

EPA Response to Comments on:

National Pollutant Discharge Elimination System (NPDES)
General Permits for Stormwater Discharges from Small Municipal Separate
Storm Sewer Systems in Massachusetts

NPDES Permit No. MAR041000, MAR042000, and MAR043000

Dated: April 4, 2016

In accordance with the provisions of 40 C.F.R. § 124.17, this document presents EPA's responses to comments received on the Draft NPDES General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in the Commonwealth of Massachusetts, 79 FR 58774 (Sept. 30, 2014). EPA took public comments on the draft permit from September 30, 2014 to February 27, 2015. EPA received over 150 unique written letters and oral comments on the draft permit. This Response to Comments and all attachments, as well as the final permit and associated documents, should be considered collectively as EPA's response to all significant comments submitted on the proposed permit.

Each comment letter contained one or more comments that EPA excerpted and sorted according to the corresponding topic or permit part. EPA did not otherwise edit the comment excerpts. EPA has addressed all significant issues that the public comments raised. In many cases, EPA has cross-referenced similar responses. To the extent that a comment response addresses issues that other comments raised, the responses should be considered together.

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1.0. INTRODUCTION

No comments were received on this section.

1.1. AREAS OF COVERAGE

1. Comment from the Berkshire Regional Planning Commission (BRPC):

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.

EPA response to comment 1

As the commenter suggests, nationally, the criteria for inclusion in the small MS4 permitting program has been codified in EPA's Phase II Stormwater regulations and is not within the scope of this permit issuance to address. EPA's decision to designate, on a national basis, small MS4s in urbanized areas is supported by studies that show a direct correlation between urbanization and adverse water quality impacts from storm water discharges. However, the Massachusetts small MS4 permit also provides flexibility for permittees to implement their stormwater management program across their entire MS4 system, not just within the regulated area.

2. Comment from the Norton Conservation Commission:

Clarifying language should be added to Section 1.1, and any other applicable section, regarding MassDOT. The connection between MassDOT's requirements and a municipality's 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 MS4 Areas' maps to clearly illustrate MassDOT responsibility. There should be a clearly written division of responsibility for those watersheds contributing to an impaired water containing State roads in both the General permit for MS4s and the MassDOT's individual permit.

EPA response to comment 2

EPA finds that the permit language in section 1 and throughout the permit is clear in terms of the scope of the municipality's responsibilities under the small MS4 permit. MassDOT will be covered under a separate individual permit with similar requirements to the MS4 permit. Part of MassDOT's requirements under their forthcoming permit will encourage coordination with neighboring municipalities.

The maps available on EPA's website show the regulated urbanized areas within the municipalities' boundaries based on census information. The maps do not incorporate information on land ownership by state and other municipal agencies, including MassDOT, and

there are no plans to add ownership information to these maps at this time. However, if data become available in the future and EPA resources are available to support the activity, EPA may reproduce the maps to incorporate municipal property ownership information.

1.2. ELIGIBILITY

3. Comment from the Town of North Andover:

New MS4 areas have been added - due to data collected in the 2010 census. This would not be the case if permit had been renewed on time.

EPA response to comment 3

Due to the language in the regulations, EPA will continually revise the scope of regulated municipalities based on the revisions to the census defined urbanized areas. EPA intends to continue to include new urbanized areas under the small MS4 permit as new census information becomes available. In fact, if the permit had been reissued on the intended five-year schedule, the third small MS4 permit iteration would have been issued in 2013, incorporating the 2010 census urbanized areas sooner than will occur under this permit issuance (2015). In addition, under 40 CFR 122.32(a)(1), small MS4s become regulated MS4s according to the latest decennial census and newly designated MS4s may be required to apply for permit coverage during a permit term if the permit is not expired.

4. Comment from the Town of Needham:

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.

EPA response to comment 4

Regulated areas under the small MS4 permit are determined by census information as required in EPA's national Phase II stormwater regulations. Census data indicate a change in the degree of urbanization in the Town of Needham between 2000 and 2010. The permit provides the town with opportunities to tailor their stormwater management plan to prioritize certain areas of their MS4 based on more detailed and complete information on land use, water quality, and other information that cannot be captured within EPA's designation procedure. Please see EPA response to comment 1 for additional information.

5. Comment from the Town of Newbury:

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)

EPA response to comment 5

Regulated areas under the MS4 permit are determined by census information as required in EPA's national Phase II stormwater regulations. Urbanized area designation criteria used by the

Census Bureau has a public participation and comment process in which any municipality may elect to participate. The Census Bureau released the Proposed Urban Area Criteria for the 2010 Census for public comment on August 24, 2010, at which point anyone (including regulated MS4s) had the opportunity to participate in the process.

6. Comment from Tighe and Bond:

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?

EPA response to comment 6

The regulated area of the permit will include both 2000 and 2010 census designated areas. Designations based on subsequent census years are governed by the Bureau of the Census' definition of an urbanized area in effect for that year. Based on historical trends, EPA expects that any area determined by the Bureau of the Census to be included within an urbanized area as of the 1990 Census will not later be excluded from the urbanized area as of the 2000 Census. However, it is important to note that even if this situation were to occur, for example, due to a possible change in the Bureau of the Census' urbanized area definition, a small MS4 that is automatically designated into the NPDES program for stormwater under an urbanized area calculation for any given census year will remain regulated regardless of the results of subsequent urbanized area calculations. See the Preamble to the Phase II rule (64 FR 68751 (Dec. 8, 1999)).

7. Comment from the Norton Conservation Commission:

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.

EPA response to comment 7

Section 1.2.1 describes the MS4s that are considered to be non-traditional MS4s. References to Sections 5 and 6 have not been added to the permit.

8. Comment from the Town of Concord:

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.

EPA response to comment 8

Individual buildings would not generally have a separate storm sewer *system* as defined in EPA's Phase II Regulations and in the permit definitions.

Where a school district meets the definition of a regulated MS4 it is independently obligated to obtain coverage under this Permit. The Draft Permit was released for public comment in accordance with 40 CFR §124.10 and all entities, including the public, were given ample notice to submit comments on the Draft Permit. Thus, one solution is that a local school district can submit a NOI as a MS4. However, in those cases where school districts operate MS4s that connect or are in close proximity to traditional MS4s, EPA encourages both entities to consider cooperative arrangements to meeting the General Permit requirements.

EPA will be informing new non-traditional MS4s and reminding existing non-traditional MS4s of their obligations under the Massachusetts Small MS4 General Permit. Information on current non-traditional MS4s is available on EPA's website. EPA disagrees that school districts were not given appropriate notification, the Draft Permit was released for public comment in accordance with 40 CFR §124.10 and all entities, including the public, were given appropriate notice to submit comments on the Draft Permit. During the public comment period, EPA works to disseminate draft permit information to the public through our website, targeted emails and mailings, and advertised public hearings across the state. Because of this, EPA finds that the public, including non-traditional MS4s have been adequately solicited for comments on the draft permit. In addition, if a permittee feels any property within its bounds should be required to obtain a permit for stormwater discharges, they can petition EPA to require permit coverage under 40 CFR 122.26(f).

1.3. LIMITATIONS ON COVERAGE

9. Comment from the City of Manchester (NH):

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.

EPA response to comment 9

Massachusetts' Department of Environmental Protection (MassDEP) is the entity with authority to implement the state's Underground Injection Control Regulations (310 CMR 27.00). The purpose of 310 CMR 27.00 is to protect underground sources of drinking water by regulating the underground injection of hazardous wastes, fluids used for extraction of minerals, oil, and energy and any other fluids having potential to contaminate groundwater as required by the Federal Safe Drinking Water Act. If it is necessary for a structural control to be authorized under the UIC regulation, MassDEP will follow its established protocol to protect sources of drinking water, as is the intent of the regulation. The information evaluated to date on structural BMPs indicates that, when designed, maintained and replaced in accordance with design life, BMPs do remove pollutants from stormwater. It is only when BMP maintenance is not done and BMPs are not replaced after their design life is met that the BMPs do not remove the pollutant load they were intended to remove. Pollutants remaining after treatment by the BMP would in many cases be attenuated through natural processes after infiltration into the soil and groundwater (which is one of the reasons why infiltration BMPs are often preferred), but in any event the state process described above would protect groundwater supplies. EPA is not aware of any study to substantiate the claims of failed adsorption of pollutants intended to be treated for using adsorption or any failed uptake mechanism releasing pollutants back into waterways through the groundwater pathway.

10. Comment from the Town of Weymouth:

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.

EPA response to comment 10

EPA understands that the comment refers to part 2.3.4.2.b of the draft permit that identifies illicit discharges to the MS4 as a violation of the permit until the illicit discharges are eliminated. EPA recognizes that, in certain situations, it is not possible to eliminate an illicit discharge immediately. Section 2.3.4.2 of the draft permit presents the steps to take when elimination of an illicit discharge is not possible within 60 days of its identification. Yet 40 CFR 122.34(b)(3)(i) requires that permittees "must develop, implement, and enforce a program to detect and *eliminate* illicit discharges (as defined at § 122.26(b)(2)) into your small MS4." Therefore, even if an illicit discharge has been identified and a reasonable schedule for its removal has been documented, the illicit discharge is not authorized under the permit and is unlawful.

11. Comment from the City of Waltham:

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 wide. 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.

EPA response to comment 11

Some, but not all, stormwater infiltration BMPs may be subject to requirements of the Underground Injection Control (UIC) Program. According to Massachusetts' UIC regulations (310 CMR 27.02), infiltration BMPs are regulated as Class V underground injection wells "used to drain stormwater runoff" if they meet any of the following criteria defining a well: 1) a bored, drilled, or driven shaft, a dug hole, or seepage pit whose depth is greater than its largest surface dimension; or 2) an improved sinkhole; or, 3) any subsurface structure that has a soil absorption system (SAS) with a subsurface fluid distribution line and aggregate. Examples of BMPs that would need to be registered as Class V Underground Injection Wells with MassDEP include dry wells, leaching catch basins, and underground storage chambers (designed primarily to infiltrate stormwater rather than used for detention). Since the UIC Program is based on state regulations and implemented by MassDEP, EPA does not have the authority to exempt permittees from this state regulation. More information regarding the UIC Programs can be found at: <http://www.mass.gov/eea/agencies/massdep/water/drinking/underground-injection-control.html> or by contacting MassDEP at 617-292-5859.

1.4. NON-STORMWATER DISCHARGES

12. Comment from the Town of East Longmeadow:

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.

13. Comment from the Towns of Medway, Millis, Abington, Swampscott, Bellingham, and Canton and the Cities of Pittsfield and Easthampton:

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.

14. Comment from the Town of Weymouth:

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.

EPA response to comments 12-14

The 18 specific categories of non-stormwater discharges allowed to enter a small MS4 were taken directly from 40 CFR 122.34 (b)(3)(iii). These are allowed, assuming they have not been identified as significant contributors of pollutants to the system. The regulations allow uncontaminated ground water discharges that could include discharges from residential sump pumps.

However, it is ultimately the responsibility of each permittee covered under this general permit to minimize the pollution that enters into their separate storm sewer system and ensure that any discharge into their system from a sump pump is in fact uncontaminated groundwater. For example, basement sump pump discharges could come into contact with household chemicals that residents might store in their cellars and basements and become contaminated.

Therefore, each municipality would need to ensure that discharges from sump pumps are truly uncontaminated. As mentioned in one of the comments, there has been a dedicated effort by municipalities to encourage residents to redirect their sump pump discharges to an available stormwater system rather than to the sewer system. A municipality could build upon such a program by having homeowners with sump pumps register with the town. This would also provide an opportunity for a municipality to distribute education materials to the homeowners regarding ways to avoid contamination of sump pump discharges. This highlights just one example that a municipality can employ to ensure that residential sump pumps are not contributing to pollution. .

15. Comment from the City of Manchester (NH):

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.

EPA response to comment 15

Stormwater is defined as “storm water runoff, snow melt runoff, and surface runoff and drainage.” 40 CFR 122.26(b)(13). This definition implies that stormwater is created as a result of precipitation (either direct runoff or melting of frozen precipitation). Any discharge not specifically identified as stormwater is non-stormwater. As such, EPA finds that the permit is clear and no additional explanation is needed as to what qualifies as a stormwater discharge or a non-stormwater discharge.

40 CFR 122.34 (b)(3)(iii) describes the 18 specific categories of non-stormwater discharges allowed to enter a small MS4. These discharges are allowed, assuming they have not been

identified as significant contributors of pollutants to the system. If any category or individual discharge of non-stormwater discharge is a significant contributor of pollutants to the small MS4, then it is not allowed under this permit and will be deemed an "illicit discharge." 40 CFR 122.26(b)(2).

16. Comment from Keith Saxon:

1.4.g. Discharge from Potable Water Source. Add disclaimer in parenthesis "(excluding storage tank cleanout/cleaning residuals and wash waters)" 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 & wash waters into an MS4 system and downstream waterways. Such discharges are extremely high in solids and heavy metal content.

EPA response to comment 16

Discharge from potable water source is one of the 18 specific categories of non-stormwater discharges allowed to enter a small MS4, in accordance with 40 CFR 122.34 (b)(3)(iii). These discharges are allowed, assuming they have not been identified as significant contributors of pollutants to the system. Although potable water may be used to fill a storage tank, once the water comes into contact with the contents of the tank it is no longer potable water because the source of the discharge will be from the storage tank and not a public water supply. EPA finds that the term "potable water source" is sufficiently clear and additional language has not been added to the permit.

1.5. PERMIT COMPLIANCE

17. Comment from the Merrimack River Watershed Council:

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.

EPA response to comment 17

Appropriate enforcement action related to permit non-compliance is at EPA's discretion. Enforcement activities may result in a variety of remedies. The permit language has not been changed.

1.6. CONTINUATION OF THIS PERMIT

No comments were received on this section.

1.7. OBTAINING AUTHORIZATION TO DISCHARGE

18. Comment from the Town of Maynard:

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.

19. Comment from the Massachusetts Department of Transportation:

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.

20. Comment from the Town of Winchester:

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 permittees have up to a year to complete.

21. Comment from the Town of Concord:

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.

22. Comment from the Massachusetts Rivers Alliance:

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.

23. Comment from 495 Metro West Partnership:

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.

24. Comment from the Town of Milford:

Once the permit is finalized, the Town will be required to submit a Notice of Intent (NOI) 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.

25. Comment from Town of Auburn:

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.

26. Comment from the Town of Newton:

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.

27. Comment from the Town of Holden Department of Public Works:

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.

28. Comment from the Town of Weymouth:

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.

29. Comment from the Town of Franklin:

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.

30. Comment from the Town of Concord PWC:

Section 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.

31. Comment from the City of Fitchburg:

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.

32. Comment from the Town of Framingham:

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 a 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.

33. Comment from the Town of North Andover:

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.

34. Comment from the Town of Rowley:

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 through 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 established 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 inter-municipal collaborative programs for sharing personnel, equipment and/or testing labs.

EPA response to comment 18 - 34

EPA acknowledges that the Notice of Intent (NOI) for this permit requires more detailed information than the previous NOI. Therefore, additional time will likely be necessary for permittees to prepare and compile information. In recognition of this effort, the effective date

of the permit will be a minimum of 6 months (180 days) following finalization of the permit. The NOI will still be due 90 days following the effective date. With the modified effective date, this will provide each permittee with at least 9 months (270 days) until the NOI is due.

Also, the information in the NOI is expected to convey how each municipality will comply with permit conditions. As required by 40 CFR 122.34(d)(1), a permittee must identify and submit in the NOI information regarding the BMPs to be used to meet permit conditions, measurable goals associated with each BMP and responsible parties.

This reflects an estimate, based on the best available information at the time of NOI submission. However, information can change between the NOI submission and the SWMP development. While the NOI reflects planned BMPs, the Stormwater Management Plan (SWMP) will ultimately contain the specific BMPs that the municipality intends to use to meet the requirements of the permit. The SWMP shall be completed one year within the effective date of the permit.

This permit builds upon work previously accomplished in the last permit round. In addition, EPA has already phased-in a number of the requirements. Therefore EPA finds the timetable for the remaining deliverables is reasonable.

35. Comment from the Massachusetts Rivers Alliance:

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.

EPA response to comment 35

Although not required on the effective date of the permit, under the new Electronic Reporting Rule, effective December 21, 2015, within 5 years (by December 21, 2020) EPA shall require general permit forms such as the NOI and MS4 annual reports to be submitted electronically. EPA has provided a recommended format for the requisite information in Appendix E. Whether a permittee submits their NOI electronically or in paper format, all of the information outlined in Appendix E is required. EPA finds that this is clearly stated in part 1.7.2, which says, "Operators of Small MS4s seeking authorization to discharge under the terms and conditions of this permit shall submit a Notice of Intent that contains the information identified in Appendix E." Permit part 1.7.3. requires submission of electronic annual reports in accordance with 40 C.F.R. 127.26 (f).

Changes to permit: Permit Part 1.7.3 has been updated accordingly

36. Comment from the Town of Watertown:

Section I. 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.

37. Comment from the Town of Winchester:

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.

38. Comment from Weston & Sampson:

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.

39. Comment from the Town of Milford:

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.

40. Comment from the City of Quincy:

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.

EPA response to comment 36 - 40

Fact Sheet section II.B.6 states the procedure that will be used for placing NOIs on public notice. Once an NOI is received, EPA will review the NOI to determine if all required information has been submitted. If the NOI does not have complete information, EPA will request the necessary information from the MS4. Once the NOI is determined to have complete information, EPA will post the NOI on its website and allow a minimum 30 day comment period. Following the close of the comment period, if no comments are received, EPA will provide written authorization to the MS4 to discharge. If comments are received, EPA will work with the permittee to ensure that comments and concerns are addressed. No formal response to comments will be provided. Rather, significant comments will be resolved by modifying the NOI, as necessary.

41. Comment from the Massachusetts Rivers Alliance:

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.

EPA response to comment 41

See EPA response to comments 92 - 112. Appendix E has been updated to address discharges to water quality limited waters and waters with a TMDL

Changes to permit: Appendix E has been updated accordingly

42. Comment from Paul Hogan of Woodard and Curran:

Section 1.7.1.: in what form will USEPA provide written authorization - via certified U.S. Mail or by an email?

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.

EPA response to comment 42

EPA will provide written authorization to permittees via certified U.S. Mail. The NOI will need to be submitted to MassDEP since the permit has been jointly issued.

43. Comment from Neponset River Watershed Association:

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).

EPA response to comment 43

Although not required on the effective dates of the permit, under the new Electronic Reporting Rule, effective December 21, 2015, within 5 years (by December 21, 2020) EPA shall require general permit forms such as the NOI and MS4 annual reports to be submitted electronically. Section 1.7.4 of the permit highlights that EPA will post the NOIs online for a minimum of 30 calendar days. This will provide the public with the opportunity to comment on the contents of all NOIs. Also when EPA receives annual reports from permittees, they will also be posted online.

Each scenario of increased discharges could possibly have different BMPs. Since each situation will be handled on a case by case basis by MassDEP, the permittee will not know at the time of NOI submittal what BMP is necessary. However, the discharge will have to comply with antidegradation requirements (314 CMR 4.04). Therefore, EPA does not believe it is appropriate to add this additional language to the NOI.

44. Comment from the Connecticut Fund for the Environment (CFE) – Save the Sound and Save the Bay:

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. 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.

EPA response to comment 44

Please refer to EPA's response to Comments 280 - 285, which summarize the opportunities embedded in the permit process for public participation.

As stated by the commenter, Section 1.7.4.a of the draft permit highlights that EPA will provide a public notice and opportunity for comment on a permittee's submitted NOI for a minimum of 30 calendar days. Section 1.7.4.b then indicates EPA may grant authorization, extend the public comment period, or deny authorization under this permit. Therefore, there is the potential to extend the public comment period or hold a public hearing, if EPA receives a written request describing the reason for the extension and/or issues proposed to be raised at the hearing and EPA concurs with the reasons or issues raised. A public hearing will be held if the permitting authority finds that there is significant public interest.

The rest of this comment references the Connecticut Department of Energy and Environmental Protection (DEEP). However, EPA does not issue permits on behalf of the state of Connecticut. This small MS4 General Permit is for the Commonwealth of Massachusetts.

1.8. INDIVIDUAL PERMITS AND ALTERNATIVE GENERAL PERMITS

No comments received on this part.

1.9. SPECIAL ELIGIBILITY DETERMINATIONS

45. Comment from the Town of Maynard:

Section 1.9.1 - Documentation Regarding Endangered Species: Before submitting a 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. 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?

46. Comment from the City of Manchester (NH):

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 their habitat is located.

47. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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 for the number of communities that will need this review as part of developing their NOI?

48. Comment from the Town of Westborough:

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.

49. Comment from the Towns of Danvers and Westwood:

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?

50. Comment from the Town of Weymouth:

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.

