 d	$1,760	80hr @ $22/hr, a lot of data required	No
26	Admin	*tabulate results by sub-basins delineated per 2.3.4.6 a I	2.3.6 d i	$0	See No. 17 in IDDE	No
27	Admin	*must include conventional pavements, driveways, parking lots and rooftops	2.3.6 d i	$0	See No. 17 in IDDE	No
28	Admin	*starting with second annual report, estimate each sub-basin added or removed each year	2.3.6 d ii	$0	See Miscellaneous No. 50	No
29	Admin	*break out those figures by development, redevelopment or retrofit by permittee, by others voluntarily	2.3.6 d ii	$0	See Miscellaneous No. 50	No
30	Admin	*. . . or in compliance with the permittee's ordinances or bylaws	2.3.6 d ii	$0	See Miscellaneous No. 50	No
31	Admin	*within 4 years complete inventory and ranking of Municipal property suitable for modification or retrofit to . . .	2.3.6 d iii	$2,640	120hrs @ $22/hrs, many properties to assess	No
32	Admin	*. . .reduce frequency, volume and pollutant loads of stormwater discharges by reduction of impervious area	2.3.6 d iii	$0	Included in No. 32	No
33	Admin	*shall include both on site and off site reduction of IA and DCIA (e.g., parking lots, buildings, etc.)	2.3.6 d iii	$0	Included in No. 32	No
34	Admin	*also include existing rights-of-way,	2.3.6 d iii	$0	Included in No. 32	No
35	Admin	*for suitability the evaluation shall consider factors such as depth to water table; subsurface geology; access	2.3.6 d iii	$0	Included in No. 32	No
36	Admin	*priority ranking shall consider factors such as CIP schedules; current storm sewer level of service, etc.	2.3.6 d iii	$0	Included in No. 32	No
37	Admin	*starting with fifth year annual report, report on status of all such inventoried properties	2.3.6 d iii	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$5,280
Estimated One-time Costs	$1,496
Estimated Intermittent Costs	$7,436

No.	BMP/Admin	Pollution Prevention and Good Housekeeping Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*W/in 1 year develop or update written O&M procedures for listed municipal facilities	2.3.7 a i	$176	8hrs @ $22/hrs	No
2	Admin	*w/in 1 year inventory all permittee owned facilities in these "good housekeeping" categories	2.3.7 a ii	$0	Included in No. 1	No
3	Admin	*For Parks and Open Space: procedures to address the use, storage and minimization of pesticides, fertilizers, etc	2.3.7 a ii a	$2,640	120hrs @ $22/hr, Large amount of spaces to review plans for	No
4	Admin	*to be reviewed annually and updated as necessary	2.3.7 a ii a	$0	Included in No. 3	No
5	Admin	*evaluate lawn maintenance and landscaping activities to be protective of water quality	2.3.7 a ii a	$0	Included in No. 3	No
6	Admin	*including reduced mowing, proper disposal of lawn clippings, use of drought resistant plantings	2.3.7 a ii a	$0	Included in No. 3	No
7	Admin	*establish pet waste handling collection, disposal and signage at all parks and open spaces	2.3.7 a ii a	$0	Included in No. 3	No
8	Admin	*establish procedures for scheduled cleaning and sufficient number of trash containers	2.3.7 a ii a	$0	Included in No. 3	No
9	Admin	*For Buildings and Facilities, such as town offices, police and fire stations, municipal pools, etc	2.3.7 a ii b	$1,760	80hrs @ $22/hr	No
10	Admin	*evaluate the use. Storage and disposal of petroleum products and train employees on proper procedures	2.3.7 a ii b	$0	Included in No. 9	No
11	Admin	*ensure that spill prevention is in place and coordinate with fire department	2.3.7 a ii b	$0	Included in No. 9	No
12	Admin	*develop management procedures for dumpsters and other waste management equipment	2.3.7 a ii b	$0	Included in No. 9	No
13	Admin	*For Vehicles and Equipment: establish procedures for storage of permittee vehicles, including inside storage	2.3.7 a ii c	$176	4hrs @ $22/hr	No
14	Admin	*establish procedures to ensure that vehicle wash water does not enter the SW system	2.3.7 a ii c	$0	Included in No. 13	No
15	Admin	*evaluate fueling areas to minimize exposure	2.3.7 a ii c	$0	Included in No. 13	No
16	Admin	*Infrastructure O&M: w/in 1 year develop and implement procedures to take care for the MS4 system	2.3.7 a iii a	$0	See Below through No. 22	No
17	Admin	*optimize routine inspections (e.g., prioritize catch basins located near construction sites)	2.3.7 a iii b	$0	Included in No. 16	No
18	BMP	*ensure that "no catch basin at anytime will be more than 50 percent full"	2.3.7 a iii b	$440	2hrs/basin @ $22/hr, assuming 10 basins/year	No
19	BMP	*if more than 50% full during two routine cleanings, investigate the cause for excessive sediment loading	2.3.7 a iii b	$0	See No. 17 & Annual Report	No
20	Admin	*describe these actions in the annual report	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
21	Admin	*document in annual report the plan for optimizing catch basin cleaning, inspections or scheduling	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
22	Admin	*include metrics used to determine that the plan is optimal for the MS4	2.3.7 a iii b	$0	Included in No. 17	No
23	Admin	*in each annual report list the total number of catch basins, number inspected and/or cleaned	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
24	Admin	*and "volume or mass of material removed from each catch basin draining to water quality limited waters"	2.3.7 a iii b	$0	Included in No. 23	No
25	Admin	*and "total volume or mass of material removed from all catch basins"	2.3.7 a iii b	$0	Included in No. 23	No
26	BMP	*Sweeping: develop and implement procedures for sweeping streets and municipal-owned lots	2.3.7 a iii c	$40,624	Materials + Labor given by town	Yes
27	BMP	*sweep all streets (rural exceptions apply) a minimum of once a year in the spring	2.3.7 a iii c	$0	Included in No. 26	Yes
28	BMP	*procedures shall include more frequent sweeping of targeted area based on various listed criteria	2.3.7 a iii c	$0	Minimal Development Cost	No
29	BMP	*criteria include inspections, pollutant loads, catch basin cleanings, land use, TMDL or impaired waters	2.3.7 a iii c	$0	Minimal Development Cost	No
30	Admin	*Each annual report shall include number of miles cleaned and volume or mass of material removed	2.3.7 a iii c	$0	See Miscellaneous No. 50	No
31	Admin	*for rural exception areas, either sweep per usual or develop specific procedures and place in first annual report	2.3.7 a iii c	$0	See Miscellaneous No. 50	No
32	BMP	*properly store catch basin cleanings so they do not discharge to receiving waters	2.3.7 a iii d	$0	$0 Since Southbridge owns their own landfill	Yes
33	BMP	*establish and implement procedures for winter road maintenance including storage of salt and sand	2.3.7 a iii e	$0	Properly house materials in municipally owned properties	Yes
34	BMP	*minimize use of sodium chloride and other salts; evaluate opportunities for alternative materials	2.3.7 a iii e	$176	8hrs @ $22/hr	Yes
35	Admin	*ensure that snow is not disposed into surface waters	2.3.7 a iii e	$0		Yes
36	Admin	*establish procedures for O&M or all permittee-owned stormwater BMPs (e.g., swales, retention basins etc.)	2.3.7 a iii f	$176	8hrs @ $22/hr	No
37	BMP	*inspect all such structures at least once annually	2.3.7 a iii f	$11,000	Inspect each BMP, assuming 2000/year 15min/BMP @ 22/hr	No
38	Admin	*in annual report include status of work required in this part	2.3.7 a iv	$0	See Miscellaneous No. 50	No
39	Admin	*permittees shall keep a written record of all required activities	2.3.7 a v	$2,200	100hrs @ $22/hr, based on templates from the CMRSWC	No
40	BMP	*develop and fully implement a SWPPP for each of the listed facilities no later than 2 years after effective date	2.3.7 b	$1,540	4hrs to update existing SWPPPs, 10hrs for new SWPPPS, @ $22/hr, assume 5 new facilities + 5 old facilities	No
41	BMP	*includes maintenance garages, public works yards, transfer stations, other waste handling facilities	2.3.7 b	$0	Included in No. 40	No
42	BMP	*Identify name and title of staff of the Pollution Prevention Team for each facility	2.3.7 b ii a	$0	Included in No. 40	No
43	BMP	*for each facility: include map, description of activities, outfall locations, receiving waters and structural controls	2.3.7 b ii b	$0	Included in No. 40	No
44	BMP	*select , sign, install and implement the following 9 control measures to prevent or reduce discharge of pollutants	2.3.7 b ii c	$10,000	Depends on variations of the extent of impaired waters varies about 10000-25000	No
45	BMP	*take all reasonable measure to address quality of discharges that may not originate at the facility	2.3.7 b ii c	$0	Included in No. 44	No
46	Admin	*for areas that discharge to impaired waters, identify the control measures to address that issue	2.3.7 b ii c	$0	Included in No. 44	No
47	BMP	*SWPP Required Elements: Minimize or Prevent Exposure (e.g., move activities or materials under cover)	2.3.7 d 1	$0	Included in No. 44	No
48	BMP	*Good Housekeeping	2.3.7 d 2	$189,540	Snow removal (3300), leaf collection (34020), salt/sand distribution (152220)	Yes
49	BMP	*Preventative Maintenance	2.3.7 d 3	$23,056	Catchment cleaning (23056)	Yes
50	BMP	*Spill Prevention and Response	2.3.7 d 4	$0	Included in No. 44	Yes
51	BMP	*Erosion and Sediment Control	2.3.7 d 5	$0	Included in No. 44	Yes
52	BMP	*Management of Runoff	2.3.7 d 6	$0	Included in No. 44	Yes
53	BMP	*Salt Storage or Piles Containing Salt	2.3.7 d 7	$0	Included in No. 44	Yes
54	BMP	*Employee Training; document training date, title and duration; attendees; subjects covered during training	2.3.7 d 8	$1,980	Given by town	Yes
55	BMP	*Maintenance of Control Measures	2.3.7 d 8	$0	Included in No. 44	Yes
56	BMP	*Inspect all areas exposed to stormwater and all stormwater control measures at least every calendar quarter	2.3.7 b iii a	$2,000	30min/inspection, assume 10 facilities with 4 areas each @ $100/area	No
57	BMP	*at least one inspection shall occur when a stormwater discharge is occurring	2.3.7 b iii a	$2,266	206 outfalls, approx. 30min/outfall @ $22/hr	No
58	Admin	*document the date, time, name of inspector, weather, any control measures needing maintenance or repair, etc	2.3.7 b iii a	$0	Included in No. 44	No
59	BMP	*permittee shall repair or replace any control measures needing repair before the next anticipated storm event	2.3.7 b iii a	$0	Included in No. 44	No
60	Admin	*shall report the findings from the Site inspections in the annual report	2.3.7 b iii a	$0	See Miscellaneous No. 50	No
61	Admin	*keep a written record of all required activities required in this section	2.3.7 b iv	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$283,458
Estimated One-time Costs	$6,292
Estimated Intermittent Costs	$0

No.	BMP/Admin	Miscellaneous Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	Submit an NOI	1.7.1	$176	8hrs @ $22/hour, historical properties or endangered species will increase this cost	No
2	Admin	*Document endangered species status (part of NOI)	1.9.1	$0	Included under No. 1	No
3	BMP	*Implement measures to protect endangered species	1.9.1	$0	Included under No. 1	No
4	Admin	Document Historic Properties Observation (part of NOI)	1.9.2	$0	See Miscellaneous No. 50	No
5	BMP	*Describe effect of discharges on Historic properties	1.9.2	Varies	Included under No. 1	No
6	Admin	*Report documents received re: such discharges	1.9.2	$0	Included under No. 1	No
7	Admin	*Provide results of Appendix D historic property screening	1.9.2	$0	Included under No. 1	No
8	BMP	Describe efforts to avoid or minimize impacts on such properties	1.9.2	Varies	Included under No. 1	No
9	BMP	Develop a SWMP	1.10	$1,760	80hrs @ $22/hr	Yes
10	BMP	Implement a SWMP	1.10	$0	Included under No. 10	Yes
11	Admin	*Update/modify SWMP	1.10	$440	20hrs @ $22/hr	No
12	Admin	Provide SWMP "immediately" to various agencies and public	1.10.1	$0	Included under No. 9	No
13	Admin	*Post SWMP online	1.10.1	$0	Included under No. 9	No
14	Admin	Identify Names and titles of people implementing the SWMP	1.10.2	$0	Included under No. 9	No
15	Admin	***Include status of 2003 permit requirements**	1.10.2	$0	Included under No. 9	Yes
16	Admin	*List all receiving water bodies, classifications, pollutants of concern	1.10.2	$0	Included under No. 9	No
17	Admin	*list all applicable TMDLs, WLAs	1.10.2	$0	Included under No. 9	No
18	Admin	*List all outfalls that discharge to each water body	1.10.2	$0	Included under No. 9	No
19	Admin	*list all public water sources that may be affected by SW discharges	1.10.2	$0	Included under No. 9	No
20	Admin	*List all interconnected MS4s and receiving water body	1.10.2	$0	Included under No. 9	No
21	Admin	*Include applicable TMDLs, WLAs and pollutants of concern	1.10.2	$0	Included under No. 9	No
22	Admin	*Document all new or increased discharges	1.10.2	$0	Included under No. 9	No
23	Admin	*Include map of separate storm sewer system (Map must be improved)	1.10.2	$0	Included under No. 9	No
24	Admin	List all discharges to impaired water and the response	1.10.2	$0	Included under No. 9	No
25	Admin	*Describe BMPs proposed to meet TMDL requirements	1.10.2	$0	Included under No. 9	No
26	Admin	For each BMP, list the milestone, timeframe and assessment measure	1.10.2	$0	Included under No. 9	No
27	Admin	*For each BMP, list person or department responsible for implementation	1.10.2	$0	Included under No. 9	No
28	Admin	*Describe BMPs proposed to meet impaired waters requirements	1.10.2	$0	Included under No. 9	No
29	Admin	Describe BMPs used to meet the 6 minimum control measures	1.10.2	$0	Included under No. 9	No
30	Admin	*List measures to avoid/minimize impacts to surface drinking waters	1.10.2	$0	Included under No. 9	No
31	BMP	*Ensure that discharges "do not cause or contribute" to an exceedance of WQ standards	2.1	$0	Included under No. 9	Yes
32	BMP	*For TMDL waters, meet requirements of Appendix F (NB: contains multiple add'l req'ts)	2.1.1 b	Varies	May range into millions of dollars, no one has estimated this yet	No
33	BMP	*For impaired waters meet requirements of Appendix H (NB: contains multiple add'l req'ts)	2.1.1 c	Varies	May range into millions of dollars, no one has estimated this yet	No
34	BMP	*For any exceedances of WQ standards to TMDL or impaired waters, eliminate it within 60 days	2.1.1 d	Varies	May range into millions of dollars, no one has estimated this yet	No
35	BMP	*For any increased discharge, comply with MassDEP's regulations at 314 CMR 4.04	2.1.2 a	Varies	Cost will vary	No
36	BMP	*Demonstrate no net increase in pollutants for discharges to any 303 (d) or 305(b) water (previously only had to identify if 303 d)	2.1.2 b	Varies	Cost will vary	No
37	Admin	*Identify all discharges to waters that are impaired or which have TMDLs (Both in SWMP and Annual report)	2.2	$0	Varies depending on EPA interpretations	No
38	Admin	*Permittee shall annually self-evaluate and maintain the evaluation in its SWMP	4.1 a	$0	Included in No. 9	No
39	Admin	*In evaluating the appropriateness of BMPs, permittees may add BMPs at any time	4.1 b	$88	4hrs @ $22/hrs, of paperwork for new BMP	Yes
40	Admin	Subtracting or replacing BMPs may only be done in limited circumstances, after showing the BMP is ineffective	4.1 b	Varies	Cost of replacement will depend on the BMP being used	No
41	Admin	*Each Annual shall include a brief explanation of any BMP modification	4.1 b	$0	See Miscellaneous No. 50	No
42	Admin	EPA or MassDEP may require the permittee to add, modify, etc., any BMP to satisfy conditions of the permit	4.1.c	$0	Minimal cost	No
43	Admin	*The permittee shall keep all record required by this permit for at least five years	4.2 a	$880	40hrs at $22/hr, week of work annually	No
44	Admin	*"Records" includes "information used in the development of any written program . . . monitoring results, etc."	4.2 a	$0	Record keeping, doesn't cost anything to implement	No
45	Admin	these records all be made available to the public	4.2 c	$0	Record keeping, doesn't cost anything to implement	No
46	Admin	*the permittee "shall document all monitoring results each year in the annual report"	4.3 b	$0	See Miscellaneous No. 50	No
47	Admin	*that shall include the date, outfall identifier, location, weather, precipitation and screening or analysis results	4.3 b	$0	Part of annual report, see No. 46	No
48	Admin	*include all monitoring results for the current reporting period and for the entire permit term	4.3 b	$0	Part of annual report, see No. 46	No
49	Admin	*permittee shall include "results from any other stormwater or receiving water quality monitoring or studies . . ."	4.3 c	$0	Part of annual report, see No. 46	No
50	Admin	The annual report shall include a self-assessment of compliance; an assessment of the appropriateness of BMPs	4.4 b i	$14,200	The Consultant fee for creating the annual report increased based off of the increase in requirements	Yes
51	Admin	*The status of any required plans	4.4 b iii	$0	Part of annual report, see No. 50	No
52	Admin	*"Identification of all discharges determined to be causing or contributing to an exceedance" of WQ standards	4.4 b iii	$0	Part of annual report, see No. 50	No
53	Admin	*For discharges to TMDLs, identify specific BMPs used to address those requirements	4.4 b iii	$0	Part of annual report, see No. 50	No
54	Admin	*For discharges to impaired waters, "a description of each BMP required by Appendix H" and all deliverables	4.4 b iii	$0	Part of annual report, see No. 50	No
55	Admin	*Assessment of the progress toward meeting the requirements for the 6 minimum control measures (see details)	4.4 b iv	$0	Part of annual report, see No. 50	No
56	Admin	*"All outfall screening and monitoring data" for the reporting term and cumulative for the permit term	4.4 b v	$0	Part of annual report, see No. 50	No
57	Admin	Description of activities for the next reporting cycle	4.4 b vi	$0	Part of annual report, see No. 50	Yes
58	Admin	Description of any changes in identified BMPs or measurable goals	4.4 b vii	$0	Part of annual report, see No. 50	Yes
59	Admin	*Description of activities undertaken by any entity contracted for achieving any requirement of the permit	4.4 b viii	$0	Part of annual report, see No. 50	No