EPA response to comment 45 - 50

50 CFR 402.08 allows a federal agency to designate a non-Federal representative to conduct informal consultation or prepare a biological assessment during the ESA process. EPA used this approach when it issued the 2003 MS4 permit. Any applicant seeking coverage under the general permit was required to certify that none of its storm water discharges, allowable non-storm water discharges or discharge related activities was likely to impact a threatened or endangered species. Each permittee was required to certify that the ESA eligibility criteria (established by the Services) were met.

However, for this NPDES general permit, EPA has slightly modified its approach and reduced some of the burden of complying with ESA requirements for small MS4 applicants. After communication with the National Marine Fisheries Service (NMFS), EPA has decided not to designate MA Small MS4 applicants as non-Federal representatives for the purpose of conducting formal or informal consultation with the NMFS. EPA has already initiated informal consultation with NMFS on behalf of all permittees. After preparing a biological assessment supporting document, EPA has determined that discharges from MS4s are not likely to adversely affect listed species or critical habitat under NMFS' jurisdiction. EPA is awaiting concurrence from NMFS. Therefore, no further action is required by applicants in order to fulfill ESA requirements of this permit related to species under NMFS' jurisdiction.

Permittees are only required to consider their impacts on endangered or threatened species covered by the U.S. Fish and Wildlife Service (USFWS). Appendix C to this NPDES general permit (Endangered Species Guidance) provides step by step guidance to aid applicants with the U.S. Fish and Wildlife Service ESA Eligibility Process, including the link (<http://ecos.fws.gov/ipac/>) to USFWS's IPaC – Information, Planning, and Conservation System tool. This tool greatly streamlines USFWS's environmental review process and lists the relevant threatened or endangered species that fall under USFWS' jurisdiction. As stated in Appendix C, Criteria A (cases where no endangered or threatened species or critical habitat are in proximity to the stormwater discharges or discharge related activities) and C (cases where, based on an evaluation of the best scientific and commercial data available, a determination has been made that the stormwater discharges and discharge-related activities will have "no effect" on threatened or endangered species) do not require a permittee to contact the USFWS, unless the permittee is having difficulty with its determination. Permittees only need to contact USFWS if they fall under Criterion B (see Appendix C, page 3). Therefore, EPA finds that permittees can meet the requirement within the NOI time period. EPA still strongly encourages applicants to begin the process at the earliest possible stage.

51. Comment from the Town of Dedham:

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.

EPA response to comment 51

See EPA response to comment 45 - 50. The Endangered Species Act of 1973 requires federal agencies, such as EPA, to ensure in consultation with USFWS and NMFS ("the Services"), any actions authorized, funded or carried out by the agency are not likely to jeopardize the continued existence of any Federally-listed endangered or threatened species or adversely modify or destroy critical habitat of such species (see 16 U.S.C 1536 (a)(2), 50 CFR part 402 and 40 CFR 122.49(c)). EPA's issuance of this NPDES general permit is a federal action which is subject to ESA.

Although the Massachusetts Natural Heritage and Endangered Species program does provide information on state and federally listed species, EPA is required to consider impacts on federally listed species only. Therefore, directing permittees to the Massachusetts Natural Heritage Endangered Species Program's website could create confusion. If a permittee determines (after using USFWS's IPaC – Information, Planning, and Conservation System tool) that no federally listed species or designated critical habitats are present in the action area, they meet Criterion A. The permittee simply needs to print and save the preliminary determination from USFWS's IPaC system.

52. Comment from the Town of Maynard:

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. 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?

53. Comment from the Town of Winchester:

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.

54. Comment from the Town of Newton, Danvers, and Westwood:

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?

EPA response to comments 52 - 54

The State Historic Preservation Officer (SHPO) had the opportunity to comment on the Draft Permit, including the screening process and timeline highlighted in Appendix D. EPA did not receive any comments indicating that the SHPO could not respond to requests from MS4 permittees in a timely manner.

Activities that may have an effect on historic properties (e.g., control measures which involve subsurface disturbance) require the permittee to submit the documentation indicated in Appendix D (i.e., Completed Project Notification Form, USGS map section, and scaled project plans showing both existing and proposed conditions) and work with the SHPO to determine if any additional documentation is required. While this process will require additional coordination and time, EPA notes that underground BMPs will not be installed by all permittees. By following the Screening Process questions in Appendix D, permittees should be able to determine the appropriate certification criterion to select. The description after each screening question also explains what documentation is necessary. For example, if an existing facility was already authorized by the previous permit and is not undertaking any activity involving subsurface land disturbance, the only documentation would be the applicant's written certification of this information.

In regards to future repairs and related excavation activity, permit applicants should complete the NHPA certification and submit the NOI based on the best information available at the time of submission. As the program develops, new information may become available. If new information becomes available, the permittee may need to reevaluate the NHPA certification criterion to ensure that permit eligibility with regards to NHPA is maintained.

1.10. STORMWATER MANAGEMENT PROGRAM (SWMP)

55. Comment from the Town of East Longmeadow and Tighe and Bond:

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 11.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.

EPA response to comment 55

The permit does not prohibit deleting specific BMPs in the SWMP as long as they are replaced with an alternative BMP and an explanation of the change. It is EPA's view that the language directing permittees to "modify or update their existing ... BMPs" conveys the intended message that while certain BMPs may be deemed ineffective and therefore could be discontinued as components of the SWMP, they must be replaced or updated with other BMPs that are expected to be effective in that same capacity, thereby modifying or updating the targeted SWMP component. See part 4.1.b. of the permit for more detailed information on changing BMPs within the SWMP.

56. Comment from the Massachusetts Rivers Alliance:

We support encouraging permittees to maintain adequate funding sources for implementation of the program. We further recommend 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.

57. Comment from the Charles River Watershed Association (CRWA):

We suggest Part 1.10c. be modified to read "The permittee 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.

EPA response to comments 56 - 57

EPA does not have the authority under the Phase II stormwater regulations to require small MS4s to maintain a funding source similar to the Phase I requirements for large and medium MS4s. EPA recognizes that there will be costs associated with the permit requirements, which we have deemed necessary to protect and restore water quality.

It has become clear through municipalities' comments and public meetings that cost is a primary concern of permittees, and we believe the conversations at public meetings as well as information on funding on our website have been sufficient to convey our general recommendations on funding a stormwater program. For this reason, the encouragement to maintain an adequate funding source has been removed from the permit. In an effort to provide more concrete guidance on this matter, EPA plans to continue to provide up-to-date cost estimates for the permit as well as information on potential funding resources on our website.

*Change to Permit: Permit part *1.10.c. of the Permit has been deleted.*

58. Comment from the Town of Westborough:

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 original 120 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.

EPA response to comment 58

The permit does not require the development of a funding source. EPA has removed such language from section 1.10.c. EPA encourages MS4 municipalities to maintain an adequate funding source for program implementation. EPA realizes that establishing a dedicated fund or a stormwater utility may take time. However, nothing has precluded municipalities from exploring utilities since the previous draft permits in 2010 and 2011. In an effort to provide more concrete guidance on this matter, EPA will continue to provide up-to-date cost estimates for the permit as well as information on potential funding resources on our website.

Change to Permit: Permit part 1.10.c. of the Permit has been deleted.

59. Comment from the Massachusetts Rivers Alliance and the Mystic River Watershed Association (MyRWA):

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.

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.

EPA response to comments 59

EPA would like to allow flexibility within the permit to account for the many different factors in evaluating BMP effectiveness and corrective actions, whether they are site-specific factors or simply relevant factors not considered previously. For that reason, the permit (at part 1.10. as well as part 4.1.b) does not contain an exhaustive list methods for evaluating BMPs or determining corrective actions necessary. However, EPA plans to provide more specific clarification outside of the permit to assist municipalities with evaluating BMPs and implementing corrective actions. Any clarifications will be made available on our website following the final permit issuance.

60. Comment from the Mystic River Watershed Association (MyRWA):

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.

EPA response to comment 60

Permittees are required to summarize any modifications and updates to BMPs in their annual report. Rather than adding to the administrative requirements in the annual report related to specific BMP corrective actions, EPA plans to provide clarifications on how to evaluate BMP performance and implement corrective actions.

EPA will not be developing any new regulations as described in the comment. Certainly, a member of the public can notify EPA at any time if they believe the BMPs being implemented by a municipality are ineffective. EPA and the municipalities will rely in part on information from citizens to stay informed of how stormwater management programs are being implemented, and public involvement and participation is an important part of the permit. Additionally, the public may report potential permit non-compliance to EPA.

61. Comment from Mystic River Watershed Association (MyRWA):

We support requirements for measurable goals for each BMP, including milestones and timeframes for implementation, defined qualitative or quantitative endpoints, and associated measure of assessment (section 1.10).

EPA response to comment 61

EPA appreciates your support. Defined and measurable goals will be important for implementing and managing effective BMPs under the permit.

62. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

EPA response to comment 62

EPA will update the contents of the SWMP in the final permit to reflect any changes to referenced requirements within other sections of the permit.

63. Comment from the Conservation Law Foundation (CLF):

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.

EPA response to comment 63

EPA finds that the permit contains clear and enforceable language while at the same time includes a recognition that each municipality is unique and allows for alternative methods for achievement of the permit requirements.

64. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, and Wilbraham:

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.

65. Comment from the Town of Shrewsbury:

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.

EPA response to comments 64 - 65

EPA finds that the extension of time to complete the SWMP to one year beyond the permit effective date is sufficient time to update a program that is already being implemented in communities and updated annually. Many of the requirements of the permit will remain unchanged and should already be budgeted for and implemented within the municipality. EPA agrees that a focus on BMPs for quality-limited waters and waters subject to TMDLs will be important initial work; Appendices F and H provide requirements for addressing such waters. In addition, EPA has added clarification that the SWMP does not have to

incorporate certain components until such components are required to be completed following the timeline of the rest of the permit. (See EPA response to comments 74 - 75).

EPA intends to develop a detailed SWMP template to aid municipalities in the development of their SWMP. Please note that the permit does not require submission of the SWMP to EPA or MassDEP, but that it be available for these agencies as needed (see part 1.10.1.a of the permit).

Changes to Permit: Permit part 1.10 has been changed accordingly.

66. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, and Wilbraham:

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.

EPA response to comment 66

EPA does not require that all reports must be available in hardcopy form and encourages the use of digital and online systems to manage stormwater programs. The permit will be modified to specify that written programs, reports, procedures, etc. may be either hardcopy or electronic.

However, the intent of the “written” documents is for permittees to deliberately and thoughtfully develop various aspects of their stormwater program and to create reference documents for standardized procedures. The permit specifies that certain important procedures and programs should be written (whether in hardcopy or electronically) and standardized within the MS4 in order to most effectively implement the permit requirements.

Changes to Permit: Relevant sections of Permit have been updated to add language that written includes both hard copy and electronic.

67. Comment from the Town of Framingham:

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:

- 1) 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.
- 2) 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 permittee's website. Revert to language from the 2010 Draft Permit "The permittee is encouraged to post the SWMP online..."

EPA response to comment 67

Public availability of the SWMP is important for public participation in how municipalities manage stormwater (see comments 69-71 regarding online SWMP availability). Posting of the SWMP on a town's website allows for greater access for community members, neighbors, watershed groups, and other interested parties who might not otherwise be able to access a hardcopy at the town's offices.

While EPA encourages municipalities to continually update their SWMP as needed, permittees are required to update their SWMP annually in accordance with public involvement and program evaluation requirements; therefore the SWMP copy provided to the public (either online or hardcopy) should be updated annually as well.

EPA acknowledges that some towns may not wish to make mapping information available on their website for reasons of public safety. The permit has been modified with a footnote that states: "Should a permittee not wish to post mapping information included in the SWMP (see section 1.10.2.) on their website for public safety reasons, they must state the reason either with or within the online SWMP and provide how the MS4 mapping information can be obtained. The permittee must retain the entire SWMP, including all completed mapping, at a location where it can be made available to the public during normal business hours."

Changes to Permit: Permit part 1.10.2 has been updated accordingly.

68. Comment from Keith Saxon:

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 and; 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.

EPA response to comment 68

It is EPA's view that the requirement to post the SWMP online if a municipality has a website is straightforward as written and does not need clarification. Per Section 1.10.2, the contents of the SWMP must include the MS4 system map, including catchment delineations and outfall locations as specified in section 2.3.4.6 and these elements do not need to be specifically identified as needing to be posted. Please refer to the response to comment 67 which allows for municipalities to not post items due to public safety concerns.

69. Comment from the Massachusetts Rivers Alliance:

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.

EPA response to comment 69

There are several ways in which permit information can be obtained by the public. In addition to posting the SWMP online, MS4s must submit annual reports to EPA, which are then made publicly available on EPA's website. Section 2.3.3 of the permit requires at least annual opportunities for public participation in SWMP review and implementation. All plans that are developed as part of the permit are also included in the SWMP and a separate posting requirement is not necessary. Monitoring results are part of the annual report submission and are posted on EPA's website.

70. Comment from Paul Hogan of Woodard and Curran:

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.

71. Comment from the Charles River Watershed Association (CRWA):

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.

EPA response to comments 70 - 71

EPA has not made posting of the SWMP mandatory. If a municipality has a website, we encourage posting on the site. If a municipality does not have a website, the permit does not require the municipality to develop one. Permittees will still be required to make copies of the SWMP available to the public during normal business hours, as stated in the permit. We have not mandated that free copies of the SWMP be provided. State law allows for a

municipality to charge a reasonable fee for copies of documents and the permit is consistent with that.

72. Comment from Neponset River Watershed Association:

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.

EPA response to comment 72

The SWMP is intended to serve as a guide for the permittee’s overall program to address stormwater pollution, largely through the actions required in the permit. The SWMP will serve as a resource for municipality staff, contractors, residents, and other interested parties to learn about and help manage the program. The SWMP is a document that describes the BMPs a municipality will use to implement the terms of the permit. The permit requires SWMP development. EPA will enforce the terms of the permit, not the items within the SWMP. However, failure to develop a SWMP is a permit violation. Actions/BMPs included in the SWMP and implemented in the community will be enforced by EPA based on whether they meet applicable conditions of the permit in Parts 2.0-6.0, and not based on their inclusion in the SWMP.

Permittees are allowed and encouraged to add more robust programs and BMPs to their SWMP than the minimum requirements of the permit. However, EPA does recommend that the SWMP document actionable items that have been planned and budgeted for to the extent possible. Permittees should only include projects which they intend to follow through with as part of their program.

73. Comment from the Merrimack River Watershed Council:

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.

EPA response to comment 73

Appendix B, Paragraph B.1., “Duty to Comply”, details penalties associated with non-compliance with the terms of the permit. It is not necessary for these to be include in the SWMP as they are already a part of the permit.

Specific consequences and any associated penalties for violations of the permit are determined on a case-by-case basis; the calculations of penalties and/or the determinations of enforcement actions are based on a variety of factors unique to the violation circumstances and the enforcement office uses its discretion in such matters.

74. Comment from the Town of Canton:

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 I 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.

75. Comment from Paul Hogan (Woodard and Curran):

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.

EPA response to comments 74 - 75

Please note that the permit does not require the SWMP to be submitted to EPA. The SWMP must be updated within a year of the effective date of the permit. EPA does not intend for permittees to complete certain permit requirements prior to the deadlines set in the permit in order to fulfill the SWMP reporting requirements. The SWMP is a document meant to assist the permittee in managing their stormwater program and should be updated as the permit term and the program progresses. The permit has been updated to clarify the initial requirements of the SWMP and elements that will be added upon completion in accordance with the permit schedule.

Changes to Permit: Permit part 1.10.2 has been updated accordingly.

76. Comment from the City of Quincy:

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.

EPA response to comment 76

EPA does not intend for permittees to complete certain permit requirements prior to the deadlines set in the permit in order to fulfill the SWMP reporting requirements.

Section 1.10.2 states that the Stormwater Management Plan should include a "listing of all interconnected MS4s and other separate storm sewer systems receiving a discharge *from* the permitted MS4" (emphasis added here for clarification - no changes will be made to the permit language). The permit does not require listing the interconnections that discharge *to* the permitted MS4 system.

EPA does not recommend requiring system mapping from neighboring communities; rather, EPA would encourage neighboring MS4s to collaborate in such efforts. It is likely that both MS4 systems may have contributing interconnections to one another's systems, and the municipality that is responsible for the contributing catchment should be aware of the ultimate receiving water for their discharge. Pollution prevention in the stormwater discharge is the responsibility of the municipality with jurisdiction over the contributing catchment. Therefore, discharges from an upstream MS4 system through an interconnection with another municipality are still the responsibility of the upstream municipality. For that reason, the upstream municipality should be aware of any additional water quality requirements for that catchment relevant to the eventual downstream receiving water. See also EPA response to comment 83.

77. Comment from the Charles River Watershed Association (CRWA):

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.

EPA response to comment 77

EPA agrees that low impact development (LID) and green infrastructure (GI) will be important components of a successful stormwater management program. Many of the requirements in Appendix F and H related to water quality limited waters and TMDL waters already involve considering the use of GI/LID. In order to avoid duplicating permit requirements and to provide flexibility within the permit for various best management practices, especially during the initial stage of the permit term, EPA does not believe additional GI/LID requirements are appropriate in the permit.

78. Comment from 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.

EPA response to comment 78

EPA and MassDEP intend to continue to provide technical assistance on permitting matters. Please see an independent cost estimate derived by a contractor, which is available on EPA's website (Watervision LLC, 2016); costs for permit compliance will vary considerably based on MS4 size and other factors specific to a municipality.

79. Comment from Paul Hogan of Woodard and Curran:

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.

EPA response to comment 79

EPA and MassDEP intend to continue to provide technical assistance on permitting matters, including for new permittees that require more extensive guidance.

80. Comment from the American Council of Engineering Companies of Massachusetts (ACEC/MA):

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.

81. Comment from Tighe and Bond:

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.

EPA response to comments 80 - 81

This was useful feedback on extended deadlines for new permittees within the permit. EPA finds that extension of deadlines is reasonable and has augmented the permit.

Changes to Permit: Permit part 1.10.3 has been updated accordingly.

2.0. NON-NUMERIC EFFLUENT LIMITATIONS

82. Comment from the City of Manchester (NH):

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.

EPA response to comment 82

NPDES MS4 permitting is not contingent on studying potential permit requirements for the "long term" until such a time as they become permit requirements. Structural BMPs addressing stormwater pollutants have been used and studied for over 20 years throughout the country and the world, and while performance can vary by region and design, overall structural BMPs reduce the pollutant load received by waterways from stormwater sources. EPA has been, and remains, dedicated to studying BMP performance specific to the New England Region and will continue to develop and refine long term performance estimates of structural BMPs used for permit compliance (See Attachment 1 to the Fact Sheet of the draft Permit for additional information on structural BMP performance studies). It is EPA's view that providing credible pollutant removal performance for structural BMPs is an integral part of stormwater permitting. Without such information, each permittee would need to undertake long term studies of each BMP used for permit compliance.

83. Comment from 495 Metro West Partnership:

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.

EPA response to comment 83

See EPA response to comments 92 - 112. EPA disagrees that the requirements of this permit are not based on watershed solutions. Indeed, many requirements of this permit are based upon the watershed in which a permittee owns or operates an MS4. For instance, Parts 2.2.2.a. and 2.2.2.b. of the final Permit identify permittees within a watershed that contains an impaired waterbody that is impaired due to excess nitrogen or phosphorus respectively and consistent requirements for each permittee are outlined in Appendix H. In addition, where TMDLs are completed for impaired waters that indicate watershed sources of pollution MS4s within that entire watershed are required to comply with requirements contained in Appendix F. The requirements contained in Appendix F and H of the final Permit are consistent throughout the impaired watershed with the goal of attaining water quality standards in the affected waterbody. Further, there is nothing in the permit to prevent communities from working together to jointly address the requirements of the permit. All of the BMP requirements and many of the WQBELs apply to multiple communities, and communities may benefit from sharing resources and programmatic efforts. Nevertheless, any joint endeavor would need to take into

consideration the extent to which the requirements of the permit must be tailored to certain communities due to the nature of their individual contributions. Finally, certain requirements, such as legal authorities needed to implement stormwater controls within their jurisdiction, will inevitably be the responsibility of individual communities, under any circumstance.

84. Comment from the Town of Canton MS4:

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.

85. Comment from Paul Hogan (Woodard and Curran):

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.

EPA response to comments 84 - 85

EPA does not agree that a precise definition of MEP is necessary. See the draft Permit Fact Sheet pages 72 -73 for a detailed explanation. See also EPA response to comments 92 - 112

2.1. Water Quality Based Effluent Limitations

2.1.1. Requirement to Meet Water Quality Standards

86. Comment from the Town of East Longmeadow and Tighe and Bond:

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?

87. Comment from American Council of Engineering Companies of Massachusetts (ACEC/MA):

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?

EPA response to comments 86 - 87

The reference to "tributaries in some cases" in part 2.1.1 is specifically referencing requirements in part 2.2.2.a. and 2.2.2.b. of the final Permit. In these sections, EPA has identified MS4s that discharge directly to waterbodies impaired for nitrogen (2.2.2.a.) or phosphorus (2.2.2.b.) as

well as MS4s that discharge to waterbodies that are tributary to the impaired waterbodies. For more information see EPA response to comment 143.

88. Comment from the Town of Framingham:

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.

89. Comment from the City of Newburyport:

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.

90. Comment from Southeastern Regional Services Group:

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?

91. Comment from the Town of Weymouth:

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 exceedance and time of year when the exceedance 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.

EPA response to comments 88 - 91

See EPA response to comments 92 - 112. Part 2.2.2 and Appendix H of the final permit contain additional measures permittees shall comply with to address pollutants commonly found in municipal stormwater, namely: nutrients (nitrogen and phosphorus), bacteria/pathogens, chloride, solids, oil & grease (hydrocarbons), and metals (see pages 60-66 of the fact sheet for the draft Permit for a discussion of stormwater quality). EPA is aware that stormwater can contain more pollutants than the ones covered by part 2.2.2. of the permit; however the presence of other constituents is likely to be the result of a contribution from an illicit connection or other non-stormwater source not related to typical land use and should therefore be dealt with through the illicit connection program of part 2.3.4 of the final Permit. In those situations where a discharge of stormwater results in an exceedance of water quality standards due to the discharge of other stormwater constituents (not included in part 2.2.2) that cannot be resolved within 60 days, an enforcement order may be the best means for addressing the cause of the discharge. Such an approach will allow EPA to take into consideration the role of other entities in contributing to such a discharge, as well as appropriate measures to be implemented by the MS4 in that situation.

92. Comment from the Massachusetts Rivers Alliance:

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.

93. Comment from Weston & Sampson and the Town of Milford:

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.

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.

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.

94. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

95. Comment from the Conservation Law Foundation (CLF):

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 in-stream exceedance of water quality standards. See CLF 2010 Letter at 3-5; CLF 2011 Letter at 4-6.

96. Comment from the National Association of Home Builders (NAHB)

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.

97. Comment from the Home Builders & Remodelers Association of Massachusetts, Inc. (HBRAMA):

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. Longworth, 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. 86 et seq. We therefore want to re-emphasize HBRAMA's agreement with the comments by Attorney Longworth on behalf of the NAHB.

98. Comment from the Town of Bellingham:

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.

99. Comment from the Town of Dracut:

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.

100. Comment from the Massachusetts Rivers Alliance:

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.

101. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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:

- 1. may be issued on a system- or jurisdiction-wide basis;*
- 2. shall include a requirement to effectively prohibit non-stormwater discharges into the storm sewers; and*
- 3. 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.

WQBEL commentary from cover letter:

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.

102. Comment from the Town of Framingham:

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.”

103. Comment from the Cities of Springfield and Worcester, the Town of Millbury, and the Massachusetts Coalition for Water Resources Stewardship:

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 I'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. US. 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 storm water 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.

104. Comment from the Town of Shrewsbury:

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 exceedance 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 waste load 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.

105. Comment from the City of Waltham:

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 permittee to meet water quality standards to the maximum extent practicable. Furthermore, EPA lacks legal authority to render an interpretation of Massachusetts water quality standards.

106. Comment from the Massachusetts Department of Environmental Protection:

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.3d 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. 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.

107. Comment from the City of Haverhill:

Inconsistent with the Clean Water Act. The Draft Permit continues to include provisions that conflict with the limited scope of municipal storm water 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.

108. Comment from the National Association of Clean Water Agencies (NACWA):

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.

109. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

110. Comment from the CMRSC (Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, Wilbraham):

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.

111. Comment from the Town of Rowley:

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.

112. Comment from the Charles River Watershed Association (CRWA):

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 permittee 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.

EPA response to comments 92 - 112

EPA's authority to regulate stormwater

The Clean Water Act (CWA) provides statutory authority for EPA to establish the limitations included in this permit. Section 301(a) of the Act, 33 USC § 1311(a), makes it unlawful for point sources to discharge pollutants to waters of the United States except in compliance with specified sections of the Clean Water Act, including section 402. Section 402 of the Act, 33 USC

1342, authorizes EPA to issue National Pollutant Discharge Elimination System (NPDES) permits allowing discharges that will meet certain specified requirements. Section 402(p) of the Act specifically addresses stormwater discharges. Under section 402(p)(2), certain stormwater discharges require NPDES permits. Among those discharges requiring permits are discharges from municipal separate storm sewer systems (MS4s) serving populations of 100,000 or more. In addition, section 402(p)(6) authorizes EPA to designate for regulation other stormwater discharges in addition to those named in section 402(p)(2) “to protect water quality.” Under this provision, EPA designated and required NPDES permits for discharges from “small” MS4s. CWA sections 402(p)(3)(B)(ii) and (iii) and implementing regulations in 40 CFR §§ 122.26 and 122.34 require NPDES permits for stormwater discharges from MS4s to effectively prohibit non-stormwater discharges into the sewer system; and to require controls to reduce pollutant discharges to the maximum extent practicable (MEP) including BMPs, and other provisions as EPA determines to be appropriate for the control of such pollutants. This latter clause authorizes the imposition of water quality based effluent limitations. *Defenders of Wildlife v. Browner*, 191 F.3d 1159, 1166 (9th Cir. 1999). EPA also relies on 40 CFR 122.44(k) for authority to impose BMPs.

This NPDES general permit applies to small MS4s governed by regulations issued pursuant to CWA Section 402(p)(6), known as the Phase II stormwater regulations. 64 Fed. Reg. 68,722 (Dec. 8, 1999). The Phase II storm water regulations require that NPDES permits for regulated small MS4s contain conditions that require the MS4 operator to develop, implement, and enforce a stormwater management program (“SWMP”) that is designed to reduce the discharge of pollutants from the MS4 to the MEP, protect water quality, and satisfy the appropriate water quality requirements of the CWA. 40 CFR 122.34(a); see also 64 Fed. Reg. at 68,752-53. The SWMP must include the following six minimum control measures: (1) public education and outreach on stormwater impacts; (2) public involvement and participation; (3) illicit discharge detection and elimination; (4) construction site stormwater runoff control; (5) post construction stormwater management in new development and redevelopment; and (6) pollution prevention/good housekeeping for municipal operations. 40 CFR 122.34(b). The “post construction storm water management in new development and redevelopment” minimum measure includes a requirement to develop and implement a program “to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre” and requires “strategies which include a combination of structural and/or non-structural best management practices (“BMPs”) as appropriate for your community.” 40 CFR 122.34(b)(5).

Comments related to EPA’s authority to set permit limits for MS4s

Several commenters challenged EPA’s authority to set permit limitations as the Agency has done in the Final Permit. These commenters challenged EPA’s authority to require controls for contributions to stormwater discharges and the nature of those controls. One commenter attached an amicus brief related to a permit appeal in which the commenter participated, which was filed before the EPA Environmental Appeals Board in *In re: Joint Base Lewis-McChord Municipal Separate Storm Sewer System*. While the brief addressed an entirely different permit, EPA is responding to the points made in the brief concerning regulation of stormwater flows, impervious surfaces, and mandating retention requirements as comments on the Draft Permit.

One commenter stated that in the settlement after the Construction and Development Effluent Limitation Guidelines rulemaking, EPA agreed to modify best management practice mandates to ensure that they related directly to the discharge of pollutants from point sources to Waterswaters of the United States, and that the Draft Permit includes BMPs that do not relate to such discharges. EPA notes that the relevance of this comment is limited to the applicability of this permit. The effluent limitations established in this permit are all directly related to the reduction of pollutants from the MS4's discharges to waters of the U.S. Under this permit, the only entities to be permitted are regulated small MS4s, as defined in 40 CFR 122.26(b)(16) and 122.32(a), that are eligible for coverage, as specified in the permit in parts 1.1 and 1.2. Small MS4s are point source dischargers and are subject to the statutory and regulatory requirements articulated above. This general permit requires each permitted MS4 to institute controls to reduce pollutants in the MS4's discharge. Pollutants discharged from the MS4 are to be reduced by controls that limit the contribution of pollutants to the MS4. In other words, the requirements in the permit for MS4s to reduce pollutant contributions from other sources, such as construction site stormwater, relate directly to discharges from the MS4s themselves.

Moreover, under this NPDES general permit, permittees are required to comply with various effluent limitations that are directly related to the discharge of pollutants to surface waters. Compliance with this permit will significantly reduce the amount of sediment and other pollutants (e.g., nutrients, bacteria, metals, chloride, oil and grease, and other toxic and nonconventional pollutants) discharged from MS4s. See also Fact Sheet Section II.

Some comments questioned EPA's selection of the BMPs in the Draft Permit and the appropriateness of including BMPs in stormwater permits. The Phase II regulations expressly recognize that "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 maximum extent practicable) and to protect water quality." 40 CFR 122.34(a). Additionally, 40 CFR 122.44(k)(2) expressly authorizes BMPs to control or abate the discharge of pollutants when authorized under section 402(p) for the control of stormwater discharges. In this case, EPA has determined that the BMPs in this permit are reasonably necessary to carry out the purposes and intent of the CWA. See also Fact Sheet Section II.D.

Comments on flow, imperviousness, and retention requirements

Some commenters argued that the permit regulates "flow" rather than pollutants, and that only pollutants may be controlled by a NPDES permit. Commenters stated that the draft permit "impermissibly attempts to regulate stormwater flow, impervious cover and mandate on-site stormwater retention 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." See comments from National Association of Homebuilders and Homebuilders and Remodelers Association of Massachusetts. These comments mischaracterize the requirements of this permit in that the permit does not specifically limit stormwater flows or impervious cover. The permit does, nevertheless, recognize that an effective means to control stormwater is for MS4s to address the volume of discharged stormwater through the reduction of impervious cover.

Some commenters stated that EPA lacks authority to regulate stormwater flow based on *Virginia Department of Transportation v. U.S. Environmental Protection Agency*, 2013 U.S. Dist. LEXIS 981 (E.D.Va. Jan. 3, 2013) (“Accotink”). They stated that EPA cannot use flow as a surrogate, regulate impervious surfaces, or mandate on-site retention. EPA disagrees with commenters’ characterization of the Accotink case and its applicability to this permit, since that case relates to a different statutory provision. The Accotink decision struck down a TMDL that expressed a load allocation and wasteload allocations for sediment in terms of stormwater flow rate based on EPA’s view that the flow rate from storm events served as a surrogate for sediment pollutant loads. The court held that this was not authorized because the statutory section authorizing TMDLs, CWA Section 303(d)(1)(C), specifically requires the setting of a total maximum daily load “for those pollutants which the Administrator identifies . . . as suitable for such calculation.” Since the court’s decision turned on the specific language of Section 303(d)(1)(C), it has no bearing on EPA’s authority to regulate “stormwater discharges,” as expressly required under CWA Section 402(p)(6), or to require various types of controls under CWA Section 402(p)(3)(B)(iii).

Three provisions in the Clean Water Act and their implementing regulations in 40 CFR Part 122 provide authority for including requirements to limit stormwater discharges. Section 402(p)(1) specifically authorizes and requires NPDES permits for certain “discharges composed entirely of stormwater,” recognizing that all stormwater contains pollutants. Section 402(p)(3)(B)(iii) specifically authorizes the inclusion of various types of controls, including “management practices” and “control techniques” to reduce the discharge of pollutants to the maximum extent practicable, and further authorizes “such other provisions as the Administrator or the State determines appropriate for the control of such pollutants.” This places substantial discretion with the permitting agency to determine what controls are necessary, including controls such as the retention requirements at issue here. Further, section 402(p)(6), under which small MS4s are regulated, authorizes EPA to designate “stormwater discharges . . . to be regulated to protect water quality and [to] establish a comprehensive program to regulate such designated sources.” In EPA’s view, a comprehensive program can include limitations on the volume of stormwater discharged. Therefore, under section 402(p), there are three bases for limitations on the volume of stormwater to reduce pollutants discharged by an MS4.

In issuing the Phase II stormwater regulations to implement these statutory requirements, EPA echoed the statutory provisions concerning the inseparability of stormwater discharges and the constituent pollutants contained in those discharges. See 40 CFR 122.30(c). EPA’s permitting requirements thus comprehensively address discharges of stormwater and reduce pollutant loads through provisions for small MS4s to, inter alia, eliminate illicit discharges, and reduce contributions from construction and development and from municipal operations. See 40 CFR 122.34.

The permit does not include requirements regulating flow or impervious cover, but does include retention requirements. The purpose of the retention requirements in the Final Permit is to reduce pollutant discharges from the permitted MS4s to the maximum extent practicable in accordance with the statute and regulations. As noted above, Section 402(p)(3)(B)(iii) of the CWA lists a variety of ways for MS4 permits to regulate the discharge of pollutants in stormwater, including “management practices, control techniques and system, design and engineering methods,” and further authorizes “such other provisions as the Administrator or the State determines appropriate for the control of such pollutants.” See also 40 CFR 122.34(a). The

retention standards in the permit are consistent with this statutory provision authorizing the imposition of practices for reducing the discharge of pollutants. For this permit, EPA determined that retention requirements are appropriate based on post construction stormwater retention requirements already being implemented in Massachusetts and in neighboring states. See also Fact Sheet to the Draft Permit pp 86-92 and EPA response to comments 609 to 664.

Other MEP comments / differences between 2003 MS4 permit and 2016 Permit

EPA received other comments concerning the validity of the effluent limitations in the permit. One commenter stated that the Draft Permit was more stringent than the MS4 permit issued for Massachusetts in 2003 ("2003 MS4 Permit").

EPA agrees that this permit includes requirements that were not included in the 2003 MS4 Permit. As with any permit reissuance, the Agency is required to evaluate the best available information at the time of reissuance and determine whether additional limitations are necessary to meet the requirements of the CWA. "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 FR 68754. As noted in the Fact Sheet, "[p]ractices that were considered MEP under the MS4-2003 permit may no longer meet that standard and must be improved or expanded based on changed conditions." Fact Sheet, p. 72. EPA has reviewed MS4 data collected over the last permit term (since the 2003 MS4 Permit was issued) and is strengthening the permit conditions in this permit to reflect EPA's determination of the current maximum "practicable" pollutant reductions. Again, as noted in the Fact Sheet, "[t]he MEP provisions in this permit reflect the approach of building on the existing programs of the 2003 permit with additional requirements that EPA believes are practicable and satisfy the MEP statutory requirement." Fact Sheet, p. 73. Fact sheet section II.D.4 provides the rationale for the MEP provisions included in this permit and how each of those compared to the 2003 MS4 Permit.

Comments related to EPA's authority to include WQBELs

Several commenters questioned EPA's authority to include water quality based effluent limitations (WQBELs) in this permit. In *Defenders of Wildlife v. Browner*, the court explained that CWA Section 402(p)(3)(B)(iii) allows a permitting authority the discretion to require less than strict compliance with state water quality standards as well as the "authority to determine that ensuring strict compliance with state water quality standards is necessary to control pollutants." *Defenders of Wildlife v. Browner*, 191 F.3d 1159, 1166 (9th Cir. 1999). Thus, whereas the NPDES permitting authority must include provisions that reduce the MS4's discharge of pollutants to the MEP, it may also include additional provisions that ensure compliance with state water quality standards where necessary to control pollutants. Consistent with the *Defenders of Wildlife* decision, EPA has previously stated that, where the NPDES permitting authority determines that MS4 discharges have the reasonable potential to cause or contribute to a water quality standard exceedance, the permitting authority should "exercise its discretion" to include the necessary requirements to meet water quality standards. See Revisions to the November 22, 2010 Memorandum "Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs"

(November 26, 2014) (“2014 Guidance”), page 4. Available at http://www.epa.gov/sites/production/files/2015-10/documents/epa_sw_tmdl_memo.pdf.

One commenter stated that “EPA lacks authority to render an interpretation of Massachusetts water quality standards.” See comment from the City of Waltham. In addition to its responsibility to approve or disapprove state water quality standards when they are promulgated (see 40 CFR Part 131), EPA, in its role as the NPDES permitting authority for Massachusetts, issues permits that implement state water quality standards, as discussed above. In this permit, EPA has exercised its discretion under CWA section 402(p)(3)(B)(iii) to establish appropriate controls in accordance with federal NPDES stormwater regulations and Massachusetts water quality standards. See Fact Sheet p. 27. Further, as provided in 40 CFR 122.34(a), a permit for small MS4s will “require at a minimum . . . a stormwater management program designed to reduce the discharge of pollutants to the MEP, to protect water quality, and to satisfy the water quality requirements of the Clean Water Act” (emphasis added). Consistent with these authorities, as the NPDES permitting authority for Massachusetts, EPA properly considered the state’s water quality standards when setting effluent limitations in this permit. Moreover, under CWA section 401, Massachusetts has certified that the final permit complies with state water quality standards.

Some commenters recommended removing the WQBELs included in the Draft Permit from the Final Permit. In exercising its discretion as the permitting authority, consistent with the holding in *Defenders of Wildlife v. Browner*, EPA has determined that it is necessary to include WQBELs in this permit in order to ensure that discharges from the permitted MS4s do not cause or contribute to exceedances of state water quality standards. Fact Sheet II.D.1.a. Moreover, the 2003 permit included WQBELs, and it would be inconsistent with antibacksliding provisions of the CWA to now withdraw such provisions from this permit.

EPA’s 2014 Guidance is instructive on EPA’s overall current approach to including WQBELs in MS4 permits. “Where the NPDES authority determines that MS4 discharges have the reasonable potential to cause or contribute to a water quality standard excursion, EPA recommends that the NPDES permitting authority exercise its discretion to include clear, specific, and measurable permit requirements and, where feasible, numeric effluent limitations as necessary to meet water quality standards.” 2014 Guidance at 4. Additionally, “NPDES authorities have significant flexibility in how they express WQBELs in MS4 permits WQBELs in MS4 permits can be expressed as system-wide requirements rather than as individual discharge location requirements such as effluent limitations on discharges from individual outfalls. Moreover, the inclusion of numeric limitations in an MS4 permit does not, by itself, mandate the type of controls that a permittee will use to meet the limitation.” *Id.* at 4-5. As discussed below, this is the approach EPA has taken in establishing WQBELs for MS4s covered by this Final Permit.

When determining the appropriateness of WQBELs in an MS4 permit, 40 CFR 122.44(d) provides a framework for determining where additional limitations are needed to protect water quality and a framework for setting appropriate water quality-based effluent limitations in the permit. Commensurate with the approach for developing WQBELs in 40 CFR 122.44(d)(1), this permit includes requirements “necessary to achieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality.” Specifically, this permit includes limitations that “control all pollutants or pollutant parameters which . . . are or may be

discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.” See 40 CFR 122.44(d)(1)(i).

The Final Permit includes requirements to ensure that the permitted MS4 discharges will not cause or contribute to exceedances of water quality standards. As discussed below, EPA has determined that, if they were not subject to the WQBELs in the Final Permit, the specified small MS4 discharges would cause or contribute to exceedances of water quality standards. See Fact Sheet pp. 59 - 72 and discussion below. Thus, this permit includes clear, specific, and measurable requirements for meeting water quality standards with respect to those MS4s. Moreover, the permit addresses situations where those conditions change, both by setting requirements for when a permittee becomes aware that a discharge is, in fact, causing or contributing to an impairment and by relieving permittees of additional requirements when EPA agrees that an MS4’s discharges are no longer causing or contributing to an impairment or that no additional stormwater controls are necessary. See Appendices F and H.

The WQBELs in this final permit are found in Parts 2.1 and 2.2 and Appendices F and H. Part 2.1.1.a requires MS4s subject to the permit to “reduce the discharge of pollutants such that the discharges from the MS4 do not cause or contribute to an exceedance of water quality standards.” For permittees discharging into water quality limited waters, compliance with the requirements of Part 2.1.1.b or Part 2.1.1.c is deemed to be compliance with Section 2.1.1.a. Part 2.1.1.b, which addresses discharges into waters for which EPA has established or approved an applicable TMDL, states that “(a) permittee’s compliance with all applicable requirements and BMP implementation schedules in Appendix F will constitute compliance with part 2.1.1.a of the permit.” Part 2.1.1.c includes similar provisions for discharges to water quality limited waters for which there is no applicable TMDL. Part 2.1.1.c states that “(a) permittee’s compliance with all applicable requirements and BMP implementation schedules in Appendix H will constitute compliance with Part 2.1.1.a of the permit.” Where an MS4 is discharging pollutants which cause or contribute to an exceedance of water quality standards and the MS4 is not subject to the requirements of Parts 2.2.1 or 2.2.2, and the exceedances are not the result of an illicit discharge, Part 2.1.1.d requires that the MS4 eliminate or reduce the discharge of such pollutants as expeditiously as possible, but no later than 60 days after becoming aware of the situation, so as to no longer cause or contribute to an exceedance of water quality standards. The WQBELs established in the permit address exceedances of water quality standards based on information available at the time of permit issuance and, when applicable, on information that becomes available after the permit is issued.