Estimated Annual Costs	$15,168
Estimated One-time Costs	$2,376
Estimated Intermittent Costs	$0

Appendix E

Control Measure	Annual	One-Time	Intermittent
Public Education and Outreach	$9,908	$0	$0
Public Involvement and Participation	$0	$0	$0
Illicit Discharge Detection and Elimination Program	$7,872	$314,494	$50,440
Construction Site Stormwater Runoff Control	$0	$770	$0
Post Construction Stormwater Management	$5,280	$1,496	$7,436
Good Housekeeping	$220,562	$6,292	$0
Non-Control Measure			
Miscellaneous	$15,168	$2,376	$0
Totals	**$258,790**	**$325,428**	**$57,876**

KEY:	
Yearly	No. = Reference Number
Once	BMP/Admin = Is the requirement completed with either a BMP or Administrative work
As Needed	X Requirement = The short name for a requirement
	Requirement = Section in the 2014 MS4 permit draft
	Cost = Cost of completing the requirement
	Justification = List of methods used to complete the requirement, as well supporting data from sources
	In Place (Y/N) = Is the requirement listed currently in place

No.	BMP/Admin	Public Education and Outreach Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	Continue public education program required by 2003 permit	2.3.2 a	$1,000	Pamphlets to homes, $500 and businesses,$500	Yes
2	Admin	*Define goals, express specific messages define audience for each message	2.3.2 a	$44	2 hrs @ $22/hr	No
3	Admin	*Identify parties responsible for each message	2.3.2 a	$22	1 hr @ $22/hr	No
4	Admin	*Develop and send out two separate messages for each of 4 different audiences	2.3.2 c	$22	1 hr @ $22/hr, once a year for 8 years	No
5	Admin	*Show evidence that messages are achieving results	2.3.2 e	$8,820	DCR explanation for assessing effectiveness	No
6	Admin	*Identify method used to evaluate effectiveness of messages	2.3.2 e	$0	Included in No. 5	No
7	Admin	*Put in annual report the methods of distribution and methods to assess effectiveness	2.3.2 g	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$9,908
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Public Involvement and Participation Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*Comply with state public Notice requirements	2.3.3 a	$0	Minimal cost, can post on website	Yes
2	Admin	Provide annual opportunity for public to participate in review and implementation of SWMP	2.3.3 b	$0	In compliance with public meeting requirement	No
3	Admin	*Put in annual report these public participation activities	2.3.3 c	$0	See Miscellaneous No. 50	Yes

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Illicit Discharge Detection and Elimination Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Eliminate any illicit discharge to the stormwater system as expeditiously as possible	2.3.4.2	$25,000	Varies depending on severity of infraction average cost, actual cost may vary	Yes
2	BMP	*Identify who is responsible for any such discharges	2.3.4.2	$0	Included in No. 1	Yes
3	Admin	*If elimination takes more than 60 days, establish an expeditious schedule for elimination	2.3.4.2	$44	2hrs @ $22/hr, for scheduling	Yes
4	Admin	*If more than 60 days, report dates of identification and schedules in annual report	2.3.4.2	$0	See Miscellaneous No. 50	Yes
5	BMP	Implement measures to control non-stormwater discharges if they add significant pollution	2.3.4.3	$25,000	Varies depending on severity of infraction, around $25,000-$50,000	No
6	Admin	*Identify all known locations where SSOs have discharged to the MS4 in last 5 years	2.3.4.4 b	$44	2hrs @ $22/hr, if records are available	No
7	Admin	*For each such SSO discharge, include date and time, location, volume, suspected cause	2.3.4.4 b	$44	2hrs @ $22/hr, to determine the information	No
8	Admin	*Also include whether each entered any surface water and what corrective actions were taken	2.3.4.4 b	$0	Included in No. 7	No
9	Admin	*Also include corrective measures planned and implementation schedule	2.3.4.4 b	$0	Included in No. 7	No
10	Admin	*Maintain the SSO inventory as part of the SWMP and the Annual Reports	2.3.4.4 b	$0	See Miscellaneous No. 50	No
11	Admin	*Provide oral and written notice to EPA and MassDEP for any SSO occurrence	2.3.4.4 c	$44	2hrs @ $22/hr, for informing EPA/MassDEP orally/written	No
12	BMP	*Develop an inventory of each MS4 outfall, including location, interconnections, and condition (different only in that it requires the condition of the outfall)	2.3.4.5	$792	15min/outfall (includes travel), 144 outfalls, @ $22/hr	No
13	Admin	*Update inventory annually to include monitoring program	2.3.4.5 b	$0	See Miscellaneous No. 50	No
14	BMP	*Physically label all MS4 outfall pipes	2.3.4.5 b	$528	10min/outfall (includes travel), 144 outfalls, @ $22/hr, + materials ($2 stick per outfall + spraypaint+sharpie)	No
15	Admin	*For each outfall list unique identifier, receiving water, date of most recent inspection	2.3.4.5 c	$0	Included in No. 14	No
16	Admin	*Also include dimensions, shape, material, physical condition and indicators of non-SW discharges	2.3.4.5 c	$0	Included in No. 14	Yes
17	BMP	*Revise existing map of stormwater system within 2 years of effective date of the permit	2.3.4.6	$250,000	Enough new requirements to have to add new data elements, cost assuming outside contracting and implementation into GIS map	No
18	BMP	*Map shall include all outfalls, pipes, manholes, catch basins, interconnections, open channels	2.3.4.6 a i	$0	Included in No. 17	No
19	BMP	*Also include all municipally-owned BMPs (e.g., retention basins, oil/water separators, etc.)	2.3.4.6 a i	$0	Included in No. 17	No
20	BMP	*Also include catchment delineation and all waters listed on the 303(d) or 305 (b) list	2.3.4.6 a i	$0	Included in No. 17	No
21	BMP	*Also include municipal sanitary sewers or combined sewer systems	2.3.4.6 a ii	$0	Included in No. 17	No
22	BMP	*Include various recommended elements	2.3.4.6 a iii	$0	Included in No. 17	No
23	BMP	*Update the map to reflect newly discovered information and corrections or modifications	2.3.4.6 b	$1,144	1hr/week @ $22/hr, for continuous additions to stormwater systems	No
24	Admin	*Report on the progress toward completion of the map in each annual report	2.3.4.6 c	$0	See Miscellaneous No. 50	Yes
25	BMP	*Write an Illicit Discharge Detection and Elimination (IDDE) program document (Discrete, specifically mentions the document must be written out)	2.3.4.7	$10,000	Complete redevelopment of the program, review and upgrades	No
26	Admin	Adopt an IDDE ordinance	2.3.4.7 a	$1,430	Change ordinance, 13 weeks @ 5 hrs/week @$22/hr, has to go to different committees	Yes
27	Admin	*Program shall clearly identify IDDE responsibilities and provide description of areas of responsibility	2.3.4.7 b	$0	Included in No. 25	No
28	BMP	*Assess and priority rank each catchment into one of 4 possible categories	2.3.4.7 c i	$17,028	Approx. 1548 catch basins, approx. 30 min/basin @ $22/hr	No
29	Admin	*Priority rank each catchment within each category (except those "excluded") using 8 factors	2.3.4.7 c ii	$34,056	Approx. 1548 catch basins, approx. 60min/basin @ $22/hr	No
30	Admin	*Gather all information needed for the 8 screening factors (e.g., industrial areas > 40 years old)	2.3.4.7 c ii	$0	Included in No. 29	No
31	Admin	*Complete ranking using existing information within 1 year; update in annual report	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
32	Admin	*In annual report include summary of evidence of known/suspected illicit discharges by catchment	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
33	Admin	*Also include corrective measures and schedule for correcting each illicit discharge	2.3.4.7 c iii	$0	See Miscellaneous No. 50	No
34	Admin	*Develop written procedure for screening and sampling of outfalls	2.3.4.7 d	$0	8hr @ $22/hr, work day to complete process, ($0 W/CMRSWC Membership)	Yes
35	Admin	*Include procedures for sample collection, use of field kits and storage and conveyance of samples	2.3.4.7 d i	$0	See No. 34	Yes
36	BMP	*If outfall is inaccessible, report the first accessible upstream structure	2.3.4.7 d ii	$0	possible time extensions	Yes
37	BMP	*Perform dry weather screening when and how prescribed; identify in annual report any follow-up needed	2.3.4.7 d iii	$1,584	144 outfalls, approx. 30min/outfall @ $22/hr	Yes
38	BMP	*Perform wet weather screening when and how prescribed	2.3.4.7 d iv	$0	Included in No. 39	Yes
39	BMP	*Sample at minimum for 7 listed factors	2.3.4.7 d v	$4,968	144 outfalls, approx. 1.5hr/outfall @ $23/hr, Paperwork for wet weather sampling (2,266), Testing Kits (0) b/c CMRSWC membership	No
40	Admin	*Catchments with specified septic or other results shall be listed as "High Priority" catchments	2.3.4.7 d vi	$44	2hrs @ $22/hr, if records are available	No
41	BMP	*Develop written Catchment Investigation Procedure including review of maps and historic records	2.3.4.7 e	$352	16hrs @ $22/hr	No
42	BMP	*Also include manhole investigation methodology and procedures to confirm sources of illicit discharges	2.3.4.7 e	$0	Included in No. 41	No
43	BMP	*For each catchment review sanitary sewer and storm sewer construction plans; prior work on either	2.3.4.7 e i	$88	Assuming 4 catchments, 1 hr/catchment @ $22/hr	No
44	BMP	*Also review Health department records for septic system or sanitary sewer system failures or complaints	2.3.4.7 e i	$0	Included in No.43	No
45	Admin	*Identify and record any of the 12 System Vulnerability Factors (e.g., infrastructure > 40 years old)	2.3.4.7 e i	$0	Included in No.43	No
46	Admin	*Document and annually report presence or absence of the 12 System Vulnerability Factors for each catchment	2.3.4.7 e i	$0	Assuming using WPI spreadsheet, otherwise about 10min per catchment	No
47	Admin	*Include these required elements of written manhole investigation and catchment investigation procedures	2.3.4.7 e ii	$0	$0 since CMRSWC Membership	No
48	Admin	*Include these required elements in written dry weather investigation procedure	2.3.4.7 e ii a	$0	Included in No. 47	No
49	Admin	*Include these required elements in written wet weather investigation procedure	2.3.4.7 e ii b	$0	Included in No. 47	No
50	Admin	*Develop procedures to isolate and confirm illicit sources (e.g., dye testing, smoke testing, caulk dams, etc.)	2.3.4.7 e iii	$176	8hrs @ $22/hr, for scheduling	Yes
51	Admin	*In annual report, for each illicit source list the location, its source, description of the discharge	2.3.4.7 f	$0	See Miscellaneous No. 50	No
52	Admin	*Also list date and method of discovery, date of elimination, mitigation or enforcement action	2.3.4.7 f	$0	Included in No. 51	No
53	Admin	*And estimate volume of flow reduced	2.3.4.7 f	$0	Included in No. 51	No
54	BMP	*One year after illicit discharge removal, perform confirmatory screening; wet, dry or both	2.3.4.7 f	$132	$22/hr 30min/screening, 1.5hr/illicit, 3 illicit	No
55	BMP	*Schedule follow up screening within 5 years after confirmatory screening	2.3.4.7 g	$132	$22/hr 30min/screening, 1.5hr/illicit, 3 illicit	No
56	BMP	*Develop and implement procedures to prevent illicit discharges and SSOs	2.3.4.7 h	$0	$0 since CMRSWC Membership	No
57	Admin	*Complete and report dry weather screening and sampling of High and Low Priority outfalls within 3 years	2.3.4.8 a	$0	Included in No. 37 and No. 38	No
58	Admin	*"All data shall be reported in each annual report . . ."	2.3.4.8 a	$0	See Miscellaneous No. 50	No
59	Admin	*Begin implementation of 2.3.4.7 d work no later than 15 months	2.3.4.8 b	$0	Deadlines, See No. 38 and 37	No
60	Admin	*Implement and report Catchment Investigation Procedure in every catchment . . .	2.3.4.8 c	$0	Deadlines, See No. 28	No
61	Admin	*In a minimum of 80% of the MS4 area serviced by Problem Catchments within 3 years and 100% within 5 years	2.3.4.8 c i	$0	Deadlines, See No. 28	No
62	Admin	*For all catchments where sampling indicates sewer input within 5 years	2.3.4.8 c ii	$0	Deadlines, See No. 28	No
63	Admin	*In 40% of all area served by all MS4 catchments within 5 years and in 100% of 4 area in 10 years	2.3.4.8 c iii	$0	Deadlines, See No. 28	No
64	Admin	*Track progress toward these milestones in each annual report	2.3.4.8 e	$0	See Miscellaneous No. 50	No
65	Admin	*Define or describe indicators for tracking program success; demonstrate efforts to locate illicit discharges	2.3.4.9	$176	8hrs @ $22/hr	No
66	Admin	*Also include percent and area in acres evaluated; volume of sewage removed; place in annual report (more detailed, 2003 only asks to measure progress)	2.3.4.9	$0	See Miscellaneous No. 50	No
67	Admin	provide annual training to employees involved in IDDE program	2.3.4.10	$0	$0 since CMRSWC Membership	Yes
68	Admin	*Include type and frequency of training in the annual report (2003 -> The program must include an employee training component)	2.3.4.10	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$7,872
Estimated One-time Costs	$314,494
Estimated Intermittent Costs	$50,440