A comment on the provisions of part 2.1.1 in the draft permit stated that EPA should “reinstate the language from the 2010 and 2011 draft permits at part 1.3(K), and expressly stating that “the permit does not allow discharges that cause or contribute to instream exceedances of WQS.” This comment overlooks the fact that both of the predecessor draft permits, the 2014 draft permit, and this final permit all included provisions that the permittee may not cause or contribute to an exceedance of water quality standards, which is nearly an identical requirement. See part 2.1.1.a. The commenter fails to explain why part 2.1.1.a, as included in the final permit, is not sufficient.

Several commenters stated that EPA should remove the final sentences of parts 2.1.1.b and 2.1.1.c and the entirety of part 2.1.1.d. One commenter added that these provisions would

“create a hurdle to citizen enforcement of WQS violations from individual discharges.” Other commenters stated that compliance with the requirements of the permit should not serve as a “shield” to citizen enforcement. Commensurate with 40 CFR 122.44(d), it is the responsibility of the Permitting Authority when developing a permit, to determine, not only where WQBELs are needed in a permit, but also what additional requirements are necessary to be implemented by a permittee in order to meet water quality standards. It is EPA’s view that parts 2.1.1.b and 2.1.1.c, as discussed below, provide a clear set of requirements (as specified in Appendix F and Appendix H of the final Permit) that are necessary to ensure the dischargers will not cause or contribute to WQS exceedances. Section 402(k) of the CWA provides that compliance with an NPDES permit constitutes compliance with, inter alia, section 301 of the CWA. Section 301(a) provides that compliance with section 402 (among other provisions) is an exception to the prohibition against discharge of a pollutant. Because section 2.1.1 of the Final Permit is issued under and implements the requirements of section 402(p)(3)(B)(iii), compliance with its provisions and other permit terms constitutes compliance with the CWA. Under these circumstances, the permit accurately and reasonably states that compliance with parts 2.1.1.b and 2.1.1.c constitute compliance with the CWA. As explained below, no shield is provided for measures taken to address exceedances required by paragraph 2.1.1.d.

The NPDES regulations require small MS4s to “comply with any more stringent effluent limitations in your permit, including permit requirements that modify, or are in addition to, the minimum control measures based on an approved total maximum daily load (TMDL) or equivalent analysis.” 40 CFR 122.34(e)(1). In addition, EPA’s 2014 Guidance references section 122.4(d)(1)(vii)(B) and states the Agency’s position that “(W)here a state or EPA has established a TMDL, NPDES permits must contain effluent limits and conditions consistent with the assumptions and requirements of the WLAs in the TMDL.” 2014 Guidance at 6. For MS4s covered by this permit, where TMDLs evaluated the contribution of stormwater discharges to the impairment, this permit includes specific requirements that are informed by the load or wasteload allocations in the approved TMDLs and are designed to address pollutants of concern in an appropriate manner consistent with the design and level of specificity of the TMDL. See Part 2.1.1.b and Appendix F. In addition to satisfying the requirements of section 122.34(e), the approach taken in this permit is also commensurate with 40 CFR 122.44(d)(1)(vii)(B).

Some commenters appear to misunderstand the relationship between TMDLs and permits. TMDLs include wasteload allocations (WLAs) for point sources (and load allocations for other sources), but TMDLs do not themselves prescribe effluent limitations or other permit requirements. Thus, this permit does not impose overlapping requirements where TMDLs have been completed and approved.

TMDLs have been completed for certain waters that receive MS4 discharges covered by this permit, as specified in part 2.2.1 and Appendix F. These TMDLs specifically identify stormwater discharges as contributing to impairments addressed by these TMDLs and include wasteload and/or load allocations for pollutants in stormwater discharges. Where such TMDLs have been established or approved by EPA, part 2.1.1.b of the final permit requires compliance with limitations designed specifically to address each of the MS4 discharges into the impaired waters or generally to address the contribution made by each discharger, as specified in part 2.2.1 and Appendix F of the final permit. As detailed in the final permit, these limitations are specifically tailored for different receiving waters and different pollutants or classes of pollutants, to the extent that applicable data were available. These limitations vary depending on the information

available in each of the applicable TMDLs. See final permit parts 2.1.1.b and 2.2.1, and Appendix F. For example, the Lower Charles River Basin and Upper/Middle Charles River TMDLs for phosphorus contain detailed information on phosphorus loading by land use type and assign numeric relative phosphorus reductions by land use type as part of the waste load allocation. EPA used refined estimates of phosphorus loading data by land use type to develop specific numeric phosphorus reduction requirements for each permittee in the Charles River watershed. See Attachment 1 to the Response to comments and the Fact Sheet to the Draft Permit part D.2. In contrast to the Charles River TMDLs, the bacteria and pathogen TMDLs identify stormwater as a source of bacteria and/or pathogens but do not contain specific numeric pollutant loads for stormwater sources. Thus, in this permit, the requirements focus on the removal of illicit connections and implementation of non-structural BMP controls for bacteria/pathogen reductions, rather than setting specific bacteria and pathogen percent reduction requirements. See Appendix F and the Fact Sheet to the Draft Permit part D.2.

For certain pollutants, where there is an impaired water, but no applicable TMDL at the time of permit issuance, this permit establishes limits in the form of specific BMPs to address those impairments, in parts 2.1.1.c and 2.2.2, and Appendix H. Part 2.2.2 specifically identifies a number of MS4s that discharge to waters impaired due to nitrogen and phosphorus. However, any of the permitted MS4s may be discharging to a receiving water that is impaired for one of the pollutants identified as covered by paragraph 2.1.1.c. This provision covers a very specific set of pollutants: nitrogen, phosphorus, certain metals (cadmium, copper, iron, lead and zinc), solids, bacteria/pathogens, chloride, and oil and grease (hydrocarbons). These are ubiquitous pollutants commonly found in municipal stormwater discharges. See Fact Sheet to the Draft Permit pp. 59 - 66. Therefore, where a receiving water is impaired for one or another of these pollutants, it is reasonable to determine that an MS4 discharge to that receiving water will be causing or contributing to the impairment. Because these pollutants are so ubiquitous, the permit does not require their elimination in MS4 discharges, but rather requires MS4s subject to these requirements to take reasonable measures to reduce those pollutants in their discharges. The measures vary from one pollutant type to another, because they are generated by different types of activities, and thus the measures required are specifically tailored to the reduction of those pollutants. Further, the permit allows permitted MS4s to select the BMPs they choose to implement to meet those requirements. The permit requires permitted MS4s to identify those locations where they are discharging to water quality limited waters, in order to determine when they must comply with the applicable permit conditions.

Part 2.1.1.d addresses what is required of a permittee if the MS4 becomes aware that it is discharging a pollutant that is causing or contributing to a violation of water quality standards but is not subject to the requirements of parts 2.1.1.b, 2.1.1.c, and 2.2.2 and is not an illegal discharge subject to the requirements of part 2.3.4 of the permit. In that case, "the permittee shall, as expeditiously as possible, but no later than 60 days of becoming aware of the situation, reduce or eliminate the pollutant in its discharge such that the discharge meets applicable water quality criteria." Part 2.1.1.d. Because pollutants not covered in part 2.1.1.c are not expected to be found in stormwater in amounts that would cause or contribute to an exceedance, such discharges are not likely to occur except in unusual circumstances. If such a circumstance does arise, the discharge would violate 2.1.1.a, and part 2.1.1.d instructs the permittee as to the immediate steps it must take. Commenters suggested elimination of the 60-day period. However, the 60-day time frame does not excuse the violations. Rather it puts the permittee on notice of EPA's expectations to address the violations as expeditiously as possible, and EPA

would consider the permittee's compliance with 2.1.1.d in weighing whether any enforcement action is warranted.

EPA disagrees with a commenter who stated that EPA is requiring MS4s to do a reasonable potential analysis. As discussed above, EPA is only imposing WQBELs in this permit to the extent that there has been a determination that an MS4 is discharging to impaired waters and is causing or has a reasonable potential for causing or contributing to the impairment (i.e., the violation of water quality standards), and when the MS4 becomes aware or should be aware (as the result of a section 303(d) listing, for example) of such determination. The permit does not require permitted MS4s to make that determination themselves, nor does it in any other way impose a burden on permittees to conduct reasonable potential analyses. A permittee may become aware of an exceedance of water quality standards in various ways, including as the result of a listing on the section 303(d) list, or as a result of monitoring done by EPA, by another entity (e.g., the Commonwealth of Massachusetts), or by the MS4 itself. However, it is only once an MS4 is made aware that a discharge of pollutants is causing or contributing to an exceedance of a water quality standard, that the permittee must take appropriate measures to limit the discharge of such pollutants, as required by part 2.1.1.c, or to eliminate the cause of the exceedance, as required by 2.1.1.d.

In setting the WQBELs for the permit, EPA has chosen to allow relief from the requirement to implement additional measures to address water quality, as required by parts 2.1.1.b and 2.1.1.c, and Appendices F and H, when EPA agrees that an MS4's discharges are no longer causing or contributing to an exceedance. The permit provides for three possible scenarios, as appropriate, that can result in such a decision, as follows: (1) where waters are subject to a TMDL, and the TMDL has been modified, revised, or withdrawn, and EPA has approved a new TMDL that indicates that no additional controls for stormwater are necessary for the permittee's discharge based on the wasteload allocation; (2) where the receiving water (and, as applicable, downstream segments) is determined to be no longer impaired; and (3) where the permittee's discharge is determined to be below applicable water quality criteria. In such instances, the permitted MS4 is relieved of the requirement to implement any measures beyond those required to be implemented prior to the date of the decision in the applicable scenario, but must continue to implement any measures required before that date.

Comments related to EPA's use of certain TMDLs

EPA received some comments concerning the TMDLs that were used to derive the WQBELs in this permit. Some commenters raised issues concerning public participation in prior TMDL development processes in Massachusetts and neighboring states. Some commenters questioned the validity of the TMDLs and did not think that permit limits based on Massachusetts TMDLs should "be utilized for NPDES permitting at all, let alone be a primary focus of a MS4 general permit." See comment from the Cities of Springfield and Worcester and the Massachusetts Coalition for Water Resources Management. See also comments from Town of Millbury, Massachusetts Department of Environmental Protection, and Rhode Island Department of Environmental Management and Response to Comments to Appendix F.

This permit does not reopen any TMDL for comment or modification. EPA encourages municipalities to undertake monitoring during the permit term and submit the resulting data to

Mass DEP. EPA could then take these data into consideration for the next permit term or Mass DEP could use these data to reconsider WLAs in future TMDL modifications.

Comments related to the approval process for the TMDLs reflected in the permit are outside the scope of the permit. The TMDL development process includes public participation described at 40 CFR 130.7(c)(1)(ii), 130.7(d)(2). Further, the permit requirements for permittees discharging into waters affected by out of state TMDLs are the same as the requirements for discharging into any other water with a TMDL covered by Appendix H. In any case, the public has had ample opportunity to comment on the permit conditions and any underlying issues related to assumptions of the TMDLs during the development of this permit.

One commenter asserted that TMDLs developed in the early 2000s would not have anticipated their applicability to stormwater discharges. EPA notes that some TMDLs have considered stormwater contributions, and some specifically included stormwater in wasteload and load allocations. As discussed above, the WQBELs in the Final Permit have been carefully designed to reflect the quality and specificity of the information provided in the relevant TMDLs, and include measures specific to the types of pollutants and the sources that cause them to be introduced into the permitted MS4 discharges.

113. Comment from the City of Manchester (NH):

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 inter-jurisdictional 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.

EPA response to comment 113

EPA agrees with the commenter that pollution causing impairments to waterbodies can come from many sources. A permittee is only responsible for their discharges and not those of the other sources. At any point, any person or organization can petition EPA to designate a source as requiring an NPDES permit to discharge stormwater under 40 CFR 122.26(f)(2). However, the commenter also seems to be referring principally to the TMDL process; for more information on TMDLs in Massachusetts, please see:

<http://www.mass.gov/eea/agencies/massdep/water/watersheds/total-maximum-daily-loads-tmdls.html>.

See EPA response to comments 92 - 112.

114. Comment from the Connecticut Fund for the Environment (CFE) – Save the Sound and Save the Bay:

Specific Recommendations: 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 3 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.

EPA response to comment 114

In general, EPA agrees with the commenter that "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." Indeed, this Permit contains requirements and milestones for pollutant reductions through a retrofit program where pollutant load reduction targets are warranted through the evaluation conducted commensurate with applicable TMDLs, as in all the examples the commenter identifies above (see pp 31-49 of the fact sheet to the draft Permit). EPA has also included compliance schedules to meet pollutant reduction requirements where necessary and it is unclear why the commenter believes there are no "specified timeframes" for pollutant reduction targets. While the permit requirements of Appendix F do not contain impervious cover reduction targets, the permit contains pollutant load reduction targets for each permittee where the TMDL analysis warrants such a requirement. The Permit also contains accounting methodology for estimating pollutant load reductions through the use of green infrastructure, and impervious cover disconnection or removal (see Attachment 1 to the fact sheet for the draft Permit). EPA has tailored each section of Appendix F and Appendix H to deal with specific TMDLs and specific pollutants found in stormwater. It is EPA's view that the requirements of Appendix F and Appendix H are clear and enforceable and when implemented will result in a decrease of pollutant loads delivered to receiving water bodies. See EPA response to comments 92 - 112.

115. Comment from the Town of Dedham:

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.

EPA response to comment 115

See EPA response to comments 92 - 112, and EPA response to comments 1130 - 1144.

2.1.2. Increased Discharges

116. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

117. Comment from the Massachusetts Coalition for Water Resources Stewardship:

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.

118. Comment from Weston & Sampson:

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 antidegradation provisions via pollutant load reductions in other areas of the same watershed (instead of prohibiting the increased discharge altogether).

119. Comment from the Town of Canton:

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, it 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.

120. Comment from the Norton Conservation Commission:

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.

121. Comment from the Town of Winchester:

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 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. 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.

122. Comment from the Massachusetts Department of Transportation:

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 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.

123. Comment from the Town Maynard:

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. 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.

124. Comment from the Massachusetts Rivers Alliance:

This section notes that any increased discharges must be authorized under the Massachusetts antidegradation 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.

125. Comment from 495 Metro West Partnership:

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.

126. Comment from the Town of Milford:

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).

127. Comment from the Town of Millbury:

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.

128. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

129. Comment from the City of Newburyport:

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.

130. Comment from the City of Beverly:

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.

131. Comment from the Towns of Danvers and Westwood:

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.

132. Comment from Paul Hogan of Woodard and Curran:

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 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 anti-degradation provisions through pollutant load reductions across the regulated municipal area.

133. Comment from the Cities of Springfield and Worcester:

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.

134. Comment from the City of Quincy:

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).

135. Comment from the Town of Weymouth:

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.

136. Comment from the Town of Shrewsbury:

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.

EPA response to comments 116 - 136

See EPA response to comments 92 - 112. EPA has written this permit to meet Massachusetts state water quality standards. Antidegradation provisions at 314 CMR § 4.04 are part of the current EPA-approved water quality standards for Massachusetts. As such, this permit must require compliance with 314 CMR § 4.04 and increased discharges from MS4s remain subject to 314 CMR § 4.04. EPA recommends permittees contact MassDEP for guidance on how compliance with 314 CMR § 4.04 will affect their MS4.

With respect to increased discharges to impaired waters listed in category 5 or 4b on the most recent Massachusetts Integrated Report of waters listed pursuant to Clean Water Act section 303(d) and 305(b), EPA has determined additional guidance is necessary and appropriate. Part 2.1.2.b.ii. now contains language indicating that (unless otherwise determined) compliance with Permit parts 2.2.2 and 2.3.6, including all reporting requirements, will constitute a demonstration that the pollutant load will not increase as a result of the increased discharge. The requirements of part 2.2.2, Appendix F and Appendix H focus on decreasing pollutants found in stormwater to those waterbodies impaired due to stormwater constituents, and EPA finds that full implementation of the requirements will result in a net decrease of the pollutants of concern which the waterbodies are impaired for . In addition, the requirements of part 2.3.6 (post construction stormwater requirements) will decrease the overall pollutant loading to all receiving waters over time. EPA is aware that new development (despite meeting the requirements of part 2.3.6) may likely increase pollutant loadings slightly above what was exported from undeveloped land. However, redevelopment throughout the jurisdiction of the permittee will result in a decrease in the overall load of pollutants to receiving water bodies since the pollutant load reduction resulting from redevelopment is likely much higher than any increased load from new development (when part 2.3.6 is adhered to fully). The added language in part 2.1.2.b.ii also allows EPA, MassDEP or the permittee (if they become aware of a situation where an increased load outpaces those reductions seen by implementing 2.2.2 or 2.3.6 of the Permit) to determine that additional analysis and determination of loading is needed for any increased discharge received by the permittees MS4 system. However, until such a time when the permittee is required to (or decides on their own to) undertake additional determinations, full compliance with part 2.2.2 and part 2.3.6 is considered sufficient for the determination that increased discharges are not increasing stormwater pollutant loading to impaired waters.

Changes to Permit: Permit part 2.1.2.b.ii. has been updated accordingly

137. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, and Wilbraham:

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 like 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".

138. Comment from the City of Cambridge:

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.

139. Comment from Roger Frymire:

Please consider the City of Cambridge's comment on section 2.1.2 for increased discharges. If storm water from sewer separation is not clearly allowed, all further benefits from CSO removal thru sewer separation will be lost. Ten years ago Cambridge had a written goal of eventual city-wide separation. Myself and other residents hope an MS4 permit does not forever derail this goal.

EPA response to comments 137 - 139

Absent evidence to the contrary EPA presumes that sewer separation projects will not increase the pollutant load to the receiving water bodies. It is not the intent of this permit to stop sewer separation projects. In addition, when calculating baseline phosphorus load and the phosphorus load reduction for the City of Cambridge EPA assumed that all planned sewer separation projects were already completed, regardless of separation schedule.

140. Comment from the Town of Holden DPW:

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 11.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 anti-degradation 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 11.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.

EPA response to comment 140

EPA notes that the Fact Sheet referenced by Holden should have read "New Dischargers" not "increased discharges" and apologizes for the confusion. However, NPDES permits need to be written consistent with State water quality standards and increased discharges from the town's MS4 therefore remain subject to 314 CMR § 4.04. The town should seek guidance from MassDEP on interpreting how the antidegradation provisions in the Massachusetts water quality standards will affect Holden. See also EPA response to comments 92 - 112.

141. Comment from the Mystic River Watershed Association (MyRWA):

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.

EPA response to comment 141

EPA notes that part 2.1.2.a. states:

"Any authorization of an increased discharge by MassDEP shall be incorporated into the permittee's SWMP. If an applicable MassDEP approval specifies additional conditions or requirements, then those requirements are incorporated into this permit by reference. The permittee must comply with all such requirements."

EPA does not believe that additional documentation in the annual report is necessary.

2.2. Discharges to Certain Impaired Waters

142. Comment from Weston & Sampson and Town of Milford:

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.

EPA response to comment 142

See EPA response to comments 92 - 112, Responses to Comments for Appendices F and H, Attachment 1 to the Response to comments, Attachment 1 to the fact sheet to the draft permit and the fact sheet to the draft permit pp. 31-49. EPA disagrees with the commenter's claims about the adequacy of TMDLs that EPA has used as a basis for developing phosphorus reduction requirements in the draft permit. The commenter did not provide evidence or information to support the statements regarding "*the questionable nature of these studies.*" The TMDL development and approval process as specified in Section 303(d) of the CWA and the implementing regulations at 40 CFR 130.7 require a public review and comment period prior to submission for EPA approval; this permit does not reopen any TMDL for comment or modification. EPA Region 1 reviews each TMDL submitted for approval by MassDEP and evaluates the adequacy of the TMDL for compliance with the regulatory requirements. Each of the TMDLs identified in the draft permit and used to develop permit requirements was found through EPA's review process to satisfy all of the TMDL regulatory requirements.

Furthermore, all waterbodies identified in the draft permit for which phosphorus TMDLs have been established and approved by EPA continue to be identified as impaired due to phosphorus on Massachusetts' most recent Section 303(d) list (2014), indicating both that excessive phosphorus loading is still relevant and that phosphorus load reductions are needed.

With respect to confirming that receiving waters are impaired for inclusion of the Section 303(d) list, the time for such an analysis would be during the public comment period for the MassDEP Integrated Report. If a permittee has evidence that an impairment has been incorrectly assessed for a waterbody segment, EPA recommends the permittee submit such evidence to MassDEP to be used to make decisions regarding surface water quality assessments as required by Sections 305(b) and 303(d) of the CWA (see:

<http://www.mass.gov/eea/agencies/massdep/water/watersheds/external-data-submittals-for-the-wpp.html>).

EPA finds that, once fully implemented, the provisions of Appendix F and Appendix H will substantially reduce phosphorus in stormwater discharges. Future assessments of the water quality limited waterbodies or other information may indicate further reductions are needed in future permit terms, but given the information presently known, EPA finds these provisions are appropriate and protective of water quality. Therefore, EPA declines to incorporate the recommendations outlined in the comment letter.

143. Comment from Weston & Sampson:

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.

EPA response to comment 143

See EPA response to comments 92 - 112. It is well documented that discharges of nutrients (specifically nitrogen and phosphorus) in stormwater not only affect the point at which the discharge enters the receiving waterbody but also affect downstream waterbodies and nutrient TMDLs covered by this permit and elsewhere require nutrient reductions watershed wide; (e.g.: (USEPA, 2010) (CTDEEP, NYDEC, 2000) (USEPA, 2015) (Vadeboncoeur, Hamburg, & Pryor, 2010) (Correll, 1998) (Charles River Watershed Association, May 2011) (Mattson & Issac, 1999) (Browman, Harris, Ryden, & Syers, 1979) (Carpenter, et al., 1998)). As such, the permit contains requirements for discharges that occur upstream of nutrient impaired waterbodies, recognizing that nutrient impairments are caused by discharges directly to the impaired waterbody as well as discharges from upstream sources. For all other pollutants subject to part 2.2 of the permit, the permit contains requirements for those discharges directly to the impaired waterbody and does not contain requirements for discharges to tributary waters, unless that tributary water is also impaired or water quality limited due to a pollutant covered in part 2.2. Part 2.2. of the permit identifies which permittees have discharges upstream of nutrient impaired waterbodies as determined by EPA or an approved TMDL and are subject to additional requirements to reduce nitrogen or phosphorus from their discharges. However, the final permit contains language providing relief from the additional requirements in the event that the permittees do not have discharges to nutrient impaired waterbodies or their tributaries. In such a case, the permit requires the permittees subject to part 2.2. to document the determination that they do not discharge to a waterbody impaired due to excess nitrogen or phosphorus or a tributary of

such an impaired water in their NOI and are relieved of any additional applicable requirements upon permit authorization.

Changes to Permit: Permit part 2.2.2.a. and 2.2.2.b. have been updated accordingly

144. Comment from Weston & Sampson:

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.

EPA response to comment 144

See EPA response to comments 92 - 112. EPA agrees that permittees that discharge into waters with approved TMDLs are subject to part 2.2.1 and Appendix F and will need to achieve varying levels of reductions in phosphorus loadings. However, EPA does not agree that the non-structural BMPs will only provide up to 10% of that reduction, and the commenter does not provide evidence to substantiate that claim. As described in the Fact Sheet, the credits for non-structural BMPs are based on best available information. However, efforts continue to be underway (e.g., Chesapeake Bay Region) to further evaluate the effectiveness of various non-structural BMPs such as sweeping technologies and catch basin cleaning programs at reducing nutrient loads. Additionally, important research is underway in Wisconsin to quantify the effectiveness of varying leaf litter management programs at reducing annual nutrient loads. EPA will continue to monitor progress in these evaluations and, if warranted, revise and/or add credits and/or approaches to calculate credits accordingly in the future as new information becomes available.

The commenter also does not provide evidence to back up the claim that permittees will need to install hundreds of BMPs in order to meet their required phosphorus load reductions. EPA’s long-term performance analyses of stormwater controls shows that stormwater treatment practices are effective at achieving significant phosphorus load reductions, including when site conditions are not suitable for infiltration practices. The practices include a variety of filtering systems and gravel wetlands and their use would eliminate the need for costly pumping and other infrastructure to transport stormwater runoff large distances. Also, similar to infiltration practices, EPA expects that consideration of small design capacities would present cost effective retrofit opportunities for reducing phosphorus loads in runoff from densely developed settings.

Lastly, the requirements in Appendix F lay out a timeline that EPA finds is reasonable for addressing the requirements and assumptions of the approved TMDLs.

145. Comment from Weston & Sampson:

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.

146. Comment from Weston and Sampson, the Town of Milford, Town of Dedham and the City of Quincy:

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 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.

147. Comment from the Cities of Easthampton and Pittsfield:

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.

148. Comment from the Town of Canton and Paul Hogan (Woodard & Curran):

Appendix H-section 1.2: 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.

149. Comment from the Town of Framingham:

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.

150. Comment from the Town of Milford:

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.

EPA response to comments 145 - 150

See EPA response to comments 92 - 112, and Responses to Comments for Appendices F and H.

As EPA described in the Fact Sheet for the Draft Permit on pages 60-61, it is well documented that the pollutants identified in part 2.2.2 of the permit are major constituents of stormwater. However, EPA included language related to relief from additional requirements in Appendix H to provide permittees an opportunity to demonstrate that the stormwater discharge at a particular outfall is not causing or contributing to a water quality impairment or that the waterbody is meeting water quality standards. EPA has revised the language in Appendix H specific to each pollutant to be consistent with the goal of the requirements of Appendix H (i.e., to reduce pollutant concentrations in stormwater discharges such that they do not cause or contribute to a violation of water quality criteria). For nutrients (nitrogen and phosphorus), there are two ways to demonstrate that relief from additional requirements is appropriate for permittees, which acknowledge that nutrient impairments are not always manifested at the point of discharge but overall loading of nutrients can cause downstream impairments. As such, the language in Appendix H part I and II relies on EPA approval of a determination by MassDEP that the receiving water and all downstream receiving waters are not impaired due to nitrogen or phosphorus (e.g. a new approved section 303(d) list) or the approval of a TMDL that indicates stormwater controls are not necessary for the control of nutrients the permittee's discharges. For other pollutants, which have the potential to cause or contribute to a violation of water quality standards at the point of discharge only; i.e., bacteria/pathogens, chloride, oil and grease (hydrocarbons, metals, and solids); Appendix H parts III, IV and V contain both of the relief mechanisms discussed above and an additional option based on characterization of the permittee's discharge when it can be demonstrated that the discharge itself meets water quality criteria. Such characterization would need to contain sufficient data to evaluate the concentration of the pollutant of concern at all points of a storm hydrograph (e.g. first flush, peak runoff, and return to baseflow), as well as data to evaluate the concentration of the pollutant of concern in all seasons.

EPA believes this data collection process will be rigorous and in most cases require the use of auto samplers equipped with flow measurement to capture pollutant concentrations at all points in storm hydrographs. EPA has determined that, in the absence of other credible reference, the sampling guide provided by The National Research Council 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 (http://www.epa.gov/npdes/pubs/nrc_stormwaterreport.pdf). However, EPA has updated requirements related to relief from certain requirements and if permittees choose to undertake an outfall characterization, permittees are encouraged to work with EPA throughout the process to ensure adequate sampling. The language in Appendix H also requires that permittees continue to implement actions previously required to address the pollutant of concern after the permittee is relieved of any additional requirements. This is to ensure that the waterbody remains in compliance with water quality criteria and does not return to non-compliance as a result of the permittee's ceasing actions previously implemented to control the pollutant of concern. The goal of the Appendix H requirements is to reduce pollutant concentration in stormwater such that impaired waters achieve water quality criteria and designated uses. Any actions undertaken to control the pollutant of concern, as required by Appendix H, prior to the granting of such relief, must continue to be implemented by all permittees that receive relief from additional requirements in Appendix H to ensure the waterbody continues to meet designated uses and water quality criteria. In all cases, permittees are required to document the date they are relieved of future requirements and all actions (BMPs) implemented to comply with the requirements of Appendix H up until the date of relief. Permittees are then required to continue to implement those BMPs on the same schedules previously used for permit compliance. In addition, any structural BMP installed prior to when relief was granted needs to be maintained and replaced in accordance with manufacturer or design specifications.

Changes to Permit: Appendix H part I, II, III, IV and V have been updated accordingly

151. Comment from the Town of East Longmeadow:

(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.

152. Comment from CT River Stormwater Committee:

Ensure that TMDL or impaired water quality requirements are tied to storm flows 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.

EPA response to comments 140 - 152

In developing the tables of permittees in part 2.2, EPA included all towns with TMDL waters or water quality limited waters or tributaries to water quality limited waters (if applicable) within their town boundaries. The permit identifies which permittees are subject to the requirements under part 2.2.1 by the tables and the language below each table, e.g. part 2.2.1.b.i.1:

“Permittees that operate regulated MS4s located in municipalities listed above that discharge to

the Charles River or its Tributaries shall meet the requirements of Appendix F, part A.I with respect to the reduction of phosphorus discharges from their MS4.” However, for Parts 2.2.2.a and 2.2.2.b., if while developing their NOI, a permittee determines that all of their discharges from the regulated MS4 areas are outside of the water quality limited watershed the permittee should summarize the results of this determination in their NOI. If EPA agrees that the information provided by the permittee is accurate and demonstrates that the permittee should no longer be subject to the applicable requirements, the permittee would then be relieved from the requirements of the applicable section of part 2.2.2 and Appendix H. For example, if the permittee is listed in part 2.2.2.a.i.1 and subject to part 2.2.2.a.i and Appendix H part I, but determines that all of their discharges from the regulated MS4 areas are outside of the nitrogen impaired watershed or tributary to the nitrogen impaired watershed, the permittee would submit their determination as part of the NOI, and upon authorization, the permittee would be relieved of the requirements in part 2.2.2.a.i and Appendix H part I. See EPA response to comments 92 - 112, and Responses to Comments on Appendices F and H.

Changes to Permit: Parts 2.2.2a and 2.2.2.b of the Permit have been updated accordingly.

153. Comment from the Town of East Longmeadow:

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.

EPA response to comment 153

The tables of permittees in part 2.2 identify the MS4s subject to the applicable permit requirements. These tables were developed by EPA through review and analysis of EPA approved TMDLs and the most recent Final Massachusetts Integrated Report. MS4s with impaired waters subject to the requirements of this permit are those listed in 2.2, whether or not the permittee appears on a 303(d) list or in an approved TMDL. Other permittees may also be subject to the requirements of part 2.2.1 – 2.2.2. if they discharge to impaired waters listed in Tables F-6, F-8, or F-9 of Appendix F or discharge to a water that is found to be impaired for nutrients (Total Nitrogen or Total Phosphorus), solids (TSS or Turbidity), bacteria/pathogens (E. Coli, Enterococcus or Fecal Coliform), chloride (Chloride), metals (Cadmium, Copper, Iron, Lead or Zinc) and oil and grease (Petroleum Hydrocarbons or Oil and Grease) after this permit is issued.

154. Comment from Tighe and Bond:

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.

EPA response to comment 154:

See EPA response to comments 140 - 152, as well as EPA response to comment 153.

155. Comment from the Massachusetts Rivers Alliance:

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.

EPA response to comment 155

EPA appreciates the public support for strong stormwater protections in the new MS4 general permit, and looks forward to the future benefits of reduced pollution and improved water quality in the Commonwealth of Massachusetts.

156. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

EPA response to comment 156

See EPA response to comments 92 - 112, and Responses to Comments for Appendices F and H. Part 2.2.1 and Appendix F outlines the requirements for permittees that discharge to waters that are subject to a TMDL. These requirements do not include specific pollutant reductions in new developments or redevelopments, rather there is an overall pollutant load reduction required in the jurisdictional area within the town. The town is therefore able to decide how best to deal with the overall pollution reduction requirements outlined in part 2.2.1 and Appendix F, as well as the requirements of part 2.3.6, which will determine how new development/redevelopment is handled. At this time, EPA does not have a formal water quality trading program, and it is not a mandate that EPA or MS4s develop trading programs. EPA appreciates the Consortium's willingness to develop and pilot a trading system in Massachusetts. EPA is not discounting the possibility of a trading system in the future and sees a trading system as being not inconsistent with the permit. See also EPA response to comments 145 - 150.

157. Comment from Tighe and Bond:

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.

158. Comment from the Town of Leicester:

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?

EPA response to comments 157 - 158

See EPA response to comments 92 - 112. EPA recognizes that there will be a number of permittees subject to the requirements under both Parts 2.2.1 and 2.2.2 that may encounter overlaps between TMDL requirements and requirements for water quality limited waters. There may also be overlaps between multiple TMDLs or multiple impairments. For many permittees, these overlapping requirements will not be in the same watershed.

EPA has reviewed all of the requirements under Parts 2.2. 1 and 2.2.2[as discussed below.] Permittees that encounter overlaps may eliminate duplication whenever possible and streamline requirements according to their applicability. In general, if overlapping requirements are not in the same watershed, the permittee is likely to be subject to requirements of all applicable parts of the permit. However, permit requirements related to public education and outreach can be combined so multiple messages are not required. In addition, source identification reports may also be streamlined. All other requirements must be implemented in the impaired watershed. However, if waters with a TMDL applicable to an MS4 and waters impaired for other pollutants are located in the same watershed, the Permittee may combine all similar requirements.

Additional details related to each specific overlapping scenario are presented below.

1. Subject to part 2.2.1.b.i (Charles TMDL) and any other part under 2.2.1 or 2.2.2:
 - a. Permittee is subject to all requirements in part 2.2.1.b.i and Appendix F part A.I.
2. Subject to part 2.2.1.b.ii (Lakes & Ponds TMDL) and any other part under 2.2.1 or 2.2.2:

- a. Permittee is subject to all requirements in part 2.2.1.b.ii and Appendix F part A.II.
- 3. Subject to part 2.2.1.b.iii (Bacteria TMDL) and any other part under 2.2.1 or 2.2.2:
 - a. Permittee may combine Public Outreach and Education requirements from Appendix F part A.III with other Public Outreach and Education requirements under Appendix F or Appendix H. Permittee subject to all other requirements under part 2.2.1.b.iii and Appendix F part A.III.
- 4. Subject to part 2.2.1.b.iv (Cape Cod TMDL) and 2.2.2.b (Phosphorus Impairment):
 - a. Permittee may combine Public Outreach and Education requirements from Appendix F part A.IV with the Public Outreach and Education requirements under Appendix H part II. Permittee subject to all other requirements under part 2.2.1.b.iv and Appendix F part A.IV, and part 2.2.2.b and Appendix H part II in impaired catchments. If discharges from the Permittee's regulated areas are to impaired catchments that are subject to both part 2.2.1.b.iv and 2.2.2.b, the Permittee may combine all requirements under Appendix F part A.IV with those in Appendix H part II, and will still be subject to the non-overlapping requirements of Appendix H part II.
- 5. Subject to part 2.2.1.b.iv (Cape Cod TMDL) and 2.2.2.a (Nitrogen Impairment):
 - a. Permittee may combine Public Outreach and Education requirements from Appendix F part A.IV with the Public Outreach and Education requirements under Appendix H part II. Permittee subject to all other requirements under part 2.2.1.b.iv and Appendix F part A.IV, and part 2.2.2.a and Appendix H part I in impaired catchments. If discharges from the Permittee's regulated areas are to impaired catchments that are subject to both part 2.2.1.b.iv and 2.2.2.a, the Permittee may combine all requirements under Appendix F part A.IV with those in Appendix H part I, and will still be subject to the non-overlapping requirements of Appendix H part I.
- 6. Subject to part 2.2.1.b.v (Assabet TMDL) and 2.2.2.b (Phosphorus Impairment):
 - a. Permittee may combine Public Outreach and Education requirements from Appendix F part A.V with the Public Outreach and Education requirements under Appendix H part II. Permittee subject to all other requirements under part 2.2.1.b.v and Appendix F part A.V, and part 2.2.2.b and Appendix H part II in impaired catchments. If discharges from the Permittee's regulated areas are to impaired catchments that are subject to both part 2.2.1.b.v and 2.2.2.b, the Permittee may combine all requirements under Appendix F part A.V with those in Appendix H part II, and will still be subject to the non-overlapping requirements of Appendix H part II.
- 7. Subject to part 2.2.1.c.i (LIS TMDL) and 2.2.2.b (Phosphorus Impairment):
 - a. Permittee may combine Public Outreach and Education requirements from Appendix F part B.I with the Public Outreach and Education requirements under Appendix H part II. Permittee may also submit one Source Identification Report to

EPA covering the elements required in Appendix F part B.I.1.b.i and Appendix H part II.1.b.i for each pollutant. Permittee subject to all other requirements under part 2.2.1.c.i and Appendix F part B.I, and part 2.2.2.b and Appendix H part II in impaired catchments. If discharges from the Permittee's regulated areas are to impaired catchments that are subject to both part 2.2.1.c.i and 2.2.2.b, the Permittee may combine all overlapping requirements under Appendix F part B.I (e.g. Appendix F part B.I.1.a.i.3) with those in Appendix H part II, and will still be subject to the non-overlapping requirements of Appendix F part B.I and Appendix H part II.

8. Subject to part 2.2.1.c.ii (RI Phos TMDL) and 2.2.2.a (Nitrogen Impairment):

- a. Permittee may combine Public Outreach and Education requirements from Appendix F part B.II with the Public Outreach and Education requirements under Appendix H part I. Permittee may also submit one Source Identification Report to EPA covering the elements required in Appendix F part B.II.1.b.i and Appendix H part I.1.b.i for each pollutant. Permittee subject to all other requirements under part 2.2.1.c.ii and Appendix F part B.II, and part 2.2.2.a and Appendix H part I in impaired catchments. If discharges from the Permittee's regulated areas are to impaired catchments that are subject to both part 2.2.1.c.ii and 2.2.2.a, the Permittee may combine all overlapping requirements under Appendix F part B.II (e.g. Appendix F part B.II.1.a.i.3) with those in Appendix H part I, and will still be subject to the non-overlapping requirements of Appendix F part B.II and Appendix H part I.

9. Subject to part 2.2.1.c.ii (RI Phos TMDL) and 2.2.2.b (Phosphorus Impairment):

- a. Permittee may combine Public Outreach and Education requirements from Appendix F part B.II with the Public Outreach and Education requirements under Appendix H part II. Permittee may also submit one Source Identification Report to EPA covering the elements required in Appendix F part B.II.1.b.i and Appendix H part II.1.b.i for each pollutant. Permittee subject to all other requirements under part 2.2.1.c.ii and Appendix F part B.II, and part 2.2.2.b and Appendix H part II in impaired catchments. If discharges from the Permittee's regulated areas are to impaired catchments that are subject to both part 2.2.1.c.ii and 2.2.2.b, the Permittee may combine all overlapping requirements under Appendix F part B.II (e.g. Appendix F part B.II.1.a.i.3) with those in Appendix H part II, and will still be subject to the non-overlapping requirements of Appendix F part B.II and Appendix H part II.

10. Subject to part 2.2.2.a (Nitrogen Impairment) and 2.2.2.b (Phosphorus Impairment):

- a. Permittee may combine Public Outreach and Education requirements from Appendix H part I with the Public Outreach and Education requirements under Appendix H part II. Permittee may also submit one Source Identification Report to EPA covering the elements required in Appendix H part I.1.b.i and Appendix H part II.1.b.i for each pollutant. Permittee subject to all other requirements under part 2.2.2.a and Appendix H part I, and part 2.2.2.b and Appendix H part II in impaired catchments. If discharges from the Permittee's regulated areas are to impaired

catchments that are subject to both part 2.2.2.a and 2.2.2.b, the Permittee may combine all overlapping requirements under Appendix H part I (e.g. Appendix H part I.1.a.i.3) with those in Appendix H part II, and will still be subject to the non-overlapping requirements of Appendix H part I and Appendix H part II.

11. Subject to multiple part 2.2.2.b (Phosphorus Impairment):

- a. Permittee may combine Public Outreach and Education requirements under Appendix H part II for multiple impairments within the Regulated area. Permittee may also submit one Source Identification Report to EPA covering the elements required in Appendix H part II.1.b.i for each impairment. Permittee subject to all other requirements under part 2.2.2.b and Appendix H part II in impaired catchments.

12. Scenarios 3-11 and 2.2.2.c:

- a. Permittee may combine Public Outreach and Education requirements from Appendix H part III with other required Public Outreach and Education requirements from Appendix F and Appendix H, as applicable to the permittee. Permittee subject to all other requirements under part 2.2.2.c and Appendix H part III in impaired catchments.

In response to the specific example given in the comment from Tighe & Bond, Mendon is subject to Scenarios 1 and 3 above. It is important to note for the Town of Mendon, EPA has re-evaluated the list of communities that are required to comply with part 2.2.2.a and Appendix H part I for nitrogen impairments. Please see EPA response to comment 179. With this revision, the Town of Mendon will no longer be subject to the requirements under part 2.2.2.a and Appendix H part I. Therefore, the Town would be able to combine the Public Education and Outreach requirements under Appendix F, part III and Appendix H, part II.1.a.i.1. The Town would be subject to all other applicable requirements in the impaired catchments.

In response to the specific example in the comment from the Town of Leicester, the Town is subject to Scenario 2 and 7 above. Important to note for the Town of Leicester is that EPA has re-evaluated the list of communities that are required to comply with part 2.2.2.a and Appendix H part I for nitrogen impairments. Please see EPA response to comment 179. With this revision, the Town of Leicester will no longer be subject to the requirements under part 2.2.2.a and Appendix H part I. Therefore, the Town would be able to combine the Public Education and Outreach requirements under Appendix F part B.I and Appendix H part II. The Town would also submit one Source Identification Report covering both sets of elements under Appendix F part B.I.1.b.i and Appendix H part II.1.b.i. However, if the Town finds that there are discharges from regulated areas to waters subject to both part 2.2.1.c.i and 2.2.2.b, the Town may combine overlapping requirements.