No.	BMP/Admin	Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Continue to implement construction ordinance work from 2003 permit; expand to include 1 acre or more	2.3.5 a	$0	Volunteer based program	Yes
2	BMP	Develop and implement a construction site runoff program	2.3.5 c	$0	See No. 3-12	Yes
3	Admin	An ordinance that requires sediment and erosions controls and for other wastes at construction sites	2.3.5 c i	$22	1 hr @ $22/hr, for review of current document	Yes
4	Admin	Adopt written procedures for inspections and enforcement of the ordinance within 1 year (2003 -> (g.) Procedures for inspections and enforcement of control measures at construction sites.)	2.3.5 c ii	$44	2hrs @ $22/hr, for review of current document	No
5	Admin	*Document the procedures and responsibilities to implement in the SWMP	2.3.5 c ii	$88	4hrs @ $22/hr	No
6	Admin	*Include requirements for site operators to implement BMPs (e.g., reduce disturbed area, protect slopes, etc.)	2.3.5 c iii	$88	4hrs @ $22/hr	No
7	Admin	*Include requirements for site operators to control other wastes	2.3.5 c iv	$88	4hrs @ $22/hr	No
8	Admin	*Develop written procedures for site plan review and inspection and enforcement within 1 year (003 -> nearly same, now has time requirement)	2.3.5 c v	$88	4hrs @ $22/hr	Yes
9	Admin	*Include pre-construction review, consideration for protection of water quality impacts, LID components	2.3.5 c v	$88	4hrs @ $22/hr	No
10	Admin	*And receipt of information from the public, inspections during and after BMP installation (now covers post construction)	2.3.5 c v	$88	4hrs @ $22/hr	No
11	Admin	*And "qualifications necessary to perform the inspections"	2.3.5 c v	$88	4hrs @ $22/hr	No
12	Admin	*And procedure for tracking the number of site reviews, inspections and enforcement actions	2.3.5 c v	$88	4hrs @ $22/hr	No
13	Admin	*All to be included in the annual report	2.3.5 c v	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$0
Estimated One-time Costs	$770
Estimated Intermittent Costs	$0

No.	BMP/Admin	Post Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*develop implement and enforce a post-construction SW program for new developments and redevelopments	2.3.6 a	$0	depends on previous program, should already be in place	Yes
2	Admin	*adopt or amend a local ordinance to control projects that disturb an acre or more	2.3.6 a ii	$176	Already in place, but 8hrs @ $22/hr minimum	Yes
3	BMP	*retain and/or treat first inch of runoff; where technically feasible do retention first	2.3.6 a ii a	$1,760	80hrs @ $22/hr, assumes no controversy and 4 people working	No
4	BMP	*"from all impervious surfaces on site"	2.3.6 a ii a	$0	See No. 3	No
5	Admin	*sites with soil contamination problems or at industrial sites shall not include any infiltration BMPs	2.3.6 a ii b	$0	Rule, does not require anything to be implemented, Possibly need Attorney	No
6	Admin	*infiltration systems near environmentally sensitive areas must include shutdown and containment systems	2.3.6 a ii c	$0	Rule, does not require anything to be implemented	No
7	Admin	*all BMPs must be constructed in accordance with the MA stormwater Handbook	2.3.6 a ii d	$0	Rule, does not require anything to be implemented	Yes
8	Admin	*this system shall include development of a long term O&M plan to inspect and repair BMPs	2.3.6 a ii e	$0	Rule, does not require anything to be implemented	No
9	Admin	*systems shall be designed "to avoid disturbance of areas susceptible to erosion and sediment loss"	2.3.6 a ii f	$0	Rule, does not require anything to be implemented	Yes
10	BMP	*systems shall require submittal of as-built drawings that depict all on site controls	2.3.6 a iii	$1,100	Submitted by construction company, 52hrs @ $22/hr, if it's new	No
11	Admin	*shall have procedures to ensure O&M, such as dedicated funds, escrow accounts or management contracts	2.3.6 a iii	$4,576	legal authority adds complexity and cost, 5hr w/ an attorney, 208hrs of labor @ $22/hr	No
12	Admin	*may include annual self-certification program	2.3.6 a iii	$0	Included in No. 11	No
13	Admin	*annual report shall include measures that the permittee has done to meet these requirements	2.3.6 a iii	$0	See Miscellaneous No. 50	Yes
14	BMP	*w/in 3 years document current street design and parking rules that affect creation of impervious cover	2.3.6 b	$1,320	60hrs @ $22/hr	No
15	BMP	*shall be used by permittee to determine if changes "can be made to support low impact design options"	2.3.6 b	$0	Included in No. 14	No
16	BMP	*if changes can be made, assessment shall include recommendations and proposed schedules to adopt changes	2.3.6 b	$0	Included in No. 14	No
17	BMP	*permitee "shall implement all recommendations . . ."; assessment must be placed in the SWMP	2.3.6 b	$0	Included in No. 14	No
18	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 b	$0	See Miscellaneous No. 50	No
19	BMP	*w/in 4 years assess local rules to determine feasibility of allowing green roofs, water harvesting and LID BMPs	2.3.6 c	$880	40 hrs @ $22/hr	No
20	Admin	*assessment shall indicate if and under what circumstances these practices are allowed	2.3.6 c	$0	Included in No. 19	No
21	BMP	*if practices not allowed, determine what hinders use of these practices and what changes can be made	2.3.6 c	$0	Included in No. 19	No
22	BMP	*provide a schedule of implementation of recommendations	2.3.6 c	$0	Included in No. 19	No
23	BMP	*"permittee shall implement all recommendations, in accordance with the schedules . . ."	2.3.6 c	$0	Included in No. 19	No
24	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 c	$0	See Miscellaneous No. 50	Yes
25	Admin	*estimate the annual increase or decrease in Impervious Area and Directly Connected Impervious Area	2.3.6 d	$1,760	80 hrs @ $22/hr, a lot of data required	No
26	Admin	*tabulate results by sub-basins delineated per 2.3.4.6 a I	2.3.6 d i	$0	See No. 17 in IDDE	No
27	Admin	*must include conventional pavements, driveways, parking lots and rooftops	2.3.6 d i	$0	See No. 17 in IDDE	No
28	Admin	*starting with second annual report, estimate each sub-basin added or removed each year	2.3.6 d ii	$0	See Miscellaneous No. 50	No
29	Admin	*break out those figures by development, redevelopment or retrofit by permitee, by others voluntarily	2.3.6 d ii	$0	See Miscellaneous No. 50	No
30	Admin	*. . . or in compliance with the permittee's ordinances or bylaws	2.3.6 d ii	$0	See Miscellaneous No. 50	No
31	Admin	*within 4 years complete inventory and ranking of Municipal property suitable for modification or retrofit to . . .	2.3.6 d iii	$2,640	120hrs @ $22/hr, many properties to assess	No
32	Admin	*. . .reduce frequency, volume and pollutant loads of stormwater discharges by reduction of impervious area	2.3.6 d iii	$0	Included in No. 32	No
33	Admin	*shall include both on site and off site reduction of IA and DCIA (e.g., parking lots, buildings, etc)	2.3.6 d iii	$0	Included in No. 32	No
34	Admin	*also include existing rights-of-way,	2.3.6 d iii	$0	Included in No. 32	No
35	Admin	*for suitability the evaluation shall consider factors such as depth to water table; subsurface geology; access	2.3.6 d iii	$0	Included in No. 32	No
36	Admin	*priority ranking shall consider factors such as CIP schedules; current storm sewer level of service, etc.	2.3.6 d iii	$0	Included in No. 32	No
37	Admin	*starting with fifth year annual report, report on status of all such inventoried properties	2.3.6 d iii	$0	See Miscellaneous No. 50	No

Estimated Annual Costs	$5,280
Estimated One-time Costs	$1,496
Estimated Intermittent Costs	$7,436

No.	BMP/Admin	Pollution Prevention and Good Housekeeping Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*W/in 1 year develop or update written O&M procedures for listed municipal facilities	2.3.7 a i	$176	8hr @ $22/hr	No
2	Admin	*w/in 1 year inventory all permitee owned facilities in these "good housekeeping" categories	2.3.7 a ii	$0	Included in No. 1	No
3	Admin	*For Parks and Open Space: procedures to address the use, storage and minimization of pesticides, fertilizers, etc.	2.3.7 a ii a	$2,640	120hrs @ $22/hr, Large amount of spaces to review plans for	No
4	Admin	*to be reviewed annually and updated as necessary	2.3.7 a ii a	$0	Included in No. 3	No
5	Admin	*evaluate lawn maintenance and landscaping activities to be protective of water quality	2.3.7 a ii a	$0	Included in No. 3	No
6	Admin	*including reduced mowing, proper disposal of lawn clippings, use of drought resistant plantings	2.3.7 a ii a	$0	Included in No. 3	No
7	Admin	*establish pet waste handling collection, disposal and signage at all parks and open spaces	2.3.7 a ii a	$0	Included in No. 3	No
8	Admin	*establish procedures for scheduled cleaning and sufficient number of trash containers	2.3.7 a ii a	$0	Included in No. 3	No
9	Admin	*For Buildings and Facilities, such as town offices, police and fire stations, municipal pools, etc.	2.3.7 a ii b	$1,760	80hrs @ $22/hr	No
10	Admin	*evaluate the use. Storage and disposal of petroleum products and train employees on proper procedures	2.3.7 a ii b	$0	Included in No. 9	No
11	Admin	*ensure that spill prevention is in place and coordinate with fire department	2.3.7 a ii b	$0	Included in No. 9	No
12	Admin	*develop management procedures for dumpsters and other waste management equipment	2.3.7 a ii b	$0	Included in No. 9	No
13	Admin	*For Vehicles and Equipment: establish procedures for storage of permittee vehicles, including inside storage	2.3.7 a ii c	$176	8hrs @ $22/hr	No
14	Admin	*establish procedures to ensure that vehicle wash water does not enter the SW system	2.3.7 a ii c	$0	Included in No. 13	No
15	Admin	*evaluate fueling areas to minimize exposure	2.3.7 a ii c	$0	Included in No. 13	No
16	Admin	*Infrastructure O&M: w/in 1 year develop and implement procedures to take care for the MS4 system	2.3.7 a iii a	$0	See Below through No. 22	No
17	Admin	*optimize routine inspections (e.g., prioritize catch basins located near construction sites)	2.3.7 a iii b	$0		No
18	BMP	*ensure that "no catch basin at anytime will be more than 50 percent full"	2.3.7 a iii b	$440	2hrs/basin @ $22/hr, assuming 10 basins /year	No
19	BMP	*if more than 50% full during two routine cleanings, investigate the cause for excessive sediment loading	2.3.7 a iii b	$0	See No. 17/Annual Report	No
20	Admin	*describe these actions in the annual report	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
21	Admin	*document in annual report the plan for optimizing catch basin cleaning, inspections or scheduling	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
22	Admin	*include metrics used to determine that the plan is optimal for the MS4	2.3.7 a iii b	$0	Included in No. 17	No
23	Admin	*in each annual report list the total number of catch basins, number inspected and/or cleaned	2.3.7 a iii b	$0	See Miscellaneous No. 50	No
24	Admin	*and "volume or mass of material removed from each catch basin draining to water quality limited waters"	2.3.7 a iii b	$0	included in No. 23	No
25	Admin	*and "total volume or mass of material removed from all catch basins"	2.3.7 a iii b	$0	included in No. 23	No
26	BMP	*Sweeping: develop and implement procedures for sweeping streets and municipal-owned lots	2.3.7 a iii c	$10,560	Materials + Labor	Yes
27	BMP	*sweep all streets (rural exceptions apply) a minimum of once a year in the spring	2.3.7 a iii c	$0	See No. 26	Yes
28	BMP	*procedures shall include more frequent sweeping of targeted area based on various listed criteria	2.3.7 a iii c	$0	Minimal Development Cost	No
29	BMP	*criteria include inspections, pollutant loads, catch basin cleanings, land use, TMDL or impaired waters	2.3.7 a iii c	$0	Minimal Development Cost	No
30	Admin	*Each annual report shall include number of miles cleaned and volume or mass of material removed	2.3.7 a iii c	$0	See Miscellaneous No. 50	No
31	Admin	*for rural exception areas, either sweep per usual or develop specific procedures and place in first annual report	2.3.7 a iii c	$0	See Miscellaneous No. 50	No
32	BMP	*properly store catch basin cleanings so they do not discharge to receiving waters	2.3.7 a iii d	$0	$0 Since Southbridge owns their own landfill	Yes
33	BMP	*establish and implement procedures for winter road maintenance including storage of salt and sand	2.3.7 a iii e	$0	Properly house materials in municipally owned properties	Yes
34	BMP	*minimize use of sodium chloride and other salts; evaluate opportunities for alternative materials	2.3.7 a iii e	$176	8hrs @ $22/hr	Yes
35	Admin	*ensure that snow is not disposed into surface waters	2.3.7 a iii e	$0		Yes
36	Admin	*establish procedures for O&M or all permitee-owned stormwater BMPs (e.g., swales, retention basins etc.)	2.3.7 a iii f	$176	8hrs @ $22/hr	No
37	BMP	*inspect all such structures at least once annually	2.3.7 a iii f	$11,000	Inspect each BMP, assuming 2000/year 15min/BMP @ $22/hr	No
38	Admin	*in annual report include status of work required in this part	2.3.7 a iv	$0	See Miscellaneous No. 50	No
39	Admin	*permittees shall keep a written record of all required activities	2.3.7 a v	$2,200	100hrs @ $22/hr, based on templates from the CMRSWC	No
40	BMP	*develop and fully implement a SWPPP for each of the listed facilities no later than 2 years after effective date	2.3.7 b	$1,540	4hrs to update existing SWPPPs, 10hrs for new SWPPPS, @ 22/hr, assume 5 new facilities and 5 old facilities	No
41	BMP	*includes maintenance garages, public works yards, transfer stations, other waste handling facilities	2.3.7 b	$0	Included in No. 40	No
42	BMP	*Identify name and title of staff of the Pollution Prevention Team for each facility	2.3.7 b ii a	$0	Included in No. 40	No
43	BMP	*for each facility: include map, description of activities, outfall locations, receiving waters and structural controls	2.3.7 b ii b	$0	Included in No. 40	No
44	BMP	*select , sign, install and implement the following 9 control measures to prevent or reduce discharge of pollutants	2.3.7 b ii c	$10,000	depends on variations of the extent of impaired waters	No
45	BMP	*take all reasonable measure to address quality of discharges that may not originate at the facility	2.3.7 b ii c	$0	Included in No. 44	No
46	Admin	*for areas that discharge to impaired waters, identify the control measures to address that issue	2.3.7 b ii c	$0	Included in No. 44	No
47	BMP	*SWPP Required Elements: Minimize or Prevent Exposure (e.g., move activities or materials under cover)	2.3.7 d 1	$0	Included in No. 44	No
48	BMP	*Good Housekeeping	2.3.7 d 2	$180,246	$7,040 catch basin cleaning, $10,560 street sweeping, $152,200 salt/sand, $5,956 maintenance, $4,470 audits	Yes
49	BMP	*Preventative Maintenance	2.3.7 d 3	$0		Yes
50	BMP	*Spill Prevention and Response	2.3.7 d 4	$0	Included in No. 44	Yes
51	BMP	*Erosion and Sediment Control	2.3.7 d 5	$0	Included in No. 44	Yes
52	BMP	*Management of Runoff	2.3.7 d 6	$0	Included in No. 44	Yes
53	BMP	*Salt Storage or Piles Containing Salt	2.3.7 d 7	$0	Included in No. 44	Yes
54	BMP	*Employee Training; document training date, title and duration; attendees; subjects covered during training	2.3.7 d 8	$1,980		Yes
55	BMP	*Maintenance of Control Measures	2.3.7 d 8	$0	Included in No. 44	Yes
56	BMP	*Inspect all areas exposed to stormwater and all stormwater control measures at least every calendar quarter	2.3.7 b iii a	$2,200	30 minutes per inspection , assume 10 facilities with four areas each @ $100/hr	No
57	BMP	*at least one inspection shall occur when a stormwater discharge is occurring	2.3.7 b iii a	$1,584	144 outfalls, approx. 30min/outfall @ $22/hr	No
58	Admin	*document the date, time, name of inspector, weather, any control measures needing maintenance or repair, etc.	2.3.7 b iii a	$0	Included in No. 44	No
59	BMP	*permitee shall repair or replace any control measures needing repair before the next anticipated storm event	2.3.7 b iii a	$0	Included in No. 44	No
60	Admin	*shall report the findings from the Site inspections in the annual report	2.3.7 b iii a	$0	See Miscellaneous No. 50	No
61	Admin	*keep a written record of all required activities required in this section	2.3.7 b iv	$0		No