Changes to Permit: Parts 2.2.1 and 2.2.2 of the Permit and Appendices F and H have been updated accordingly.

159. Comment from the City of Quincy:

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 to 14 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.

EPA response to comment 159

See EPA response to comments 92 - 112. According to part 2.2.2, The City of Quincy is subject to the requirements outlined in Appendix H.II.1 for phosphorus and Appendix H.III.1 for bacteria. See also Fact Sheet to the Draft Permit (pgs. 59-72). See also Response to Comments for Appendix H and EPA response to comments 1119 - 1121.

The final permit provides updated language for relief from requirements of Appendix H. See EPA response to comments 145 - 150

It is unclear what permit requirements the commenter feels are too onerous or why the commenter believes they are subject to end of pipe limits or impervious cover retrofit programs, which are not part of the permit requirements. For additional information on funding see EPA response to comments 1130 - 1144 and EPA Response to comments 1160 - 1172.

2.2.1. Discharges Subject to Requirements Related to an Approved TMDL

160. Comment from the Massachusetts Rivers Alliance:

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.

161. Comment from the Connecticut River Watershed Council (CRWC):

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.

162. Comment from the Mystic River Watershed Association (MyRWA):

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.

EPA response to comments 160 - 162

See EPA response to comments 92 - 112.

EPA disagrees with the suggestion that it should go beyond its practice in NPDES permitting, and the requirements applicable to other NPDES permits under 40 CFR § 122.44(d)(1)(vii)(B), in order to incorporate requirements to meet additional relevant TMDLs that have not been approved but may be finalized during the permit term. At each permit renewal, TMDL approvals from the previous permit term will be incorporated into the permit requirements. *Cf. In re Dominion Energy Brayton Point, LLC*, 12 E.A.D. 490, 611-18 (EAB 2006). EPA does, however, retain the authority to modify the permit during its term where necessary. See 40 CFR § 122.62.

163. Comment from the Charles River Watershed Association (CRWA):

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 permittees.

EPA response to comment 163

See EPA response to comments 160 - 162. See also EPA response to comments 92 - 112, and Response to Comments for Appendices F and H.

164. Comment from the Town of Leicester:

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.

EPA response to comment 164

See EPA response to comments 92 - 112, and Responses to Comments for Appendices F and H. The NPDES regulations at 40 CFR 122.47 allow EPA to establish schedules of compliance, when appropriate, to give permittees additional time to achieve compliance with the CWA and applicable regulations. Schedules must require compliance by the permittee “as soon as possible.” EPA’s approach in setting compliance schedules for WQBELs in MS4 permits is consistent with section 122.47. See *Revisions to the November 22, 2010 Memorandum “Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs”* (November 26, 2014) (“2014 Guidance”), page 6. Available at http://www.epa.gov/sites/production/files/2015-10/documents/epa_sw_tmdl_memo.pdf. Further, Massachusetts’ water quality standards regulations are consistent with the requirements of section 122.47. See 314 CMR 4.03(b). Based

on the rationale discussed on pages 43-46 of the MA MS4 Fact Sheet, EPA has estimated that “as soon as possible” for most permittees subject to the lake phosphorus control plan requirements will be on the order of a 15 year timeframe. Therefore, the phased implementation plan will be continued through each subsequent permit term.

165. Comment from the Town of Milford:

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).

EPA response to comment 165

EPA intends to re-evaluate all BMP removal credits and add new credits when supporting information is sufficient to support adding credits at regular intervals consistent with the five year permit reissuance cycle. Revised (i.e., updated) and new credit information shall be made available so that permittees can account for the latest credit information as they develop each phase of their PCP. Moreover, EPA plans to produce a white paper around BMP analysis for future credit refinement if resources allow, should a permittee feel that adequate credit is not being given for their BMP pollutant load reduction.

166. Comment from the Town of Leicester:

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 the work.

EPA response to comment 166

See Responses to Comments on Appendix F. As described in Appendix F, for the permittee to claim credit for non-structural BMPs, including leaf litter collection, the permittee must include a description of the control including the planned measures, the areas where the measures will be implemented, and the annual phosphorus reductions that are expected to result from their implementation in units of mass/yr, in the Phosphorus Control Plan. Annual phosphorus reduction from non-structural BMPs shall be calculated consistent with Attachment 2 to Appendix F. The permit does not include requirements to track the leaf litter collection, provided the details of the leaf litter collection plan meets those outlined in #4 of Attachment 2 to Appendix F.

If the town feels that goose waste is an issue contributing to the impairment, the Town could consider tailoring their educational messages around this and/or develop a program to manage the goose waste. In light of the impact that waterfowl may play in bacteria levels, additional requirements have been added to Good Housekeeping to require addressing waterfowl congregation areas at the discretion of the permittee. Permittees should see MassWildlife

guidance for dealing with waterfowl: <http://www.mass.gov/eea/agencies/dfg/dfw/fish-wildlife-plants/mammals/canada-geese-conflict.html>

Also, EPA recognizes that the calculations for nutrient removal are intensive and worked to address this with the examples contained in the attachments to Appendix F and Appendix H. In order to support permittees EPA plans to make available a BMP accounting and tracking tool to assist permittees with the calculations and compilation of information necessary for the permit requirements. This tool will have the equations from the attachments to Appendix F and Appendix H built in, so that permittees will be able to enter their site specific information to complete the calculations. EPA anticipates this tool will be available for pilot testing in 2016.

Changes to Permit: Permit part 2.3.7.a.ii.(a) of the Permit has been updated accordingly

167. Comment from the Town of Milford:

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?

EPA response to comment 167

EPA recognizes that many communities have already invested time and money towards voluntary implementation of BMPs. To that end, the Phase 1 Phosphorus Control Plan, as described in Appendix F A.I.a.3) Description of Phase I planned structural controls, includes both planned and existing measures. Annual phosphorus reductions from existing structural BMPs shall be calculated consistent with Attachment 3 to Appendix F.

168. Comment from the Town of North Andover:

North Andover has been listed as discharging to waterways with TMDLs for: Bacteria, Phosphorous, and Turbidity. It is unclear what documents govern the interpretation of TMDL.

EPA response to comment 168

The tables of municipalities in part 2.2.1 identify MS4s subject to the applicable permit requirements. These tables were developed by EPA through review and analysis of EPA approved TMDLs.

169. Comment from the Town of Newbury:

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?

EPA response to comment 169

According to the Final 2014 Massachusetts Integrated Report, while a number of segments in the Parker River Watershed are listed as impaired (Category 5), there are no waters in the Parker River Watershed listed as having a TMDL (Category 4A). The commenter is correct.

170. Comment from the Town of Brewster:

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.

EPA response to comment 170

See also Response to Comments for Appendix F. The commenter is correct in that the Pleasant Bay Nitrogen TMDL covers the towns of Brewster, Chatham, Harwich and Orleans, however none of the impaired segments lie within the town of Brewster, as indicted in Table F-9 of Appendix F. Therefore, EPA has updated the table in part 2.2.1 of the Final Permit to remove Brewster. However, as stated in both part 2.2.1.b.iv and Appendix F, if a permittee determines through development of their NOI that it discharges to any waterbody listed in Table F-9 or their tributaries, the permittee shall comply with the applicable requirements. With respect to the TMDL stating that stormwater is an insignificant load, EPA directs the commenter to pages 50-51 of the Fact Sheet for the 2014 Draft Permit where the nitrogen load from the Cape Cod TMDLs is discussed.

Changes to Permit: Permit part 2.2.1.b.iv has been updated accordingly.

171. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, and Wilbraham:

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.

EPA response to comment 171

See EPA response to comments 92 - 112. EPA performs cost/benefit analysis regarding promulgation of regulations, but does not perform cost/benefit analysis for permit requirements. EPA disagrees with commenter's claims regarding the TMDL reports that EPA has used as a basis for developing phosphorus reduction requirements in the draft permit as not being widely accepted. If the commenter had evidence or data that substantiated the claims made in the comment above, the time to submit such comments would have been during the public review and comment period for the TMDL. The TMDL development and approval process as specified in Section 303(d) of the CWA and the implementing regulations at 40 CFR 130.7 require a public review and comment period prior to submission for EPA approval; this permit does not reopen any TMDL for comment or modification. EPA Region 1 reviews each TMDL submitted for approval by MassDEP and evaluates the adequacy of the TMDL for compliance with the regulatory requirements. Each of the TMDLs identified in the draft permit and used to develop permit requirements were found through EPA's review process to satisfy all of the TMDL regulatory requirements.

For further discussion of provisions in the final permit that provide relief from requirements related to TMDLs, see EPA response to comment 178 and responses to comments for Appendices F and H.

EPA finds that, once fully implemented, the provisions of Appendix F will substantially reduce contaminants in stormwater discharges. Therefore, EPA declines to incorporate the recommendations outlined in the comment letter.

172. Comment from Tighe and Bond:

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.

EPA response to comment 172

EPA has updated the list of municipalities that contain waters subject to an approved TMDL for bacteria/pathogens in part 2.2.1.b.iii.1.

Changes to Permit: Permit part 2.2.1 has been updated accordingly.

173. Comment from the Town of Webster:

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 nonstructural 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.

EPA response to comment 173

See also Response to Comments on Appendix F. EPA agrees that the planning process should focus on what potential load reductions are possible and feels that this statement highlights the importance of the Nitrogen Source Identification Report, detailed in Appendix F part B.I.1.b.i. Also, it is important to note that two of the elements included in the Nitrogen Source Identification Report build upon already included permit requirements (see Appendix F part B.I.1.b.i.1 and 2). EPA also recognizes the many steps that are necessary in the development and planning of a structural BMP as a demonstration project, and is not suggesting that the permittee must wait until year 4 of the permit term to begin planning. As detailed in Appendix F part B.I.1.c, installation of additional structural BMPs beyond the demonstration project will be according to the plan and schedule provided in the year 5 annual report, allowing each permittee latitude to develop a schedule that meets their available funding and planning constraints.

EPA agrees that non-structural controls are also effective for nitrogen reductions, however non-structural controls are already incorporated in the permit requirements through the enhanced BMPs outlined in Appendix F part B.I.1.a.

174. Comment from the Town of Webster MS4:

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 rationale and authority to broadly impose nitrogen reduction requirements in unimpaired tributaries in our watershed and please revise the permit to reflect necessary changes.

EPA response to comment 174

See EPA response to comments 92 - 112. The tables of municipalities in Parts 2.2.1 and 2.2.2 identify which MS4s are subject to the applicable permit requirements. These tables were developed by EPA through review and analysis of EPA approved TMDLs and the Final 2014 MA Integrated Report. As discussed on pages 53-55 of the Fact Sheet, the LIS TMDL for nitrogen establishes both in-basin reductions and out-of-basin reductions; out-of-basin areas are considered those areas north of Connecticut. The drainage area of LIS includes the states of Connecticut, Massachusetts, Vermont, and New Hampshire. Within Massachusetts, the Connecticut River, the Housatonic River and the Thames River are tributary to LIS. The Town of Webster falls within the Quinebaug River Watershed, which is tributary to the Thames River.

175. Comment from the Southeastern Regional Services Group:

The list of TMDLs in the Draft Permit does not include the September 2014 South Coastal bacteria TMDL.

EPA response to comment 175

The Draft Permit was released for comment on September 30, 2014, and included all approved TMDLs through Sept. 1, 2014. As The South Coastal Final Bacteria TMDL was approved on Sept. 26, 2014, it has been included in the Final Permit. Part 2.2.1 and Appendix F has been updated to reflect any additional TMDLs approved since the 2014 Draft Permit was issued, along with specific requirements for those municipalities that are subject to the approved TMDLs.

Changes to Permit: Permit part 2.2.1 and Appendix F have been updated accordingly.

176. Comment from the Southeastern Regional Services Group:

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.

EPA response to comment 176

EPA agrees that the coverage date for the TMDL waters covered by the permit are as of the Date of Issuance of the final permit. This change has been made in the Final Permit.

Changes to Permit: Permit part 2.2.1 o has been updated accordingly.

177. Comments from the Massachusetts Department of Environmental Protection:

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.

EPA response to comment 177

See EPA response to comment 972.

EPA continues to find that the required level of effort associated with tracking and accounting of storm water controls and their estimated load reductions is both necessary and worthwhile considering the investment of public resources that will be expended to achieve the required phosphorus load reductions. EPA needs to ensure that a credible accounting and tracking process will be done in a consistent and equitable manner by all permittees so that the responsibility of achieving needed phosphorus load reductions will be shared fairly.

A comprehensive water quality monitoring program in each receiving water would be an additional valuable tool for evaluating, assessing, and demonstrating overall progress towards improving water quality through load reductions. However, as discussed in EPA response to comment 972, comprehensive receiving water quality monitoring programs are not likely be a practical or cost effective means for permittees to demonstrate permit compliance and accountability. EPA notes that the current level of ambient water quality monitoring conducted by MassDEP and others could be enhanced to better demonstrate overall water quality progress related to the permit. EPA is willing to work with MassDEP if MassDEP decides to develop comprehensive receiving water monitoring programs sufficient to evaluate overall progress associated with watershed load reductions and improved water quality in TMDL receiving waters.

As discussed in detail in the Fact Sheet Attachment 1 and Attachment 1 to the Response to comments, the phosphorus load reductions requirements in the permit are in fact derived from the percent reductions from the TMDL analyses. However, EPA has determined that a numeric accounting system is necessary and required to demonstrate permit compliance for achieving relative load reductions from source areas that have demonstrable different loading rates. Again, as described in the Fact Sheet Attachment 1 and Attachment 1 to the Response to comments, EPA has used scientifically valid methods and tools based on credible data, studies and analyses to calculate average annual phosphorus load rates for various source areas and long-term cumulative reduction efficiencies among control types in order to refine the baseline phosphorus loads contained in the TMDLs.

EPA's focus is not on tracking grams, as indicated by the commenter. The focus of the requirements is for permittees to track and account for load reductions achieved through the implementation of numerous controls that together will ultimately demonstrate achievement of the total *relative* mass load reductions from land use sources as determined through an analysis contained in an EPA approved TMDL. Given that stormwater controls are often implemented to treat runoff from very small drainage areas (e.g., less than an acre) and that stormwater event mean concentrations of phosphorus from impervious surfaces are typically in the range of 0.1 to 0.4 mg/L, it is simply an artifact of an accounting system and the nature of stormwater management that calculations may yield results that include tenths of kilograms (i.e., hundreds of grams). EPA finds that accounting for all reductions no matter how small will be worthwhile to permittees given the economic and technical challenges associated with implementing many controls into existing developed landscapes.

Furthermore, the tracking and accounting approach developed for the permit gives permittees access to scientifically valid information on both long-term cumulative source loading rates and performances of various stormwater control technologies. Access to this information allows permittees to make the best use of limited resources to develop and implement the most cost effective control plans that suit their community, and also to demonstrate permit compliance. An alternative permitting approach would be to have each permittee responsible for demonstrating the pollutant reduction effectiveness credit of each BMP, requiring large scale comprehensive sampling of implemented BMPs within the permittee's jurisdiction. This approach would put a large financial burden on permittees to conduct research on BMP performance to account for associated phosphorus reductions. In addition, any scientifically sound BMP performance evaluation is likely result in BMP performance estimates similar to those identified in Appendix F Attachment 3. While the commenter may be suggesting site-specific determinations of BMP removal effectiveness credits for each BMP installed within each permittee's jurisdiction, EPA does not believe it is most productive use of municipal resources to document compliance and pollution load reductions in this manner.

To further assist permittees in fulfilling the accounting and tracking requirements, EPA is developing an accounting and tracking tool for MS4s referred to as the BMP Accounting & Tracking Tool (BATT). It is anticipated that this tool will help to both standardize and facilitate the process of accounting and tracking controls and associated load reduction estimates, as well reporting to demonstrate permit compliance. It is anticipated that the tool will be ready for pilot testing in 2016.

178. Comment from the Mystic River Watershed Association (MyRWA):

MyRWA also recommends the following: 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.

EPA response to comment 178

See EPA response to comments 92 - 112, and Response to Comments for Appendices F and H. The final permit contains language providing relief from additional requirements in each part of Appendix F. Since the permit contains requirements for those discharges where TMDLs identify stormwater as a source of a pollutant of concern, these permit's relief provisions are tied to the status of the particular TMDL and the continued implementation of those controls that are in place when the TMDL status changes, rather than the results of end of pipe sampling.

Specifically, when the TMDL applicable to the receiving water has been modified, revised or withdrawn, and EPA has approved a new TMDL that indicates no stormwater controls for addressing the associated pollutant(s) are necessary for the permittee's discharge, then, based on wasteload allocations approved in the new TMDL, the permittee may be relieved from the additional requirements in Appendix F associated with the previously approved TMDL, as of the date of the new TMDL approval by EPA. The existing EPA-approved TMDL and related permit requirements remain in effect until a new TMDL is approved by EPA.

In order to be relieved from additional requirements in Appendix F, the permittee must identify in its SWMP all structural and non-structural BMPs used to date to target the pollutant of concern, as required by the applicable requirements in Appendix F, and continue to implement those controls on the same schedules to ensure that the waterbody does not slide back into non-compliance, and to account for the fact that any new TMDL development would be based on data collected during the implementation of the identified BMPs.

In the event that the replacement TMDL refines existing allocations, rather than indicating that no stormwater controls are necessary as part of the waste load allocation, the permittee would not be relieved of the applicable requirements of Appendix F, but any load reduction requirements in the permit could be refined to reflect new allocations specified in the newly approved TMDL in future permit terms. For example, a revised TMDL for phosphorus reduction requirements associated with the Charles River Watershed TMDLs might indicate that some of the phosphorus reduction requirements in the permit may no longer be necessary, and modifications to the permit conditions would be done in future permit issuances to reflect the new waste load allocations.

Changes to Permit: Applicable parts of Appendix F Parts A and B have updated accordingly

2.2.2. Discharges to Certain Water Quality Limited Waters Subject to Additional Requirements

179. Comment from Tighe and Bond:

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 4 as receiving waters in Boylston or Mendon with nitrogen as the pollutant of concern. In the response to comments, please clarify EPA's rationale 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.

EPA response to comment 179

As described in the Fact Sheet to the Draft Permit (pgs. 66-68), discharges of nutrients, specifically nitrogen and phosphorus, in stormwater affect not only the point at which the discharge enters the receiving waterbody but also affect downstream waterbodies. Therefore, in determining the list of permittees identified in part 2.2.2.a.i.1 for nitrogen, EPA reviewed the MA 2014 Integrated Report for “Total nitrogen” impairments and included the impaired waters, as well as tributaries to the impaired waters. Additionally, EPA considered all nitrogen impaired coastal waters in Massachusetts as well as those in surrounding states; the upstream watersheds impacting the impaired coastal waters were then included in the list of permittees in part 2.2.2.a.i.1. Therefore, towns in the Blackstone River watershed were included in this list, as the Blackstone River flows from its origin in Massachusetts south into Rhode Island to the Seekonk River and ultimately to Narragansett Bay, a marine water impaired for nitrogen.

However, upon receiving a number of comments regarding nitrogen impaired waters in the Blackstone River watershed, EPA conducted additional review of the analysis completed for the Upper Blackstone Water Pollution Abatement District (UPWPAD) NPDES Permit contained in the permit Fact Sheet. This analysis identifies the predominant source of the nitrogen loadings in the Providence and Seekonk Rivers as the municipal wastewater treatment facilities in Rhode Island and Massachusetts. Moreover, the analysis determined that UPWPAD was the dominant source of nitrogen loadings to the Blackstone River; stormwater and nonpoint source loadings were not considered as sources of nitrogen in the Narragansett analysis. For these reasons, EPA has removed the towns from the Blackstone River Watershed from part 2.2.2.a. of the permit. The Ten Mile River watershed was not included in the list of permittees.

Changes to Permit: Permit part 2.2.2.a has been updated accordingly.

180. Comment from the Town of Upton:

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);
- 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.

181. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, and Wilbraham:

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.

EPA response to comments 180 - 181

See EPA response to comments 92 - 112. EPA finds it is appropriate to include such additional requirements for MS4 discharges to waters that are not meeting water quality standards due to one or more of the pollutants typically found in urban stormwater runoff, as explained in the Fact Sheet to the Draft Permit (pgs. 59-72).

It is important to note for the Town of Upton that EPA has re-evaluated the list of communities that are required to comply with part 2.2.2.a and Appendix H part I for nitrogen impairments. Please see EPA response to comment 179. With this revision, the Town of Upton will no longer be subject to the requirements under part 2.2.2.a and Appendix H part I.

The final permit provides updated language for relief from requirements of Appendix H. See EPA response to comments 145 - 150.

See also EPA response to comments 140 - 152.

Lastly, the requirements in Appendix H lay out a timeline that EPA finds is reasonable for addressing complex or widespread sources of impairments in the absence of a TMDL that establishes the necessary load reductions and allocation.

182. Comment from the City of Manchester (NH):

Page 17, Section 2.2.2, Discharges to certain WQ limited waters. The second paragraph states, “If the discharge from an 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.

EPA response to comment 182

See EPA response to comments 92 - 112, and Response to Comments for Appendices F and H. The language that the commenter identifies as “the opening paragraph of Appendix H” is actually from the opening paragraph of Attachment 1 to Appendix H. Attachment 1 to Appendix H outlines the calculations to determine nitrogen loads and pollutant removals for installed BMPs. However, as correctly stated in Attachment 1 to Appendix H, there is no associated permittee-specific required nitrogen load reduction in the Draft Permit. Nevertheless, permittees that are subject to the requirements of Appendix H must comply with those requirements, including the requirement to track any structural BMPs installed, and estimate their performance using Attachment 1 to Appendix H. In sum, the permittee is required to track and estimate nitrogen load reductions, but those estimates are not associated with a particular numeric nitrogen load reduction requirement in this permit.

183. Comment from the Town of Milford:

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.

EPA response to comments 109 - 183

EPA has re-evaluated the list of communities that are required to comply with part 2.2.2.a and Appendix H part I for nitrogen impairments. Please see EPA response to comment 179. With this revision, the Town of Milford will no longer be subject to the requirements under part 2.2.2.a and Appendix H part I.

184. Comment from the Town of Shrewsbury:

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.

EPA response to comment 184

EPA has re-evaluated the list of communities that are required to comply with part 2.2.2.a and Appendix H part I for nitrogen impairments. Please see EPA response to comment 179. With this revision, the Town of Shrewsbury will no longer be subject to the requirements under part 2.2.2.a and Appendix H part I.

185. Comment from the Town of Hopkinton:

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.

EPA response to comment 185

EPA agrees that green infrastructure is an important tool for stormwater management. EPA recognizes that the work needed to satisfy the permit requirements may in some cases be beyond the expertise of municipal staff and that in many cases outside technical assistance may be beneficial. Therefore, EPA intends to provide guidance to permittees and is currently developing a spreadsheet-based BMP accounting and tracking tool (BATT) to assist permittees in completing the required calculations, tracking and accounting. The tool will be available from EPA for pilot testing in 2016.

EPA has re-evaluated the list of communities that are required to comply with part 2.2.2.a and Appendix H part I for nitrogen impairments. Please see EPA response to comment 179. With this revision, the Town of Hopkinton will no longer be subject to the requirements under part 2.2.2.a and Appendix H part I.

186. Comment from the Town of Holden DPW:

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, myriophyllum spicatum, and ambient bioassays -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 OCR 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 OCR 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 OCR 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.

EPA response to comment 186

EPA has re-evaluated the list of communities that are required to comply with part 2.2.2.a and Appendix H part I for nitrogen impairments. Please see EPA response to comment 179. With this revision, the Town of Holden will no longer be subject to the requirements under part 2.2.2.a and Appendix H part I.

187. Comment from the Massachusetts Department of Transportation:

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.

EPA response to comment 187

As part of their NOI submittal each permittee will evaluate their receiving waters to determine if the waters are impaired and will therefore determine if they are subject to the requirements outlined in part 2.2.2.d. Chloride impairments are listed in the Massachusetts Integrated Report

for the impairment “chloride.” Permittees are encouraged to use the Interactive Mapping of the most recent approved Integrated List of Waters available from MassDEP to determine impairments (<http://www.mass.gov/eea/agencies/massdep/water/watersheds/2012-integrated-list-of-waters.html>). If a permittee prefers, a GIS layer of the Integrated List of Waters is available on the MASS GIS website (<http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/layerlist.html>). EPA included tables of municipalities for phosphorus and nitrogen impairments as discharges of nutrients in stormwater not only affect the point at which the discharge enters the receiving waterbody but also affect downstream waterbodies so MS4s that discharge to waterbodies that are impaired due to excess nutrients or to their tributaries require reductions. Water quality impacts of chloride are greatest near the point of discharge and it is for this reason that only permittees discharging directly to a waterbody that is found to be impaired due to chloride are subject to additional requirements.

188. Comment from the Massachusetts Coalition for Water Resources Stewardship, the Town of Millbury, and the Cities of Springfield and Worcester:

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.

EPA response to comment 188

EPA disagrees with commenter’s claims about the adequacy of the water quality assessments conducted by the Massachusetts Department of Environmental Protection (MassDEP) that EPA has used as a basis for including water quality limited segments in the permit. As detailed in the Massachusetts Consolidated Assessment and Listing Methodology Guidance Manual (<http://www.mass.gov/eea/docs/dep/water/resources/07v5/2012calm.pdf>), when too little current data/information exist or no reliable data are available, the designated use for that water body segment is not assessed. For nutrient impairment assessment and listing, MassDEP relies on a number of indicators that represent responses to excessive nutrient enrichment rather than just one indicator. Moreover, development of Category 5, which is the “List of Impaired Waters” mandated in Section 303(d) of the CWA (the 303(d) List), includes a rigorous public review and comment process and the final version of this List must be formally approved by the EPA. EPA Region 1 reviews each 303(d) list submitted for approval by MassDEP and evaluates the adequacy for compliance with the regulatory requirements.

With respect to questioning the assessment and listing decisions made by MassDEP, the time for such an analysis would be during the public comment period for the MassDEP Integrated Report. If a permittee has evidence that an impairment has been incorrectly assessed for a waterbody segment, EPA recommends the permittee submit such evidence to MassDEP to be used to make decisions regarding surface water quality assessments as required by Sections 305(b) and 303(d) of the CWA (see:

<http://www.mass.gov/eea/agencies/massdep/water/watersheds/external-data-submittals-for-the-wpp.html>).

The final permit provides updated language for relief from requirements of Appendix H. See EPA response to comments 145 - 150.

189. Comment from the Mystic River Watershed Association (MyRWA):

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.

EPA response to comment 189

EPA appreciates the public support for strong stormwater protections in the new MS4 general permit, and looks forward to the future benefits of reduced pollution and improved water quality in the Commonwealth of Massachusetts.

190. Comment from the Mystic River Watershed Association (MyRWA):

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.

EPA response to comment 190

EPA appreciates the public support for strong stormwater protections in the new MS4 general permit, and looks forward to the future benefits of reduced pollution and improved water quality in the Commonwealth of Massachusetts.

191. Comment from the Mystic River Watershed Association (MyRWA):

MyRWA also recommends the following: 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.

192. Comment from the Massachusetts Rivers Alliance:

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.

EPA response to comments 191 - 192

EPA agrees with the comments and will use the Final 2014 Massachusetts Integrated List of Waters.

193. Comment from the Merrimack River Watershed Council, Charles River Conservancy (CRC):

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.

194. Comment from OARS Oral Testimony:

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.

195. Comment from Ipswich River Watershed Association:

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.

196. Comment from Neponset River Watershed Association:

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.

197. Comment from the Charles River Watershed Association (CRWA):

Appendix H Requirements Related to Discharges to Certain Water Quality Limited Waterbodies 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.

198. Comment from the Berkshire Environmental Action Team (BEAT), the Chicopee 4Rivers Watershed Council (C4RWC), and the Mystic River Watershed Association (MyRWA):

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.

199. Comment from the Massachusetts Rivers Alliance:

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 [Footnote: 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]. 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.

200. Comment from Conservation Law Foundation (CLF):

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.

EPA response to comments 193 - 200

EPA agrees that chloride is an important pollution problem in Massachusetts, with increasing trends of chloride use and impacts being seen throughout the area. EPA is also aware that the 303(d) and 305(b) lists do not represent an exhaustive list of those waters that may be experiencing excursions above water quality standards. However, EPA does not feel it is appropriate at this time to apply the additional chloride requirements throughout the regulated area without indication of a water quality impairment due to chloride. Unlike the impact of nutrients, where receiving waters respond to the overall annual load of nutrients received, the water quality impacts of chloride are greatest near the point of discharge.

If a chloride impairment is found to exist, Appendix H part IV.3 does include a provision for permittees to complete a Salt Reduction Plan that includes the BMPs in part IV.4 within 3 years of becoming aware of the situation and fully implement the Salt Reduction Plan within 5 years of becoming aware of the situation.

If sufficient data exists to indicate a chloride impairment EPA recommends submitting the data to MassDEP for consideration through the 303(d) listing process. See MassDEP guidelines for submittal of external data at:

<http://www.mass.gov/eea/agencies/massdep/water/watersheds/external-data-submittals-for-the-wpp.html>. Alternatively, the commenter could submit the relevant data to the permittee to make them aware of the impairment.

201. Comment from the Towns of Chicopee, Granby, Beckett, and the Tri-County Highway Superintendents Association:

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.

EPA response to comment 201

EPA recognizes the use of deicing chemicals during the winter season is for public safety and is not imposing requirements that would completely stop the use of salts as the preferred deicing agent. Rather, the requirements found in Appendix H part IV focus on reducing the amount of chloride applied to various sources (state roads, town roads, parking lots, storage, etc.) through the use of calibration, low salt zones, application rate standards and other BMPs designed to reduce the amount of road salt applied without compromising public safety.

202. Comment from OARS Oral Testimony:

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.

EPA response to comment 202

EPA appreciates the public support for strong stormwater protections in the new MS4 general permit, and looks forward to the future benefits of reduced pollution and improved water quality in the Commonwealth of Massachusetts

203. Comment from Cape Cod Commission:

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.

EPA response to comment 203

Due to the number of unassessed waters in Massachusetts, EPA recognizes that the 303(d) and 305(b) lists do not represent an exhaustive list of waters that may be experiencing excursions above water quality standards. EPA is also aware of the MEP Technical reports and the water quality analyses contained within the reports for estuaries and waterbodies on Cape Cod; however, EPA is not able to conduct an exhaustive search of all available data and analyses for consideration in this permit. If sufficient data exists to indicate an impairment EPA recommends submitting the data to MassDEP for consideration through the 303(d) listing process. See MassDEP guidelines for submittal of external data at:

<http://www.mass.gov/eea/agencies/massdep/water/watersheds/external-data-submittals-for-the-wpp.html>. Alternatively, the commenter could submit the relevant data to the permittee to make them aware of the impairment. A permittee that becomes aware that it discharges to a waterbody impaired for nitrogen would then be subject to the requirements in Appendix H (see part 2.2.2.a.i.2.). As Watershed Permits do not yet exist for Massachusetts, it is not clear how stormwater management efforts in these watersheds would be applied.

204. Comment from Jennifer Doyle-Breen:

I have noticed that there are Cape Cod municipalities that have a Nitrogen Related Water Quality Impairment (often Estuarine Bio-assessments) 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.

EPA response to comment 204

In determining the list of permittees identified in part 2.2.2.a.i.1, EPA reviewed the MA 2014 Integrated Report for "Total nitrogen" impairments and included the impaired waters. Nitrogen related water quality impairments such as "estuarine bioassessments" were not considered as there is no clear link in the 303(d) list or in published literature linking estuarine bioassessment to nitrogen impairments. Additionally, EPA considered all nitrogen impaired coastal waters in Massachusetts, and included the upstream watersheds impacting the impaired coastal waters in the list of permittees in part 2.2.2.a.i.1. Therefore, the listed permittees in the Table in Section 2.2.2.a.i reflect the Cape Cod towns with "total nitrogen" impairments or those tributary to "total nitrogen" impaired coastal waters without a related TMDL.

205. Comment from the Town of Framingham:

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.

EPA response to comment 205

Due to the number of unassessed waters in Massachusetts, EPA recognizes that the 303(d) and 305(b) lists do not represent an exhaustive list of waters that may be experiencing excursions above water quality standards. Therefore, EPA chose to define "water quality limited water body" as explained in the comment above in order to capture waters that may be experiencing excursions above water quality standards but have not yet been assessed by MassDEP. The absence of a water being listed as "impaired" pursuant to Section 303(d) of the Clean Water Act does not preclude the permittee, EPA or MassDEP from determining that the waterbody (or a segment thereof) is not meeting water quality standards and should be treated as "water quality limited" for purposes of part 2.2.2 of the Draft Permit. To that end, EPA included language in part 2.2.2 to capture such waters (see part 2.2.2.a.i.2). EPA declines to revise the definition of a "water quality limited water body" as the commenter suggested.

206. Comment from the Town of Framingham:

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.

EPA response to comment 206

See EPA response to comments 92 - 112, and Response to Comments for Appendix H.

The final permit provides updated language for relief from requirements of Appendix H. See EPA response to comments 145 - 150.

EPA also recognizes that there are impairments from pollutants that may be present in stormwater but where the source has been identified as atmospheric deposition in a TMDL, such as mercury (addressed under the Northeast Regional Mercury TMDL). These specific circumstances are addressed under the relevant TMDL and therefore part 2.2.2 does not apply to these impairments. To clarify this, EPA has included these TMDLs in Appendix F with a statement that no BMPs are required in connection with these TMDLs.

Changes to Permit: Appendix F and Appendix H have been updated accordingly.

207. Comment from the Town of Framingham:

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 closely 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 macro-invertebrate bio-assessments 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.

EPA response to comment 207

EPA agrees with the comment and has revised the permit text in part 2.2.2 and Appendix H to provide clarification as to the specific impairments listed in the MA 2014 Integrated Report (IR) that were considered in the development of the lists of permittees. See EPA response to comment 209.

EPA also recognizes that there are impairments from pollutants that may be present in stormwater but where the source has been identified as atmospheric deposition in a TMDL, such as mercury (addressed under the Northeast Regional Mercury TMDL). Please see EPA response to comment 206.

208. Comment from Tighe and Bond:

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.

EPA response to comment 208

EPA agrees with the comment and will revise part 2.2.2 of the permit accordingly to indicate the equivalent impairment causes from the MA 2014 Integrated Report. See also response to Comment 209.

Changes to Permit: Part 2.2.2 of the Permit have been updated accordingly.

209. Comment from the Town of Framingham:

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 Parts 2.2.2.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

EPA response to comment 209

As part of their NOI submittal each permittee will evaluate their receiving waters to determine if the waters are impaired and will therefore determine if they are subject to the requirements outlined in part 2.2.2.d. Permittees are encouraged to utilize the Interactive Mapping of the most recent approved Integrated List of Waters available from MassDEP to determine impairments (<http://www.mass.gov/eea/agencies/massdep/water/watersheds/2012-integrated-list-of-waters.html>). If a permittee prefers, a GIS layer of the Integrated List of Waters is available on the MASS GIS website (<http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/layerlist.html>). The text in Parts 2.2.2.c, 2.2.2.d and 2.2.2.e will be updated to reflect the specific water quality impairments that are covered by these requirements:

- Bacteria: "E. Coli", "Enterococcus" and "Fecal Coliform"
- Chloride: "Chloride"
- Solids: "TSS" and "Turbidity"
- Oil, Grease: "Petroleum Hydrocarbons" and "Oil and Grease"
- Metals: "Cadmium", "Copper", "Iron", "Lead" and "Zinc"

EPA included tables of municipalities for phosphorus and nitrogen impairments because discharges of nutrients in stormwater not only affect the point at which the discharge enters the receiving waterbody, but also affect downstream waterbodies, so MS4s that discharge to waterbodies that are impaired due to excess nutrients or to their tributaries require reductions. Water quality impacts of bacteria, chloride, solids and metals are greatest near the point of discharge and only permittees discharging directly to a waterbody that is found to be impaired for these constituents are subject to additional requirements.

Changes to Permit: Permit part 2.2.1 and 2.2.2 have been updated accordingly.

210. Comment from the Town of Framingham:

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."

EPA response to comment 210

See EPA response to comments 92 - 112.

EPA declines to make revise the permit text as suggested.

EPA also recognizes that there are impairments from pollutants that may be present in stormwater but where the source has been identified as atmospheric deposition in a TMDL, such as mercury (addressed under the Northeast Regional Mercury TMDL). Please see EPA response to comment 206.

211. Comment from the Town of Hopkinton:

We are considering the option of hiring an Environmental Compliance Engineer in FY 16 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.

EPA response to comment 211

The requirements in Appendix H lay out a timeline that EPA finds is reasonable for addressing complex or widespread sources of impairments in the absence of a TMDL that establishes the necessary load reductions and allocation. As explained in EPA response to comment 166, EPA is developing a spreadsheet based BMP accounting and tracking tool (BATT) to assist permittees in estimating pollutant load reductions from stormwater BMPs.

212. Comment from the Southeastern Regional Service Group:

The draft 2014 list of 303(d) waters includes other TMDLs and impairments not listed in the draft permit.

EPA response to comment 212

EPA reviewed the Final 2012 Massachusetts Integrated Report in development of the Draft Permit. However, the 2014 Integrated Report is now available and EPA will use the Final 2014 Massachusetts Integrated List of Waters. EPA will also include all TMDLs that have been approved by EPA prior to the issuance date of the final permit.

213. Comment from the Southeastern Regional Service Group:

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.

EPA response to comment 213

Part 2.2.2 of the Draft MA MS4 permit refers to Discharges to Certain Water Quality Limited Waters Subject to Additional Requirements. Part 2.2.1 lists communities that are subject to an approved TMDL and this part of the permit, specifically part 2.2.1.iii, and corresponds to Table F-8. The table in part 2.2.1.iii that covers the list of municipalities that contain waters subject to an approved TMDL for bacteria or pathogens matches the list of municipalities in Table F-8, with Table F-8 providing additional detail as to the details of the impaired waterbodies and indicator organisms.

214. Comment from the Southeastern Regional Service Group:

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.

EPA response to comment 214

The Taunton River Watershed TMDL report includes a TMDL for the Salisbury Plain River, waterbody segment MA62-06, and this segment passes through the regulated area of West Bridgewater. Although the TMDL report does not specifically identify the West Bridgewater MS4, it does not exclude West Bridgewater MS4 as a potential source. Therefore, West Bridgewater will remain listed in part 2.2.2 as having a bacterial TMDL and will remain subject to the requirements of part 2.2.2.

215. Comment from the Cities of Easthampton and Pittsfield:

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.

EPA response to comment 215

EPA recognizes that additional work will be required of those permittees subject to the requirements in part 2.2 of the permit and finds that the requirements contained in part 2.2 and Appendix F and H of the permit are necessary to protect water quality. Both the City of Easthampton and the City of Pittsfield are subject to the requirements of part 2.2.2.b, as having discharges to water quality limited waterbodies where phosphorus is the cause of impairment, or their tributaries. EPA disagrees with the commenter regarding the statement "the program is experimental and the likely effectiveness of it is unknown." While these parts of the permit have not been included in previous permits, the effectiveness of non-structural and structural BMPs to reduce phosphorus loadings is not experimental, and the effectiveness has been evaluated and documented through multiple references. In addition, proper planning and mapping of BMP retrofit sites can lead to more cost effective BMP site selection and cost savings for permittees

See also EPA response to comments 140 - 152.

2.3. Requirements to Reduce Pollutants to the Maximum Extent Practicable (MEP)

216. Comment from the Massachusetts Rivers Alliance:

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.

EPA response to comment 216

EPA acknowledges the commenter's support.

217. Comment from Berkshire Regional Planning Commission (BRPC):

MEP should be used to allow regulated communities to propose a strategy to comply with the permit. 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, communities may use a phased approach that becomes progressively more rigorous to achieve the goals of the program over the five year 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.

EPA response to comment 217

The permit involves a phased approach that builds on the requirements of the 2003 Massachusetts small MS4 permit. This approach is consistent with the approach detailed in EPA's preamble to the Phase II regulations, 64 Fed. Reg. 68722, 68753, 68788 (Dec 8, 1999):

"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."

This permit also includes extended schedules and deadlines for completion of tasks, where appropriate, in order to allow time for communities to fully implement a robust stormwater management program. However, permittees must begin to address permit requirements at the start of their permit term in order to develop a comprehensive, effective program with plans for adequate funding and resources.

See also EPA response to comments 92 - 112.

218. Comment from the City of Newton and the Towns of Danvers and Westwood:

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.

219. Comment from the Town of Maynard:

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.

EPA response to comments 0 - 219

40 CFR 122.46(a) states that the duration for a NPDES permit cannot exceed 5 years. EPA finds that generally the timelines in the Draft Permit were reasonable given the fact that this program will be built off of the permittees' existing SWMPs. However, certain timelines for completion have been extended in response to specific comments (see EPA response to comments 1310 - 1318 for a summary); please note that in particular, the IDDE program is intended to be completed on a ten year schedule. See also EPA response to comment 164.

2.3.1. Control Measures

220. Comment from the Town of Milford:

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.