Estimated Annual Costs	$220,562
Estimated One-time Costs	$6,292
Estimated Intermittent Costs	$0

No.	BMP/Admin	Miscellaneous Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	Submit an NOI	1.7.1	$176	8hrs at $22/hr, historical properties or endangered species will increase this	No
2	Admin	*Document endangered species status (part of NOI)	1.9.1	$0	Included under No. 1	No
3	BMP	*Implement measures to protect endangered species	1.9.1	Varies	Included under No. 1	No
4	Admin	Document Historic Properties Observation (part of NOI)	1.9.2	$0	See Miscellaneous No. 50	No
5	BMP	*Describe effect of discharges on Historic properties	1.9.2	Varies	Included under No. 1	No
6	Admin	*Report documents received re: such discharges	1.9.2	$0	Included under No. 1	No
7	Admin	*Provide results of Appendix D historic property screening	1.9.2	$0	Included under No. 1	No
8	BMP	Describe efforts to avoid or minimize impacts on such properties	1.9.2	Varies	Included under No. 1	No
9	BMP	Develop a SWMP	1.10	$1,760	80hrs at $22/hr	Yes
10	BMP	Implement a SWMP	1.10	$0		Yes
11	Admin	*Update/modify SWMP	1.10	$440	20hrs at $22/hr	No
12	Admin	Provide SWMP "immediately" to various agencies and public	1.10.1	$0	Included under No. 9	No
13	Admin	*Post SWMP online	1.10.1	$0	Included under No. 9	No
14	Admin	Identify Names and titles of people implementing the SWMP	1.10.2	$0	Included under No. 9	No
15	Admin	***Include status of 2003 permit requirements**	1.10.2	$0	Included under No. 9	Yes
16	Admin	*List all receiving waterbodies, classifications, pollutants of concern	1.10.2	$0	Included under No. 9	No
17	Admin	*list all applicable TMDLs, WLAs	1.10.2	$0	Included under No. 9	No
18	Admin	*List all outfalls that discharge to each waterbody	1.10.2	$0	Included under No. 9	No
19	Admin	*list all public water sources that may be affected by SW discharges	1.10.2	$0	Included under No. 9	No
20	Admin	*List all interconnected MS4s and receiving waterbody	1.10.2	$0	Included under No. 9	No
21	Admin	*Include applicable TMDLs, WLAs and pollutants of concern	1.10.2	$0	Included under No. 9	No
22	Admin	*Document all new or increased discharges	1.10.2	$0	Included under No. 9	No
23	Admin	*Include map of separate storm sewer system (Map must be improved)	1.10.2	$0	Included under No. 9	No
24	Admin	List all discharges to impaired water and the response	1.10.2	$0	Included under No. 9	No
25	Admin	*Describe BMPs proposed to meet TMDL requirements	1.10.2	$0	Included under No. 9	No
26	Admin	For each BMP, list the milestone, timeframe and assessment measure	1.10.2	$0	Included under No. 9	No
27	Admin	*For each BMP, list person or department responsible for implementation	1.10.2	$0	Included under No. 9	No
28	Admin	*Describe BMPs proposed to meet impaired waters requirements	1.10.2	$0	Included under No. 9	No
29	Admin	Describe BMPs used to meet the 6 minimum control measures	1.10.2	$0	Included under No. 9	No
30	Admin	*List measures to avoid/minimize impacts to surface drinking waters	1.10.2	$0	Included under No. 9	No
31	BMP	*Ensure that discharges "do not cause or contribute" to an exceedance of WQ standards	2.1	$0	Included under No. 9	Yes
32	BMP	*For TMDL waters, meet requirements of Appendix F (NB: contains multiple add'l req'ts)	2.1.1 b	Varies	May range into millions of dollars, no one has estimated this yet	No
33	BMP	*For impaired waters meet requirements of Appendix H (NB: contains multiple add'l req'ts)	2.1.1 c	Varies	May range into millions of dollars, no one has estimated this yet	No
34	BMP	*For any exceedances of WQ standards to TMDL or impaired waters, eliminate it within 60 days	2.1.1 d	Varies	May range into millions of dollars, no one has estimated this yet	No
35	BMP	*For any increased discharge, comply with MassDEP's regulations at 314 CMR 4.04	2.1.2 a	Varies	Cost will vary	No
36	BMP	*Demonstrate no net increase in pollutants for discharges to any 303 (d) or 305(b) water (previously only had to identify if 303 d)	2.1.2 b	Varies	Cost will vary	No
37	Admin	*Identify all discharges to waters that are impaired or which have TMDLs (Both in SWMP and Annual report)	2.2	$0	Varies depending on EPA interpretations	No
38	Admin	*Permittee shall annually self-evaluate and maintain the evaluation in its SWMP	4.1 a	$0	Included under No. 9	No
39	Admin	*In evaluating the appropriateness of BMPs, permittees may add BMPs at any time	4.1 b	$88	4hrs @ $22/hr, paperwork for new BMP	Yes
40	Admin	Subtracting or replacing BMPs may only be done in limited circumstances, after showing the BMP is ineffective	4.1 b	Varies	Cost of replacement will depend on the BMP being used	No
41	Admin	*Each Annual shall include a brief explanation of any BMP modification	4.1 b	$0	See No. 50	No
42	Admin	EPA or MassDEP may require the permittee to add, modify, etc., any BMP to satisfy conditions of the permit	4.1.c	$0	Minimal cost	No
43	Admin	*The permittee shall keep all record required by this permit for at least five years	4.2 a	$880	Week of work annually, 40hrs at $22/hr	No
44	Admin	*"Records" includes "information used in the development of any written program . . . monitoring results, etc."	4.2 a	$0	Record keeping, doesn't cost anything to implement	No
45	Admin	these records all be made available to the public	4.2 c	$0	Record keeping, doesn't cost anything to implement	No
46	Admin	*the permittee "shall document all monitoring results each year in the annual report"	4.3 b	$0	See No. 50	No
47	Admin	*that shall include the date, outfall identifier, location, weather, precipitation and screening or analysis results	4.3 b	$0	Part of annual report, see No. 46	No
48	Admin	*include all monitoring results for the current reporting period and for the entire permit term	4.3 b	$0	Part of annual report, see No. 46	No
49	Admin	*permittee shall include "results from any other stormwater or receiving water quality monitoring or studies . . ."	4.3 c	$0	Part of annual report, see No. 46	No
50	Admin	The annual report shall include a self-assessment of compliance; an assessment of the appropriateness of BMPs	4.4 b i	$14,200	Consulting fee for annual report	No
51	Admin	*The status of any required plans	4.4 b iii	$0	Part of annual report, see No. 50	No
52	Admin	*"Identification of all discharges determined to be causing or contributing to an exceedance" of WQ standards	4.4 b iii	$0	Part of annual report, see No. 50	No
53	Admin	*For discharges to TMDLs, identify specific BMPs used to address those requirements	4.4 b iii	$0	Part of annual report, see No. 50	No
54	Admin	*For discharges to impaired waters, "a description of each BMP required by Appendix H" and all deliverables	4.4 b iii	$0	Part of annual report, see No. 50	No
55	Admin	*Assessment of the progress toward meeting the requirements for the 6 minimum control measures (see details)	4.4 b iv	$0	Part of annual report, see No. 50	No
56	Admin	*"All outfall screening and monitoring data" for the reporting term and cumulative for the permit term	4.4 b v	$0	Part of annual report, see No. 50	No
57	Admin	Description of activities for the next reporting cycle	4.4 b vi	$0	Part of annual report, see No. 50	Yes
58	Admin	Description of any changes in identified BMPs or measurable goals	4.4 b vii	$0	Part of annual report, see No. 50	Yes
59	Admin	*Description of activities undertaken by any entity contracted for achieving any requirement of the permit	4.4 b viii	$0	Part of annual report, see No. 50	No

Estimated Annual Costs	$15,168
Estimated One-time Costs	$2,376
Estimated Intermittent Costs	$0

Appendix F

Control Measure	Estimated Annual Costs	Estimated One-time Costs	Estimated Intermittent Costs
Public Education and Outreach	$12,106	$0	$0
Public Involvement and Participation	$0	$0	$0
Illicit Discharge Detection and Elimination Program	$11,347	$306,481	$76,972
Construction Site Stormwater Runoff Control	$350	$858	$0
Post Construction Stormwater Management	$5,280	$1,496	$7,480
Good Housekeeping	$693,578	$6,292	$0
Non-Control Measure			
Miscellaneous	$12,968	$2,376	$0
Totals	**$735,629**	**$317,503**	**$84,452**

KEY:			
Yearly	No. = Reference Number		
Once	BMP/Admin = Is the requirement completed with either a BMP or Administrative work		
As Needed	X Requirement = The short name for a requirement		
	Requirement = Section in the 2014 MS4 permit draft		
	Cost = Cost of completing the requirement		
	Justification = List of methods used to complete the requirement, as well supporting data from sources		
	In Place (Y/N) = Is the requirement listed currently in place		

No.	BMP/Admin	Public Education and Outreach Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	Continue public education program required by 2003 permit	2.3.2 a	$3,176	Art Contest (3000) for materials, 8 hr(s) @ $22/hr	Y
2	Admin	*Define goals, express specific messages define audience for each message	2.3.2 a	$44	2hrs @ $22/hr, a minor administrative cost	N
3	Admin	*Identify parties responsible for each message	2.3.2 a	$44	2hrs @ $22/hr, a minor administrative cost	N
4	Admin	*Develop and send out two separate messages for each of 4 different audiences	2.3.2 c	$22	1hr @ $22/hr, a minor administrative cost, once a year for 8 years	N
5	Admin	*Show evidence that messages are achieving results	2.3.2 e	$8,820	DCR explanation for assessing effectiveness	N
6	Admin	*Identify method used to evaluate effectiveness of messages	2.3.2 e	$0	No significant cost	N
7	Admin	*Put in annual report the methods of distribution and methods to assess effectiveness	2.3.2 g	$0	See Miscellaneous No. 50	N

Estimated Annual Costs	$12,106
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Public Involvement and Participation Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*Comply with state public Notice requirements	2.3.3 a	$0	No significant cost, website hosting	Y
2	Admin	Provide annual opportunity for public to participate in review and implementation of SWMP	2.3.3 b	$0	No significant cost	Y
3	Admin	*Put in annual report these public participation activities	2.3.3 c	$0	See Miscellaneous No. 50	N

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Illicit Discharge Detection and Elimination Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Eliminate any illicit discharge to the stormwater system as expeditiously as possible	2.3.4.2	$25,000	[Varies depending on infraction, ranges from ($0-50,000) provided by DCR Director Larry Pistrang]	Y
2	BMP	*Identify who is responsible for any such discharges	2.3.4.2	$0	See No. 1, part of identification process	Y
3	Admin	*If elimination takes more than 60 days, establish an expeditious schedule for elimination	2.3.4.2	$44	2hrs @ $22/hr, for scheduling	N
4	Admin	*If more than 60 days, report dates of identification and schedules in annual report	2.3.4.2	$0	See Miscellaneous No. 50	N
5	BMP	Implement measures to control non-stormwater discharges if they add significant pollution	2.3.4.3	$25,000	[Varies depending on infraction, ranges from ($0-50,000) provided by DCR Director Larry Pistrang]	Y
6	Admin	*Identify all known locations where SSOs have discharged to the MS4 in last 5 years	2.3.4.4 b	$44	2hrs @ $22/hr, assuming records are easily available	N
7	Admin	*For each such SSO discharge, include date and time, location, volume, suspected cause	2.3.4.4 b	$44	2hrs @ $22/hr, to determine the information	N
8	Admin	*Also include whether each entered any surface water and what corrective actions were taken	2.3.4.4 b	$0	Included under No. 7	N
9	Admin	*Also include corrective measures planned and implementation schedule	2.3.4.4 b	$0	Included under No. 7	N
10	Admin	*Maintain the SSO inventory as part of the SWMP and the Annual Reports	2.3.4.4 b	$0	See Miscellaneous No. 50	N
11	Admin	*Provide oral and written notice to EPA and MassDEP for any SSO occurrence	2.3.4.4 c	$44	2hrs @ $22/hr, informing EPA/MassDEP orally/written	N
12	BMP	*Develop an inventory of each MS4 outfall, including location, interconnections, and condition (different only in that it requires the condition of the outfall)	2.3.4.5	$1,469	2hrs @ $22/hr, about 15min/outfall, 267 outfalls	N
13	Admin	*Update inventory annually to include monitoring program	2.3.4.5 b	$0	See Miscellaneous No. 50	N
14	BMP	*Physically label all MS4 outfall pipes	2.3.4.5 b	$2,003	2hrs @ $22/hr, about 10min/outfall, 267 outfalls, materials included ($2 stick per outfall + spraypaint+sharpie)	N
15	Admin	*For each outfall list unique identifier, receiving water, date of most recent inspection	2.3.4.5 c	$0	Included under No. 14, materials are available from the Coalition	N
16	Admin	*Also include dimensions, shape, material, physical condition and indicators of non-SW discharges	2.3.4.5 c	$0	Included under No. 14, materials are available from the Coalition	N
17	BMP	*Revise existing map of stormwater system within 2 years of effective date of the permit	2.3.4.6	$250,000	Will likely require complete redevelopment of the map system, this numbers based on Millbury estimations for People GIS	N
18	BMP	*Map shall include all outfalls, pipes, manholes, catch basins, interconnections, open channels	2.3.4.6 a i	$0	Included under No. 17	N
19	BMP	*Also include all municipally-owned BMPs (e.g., retention basins, oil/water separators, etc.)	2.3.4.6 a i	$0	Included under No. 17	N
20	BMP	*Also include catchment delineation and all waters listed on the 303(d) or 305 (b) list	2.3.4.6 a i	$0	Included under No. 17	N
21	BMP	*Also include municipal sanitary sewers or combined sewer systems	2.3.4.6 a ii	$0	Included under No. 17	N
22	BMP	*Include various recommended elements	2.3.4.6 a iii	$0	Included under No. 17	N
23	BMP	*Update the map to reflect newly discovered information and corrections or modifications	2.3.4.6 b	$1,144	1hr/week @ $22/hr, for continuous developments and additions to stormwater systems	N
24	Admin	*Report on the progress toward completion of the map in each annual report	2.3.4.6 c	$0	See Miscellaneous No. 50	N
25	BMP	*Write an Illicit Discharge Detection and Elimination (IDDE) program document (Discrete, specifically mentions the document must be written out)	2.3.4.7	$10,000	A complete redevelopment of the program, smaller towns can expect a cost of 10,000	N
26	Admin	Adopt an IDDE ordinance	2.3.4.7 a	$1,430	65hrs @ $22/hr, will have to change ordinance and allow a representative to go to different committees	Y
27	Admin	*Program shall clearly identify IDDE responsibilities and provide description of areas of responsibility	2.3.4.7 b	$0	Included under No. 25	N
28	BMP	*Assess and priority rank each catchment into one of 4 possible categories	2.3.4.7 c i	$13,310	1210 catch basins, about 30min/basin @ $22/hr	N
29	Admin	*Priority rank each catchment within each category (except those "excluded") using 8 factors	2.3.4.7 c ii	$26,620	1210 catch basins, about 1hr/basin @ $22/hr	N
30	Admin	*Gather all information needed for the 8 screening factors (e.g., industrial areas > 40 years old)	2.3.4.7 c ii	$0	Included under No. 29	N
31	Admin	*Complete ranking using existing information within 1 year; update in annual report	2.3.4.7 c iii	$0	See Miscellaneous No. 50	N
32	Admin	*In annual report include summary of evidence of known/suspected illicit discharges by catchment	2.3.4.7 c iii	$0	See Miscellaneous No. 50	N
33	Admin	*Also include corrective measures and schedule for correcting each illicit discharge	2.3.4.7 c iii	$0	See Miscellaneous No. 50	N
34	Admin	*Develop written procedure for screening and sampling of outfalls	2.3.4.7 d	$0	No cost with Coalition Membership	N
35	Admin	*Include procedures for sample collection, use of field kits and storage and conveyance of samples	2.3.4.7 d i	$0	Included under No. 34	N
36	BMP	*If outfall is inaccessible, report the first accessible upstream structure	2.3.4.7 d ii	$0	Minimal cost, possible time extensions to test applicable outfalls	N
37	BMP	*Perform dry weather screening when and how prescribed; identify in annual report any follow-up needed	2.3.4.7 d iii	$979	267 outfalls, about 10min/outfall @ $22/hr	N
38	BMP	*Perform wet weather screening when and how prescribed	2.3.4.7 d iv	$1,469	267 outfalls, about 15min/outfall @ $22/hr	N
39	BMP	*Sample at minimum for 7 listed factors	2.3.4.7 d v	$8,811	267 outfalls, about 1.5hr/outfall @ $22/hr, along with applicable water quality testing kit costs (none with Coalition)	N
40	Admin	*Catchments with specified septic or other results shall be listed as "High Priority" catchments	2.3.4.7 d vi	$44	2hrs @ $22/hr, if files readily available	N
41	BMP	*Develop written Catchment Investigation Procedure including review of maps and historic records	2.3.4.7 e	$352	16hrs @ $22/hr, for development of procedure	N
42	BMP	*Also include manhole investigation methodology and procedures to confirm sources of illicit discharges	2.3.4.7 e	$0	Included under No. 41	N
43	BMP	*For each catchment review sanitary sewer and storm sewer construction plans; prior work on either	2.3.4.7 e i	$26,620	1210 catchments, 1 hr/catchment @ $22/hr	N
44	BMP	*Also review Health department records for septic system or sanitary sewer system failures or complaints	2.3.4.7 e i	$0	Included under No. 43	N
45	Admin	*Identify and record any of the 12 System Vulnerability Factors (e.g., infrastructure > 40 years old)	2.3.4.7 e i	$0	Included under No. 43	N
46	Admin	*Document and annually report presence or absence of the 12 System Vulnerability Factors for each catchment	2.3.4.7 e i	$0	See Miscellaneous No. 50	N
47	Admin	*Include these required elements of written manhole investigation and catchment investigation procedures	2.3.4.7 e ii	$0	No cost with Coalition Membership	N
48	Admin	*Include these required elements in written dry weather investigation procedure	2.3.4.7 e ii a	$0	Included under No. 47	N
49	Admin	*Include these required elements in written wet weather investigation procedure	2.3.4.7 e ii b	$0	Included under No. 47	N
50	Admin	*Develop procedures to isolate and confirm illicit sources (e.g., dye testing, smoke testing, caulk dams, etc.)	2.3.4.7 e iii	$22	1hr @ $22/hr, for scheduling	Y
51	Admin	*In annual report, for each illicit source list the location, its source, description of the discharge	2.3.4.7 f	$88	4hrs @ $22/hr, for scheduling	N
52	Admin	*Also list date and method of discovery, date of elimination, mitigation or enforcement action	2.3.4.7 f	$0	Included under No. 51	N
53	Admin	*And estimate volume of flow reduced	2.3.4.7 f	$0	Included under No. 51	N
54	BMP	*One year after illicit discharge removal, perform confirmatory screening; wet, dry or both	2.3.4.7 f	$132	$22/hr 30min/screening, approximately 1.5hr/illicit, assuming 3 illicit	N
55	BMP	*Schedule follow up screening within 5 years after confirmatory screening	2.3.4.7 g	$132	$22/hr 30min/screening, approximately 1.5hr/illicit, assuming 3 illicit	N
56	BMP	*Develop and implement procedures to prevent illicit discharges and SSOs	2.3.4.7 h	$0	8hrs @ $22/hr, one work day to complete process, no cost with Coalition membership	N
57	Admin	*Complete and report dry weather screening and sampling of High and Low Priority outfalls within 3 years	2.3.4.8 a	$0	Included under No. 37 and No. 38	N
58	Admin	*"All data shall be reported in each annual report . . ."	2.3.4.8 a	$0	See Miscellaneous No. 50	N
59	Admin	*Begin implementation of 2.3.4.7 d work no later than 15 months	2.3.4.8 b	$0	Included under No. 37 and No. 38, deadlines	N
60	Admin	*Implement and report Catchment Investigation Procedure in every catchment . . .	2.3.4.8 c	$0	Included under No. 28, deadlines	N
61	Admin	*In a minimum of 80% of the MS4 area serviced by Problem Catchments within 3 years and 100% within 5 years	2.3.4.8 c i	$0	Included under No. 28, deadlines	N
62	Admin	*For all catchments where sampling indicates sewer input within 5 years	2.3.4.8 c ii	$0	Included under No. 28, deadlines	N
63	Admin	*In 40% of all area served by all MS4 catchments within 5 years and in 100% of 4 area in 10 years	2.3.4.8 c iii	$0	Included under No. 28, deadlines	N
64	Admin	*Track progress toward these milestones in each annual report	2.3.4.8 e	$0	See Miscellaneous No. 50	N
65	Admin	*Define or describe indicators for tracking program success; demonstrate efforts to locate illicit discharges	2.3.4.9	$0	8hrs @ $22/hr, administrative work	N
66	Admin	*Also include percent and area in acres evaluated; volume of sewage removed; place in annual report (more detailed, 2003 only asks to measure progress)	2.3.4.9	$0	See Miscellaneous No. 50	N
67	Admin	provide annual training to employees involved in IDDE program	2.3.4.10	$0	No cost with Coalition membership	Y
68	Admin	*Include type and frequency of training in the annual report (2003 -> The program must include an employee training component)	2.3.4.10	$0	See Miscellaneous No. 50	N

Estimated Annual Costs	$11,347
Estimated One-time Costs	$306,481
Estimated Intermittent Costs	$76,972

No.	BMP/Admin	Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Continue to implement construction ordinance work from 2003 permit; expand to include 1 acre or more	2.3.5 a	$350	Compare to previous cost, Millbury cost provided by Laurie Connors	Y
2	BMP	Develop and implement a construction site runoff program	2.3.5 c	$0	as provided by Laurie Connors, Town planner	Y
3	Admin	An ordinance that requires sediment and erosions controls and for other wastes at construction sites	2.3.5 c i	$22	1hr @ $22/hr, included under No. 2	Y
4	Admin	Adopt written procedures for inspections and enforcement of the ordinance within 1 year (2003 -> (g.) Procedures for inspections and enforcement of control measures at construction sites.)	2.3.5 c ii	$44	2hrs @ $22/hr, for review of the established document included under No. 2	Y
5	Admin	*Document the procedures and responsibilities to implement in the SWMP	2.3.5 c ii	$176	4hrs @ $22/hr, included under No. 2	N
6	Admin	*Include requirements for site operators to implement BMPs (e.g., reduce disturbed area, protect slopes, etc.)	2.3.5 c iii	$88	4hrs @ $22/hr, included under No. 2	N
7	Admin	*Include requirements for site operators to control other wastes	2.3.5 c iv	$88	4hrs @ $22/hr, included under No. 2	N
8	Admin	*Develop written procedures for site plan review and inspection and enforcement within 1 year (003 -> nearly same, now has time requirement)	2.3.5 c v	$88	4hrs @ $22/hr, included under No. 2	N
9	Admin	*Include pre-construction review, consideration for protection of water quality impacts, LID components	2.3.5 c v	$88	4hrs @ $22/hr, included under No. 2	N
10	Admin	*And receipt of information from the public, inspections during and after BMP installation (now covers post construction)	2.3.5 c v	$88	4hrs @ $22/hr, included under No. 2	N
11	Admin	*And "qualifications necessary to perform the inspections"	2.3.5 c v	$88	4hrs @ $22/hr, included under No. 2	N
12	Admin	*And procedure for tracking the number of site reviews, inspections and enforcement actions	2.3.5 c v	$88	4hrs @ $22/hr, included under No. 2	N
13	Admin	*All to be included in the annual report	2.3.5 c v	$0	See Miscellaneous No. 50	N

Estimated Annual Costs	$350
Estimated One-time Costs	$858
Estimated Intermittent Costs	$0

No.	BMP/Admin	Post Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*develop implement and enforce a post-construction SW program for new developments and redevelopments	2.3.6 a	$0	depends on previous program, should already be in place	Y
2	Admin	*adopt or amend a local ordinance to control projects that disturb an acre or more	2.3.6 a ii	$176	Already in place, amendment would be 8 hr(s) @ 22/hr minimum	N
3	BMP	*retain and/or treat first inch of runoff; where technically feasible do retention first	2.3.6 a ii a	$1,760	80hrs @ $22/hr, difficult to assess cost, assumes no controversies or unresolved issues and four people working	N
4	BMP	*"from all impervious surfaces on site"	2.3.6 a ii a	$0	Included under No. 3	N
5	Admin	*sites with soil contamination problems or at industrial sites shall not include any infiltration BMPs	2.3.6 a ii b	$0	Rule, does not require anything to be implemented, Possibly need Attorney	N
6	Admin	*infiltration systems near environmentally sensitive areas must include shutdown and containment systems	2.3.6 a ii c	$0	Rule, does not require anything to be implemented	N
7	Admin	*all BMPs must be constructed in accordance with the MA Sstormwater Handbook	2.3.6 a ii d	$0	Rule, does not require anything to be implemented	N
8	Admin	*this system shall include development of a long term O&M plan to inspect and repair BMPs	2.3.6 a ii e	$0	Rule, does not require anything to be implemented	N
9	Admin	*systems shall be designed "to avoid disturbance of areas susceptible to erosion and sediment loss"	2.3.6 a ii f	$0	Rule, does not require anything to be implemented	N
10	BMP	*systems shall require submittal of as-built drawings that depict all on site controls	2.3.6 a iii	$1,144	52hrs @ $22/hr and submitted by construction company if it is new	N
11	Admin	*shall have procedures to ensure O&M, such as dedicated funds, escrow accounts or management contracts	2.3.6 a iii	$4,576	208hrs @ $22/hr, Submitted by construction company, legal authority and complexity add costs, including maybe 5 people inc/attorney	N
12	Admin	*may include annual self-certification program	2.3.6 a iii	$0	Included under No. 11	N
13	Admin	*annual report shall include measures that the permittee has done to meet these requirements	2.3.6 a iii	$0	See Miscellaneous No. 50	N
14	BMP	*w/in 3 years document current street design and parking rules that affect creation of impervious cover	2.3.6 b	$1,320	60hrs @$22/hr, including fire chief	N
15	BMP	*shall be used by permittee to determine if changes "can be made to support low impact design options"	2.3.6 b	$0	Included under No. 14	N
16	BMP	*if changes can be made, assessment shall include recommendations and proposed schedules to adopt changes	2.3.6 b	$0	Included under No. 14	N
17	BMP	*permitee "shall implement all recommendations . . ."; assessment must be placed in the SWMP	2.3.6 b	$0	Included under No. 14	N
18	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 b	$0	See Miscellaneous No. 50	N
19	BMP	*w/in 4 years assess local rules to determine feasibility of allowing green roofs, water harvesting and LID BMPs	2.3.6 c	$880	40hrs @ $22/hr	N
20	Admin	*assessment shall indicate if and under what circumstances these practices are allowed	2.3.6 c	$0	Included under No. 19	N
21	BMP	*if practices not allowed, determine what hinders use of these practices and what changes can be made	2.3.6 c	$0	Included under No. 19	N
22	BMP	*provide a schedule of implementation of recommendations	2.3.6 c	$0	Included under No. 19	N
23	BMP	*"permittee shall implement all recommendations, in accordance with the schedules . . ."	2.3.6 c	$0	Included under No. 19	N
24	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 c	$0	See Miscellaneous No. 50	N
25	Admin	*estimate the annual increase or decrease in Impervious Area and Directly Connected Impervious Area	2.3.6 d	$1,760	80hrs @ $22/hr, data intensive, devising system and updating yearly, assumes 4 people working	N
26	Admin	*tabulate results by sub-basins delineated per 2.3.4.6 a I	2.3.6 d i	$0	Included in IDDE No. 17	N
27	Admin	*must include conventional pavements, driveways, parking lots and rooftops	2.3.6 d i	$0	Included in IDDE No. 17	N
28	Admin	*starting with second annual report, estimate each sub-basin added or removed each year	2.3.6 d ii	$0	See Miscellaneous No. 50	N
29	Admin	*break out those figures by development, redevelopment or retrofit by permitee, by others voluntarily	2.3.6 d ii	$0	See Miscellaneous No. 50	N
30	Admin	*. . . or in compliance with the permittee's ordinances or bylaws	2.3.6 d ii	$0	See Miscellaneous No. 50	N
31	Admin	*within 4 years complete inventory and ranking of Municipal property suitable for modification or retrofit to . . .	2.3.6 d iii	$2,640	120hrs @ $22/hr, involving schools, DPW, fire, police etc. assume 13 weeks work time	N
32	Admin	*. . .reduce frequency, volume and pollutant loads of stormwater discharges by reduction of impervious area	2.3.6 d iii	$0	Included under No. 31	N
33	Admin	*shall include both on site and off site reduction of IA and DCIA (e.g., parking lots, buildings, etc.)	2.3.6 d iii	$0	Included under No. 31	N
34	Admin	*also include existing rights-of-way,	2.3.6 d iii	$0	Included under No. 31	N
35	Admin	*for suitability the evaluation shall consider factors such as depth to water table; subsurface geology; access	2.3.6 d iii	$0	Included under No. 31	N
36	Admin	*priority ranking shall consider factors such as CIP schedules; current storm sewer level of service, etc.	2.3.6 d iii	$0	Included under No. 31	N
37	Admin	*starting with fifth year annual report, report on status of all such inventoried properties	2.3.6 d iii	$0	See Miscellaneous No. 50	N

Estimated Annual Costs	$5,280
Estimated One-time Costs	$1,496
Estimated Intermittent Costs	$7,480

No.	BMP/Admin	Pollution Prevention and Good Housekeeping Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*W/in 1 year develop or update written O&M procedures for listed municipal facilities	2.3.7 a i	$176	8hrs @ $22/hr,	N
2	Admin	*w/in 1 year inventory all permitee owned facilities in these "good housekeeping" categories	2.3.7 a ii	$0	included under No. 1	N
3	Admin	*For Parks and Open Space: procedures to address the use, storage and minimization of pesticides, fertilizers, etc.	2.3.7 a ii a	$2,640	120hrs @ $22/hr, Large amount of spaces to review plans for	N
4	Admin	*to be reviewed annually and updated as necessary	2.3.7 a ii a	$0	included under No. 3	N
5	Admin	*evaluate lawn maintenance and landscaping activities to be protective of water quality	2.3.7 a ii a	$0	included under No. 3	N
6	Admin	*including reduced mowing, proper disposal of lawn clippings, use of drought resistant plantings	2.3.7 a ii a	$0	included under No. 3	N
7	Admin	*establish pet waste handling collection, disposal and signage at all parks and open spaces	2.3.7 a ii a	$0	included under No. 3	N
8	Admin	*establish procedures for scheduled cleaning and sufficient number of trash containers	2.3.7 a ii a	$0	included under No. 3	N
9	Admin	*For Buildings and Facilities, such as town offices, police and fire stations, municipal pools, etc.	2.3.7 a ii b	$1,760	80hrs @ $22/hr, to write procedures	N
10	Admin	*evaluate the use. Storage and disposal of petroleum products and train employees on proper procedures	2.3.7 a ii b	$0	included under No. 1	N
11	Admin	*ensure that spill prevention is in place and coordinate with fire department	2.3.7 a ii b	$0	included under No. 1	N
12	Admin	*develop management procedures for dumpsters and other waste management equipment	2.3.7 a ii b	$0	included under No. 1	N
13	Admin	*For Vehicles and Equipment: establish procedures for storage of permittee vehicles, including inside storage	2.3.7 a ii c	$176	8hrs @ $22/hr,	N
14	Admin	*establish procedures to ensure that vehicle wash water does not enter the SW system	2.3.7 a ii c	$0	Included under No. 13	N
15	Admin	*evaluate fueling areas to minimize exposure	2.3.7 a ii c	$0	Included under No. 13	N
16	Admin	*Infrastructure O&M: w/in 1 year develop and implement procedures to take care for the MS4 system	2.3.7 a iii a	$0	See Below through No. 22, will likely require significant investment	N
17	Admin	*optimize routine inspections (e.g., prioritize catch basins located near construction sites)	2.3.7 a iii b	$0	See below	N
18	BMP	*ensure that "no catch basin at anytime will be more than 50 percent full"	2.3.7 a iii b	$440	2hrs/catch basin, for example put 10 catch basins assume only 10 more than 50% each year	N
19	BMP	*if more than 50% full during two routine cleanings, investigate the cause for excessive sediment loading	2.3.7 a iii b	$0	See No. 17/Annual Report	N
20	Admin	*describe these actions in the annual report	2.3.7 a iii b	$0	See No. 17/Annual Report	N
21	Admin	*document in annual report the plan for optimizing catch basin cleaning, inspections or scheduling	2.3.7 a iii b	$0	See No. 17/Annual Report	N
22	Admin	*include metrics used to determine that the plan is optimal for the MS4	2.3.7 a iii b	$0	See No. 17/Annual Report	N
23	Admin	*in each annual report list the total number of catch basins, number inspected and/or cleaned	2.3.7 a iii b	$0	See No. 17/Annual Report	N
24	Admin	*and "volume or mass of material removed from each catch basin draining to water quality limited waters"	2.3.7 a iii b	$0	See No. 17/Annual Report	N
25	Admin	*and "total volume or mass of material removed from all catch basins"	2.3.7 a iii b	$0	See No. 17/Annual Report	N
26	BMP	*Sweeping: develop and implement procedures for sweeping streets and municipal-owned lots	2.3.7 a iii c	$0	Included under No. 27, already in place, Based on Estimations for one annual sweep	Y
27	BMP	*sweep all streets (rural exceptions apply) a minimum of once a year in the spring	2.3.7 a iii c	$165,000	Already implemented, Based on Estimations provided by Rob McNeil	Y
28	BMP	*procedures shall include more frequent sweeping of targeted area based on various listed criteria	2.3.7 a iii c	$0	Minimal Developmental cost	N
29	BMP	*criteria include inspections, pollutant loads, catch basin cleanings, land use, TMDL or impaired waters	2.3.7 a iii c	$0	Minimal Developmental cost	N
30	Admin	*Each annual report shall include number of miles cleaned and volume or mass of material removed	2.3.7 a iii c	$0	See Miscellaneous No. 50	N
31	Admin	*for rural exception areas, either sweep per usual or develop specific procedures and place in first annual report	2.3.7 a iii c	$0	Included under No. 28	N
32	BMP	*properly store catch basin cleanings so they do not discharge to receiving waters	2.3.7 a iii d	$33,200	400tons @ $83/ton, based on numbers provided by Rob McNeil	Y
33	BMP	*establish and implement procedures for winter road maintenance including storage of salt and sand	2.3.7 a iii e	$476,449	Properly house materials in municipally owned properties, performed yearly	Y
34	BMP	*minimize use of sodium chloride and other salts; evaluate opportunities for alternative materials	2.3.7 a iii e	$176	8hrs @ $22/hr	N
35	Admin	*ensure that snow is not disposed into surface waters	2.3.7 a iii e	$0	Announcement to DPW workers involved with snow procedures	N
36	Admin	*establish procedures for O&M or all permitee-owned stormwater BMPs (e.g., swales, retention basins etc.)	2.3.7 a iii f	$176	8hrs @ $22/hr,	N
37	BMP	*inspect all such structures at least once annually	2.3.7 a iii f	$11,000	Assuming 2000 per year, 15 minutes per structure	N
38	Admin	*in annual report include status of work required in this part	2.3.7 a iv	$0	See Miscellaneous No. 50	N
39	Admin	*permittees shall keep a written record of all required activities	2.3.7 a v	$2,200	100hrs @ $22/hr,	N
40	BMP	*develop and fully implement a SWPPP for each of the listed facilities no later than 2 years after effective date	2.3.7 b	$1,540	Assume 4 hrs to update existing SWPPPs, 10hrs for new SWPPPS, 70 hr(s) @ 22/hr, assume 5 new facilities a	N
41	BMP	*includes maintenance garages, public works yards, transfer stations, other waste handling facilities	2.3.7 b	$0	Included under No. 40	N
42	BMP	*Identify name and title of staff of the Pollution Prevention Team for each facility	2.3.7 b ii a	$0	Included under No. 40	N
43	BMP	*for each facility: include map, description of activities, outfall locations, receiving waters and structural controls	2.3.7 b ii b	$0	Included under No. 40	N
44	BMP	*select , sign, install and implement the following 9 control measures to prevent or reduce discharge of pollutants	2.3.7 b ii c	$0	Implementation of a number of control measures, cost will depend upon type of enforcement	N
45	BMP	*take all reasonable measure to address quality of discharges that may not originate at the facility	2.3.7 b ii c	$0	extra work, depends on variations of the extent of impaired waters	N
46	Admin	*for areas that discharge to impaired waters, identify the control measures to address that issue	2.3.7 b ii c	$0	Included under No. 44	N
47	BMP	*SWPP Required Elements: Minimize or Prevent Exposure (e.g., move activities or materials under cover)	2.3.7 d 1	$0	Included under No. 44	N
48	BMP	*Good Housekeeping	2.3.7 d 2	$0	Included under No. 44	N
49	BMP	*Preventative Maintenance	2.3.7 d 3	$0	Included under No. 44	N
50	BMP	*Spill Prevention and Response	2.3.7 d 4	$0	Included under No. 44	N
51	BMP	*Erosion and Sediment Control	2.3.7 d 5	$0	Included under No. 44	N
52	BMP	*Management of Runoff	2.3.7 d 6	$0	Included under No. 44	N
53	BMP	*Salt Storage or Piles Containing Salt	2.3.7 d 7	$0	Included under No. 44	N
54	BMP	*Employee Training; document training date, title and duration; attendees; subjects covered during training	2.3.7 d 8	$0	Included under No. 44	N
55	BMP	*Maintenance of Control Measures	2.3.7 d 8	$0	Included under No. 44	N
56	BMP	*Inspect all areas exposed to stormwater and all stormwater control measures at least every calendar quarter	2.3.7 b iii a	$2,000	20hrs @ $100/hr, assume 30min/inspection and 10 facilities with four areas each	N
57	BMP	*at least one inspection shall occur when a stormwater discharge is occurring	2.3.7 b iii a	$2,937	267 outfalls, about 30min/area @ $22/hr	N
58	Admin	*document the date, time, name of inspector, weather, any control measures needing maintenance or repair, etc.	2.3.7 b iii a	$0	Already included as operating costs, should be green	N
59	BMP	*permitee shall repair or replace any control measures needing repair before the next anticipated storm event	2.3.7 b iii a	$0	costs for maintenance procedures	N
60	Admin	*shall report the findings from the Site inspections in the annual report	2.3.7 b iii a	$0	See Miscellaneous No. 50	N
61	Admin	*keep a written record of all required activities required in this section	2.3.7 b iv	$0	Minimal investment for records keeping	N

Estimated Annual Costs	$693,578
Estimated One-time Costs	$6,292
Estimated Intermittent Costs	$0

No.	BMP/Admin	Miscellaneous Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	Submit an NOI	1.7.1	$176	8hrs @ $22/hr, historical properties or endangered species will increase this cost	Y
2	Admin	*Document endangered species status (part of NOI)	1.9.1	$0	Included under No. 1	N
3	BMP	*Implement measures to protect endangered species	1.9.1	$0	cost varies. included under No. 1	N
4	Admin	Document Historic Properties Observation (part of NOI)	1.9.2	$0	minimal cost, Included under No. 50	N
5	BMP	*Describe effect of discharges on Historic properties	1.9.2	$0	Varies, Included under No. 1	N
6	Admin	*Report documents received re: such discharges	1.9.2	$0	Included under No. 1	N
7	Admin	*Provide results of Appendix D historic property screening	1.9.2	$0	Included under No. 1	N
8	BMP	Describe efforts to avoid or minimize impacts on such properties	1.9.2	Varies	Included under No. 1	Y
9	BMP	Develop a SWMP	1.10	$1,760	80hrs @ $22/hr,	Y
10	BMP	Implement a SWMP	1.10	$0	Included under No. 9	Y
11	Admin	*Update/modify SWMP	1.10	$440	20hrs @ $22/hr,	N
12	Admin	Provide SWMP "immediately" to various agencies and public	1.10.1	$0	Included under No. 9	Y
13	Admin	*Post SWMP online	1.10.1	$0	Included under No. 9	Y
14	Admin	Identify Names and titles of people implementing the SWMP	1.10.2	$0	Included under No. 9	N
15	Admin	**Include status of 2003 permit requirements**	1.10.2	$0	Included under No. 9	Y
16	Admin	*List all receiving water bodies, classifications, pollutants of concern	1.10.2	$0	Included under No. 9	N
17	Admin	*list all applicable TMDLs, WLAs	1.10.2	$0	Included under No. 9	N
18	Admin	*List all outfalls that discharge to each water body	1.10.2	$0	Included under No. 9	N
19	Admin	*list all public water sources that may be affected by SW discharges	1.10.2	$0	Included under No. 9	N
20	Admin	*List all interconnected MS4s and receiving water body	1.10.2	$0	Included under No. 9	N
21	Admin	*Include applicable TMDLs, WLAs and pollutants of concern	1.10.2	$0	Included under No. 9	N
22	Admin	*Document all new or increased discharges	1.10.2	$0	Included under No. 9	N
23	Admin	*Include map of separate storm sewer system (Map must be improved)	1.10.2	$0	Included under No. 9	N
24	Admin	List all discharges to impaired water and the response	1.10.2	$0	Included under No. 9	Y
25	Admin	*Describe BMPs proposed to meet TMDL requirements	1.10.2	$0	Included under No. 9	N
26	Admin	For each BMP, list the milestone, timeframe and assessment measure	1.10.2	$0	Included under No. 9	Y
27	Admin	*For each BMP, list person or department responsible for implementation	1.10.2	$0	Included under No. 9	N
28	Admin	*Describe BMPs proposed to meet impaired waters requirements	1.10.2	$0	Included under No. 9	N
29	Admin	Describe BMPs used to meet the 6 minimum control measures	1.10.2	$0	Included under No. 9	Y
30	Admin	*List measures to avoid/minimize impacts to surface drinking waters	1.10.2	$0	Included under No. 9	N
31	BMP	*Ensure that discharges "do not cause or contribute" to an exceedance of WQ standards	2.1	$0	Included under No. 9	N
32	BMP	*For TMDL waters, meet requirements of Appendix F (NB: contains multiple add'l req'ts)	2.1.1 b	Varies	May range into millions of dollars, no one has estimated this yet	N
33	BMP	*For impaired waters meet requirements of Appendix H (NB: contains multiple add'l req'ts)	2.1.1 c	Varies	May range into millions of dollars, no one has estimated this yet	N
34	BMP	*For any exceedances of WQ standards to TMDL or impaired waters, eliminate it within 60 days	2.1.1 d	Varies	May range into millions of dollars, no one has estimated this yet	N
35	BMP	*For any increased discharge, comply with MassDEP's regulations at 314 CMR 4.04	2.1.2 a	Varies	Cost will vary	N
36	BMP	*Demonstrate no net increase in pollutants for discharges to any 303 (d) or 305(b) water (previously only had to identify if 303 d)	2.1.2 b	Varies	Cost will vary	N
37	Admin	*Identify all discharges to waters that are impaired or which have TMDLs (Both in SWMP and Annual report)	2.2	$0	Varies depending on EPA interpretations	N
38	Admin	*Permittee shall annually self-evaluate and maintain the evaluation in its SWMP	4.1 a	$0	Included under No. 9	N
39	Admin	*In evaluating the appropriateness of BMPs, permittees may add BMPs at any time	4.1 b	$88	4hrs @ $22/hr, paperwork for new BMP	N
40	Admin	Subtracting or replacing BMPs may only be done in limited circumstances, after showing the BMP is ineffective	4.1 b	Varies	Cost of replacement will depend on the BMP being used	Y
41	Admin	*Each Annual shall include a brief explanation of any BMP modification	4.1 b	$0	Included under Public Education No. 7	N
42	Admin	EPA or MassDEP may require the permitte to add, modify, etc., any BMP to satisfy conditions of the permit	4.1.c	$0	Minimal cost	Y
43	Admin	*The permittee shall keep all record required by this permit for at least five years	4.2 a	$880	40hrs at $22/hr	N
44	Admin	*"Records" includes "information used in the development of any written program . . . monitoring results, etc."	4.2 a	$0	Record keeping, doesn't cost anything to implement	N
45	Admin	these records all be made available to the public	4.2 c	$0	Record keeping, doesn't cost anything to implement	Y
46	Admin	*the permitee "shall document all monitoring results each year in the annual report"	4.3 b	$0	Included under Public Education No. 7	N
47	Admin	*that shall include the date, outfall identifier, location, weather, precipitation and screening or analysis results	4.3 b	$0	Included under No. 46	N
48	Admin	*include all monitoring results for the current reporting period and for the entire permit term	4.3 b	$0	Included under No. 46	N
49	Admin	*permittee shall include "results from any other stormwater or receiving water quality monitoring or studies . . ."	4.3 c	$0	Included under No. 46	N
50	Admin	The annual report shall include a self-assessment of compliance; an assessment of the appropriateness of BMPs	4.4 b i	$12,000	Consulting fee for annual report, increased from $3000 based on Matt's estimated	Y
51	Admin	*The status of any required plans	4.4 b iii	$0	Included under No. 50	N
52	Admin	*"Identification of all discharges determined to be causing or contributing to an exceedance" of WQ standards	4.4 b iii	$0	Included under No. 50	N
53	Admin	*For discharges to TMDLs, identify specific BMPs used to address those requirements	4.4 b iii	$0	Included under No. 50	N
54	Admin	*For discharges to impaired waters, "a description of each BMP required by Appendix H" and all deliverables	4.4 b iii	$0	Included under No. 50	N
55	Admin	*Assessment of the progress toward meeting the requirements for the 6 minimum control measures (see details)	4.4 b iv	$0	Included under No. 50	N
56	Admin	*"All outfall screening and monitoring data" for the reporting term and cumulative for the permit term	4.4 b v	$0	Included under No. 50	N
57	Admin	Description of activities for the next reporting cycle	4.4 b vi	$0	Included under No. 50	Y
58	Admin	Description of any changes in identified BMPs or measurable goals	4.4 b vii	$0	Included under No. 50	Y
59	Admin	*Description of activities undertaken by any entity contracted for achieving any requirement of the permit	4.4 b viii	$0	Included under No. 50	N

Estimated Annual Costs	$12,968
Estimated One-time Costs	$2,376
Estimated Intermittent Costs	$0

Appendix G

Appendix G

Sample Interview Material

Preamble

We are a group of students from Worcester Polytechnic Institute (WPI). We are conducting this interview in order to learn more about the cost of implementing the new 2014 MS4 permit. By participating in this interview, you will help us assess the total cost of compliance for _____(Town Name). If you want, we are able to keep your responses anonymous so you cannot be identified in this report. Your participation in this interview is completely voluntary and you can abstain from answering any question or stop the interview at any point. If you would like, we can provide you with a copy of the results at the end of our project. This project is a collaboration between the Massachusetts Department of Environmental Protection (MassDEP) and WPI, and all of us appreciate your participation.

Sample Interview Questions

1. Does your municipality use a contractor for stormwater management?
    a. If so, may we have their contact information?
2. How much does your municipality spend on public education?
    a. Does your municipality provide pamphlets?
    b. Does your municipality have public access television programs about stormwater management?
    c. How much do you spend on posting signage?

    d. Do you use social media to provide information? If so, how much does it cost?

3. How much does your municipality spend on public participation?
    a. Do you hold town meetings about stormwater management?
4. How much does your municipality spend on illicit discharge and elimination?
    a. Does your municipality use the database?
    b. How much does it cost you to map your catchment basins?
    c. Does your municipality have retention ponds for stormwater? If so, do you maintain them?
    d. How often does your municipality street sweep?
    e. How much does it cost you to remove illicit discharges?
    f. How much does it cost you to train municipal employees to use the detection equipment?
5. How much does your municipality spend on construction site runoff control?
    a. How much does it cost to notify municipal residents about impending construction projects?
    b. How much does it cost you to inspect construction sites?
6. How much does your municipality spend on post-construction site runoff control?
    a. How much does it cost for you to inspect the construction sites after completion of the construction?
7. How much does your municipality spend on good housekeeping?
    a. How much does it cost your municipality to maintain stormwater management BMPs every year?
    b. How much does it cost to train your employees to maintain BMPs?

c. How much does it cost you to inspect your best management practices?

d. How much does it cost you per year to street sweep?

8. Could you provide us with a cost report for your municipality?

    a. Itemized report stormwater spending?

9. Do you believe that your town effectively implemented the requirements of the 2003 MS4 permit?

10. To what extent do you believe your town is prepared to implement the requirements of the new MS4 permit?

    a. What challenges do you foresee in implementing the new MS4 permit?

    b. How do you plan to provide additional funding for implementing the new permit?

Appendix H

Control Measure	Estimated Annual Costs	Estimated One-time Costs	Estimated Intermittent Costs
Public Education and Outreach	$0	$0	$0
Public Involvement and Participation	$0	$0	$0
Illicit Discharge Detection and Elimination Program	$0	$0	$0
Construction Site Stormwater Runoff Control	$0	$0	$0
Post Construction Stormwater Management	$0	$0	$0
Good Housekeeping	$0	$0	$0
Non-Control Measure			
Miscellaneous	$0	$0	$0
Totals	**$0**	**$0**	**$0**

KEY:

Yearly	No. = Reference Number
Once	BMP/Admin = Is the requirement completed with either a BMP or Administrative work
As Needed	X Requirement = The short name for a requirement
	Requirement = Section in the 2014 MS4 permit draft
	Cost = Cost of completing the requirement
	Justification = List of methods used to complete the requirement, as well supporting data from sources
	In Place (Y/N) = Is the requirement listed currently in place

No.	BMP/Admin	Public Education and Outreach Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	Continue public education program required by 2003 permit	2.3.2 a			
2	Admin	*Define goals, express specific messages define audience for each message	2.3.2 a			
3	Admin	*Identify parties responsible for each message	2.3.2 a			
4	Admin	*Develop and send out two separate messages for each of 4 different audiences	2.3.2 c			
5	Admin	*Show evidence that messages are achieving results	2.3.2 e			
6	Admin	*Identify method used to evaluate effectiveness of messages	2.3.2 e			
7	Admin	*Put in annual report the methods of distribution and methods to assess effectiveness	2.3.2 g			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Public Involvement and Participation Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*Comply with state public Notice requirements	2.3.3 a			
2	Admin	Provide annual opportunity for public to participate in review and implementation of SWMP	2.3.3 b			
3	Admin	*Put in annual report these public participation activities	2.3.3 c			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Illicit Discharge Detection and Elimination Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Eliminate any illicit discharge to the stormwater system as expeditiously as possible	2.3.4.2			
2	BMP	*Identify who is responsible for any such discharges	2.3.4.2			
3	Admin	*If elimination takes more than 60 days, establish an expeditious schedule for elimination	2.3.4.2			
4	Admin	*If more than 60 days, report dates of identification and schedules in annual report	2.3.4.2			
5	BMP	Implement measures to control non-stormwater discharges if they add significant pollution	2.3.4.3			
6	Admin	*Identify all known locations where SSOs have discharged to the MS4 in last 5 years	2.3.4.4 b			
7	Admin	*For each such SSO discharge, include date and time, location, volume, suspected cause	2.3.4.4 b			
8	Admin	*Also include whether each entered any surface water and what corrective actions were taken	2.3.4.4 b			
9	Admin	*Also include corrective measures planned and implementation schedule	2.3.4.4 b			
10	Admin	*Maintain the SSO inventory as part of the SWMP and the Annual Reports	2.3.4.4 b			
11	Admin	*Provide oral and written notice to EPA and MassDEP for any SSO occurrence	2.3.4.4 c			
12	BMP	*Develop an inventory of each MS4 outfall, including location, interconnections, and condition (different only in that it requires the condition of the outfall)	2.3.4.5			
13	Admin	*Update inventory annually to include monitoring program	2.3.4.5 b			
14	BMP	*Physically label all MS4 outfall pipes	2.3.4.5 b			
15	Admin	*For each outfall list unique identifier, receiving water, date of most recent inspection	2.3.4.5 c			
16	Admin	*Also include dimensions, shape, material, physical condition and indicators of non-SW discharges	2.3.4.5 c			
17	BMP	*Revise existing map of stormwater system within 2 years of effective date of the permit	2.3.4.6			
18	BMP	*Map shall include all outfalls, pipes, manholes, catch basins, interconnections, open channels	2.3.4.6 a i			
19	BMP	*Also include all municipally-owned BMPs (e.g., retention basins, oil/water separators, etc.)	2.3.4.6 a i			
20	BMP	*Also include catchment delineation and all waters listed on the 303(d) or 305 (b) list	2.3.4.6 a i			
21	BMP	*Also include municipal sanitary sewers or combined sewer systems	2.3.4.6 a ii			
22	BMP	*Include various recommended elements	2.3.4.6 a iii			
23	BMP	*Update the map to reflect newly discovered information and corrections or modifications	2.3.4.6 b			
24	Admin	*Report on the progress toward completion of the map in each annual report	2.3.4.6 c			
25	BMP	*Write an Illicit Discharge Detection and Elimination (IDDE) program document (Discrete, specifically mentions the document must be written out)	2.3.4.7			
26	Admin	Adopt an IDDE ordinance	2.3.4.7 a			
27	Admin	*Program shall clearly identify IDDE responsibilities and provide description of areas of responsibility	2.3.4.7 b			
28	BMP	*Assess and priority rank each catchment into one of 4 possible categories (soupped up from previous "priority" mark in 2003)	2.3.4.7 c i			
29	Admin	*Priority rank each catchment within each category (except those "excluded") using 8 factors (soupped up from previous "priority" mark in 2003)	2.3.4.7 c ii			
30	Admin	*Gather all information needed for the 8 screening factors (e.g., industrial areas > 40 years old)	2.3.4.7 c ii			
31	Admin	*Complete ranking using existing information within 1 year; update in annual report	2.3.4.7 c iii			
32	Admin	*In annual report include summary of evidence of known/suspected illicit discharges by catchment	2.3.4.7 c iii			
33	Admin	*Also include corrective measures and schedule for correcting each illicit discharge	2.3.4.7 c iii			
34	Admin	*Develop written procedure for screening and sampling of outfalls	2.3.4.7 d			
35	Admin	*Include procedures for sample collection, use of field kits and storage and conveyance of samples	2.3.4.7 d i			
36	BMP	*If outfall is inaccessible, report the first accessible upstream structure	2.3.4.7 d ii			
37	BMP	*Perform dry weather screening when and how prescribed; identify in annual report any follow-up needed	2.3.4.7 d iii			
38	BMP	*Perform wet weather screening when and how prescribed	2.3.4.7 d iv			
39	BMP	*Sample at minimum for 7 listed factors	2.3.4.7 d v			
40	Admin	*Catchments with specified septic or other results shall be listed as "High Priority" catchments	2.3.4.7 d vi			
41	BMP	*Develop written Catchment Investigation Procedure including review of maps and historic records	2.3.4.7 e			
42	BMP	*Also include manhole investigation methodology and procedures to confirm sources of illicit discharges	2.3.4.7 e			
43	BMP	*For each catchment review sanitary sewer and storm sewer construction plans; prior work on either	2.3.4.7 e i			
44	BMP	*Also review Health department records for septic system or sanitary sewer system failures or complaints	2.3.4.7 e i			
45	Admin	*Identify and record any of the 12 System Vulnerability Factors (e.g., infrastructure > 40 years old)	2.3.4.7 e i			
46	Admin	*Document and annually report presence or absence of the 12 System Vulnerability Factors for each catchment	2.3.4.7 e i			
47	Admin	*Include these required elements of written manhole investigation and catchment investigation procedures	2.3.4.7 e ii			
48	Admin	*Include these required elements in written dry weather investigation procedure	2.3.4.7 e ii a			
49	Admin	*Include these required elements in written wet weather investigation procedure	2.3.4.7 e ii b			
50	Admin	*Develop procedures to isolate and confirm illicit sources (e.g., dye testing, smoke testing, caulk dams, etc.)	2.3.4.7 e iii			
51	Admin	*In annual report, for each illicit source list the location, its source, description of the discharge	2.3.4.7 f			
52	Admin	*Also list date and method of discovery, date of elimination, mitigation or enforcement action	2.3.4.7 f			
53	Admin	*And estimate volume of flow reduced	2.3.4.7 f			
54	BMP	*One year after illicit discharge removal, perform confirmatory screening; wet, dry or both	2.3.4.7 f			
55	BMP	*Schedule follow up screening within 5 years after confirmatory screening	2.3.4.7 g			
56	BMP	*Develop and implement procedures to prevent illicit discharges and SSOs	2.3.4.7 h			
57	Admin	*Complete and report dry weather screening and sampling of High and Low Priority outfalls within 3 years	2.3.4.8 a			
58	Admin	*"All data shall be reported in each annual report . . ."	2.3.4.8 a			
59	Admin	*Begin implementation of 2.3.4.7 d work no later than 15 months	2.3.4.8 b			
60	Admin	*Implement and report Catchment Investigation Procedure in every catchment . . .	2.3.4.8 c			
61	Admin	*In a minimum of 80% of the MS4 area serviced by Problem Catchments within 3 years and 100% within 5 years	2.3.4.8 c i			
62	Admin	*For all catchments where sampling indicates sewer input within 5 years	2.3.4.8 c ii			
63	Admin	*In 40% of all area served by all MS4 catchments within 5 years and in 100% of 4 area in 10 years	2.3.4.8 c iii			
64	Admin	*Track progress toward these milestones in each annual report	2.3.4.8 e			
65	Admin	*Define or describe indicators for tracking program success; demonstrate efforts to locate illicit discharges	2.3.4.9			
66	Admin	*Also include percent and area in acres evaluated; volume of sewage removed; place in annual report (more detailed, 2003 only asks to measure progress)	2.3.4.9			
67	Admin	provide annual training to employees involved in IDDE program	2.3.4.10			
68	Admin	*Include type and frequency of training in the annual report (2003 -> The program must include an employee training component)	2.3.4.10			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*Continue to implement construction ordinance work from 2003 permit; expand to include 1 acre or more	2.3.5 a			
2	BMP	Develop and implement a construction site runoff program	2.3.5 c			
3	Admin	An ordinance that requires sediment and erosions controls and for other wastes at construction sites	2.3.5 c i			
4	Admin	Adopt written procedures for inspections and enforcement of the ordinance within 1 year (2003 -> (g.) Procedures for inspections and enforcement of control measures at construction sites.)	2.3.5 c ii			
5	Admin	*Document the procedures and responsibilities to implement in the SWMP	2.3.5 c ii			
6	Admin	*Include requirements for site operators to implement BMPs (e.g., reduce disturbed area, protect slopes, etc.)	2.3.5 c iii			
7	Admin	*Include requirements for site operators to control other wastes	2.3.5 c iv			
8	Admin	*Develop written procedures for site plan review and inspection and enforcement within 1 year (003 -> nearly same, now has time requirement)	2.3.5 c v			
9	Admin	*Include pre-construction review, consideration for protection of water quality impacts, LID components	2.3.5 c v			
10	Admin	*And receipt of information from the public, inspections during and after BMP installation (now covers post construction)	2.3.5 c v			
11	Admin	*And "qualifications necessary to perform the inspections"	2.3.5 c v			
12	Admin	*And procedure for tracking the number of site reviews, inspections and enforcement actions	2.3.5 c v			
13	Admin	*All to be included in the annual report	2.3.5 c v			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Post Construction Site Runoff Control Requirement	Reference	Cost	Justification	In Place (Y/N)
1	BMP	*develop implement and enforce a post-construction SW program for new developments and redevelopments	2.3.6 a			
2	Admin	*adopt or amend a local ordinance to control projects that disturb an acre or more	2.3.6 a ii			
3	BMP	*retain and/or treat first inch of runoff; where technically feasible do retention first	2.3.6 a ii a			
4	BMP	*"from all impervious surfaces on site"	2.3.6 a ii a			
5	Admin	*sites with soil contamination problems or at industrial sites shall not include any infiltration BMPs	2.3.6 a ii b			
6	Admin	*infiltration systems near environmentally sensitive areas must include shutdown and containment systems	2.3.6 a ii c			
7	Admin	*all BMPs must be constructed in accordance with the MA Stormwater Handbook	2.3.6 a ii d			
8	Admin	*this system shall include development of a long term O&M plan to inspect and repair BMPs	2.3.6 a ii e			
9	Admin	*systems shall be designed "to avoid disturbance of areas susceptible to erosion and sediment loss"	2.3.6 a ii f			
10	BMP	*systems shall require submittal of as-built drawings that depict all on site controls	2.3.6 a iii			
11	Admin	*shall have procedures to ensure O&M, such as dedicated funds, escrow accounts or management contracts	2.3.6 a iii			
12	Admin	*may include annual self-certification program	2.3.6 a iii			
13	Admin	*annual report shall include measures that the permittee has done to meet these requirements	2.3.6 a iii			
14	BMP	*w/in 3 years document current street design and parking rules that affect creation of impervious cover	2.3.6 b			
15	BMP	*shall be used by permittee to determine if changes "can be made to support low impact design options"	2.3.6 b			
16	BMP	*if changes can be made, assessment shall include recommendations and proposed schedules to adopt changes	2.3.6 b			
17	BMP	*permittee "shall implement all recommendations . . ."; assessment must be placed in the SWMP	2.3.6 b			
18	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 b			
19	BMP	*w/in 4 years assess local rules to determine feasibility of allowing green roofs, water harvesting and LID BMPs	2.3.6 c			
20	Admin	*assessment shall indicate if and under what circumstances these practices are allowed	2.3.6 c			
21	BMP	*if practices not allowed, determine what hinders use of these practices and what changes can be made	2.3.6 c			
22	BMP	*provide a schedule of implementation of recommendations	2.3.6 c			
23	BMP	*"permittee shall implement all recommendations, in accordance with the schedules . . ."	2.3.6 c			
24	Admin	*annual report shall contain an update on this requirement, including any planned or completed changes	2.3.6 c			
25	Admin	*estimate the annual increase or decrease in Impervious Area and Directly Connected Impervious Area	2.3.6 d			
26	Admin	*tabulate results by sub-basins delineated per 2.3.4.6 a I	2.3.6 d i			
27	Admin	*must include conventional pavements, driveways, parking lots and rooftops	2.3.6 d i			
28	Admin	*starting with second annual report, estimate each sub-basin added or removed each year	2.3.6 d ii			
29	Admin	*break out those figures by development, redevelopment or retrofit by permittee, by others voluntarily	2.3.6 d ii			
30	Admin	*. . . or in compliance with the permittee's ordinances or bylaws	2.3.6 d ii			
31	Admin	*within 4 years complete inventory and ranking of Municipal property suitable for modification or retrofit to . . .	2.3.6 d iii			
32	Admin	*. . .reduce frequency, volume and pollutant loads of stormwater discharges by reduction of impervious area	2.3.6 d iii			
33	Admin	*shall include both on site and off site reduction of IA and DCIA (e.g., parking lots, buildings, etc.)	2.3.6 d iii			
34	Admin	*also include existing rights-of-way,	2.3.6 d iii			
35	Admin	*for suitability the evaluation shall consider factors such as depth to water table; subsurface geology; access	2.3.6 d iii			
36	Admin	*priority ranking shall consider factors such as CIP schedules; current storm sewer level of service, etc.	2.3.6 d iii			
37	Admin	*starting with fifth year annual report, report on status of all such inventoried properties	2.3.6 d iii			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Pollution Prevention and Good Housekeeping Requirement	Reference	Cost	Justification	In Place (Y/N)
1	Admin	*W/in 1 year develop or update written O&M procedures for listed municipal facilities	2.3.7 a i			
2	Admin	*w/in 1 year inventory all permittee owned facilities in these "good housekeeping" categories	2.3.7 a ii			
3	Admin	*For Parks and Open Space: procedures to address the use, storage and minimization of pesticides, fertilizers, etc	2.3.7 a ii a			
4	Admin	*to be reviewed annually and updated as necessary	2.3.7 a ii a			
5	Admin	*evaluate lawn maintenance and landscaping activities to be protective of water quality	2.3.7 a ii a			
6	Admin	*including reduced mowing, proper disposal of lawn clippings, use of drought resistant plantings	2.3.7 a ii a			
7	Admin	*establish pet waste handling collection, disposal and signage at all parks and open spaces	2.3.7 a ii a			
8	Admin	*establish procedures for scheduled cleaning and sufficient number of trash containers	2.3.7 a ii a			
9	Admin	*For Buildings and Facilities, such as town offices, police and fire stations, municipal pools, etc	2.3.7 a ii b			
10	Admin	*evaluate the use. Storage and disposal of petroleum products and train employees on proper procedures	2.3.7 a ii b			
11	Admin	*ensure that spill prevention is in place and coordinate with fire department	2.3.7 a ii b			
12	Admin	*develop management procedures for dumpsters and other waste management equipment	2.3.7 a ii b			
13	Admin	*For Vehicles and Equipment: establish procedures for storage of permittee vehicles, including inside storage	2.3.7 a ii c			
14	Admin	*establish procedures to ensure that vehicle wash water does not enter the SW system	2.3.7 a ii c			
15	Admin	*evaluate fueling areas to minimize exposure	2.3.7 a ii c			
16	Admin	*Infrastructure O&M: w/in 1 year develop and implement procedures to take care for the MS4 system	2.3.7 a iii a			
17	Admin	*optimize routine inspections (e.g., prioritize catch basins located near construction sites)	2.3.7 a iii b			
18	BMP	*ensure that "no catch basin at anytime will be more than 50 percent full"	2.3.7 a iii b			
19	BMP	*if more than 50% full during two routine cleanings, investigate the cause for excessive sediment loading	2.3.7 a iii b			
20	Admin	*describe these actions in the annual report	2.3.7 a iii b			
21	Admin	*document in annual report the plan for optimizing catch basin cleaning, inspections or scheduling	2.3.7 a iii b			
22	Admin	*include metrics used to determine that the plan is optimal for the MS4	2.3.7 a iii b			
23	Admin	*in each annual report list the total number of catch basins, number inspected and/or cleaned	2.3.7 a iii b			
24	Admin	*and "volume or mass of material removed from each catch basin draining to water quality limited waters"	2.3.7 a iii b			
25	Admin	*and "total volume or mass of material removed from all catch basins"	2.3.7 a iii b			
26	BMP	*Sweeping: develop and implement procedures for sweeping streets and municipal-owned lots	2.3.7 a iii c			
27	BMP	*sweep all streets (rural exceptions apply) a minimum of once a year in the spring	2.3.7 a iii c			
28	BMP	*procedures shall include more frequent sweeping of targeted area based on various listed criteria	2.3.7 a iii c			
29	BMP	*criteria include inspections, pollutant loads, catch basin cleanings, land use, TMDL or impaired waters	2.3.7 a iii c			
30	Admin	*Each annual report shall include number of miles cleaned and volume or mass of material removed	2.3.7 a iii c			
31	Admin	*for rural exception areas, either sweep per usual or develop specific procedures and place in first annual report	2.3.7 a iii c			
32	BMP	*properly store catch basin cleanings so they do not discharge to receiving waters	2.3.7 a iii d			
33	BMP	*establish and implement procedures for winter road maintenance including storage of salt and sand	2.3.7 a iii e			
34	BMP	*minimize use of sodium chloride and other salts; evaluate opportunities for alternative materials	2.3.7 a iii e			
35	Admin	*ensure that snow is not disposed into surface waters	2.3.7 a iii e			
36	Admin	*establish procedures for O&M or all permittee-owned stormwater BMPs (e.g., swales, retention basins etc.)	2.3.7 a iii f			
37	BMP	*inspect all such structures at least once annually	2.3.7 a iii f			
38	Admin	*in annual report include status of work required in this part	2.3.7 a iv			
39	Admin	*permittees shall keep a written record of all required activities	2.3.7 a v			
40	BMP	*develop and fully implement a SWPPP for each of the listed facilities no later than 2 years after effective date	2.3.7 b			
41	BMP	*includes maintenance garages, public works yards, transfer stations, other waste handling facilities	2.3.7 b			
42	BMP	*Identify name and title of staff of the Pollution Prevention Team for each facility	2.3.7 b ii a			
43	BMP	*for each facility: include map, description of activities, outfall locations, receiving waters and structural controls	2.3.7 b ii b			
44	BMP	*select , sign, install and implement the following 9 control measures to prevent or reduce discharge of pollutants	2.3.7 b ii c			
45	BMP	*take all reasonable measure to address quality of discharges that may not originate at the facility	2.3.7 b ii c			
46	Admin	*for areas that discharge to impaired waters, identify the control measures to address that issue	2.3.7 b ii c			
47	BMP	*SWPP Required Elements: Minimize or Prevent Exposure (e.g., move activities or materials under cover)	2.3.7 d 1			
48	BMP	*Good Housekeeping	2.3.7 d 2			
49	BMP	*Preventative Maintenance	2.3.7 d 3			
50	BMP	*Spill Prevention and Response	2.3.7 d 4			
51	BMP	*Erosion and Sediment Control	2.3.7 d 5			
52	BMP	*Management of Runoff	2.3.7 d 6			
53	BMP	*Salt Storage or Piles Containing Salt	2.3.7 d 7			
54	BMP	*Employee Training; document training date, title and duration; attendees; subjects covered during training	2.3.7 d 8			
55	BMP	*Maintenance of Control Measures	2.3.7 d 8			
56	BMP	*Inspect all areas exposed to stormwater and all stormwater control measures at least every calendar quarter	2.3.7 b iii a			
57	BMP	*at least one inspection shall occur when a stormwater discharge is occurring	2.3.7 b iii a			
58	Admin	*document the date, time, name of inspector, weather, any control measures needing maintenance or repair, etc	2.3.7 b iii a			
59	BMP	*permittee shall repair or replace any control measures needing repair before the next anticipated storm event	2.3.7 b iii a			
60	Admin	*shall report the findings from the Site inspections in the annual report	2.3.7 b iii a			
61	Admin	*keep a written record of all required activities required in this section	2.3.7 b iv			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

No.	BMP/Admin	Miscellaneous Requirement		Reference	Cost	Justification	In Place (Y/N)
1	BMP	Submit an NOI		1.7.1			
2	Admin	*Document endangered species status (part of NOI)		1.9.1			
3	BMP	*Implement measures to protect endangered species		1.9.1			
4	Admin	Document Historic Properties Observation (part of NOI)		1.9.2			
5	BMP	*Describe effect of discharges on Historic properties		1.9.2			
6	Admin	*Report documents received re: such discharges		1.9.2			
7	Admin	*Provide results of Appendix D historic property screening		1.9.2			
8	BMP	Describe efforts to avoid or minimize impacts on such properties		1.9.2			
9	BMP	Develop a SWMP		1.10			
10	BMP	Implement a SWMP		1.10			
11	Admin	*Update/modify SWMP		1.10			
12	Admin	Provide SWMP "immediately" to various agencies and public		1.10.1			
13	Admin	*Post SWMP online		1.10.1			
14	Admin	Identify Names and titles of people implementing the SWMP		1.10.2			
15	Admin	***Include status of 2003 permit requirements**		1.10.2			
16	Admin	*List all receiving water bodies, classifications, pollutants of concern		1.10.2			
17	Admin	*list all applicable TMDLs, WLAs		1.10.2			
18	Admin	*List all outfalls that discharge to each water body		1.10.2			
19	Admin	*list all public water sources that may be affected by SW discharges		1.10.2			
20	Admin	*List all interconnected MS4s and receiving water body		1.10.2			
21	Admin	*Include applicable TMDLs, WLAs and pollutants of concern		1.10.2			
22	Admin	*Document all new or increased discharges		1.10.2			
23	Admin	*Include map of separate storm sewer system (Map must be improved)		1.10.2			
24	Admin	List all discharges to impaired water and the response		1.10.2			
25	Admin	*Describe BMPs proposed to meet TMDL requirements		1.10.2			
26	Admin	For each BMP, list the milestone, timeframe and assessment measure		1.10.2			
27	Admin	*For each BMP, list person or department responsible for implementation		1.10.2			
28	Admin	*Describe BMPs proposed to meet impaired waters requirements		1.10.2			
29	Admin	Describe BMPs used to meet the 6 minimum control measures		1.10.2			
30	Admin	*List measures to avoid/minimize impacts to surface drinking waters		1.10.2			
31	BMP	*Ensure that discharges "do not cause or contribute" to an exceedance of WQ standards		2.1			
32	BMP	*For TMDL waters, meet requirements of Appendix F (NB: contains multiple add'l req'ts)		2.1.1 b			
33	BMP	*For impaired waters meet requirements of Appendix H (NB: contains multiple add'l req'ts)		2.1.1 c			
34	BMP	*For any exceedances of WQ standards to TMDL or impaired waters, eliminate it within 60 days		2.1.1 d			
35	BMP	*For any increased discharge, comply with MassDEP's regulations at 314 CMR 4.04		2.1.2 a			
36	BMP	*Demonstrate no net increase in pollutants for discharges to any 303 (d) or 305(b) water (previously only had to identify if 303 d)		2.1.2 b			
37	Admin	*Identify all discharges to waters that are impaired or which have TMDLs (Both in SWMP and Annual report)		2.2			
38	Admin	*Permittee shall annually self-evaluate and maintain the evaluation in its SWMP		4.1 a			
39	Admin	*In evaluating the appropriateness of BMPs, permittees may add BMPs at any time		4.1 b			
40	Admin	Subtracting or replacing BMPs may only be done in limited circumstances, after showing the BMP is ineffective		4.1 b			
41	Admin	*Each Annual shall include a brief explanation of any BMP modification		4.1 b			
42	Admin	EPA or MassDEP may require the permittee to add, modify, etc., any BMP to satisfy conditions of the permit		4.1.c			
43	Admin	*The permittee shall keep all record required by this permit for at least five years		4.2 a			
44	Admin	*"Records" includes "information used in the development of any written program . . . monitoring results, etc."		4.2 a			
45	Admin	these records all be made available to the public		4.2 c			
46	Admin	*the permittee "shall document all monitoring results each year in the annual report"		4.3 b			
47	Admin	*that shall include the date, outfall identifier, location, weather, precipitation and screening or analysis results		4.3 b			
48	Admin	*include all monitoring results for the current reporting period and for the entire permit term		4.3 b			
49	Admin	*permittee shall include "results from any other stormwater or receiving water quality monitoring or studies . . ."		4.3 c			
50	Admin	The annual report shall include a self-assessment of compliance; an assessment of the appropriateness of BMPs		4.4 b i			
51	Admin	*The status of any required plans		4.4 b iii			
52	Admin	*"Identification of all discharges determined to be causing or contributing to an exceedance" of WQ standards		4.4 b iii			
53	Admin	*For discharges to TMDLs, identify specific BMPs used to address those requirements		4.4 b iii			
54	Admin	*For discharges to impaired waters, "a description of each BMP required by Appendix H" and all deliverables		4.4 b iii			
55	Admin	*Assessment of the progress toward meeting the requirements for the 6 minimum control measures (see details)		4.4 b iv			
56	Admin	*"All outfall screening and monitoring data" for the reporting term and cumulative for the permit term		4.4 b v			
57	Admin	Description of activities for the next reporting cycle		4.4 b vi			
58	Admin	Description of any changes in identified BMPs or measurable goals		4.4 b vii			
59	Admin	*Description of activities undertaken by any entity contracted for achieving any requirement of the permit		4.4 b viii			

Estimated Annual Costs	$0
Estimated One-time Costs	$0
Estimated Intermittent Costs	$0

TOWN OF YARMOUTH

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CONSERVATION COMMISSION

December 19, 2014

Newton Tedder, US EPA—Region 1,
5 Post Office Square—Suite 100,
Mail Code—OEP06-4,
Boston, MA 02109-3912.
Tedder.Newton@epa.gov

RE: Submittal of Public Comment, Town of Yarmouth
2014 Draft Massachusetts Small MS4 General Permit

Dear Mr. Tedder,

The Town of Yarmouth staff has attended three public meetings that presented an overview of the draft Small MS4 General Permit Requirements. We appreciate the time and effort from staff members of the EPA and MASS DEP during all public meetings. At this time we would like to offer the following comments into the record for the public comment period.

Comments:

1. Page 43, Section 2.3.7 Good House Keeping and Pollution Prevention for Permittee Owned Operations: a.ii.(a). Can you please define the definition of "parks" and "open space"? In some cases, open spaces are put aside for land protection and are left unmaintained and undisturbed. The use of pesticides, herbicides, fertilizers and other lawn maintenance and landscape activities are not applicable in such areas. We would like to see flexibility in the language of what is defined as a park and open space. Furthermore, the establishment of pet waste sites should be dedicated to locations that are frequently used and maintained, and provide recreation opportunities. It is our suggestion that open space areas, which contain unmaintained and undisturbed land, should not have the same requirements as other frequented areas.

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2. We would like to suggest EPA to work in collaboration with DEP and consider late fall sweeping of leaves and pine needles to be classified as compost and allow this material to be disposed of in any suitable facility that accepts yard waste debris. A suggested regulation that the roads must have been swept of other debris prior to the sweeping may help DEP agree to this idea. The purpose would be to remove as much of this material as possible prior to it entering into the MS4 system, thus reducing the phosphorus and nitrogen loads. This could be limited only to MS4 discharge area or for all areas meeting any guidelines that DEP may impose.

Sincerely,

Rick Kelley
Highway Superintendent

Kerry Muldoon
Conservation Administrator