EPA response to comment 220

The Phase II stormwater program is designed to be flexible and build on existing state and local programs, when possible. Specifically, 40 CFR 122.34(c) allows EPA to reference a state program that the municipality is already subject to as meeting the requirements of one or more of the control measures described in the Draft Permit. When recognized by EPA, compliance with the state requirement would constitute compliance with the requirements of the control measures.

MassDEP has incorporated the Massachusetts Stormwater Standards (the Standards) into the Wetlands Protection Act Regulations (310 CMR 10.05(6)(k)) and the Water Quality Certification Regulations (314 CMR 9.06(6)(a)). As mentioned in the comment, ten standards apply to stormwater discharges within the Commonwealth. The program is typically implemented by the local conservation commissions. However, due to differences in the jurisdictional reach of applicable federal and state regulations, the State Stormwater Regulations do not qualify as a Qualifying Local Program (QLP). Therefore, one overall standard is not possible.

Although there is some overlap, the six minimum control measures required under NPDES regulations are different from the ten Massachusetts standards which focus on retention, peak control, BMP design, etc. Nonetheless, EPA has revised Section 2.3.6 (Stormwater Management in New Development and Redevelopment) of the final permit so it more closely aligns with the Massachusetts Stormwater Standards to make it easier for permittees to implement.

In response to the last bullet of the comment, if a large development complies with a town bylaw that is as stringent as Section 2.3.6, then no waiver would be necessary because it would already meet the requirements of Section 2.3.6.

221. Comment from the Town of Milford:

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 permittees who regionalize. Incentive might include the ability for members to trade credits within the Utility, or direct credits to each member of a Utility.

EPA response to comment 221

As stated in Section 2.3.1.b, EPA does allow municipalities to share implementation of one or more minimum control measures with another entity. However, each entity is ultimately responsible for compliance with its own permit obligations. Therefore, if all members of a utility or group maintain compliance with their permits *except* for one, and that entity's noncompliance does not impact the other communities' compliance, then only that one entity would be out of compliance.

The draft permit does not currently provide any numeric reduction of pollutant load for any TMDL during the five year permit term. Rather, the draft permit requires relevant permittees to take other actions, such as completing a written plan of the Phosphorus Control Plan (PCP) or installing additional BMPs, for example. However, future permit terms will require load reductions, as discussed in Appendix F.

The draft permit does not preclude credit trading or offsite mitigation, although it does not specifically set up a system for doing so. EPA anticipates such language and tools may be developed in future permit terms, if necessary. Any anticipated investment in structural BMPs is not required until after this permit term and therefore there is time to work out any trading mechanisms required to implement the TMDL requirements as economically as possible.

222. Comment from the City of Manchester (NH):

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 than 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.

EPA response to comment 222

Section 2.3.1 does not require that permittees set up intermunicipal agreements. It simply provides permittees the option to work together, if desired. 40 CFR § 122.35 does allow an operator of a regulated small MS4 to share the responsibility of implementing the minimum control measures with other entities, if certain conditions are met and if all entities agree to share such responsibilities.

Furthermore, the comment regarding the second bullet of Section 2.3.1 has misinterpreted the permit language. The draft permit says, “The particular control measure or component thereof undertaken by the other entity is at least as stringent as the corresponding permit requirement,” not “the corresponding community,” as the commenter misquotes.

See EPA response to comments 92 - 112.

223. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

EPA response to comment 223

The permit offers credit for existing BMPs. For example, Attachments 1 & 2 to Appendix F describe the process for receiving phosphorus reduction credits for selected enhanced non-structural BMPs and structural BMPs, respectively. In order to ensure a level playing field, a permittee must go through a verification process to receive credit. However, pollution reduction credit is given for existing BMPs. In addition, MS4s can claim phosphorus reduction credit for BMPs installed by 3rd parties, regardless of whether they discharge to the MS4 or not. Additional information regarding credits can also be found in the Response to Comments for Appendix F.

224. Comment from Keith Saxon:

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.

EPA response to comment 224

See EPA response to comments 92 - 112. This permit's requirements build upon the 2003 MA MS4 permit's requirements. As with the last permit, each permittee will be required to develop and implement a written SWMP to describe the activities and measures that will be implemented to maintain compliance with the permit conditions. Permittees are also required to update and/or modify their existing BMPs and measurable goals within one year of the effective date of this permit. It is EPA's view that this step will ensure that the BMPs are adequately reviewed. In addition, Section 1.10.1.b requires that permittees make the SWMP available to the public during normal business hours (or post electronically on their website, if they have one). Therefore, an interested party could review the information about the BMPs, if desired. It is EPA's view that it is not necessary to require a third party review, and such a requirement has not been added to the permit. However, municipalities are allowed to set up such a program for enhanced transparency.

225. Comment from Southeastern Regional Services Group:

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.

EPA response to comment 225

It is EPA's view that the draft MA Small MS4 permit strikes an appropriate balance between allowing each permittee flexibility to implement controls and measures while also effectively prohibiting pollutants from entering the MS4. For example, for communities subject to the Cape Cod Nitrogen TMDL Requirements (see Appendix F part A.IV), the draft permit requires activities like using slow release fertilizers on permittee-owned property and increased street sweeping. These measures are designed to specifically target the reduction of accumulated organics on impervious surfaces. In addition, removing organics from contact with stormwater will reduce the amount of nitrogen contributed to receiving waters. EPA maintains that this approach is reasonable and not overly prescriptive for permittees with water quality-limited waters.

In regards to the public education requirement, Section 2.3.2.d indicates that the "permittee shall, at a minimum, consider the topics listed in part 2.3.2.d.i-iv when developing the outreach/education program." However, it also indicates that the "permittee shall focus on

those topics most relevant to the community.” In cases where a community has a particular problem, for example, nitrogen-impaired waters, it is reasonable to expect that community to tailor its public education and outreach on common sources of nitrogen.

2.3.2. Public Education and Outreach

226. **Comment from the Massachusetts Watershed Coalition:**

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.

EPA response to comment 226

EPA agrees that effective public education and outreach should use language that is easy for the targeted audience to understand. In fact, many of the resources available on EPA’s website for stormwater public education and outreach (<http://cfpub.epa.gov/npstbx/index.html>) use non-technical language to convey the relevant messages. In addition, MassDEP will be including materials suitable for a public education campaign on their website (<http://www.mass.gov/eea/agencies/massdep/water/wastewater/stormwater.html>) and will be providing technical support and assistance to communities in implementing the permit, as indicated by their comments. MS4s are able to use all of these resources for their own outreach.

227. **Comment from the Massachusetts Rivers Alliance:**

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.

EPA response to comment 227

EPA acknowledges the supportive comment.

228. **Comment from the Towns of Medway and Millis:**

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.

229. Comment from the Towns of Abington, Swampscott, and Bellingham and the City of Easthampton:

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.

EPA Response to comments 228 - 229

This comment provided a helpful perspective on school curriculum changes. The permit requires public education and outreach for four specific audiences: (1) residents, (2) businesses, institutions, and commercial facilities, (3) developers, and (4) industrial facilities. EPA appreciates the difficulty of introducing non-mandatory materials into some school systems. Some schools, particularly colleges and private schools which have more flexibility in their curriculum, could be selected for public education and outreach under the residential category. However, each community has the flexibility to determine whether or not they include school curricula as an educational message to residents. Please note that EPA has identified school curricula as an example of public education. Development of a school curriculum is not a requirement of the permit.

Since EPA is unclear as to the source of the cost estimates referenced in the comment, no specific response can be provided. Please refer to EPA response to comments 1130 - 1144 as well as the independent contractor cost estimate provided on our website, which makes no assumptions about school education programs.

230. Comments from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, and Wilbraham:

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.

231. Comment from the Town Uxbridge:

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.

EPA Response to comments 230 - 231

The Draft Permit increases the expectations and requirements for a permittee's public education program and provides more guidance on targets for the program, building upon what was reported by permittees in the previous permit term. As mentioned in the comment, the permit defines target audiences, requires the permittee to provide educational materials to each, and includes topics for consideration for all audiences. The permittee may use those topics listed or may focus on other topics specific to the small MS4; the permittee may also choose the type of educational outreach method best suited to the target audience in their community. EPA finds that this flexibility will allow for a robust and appropriate public education and outreach program. Each of the audiences, namely 1) residents and/or students, 2) businesses, institutions, and commercial facilities, 3) developers (construction), and 4) industrial facilities, are general audiences that are likely present in all but the smallest communities. They also contribute to sources of common stormwater pollution entering (and discharging from) a permittee's MS4 system. EPA will retain the four audiences in the draft permit.

However, EPA has added language to the permit to clarify that all four audiences are required *unless* a specific audience(s) does not exist. For example, if a small community does not have any industrial facilities, then this must be documented in the Notice of Intent (NOI) and the SWMP. In such a situation, the municipality does *not* need to offer public education to that (non-existent) audience; the public education requirement for that specific audience is waived.

Please refer to EPA response to comments 232 - 263 regarding the need to measure the effectiveness of each message.

Change to Permit: Permit part 2.3.2.b has been updated accordingly,

232. Comment from the Town of Uxbridge:

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

233. Comment from the City of Manchester (NH):

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.

234. Comment from the Town of Westborough MS4:

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.

235. Comment from the City of Medford:

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.

236. Comment from the Town of Walpole:

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.

237. Comment from the Town of Lexington:

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.

238. Comment from the Town of Watertown:

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.

239. Comment from the Town of North Andover:

Public Education and Outreach - is inefficient - Part 2.3.2.e 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.

240. Comment from the City of Fitchburg:

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.

241. Comment from the Town of Auburn:

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

242. Comment from the Massachusetts Municipal Association (MMA):

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.

243. Comment from Holden Town Manager/Board of Selectmen:

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 nonprofit 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.

244. Comment from the Town of Newbury:

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).

245. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

246. Comment from Paul Hogan of Woodard and Curran:

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.

247. Comment from the Town of Paxton:

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.

248. Comment from Holden Town Manager/Board of Selectmen:

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.

249. Comment from Tighe and Bond:

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.

250. Comment from the Town of Dedham:

Part 2.3.2.g 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.

251. Comment from the Town of Framingham:

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.

252. Comment from the Town of Holden DPW:

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.

253. Comment from the Town of Franklin:

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."

254. Comment from the Town of Concord:

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.

255. Comment from the Town of Leicester:

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.

256. Comment from the Town of Canton MS4:

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.

257. Comment from the Massachusetts Coalition for Water Resources Stewardship:

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 catch basins 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.

258. Comment from the Town of East Longmeadow:

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.

259. Comment from 495 Partnership:

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 Stormwater-Sense campaign similar to the successful Water-Sense 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.

260. Comment from the Town of Millbury:

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 catch-basins 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.

261. Comment from the Cities of Beverly, Springfield, and Worcester:

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 catch-basins 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.

262. Comment from the Town of Bellingham:

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.

263. Comment from the City of Fitchburg:

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.

EPA response to comments 232 - 263

Public Education and Outreach is one of the six Minimum Control Measures required for small MS4 permits. 40 CFR 122.34 (d)(1)(ii) states that all permittees must identify and submit to the NPDES permitting authority the measurable goals, including interim milestones and the

frequency of the action, to meet these minimum control measures. This dictates the need for measuring the effectiveness of one's public education and outreach activities.

One comment suggested that the draft permit did not allow the use of process indicators (i.e., number of pamphlets distributed, number of web page views, etc.). EPA disagrees. In fact, the Fact Sheet (Section II.D.4.a.a) states that "Quantifiable data such as the number of brochures distributed, the number of hits on a website, or the number of public attendees at MS4 sponsored events can be tracked." Those values would support the requirement for interim milestones. However, they do not always measure the ultimate effectiveness of one's message.

As stated in Section 2.3.2 of the draft permit, the ultimate objective of a public education program is to increase knowledge and change behavior of the public so that pollutants in stormwater are reduced. The program should improve audience's understanding of the causes and effects of stormwater pollution, as well as educate them about how they can reduce those impacts with the ultimate goal of reducing pollution in stormwater. These must be measured in order to demonstrate compliance with the related provisions.

The permit does not state a specific methodology to measure the effectiveness of the education program in order to allow flexibility for a municipality to determine their own effectiveness indicators. Generally, it is not appropriate to include guidance or examples within permit language. It is highly recommended that permittees take a thoughtful and targeted approach when considering the goal of each public education and outreach program. If a permittee sets a broad goal (e.g., increasing knowledge or changing a person's mindset,) EPA agrees it could be difficult to measure such effectiveness, though Maine successfully analyzed such measures. See <http://cfpub.epa.gov/npstbx/files/maine05report.pdf>. EPA suggests that permittees set more measurable goals (as will be discussed below), which are more readily assessed during the specified timeframe.

Example 1: A popular river walk in town attracts a lot of geese because people are feeding them. As a result, there are excessive goose droppings and the nearby bathing area has been closed three times because of elevated bacteria counts. A municipality could display a DVD at a kiosk reminding people not to feed the geese. If the bacteria count still remains elevated, the municipality can decide to change their BMP and put a sign along the river walk or air a PSA on the radio. The municipality could then measure how many times the beach was closed due to high bacteria counts, or use bacteria counts from samples collected at the beach. If the number of closings or bacteria counts decreased, the municipality could use this as indication of their message's effectiveness. Particular messages may not be completely effective at first. The benefit of measuring the program's effectiveness is the ability to change the message when it does not appear to be working.

Example 2: A town has a trash problem in the local park, where trash is ending up in the MS4. A measurable goal may be to decrease the amount of trash in that park that makes it to the MS4 by a certain percentage. The municipality installs more trash barrels and signs as their public education/outreach, establishes a clean-up day, then monitors the results for a defined period of time. If the amount of trash in catch basins of the MS4 decreases based on the efforts of the municipality, then the municipality could conclude that both the message and delivery of the message were effective with amount of trash collected from the MS4 being the thing that was measured.

The Agency is not expecting sophisticated data gathering, nor the hiring of consultants. Rather, it is expecting municipalities to focus on known, specific stormwater problems or conditions, to develop reasonable methods to educate the appropriate audience(s) to address those problems or conditions, and to measure the success of that educational material for the chosen topic. Potential measurable goals could include (but are not limited to): Increase in participation in leaf litter program; decrease in calls to hotline about illegal dumping; increase in participation in hazardous waste drop-off days; reduction in volume of trash removed from the MS4; decrease in volume of material removed from catch basins; decreased bacteria counts in local waterways; increase in number of rain gardens installed by citizens; increase in number of people who use pet waste bags, etc. Once again, each MS4 may select its own unique set of goals or objectives, but the ultimate outcome of the program is to elicit specific changes in behavior that in turn benefits water quality. The measurement of the effectiveness of the educational messages should be linked to the measurable goals established by the MS4.

Several commenters expressed a desire for EPA to take the lead in the development of a nationwide education campaign on stormwater. Since EPA Region I is the permitting authority for the state of Massachusetts, it is not appropriate for EPA to undertake an activity required of permittees under the Massachusetts small MS4 general permit, nor would the Massachusetts program be applicable nationwide. Therefore EPA has not developed a nation-wide educational message. However, EPA Region I can provide guidance to permittees. First, the Region has already developed the “Soak up the Rain” website and other resources to help raise awareness about stormwater and promote the implementation of practices to reduce runoff. The “Soak up the Rain” information, available at www.epa.gov/region1/soakuptherain, has a wide range of resources for those looking to conduct outreach about actions that *citizens* can take to reduce polluted runoff.

Second, a number of other valuable resources, funded or collected by EPA, can be found at the following website: <http://cfpub.epa.gov/npstbx/index.html>. Of particular notice is the 3rd edition of *Getting in Step: A Guide for Conducting Watershed Outreach Campaigns*, which is available in hardcopy, in video, or as a webinar. Section 6 of the resource discusses ways to evaluate (or measure) an outreach campaign which help permittees as they measure the effectiveness of their programs. For example, it provides an easy way to monitor web traffic which can help determine the effectiveness of an outreach campaign, if the audience is directed to a website. It also highlights free resources for polling and surveys. It is also recommended that permittees investigate the “Surveys and Evaluations” tab on the aforementioned website which include baseline attitude surveys, stormwater program-related surveys, and other examples. A number of the documents focus on New England states, including Maine. (See <http://cfpub.epa.gov/npstbx/WhereYouLive.cfm?StateID=22> for examples of some of their templates.) EPA’s “Stormwater Phase II Final Rule: Public Education and Outreach Minimum Control Measure,” found at <http://www3.epa.gov/npdes/pubs/fact2-3.pdf>, also provides valuable examples. In addition, EPA suggests that permittees review the following resources, “Measurable Goals Guidance for Phase II Small MS4s,” found at <http://www3.epa.gov/npdes/pubs/measurablegoals.pdf>, and “Social Marketing: A Tool for More Effective Stormwater Education and Outreach Programs,” at www.epa.gov/npdes/outreach_files/webcast/may092007/files/lobby.html. These resources, templates, and examples will prevent permittees from developing appropriate educational outreach from scratch.

Another commenter suggested that EPA should provide more educational opportunities on stormwater management to Administrators, Managers, and Selectmen, as EPA did at the Massachusetts Municipal Association's Annual Conference. EPA notes that municipal leaders had access to information sessions held during the comment period for this permit and EPA will continue to speak about the permit when invited to events such as the MMA conference.

Lastly, in response to several comments regarding the ability to work with other entities, EPA would like to note that permittees are allowed to work cooperatively on their public education and outreach programs to meet this minimum control requirement. We agree that this may be an effective and cost-efficient approach to the public education requirements of the permit. 40 CFR 122.34(b)(1)(ii) provides that permittees may use stormwater educational materials provided by your State, EPA, environmental, public interest or trade organizations, or other MS4s. Therefore, if MassDEP developed a state-wide stormwater education program, that could be used as part of compliance. The same would be true for educational materials developed by a regional stormwater group or non-profit organizations. During the MS4 2003 permit term, several stormwater coalitions and other groups developed comprehensive public education programs for use by regulated small MS4s.

264. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

EPA response to comment 264

EPA notes the supportive comment regarding the importance of public education.

265. Comment from the Town of Milford:

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.

EPA response to comment 265

School based outreach programs would qualify for permit compliance for outreach to residents providing the measurable goal set by the permittee is reached and the permittee can link their school program with an environmental outcome.

Although most large commercial, industrial, institutional, and construction sites are required to meet the Ten Massachusetts Stormwater Management Standards during development, EPA's view is that it is important to include these audiences under the public education and outreach control measure. These are sources that could potentially pollute a MS4. Since each MS4 is responsible for the contents of its system, it is in the best interest of each municipality to educate potential contributors. This is why EPA will retain the four audiences in the draft permit.

However, EPA has added language to the permit to clarify that all four audiences are required *unless* a specific audience(s) does not exist. For example, if a small community does not have any industrial facilities, then this must be documented in both the SWMP and each annual report. In such a situation, the municipality does not need to offer public education to that non-existent audience, but should shift the assigned two messages to the remaining audiences.

Outreach efforts can take multiple forms. As stated in 2.3.2.c, this can include printed brochures, electronic materials, mass media such as public service announcement (radio or cable), or targeted workshops. EPA considers education segments on local radio and TV cable shows as eligible formats for public outreach. Since the MA Small MS4 general permit focuses on stormwater, it is logical that outreach efforts should focus on that topic. However, if a municipality would like to include wastewater and drinking water in a public education program, in *addition* to stormwater, the municipality may choose to do so.

Changes to Permit: Permit part 2.3.2 has been updated accordingly

266. Comment from the Merrimack River Watershed Council:

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.

EPA Response to comment 266

EPA has given permittees the flexibility to craft messages that are most appropriate to the four defined audiences. If a permittee decides that certain topics are appropriate stormwater messages to convey, they are able to do so.

267. Comment from the Mystic River Watershed Association (MyRWA):

Public Involvement and Participation: 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.

EPA response to comment 267

EPA acknowledges the comment. As stated in Section 2.3.2.c of the permit, each permittee may partner with other entities, including (but not limited to) other MS4s, community groups, or

watershed associations, to implement the education program, as suggested in the above comment. However, EPA has not added a specific listing of these entities to the permit.

268. Comment from the Mystic River Watershed Association (MyRWA):

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).

EPA response to comment 268

EPA concurs about the importance of public education and outreach. EPA has taken efforts to provide a balanced approach to this control measure by adding some structure (i.e., requiring the four specific audience categories), while still allowing some flexibility for the municipality/permittee to target their program appropriately (i.e., particular message; format). Section 2.3.2.c not only allows educational messages to be printed materials (like brochures or newsletters), but also encourages electronic materials (like websites) and mass media (like PSAs on radio or cable television). It is EPA's view that this will allow MS4s to tailor their outreach and education programs appropriately.

Also, EPA acknowledges the concern about the frequency of the educational messages and term period of each permit. However, EPA intends to issue this general permit every five years. The permit will maintain the current outreach schedule of eight messages during the five year permit period.

269. Comment from New England Civil Eng. Corp:

Will EPA align timeline for dog owner messages required in MS4s with water quality limited waters? Messages should be allowed to be provided along with the dog license notices as allowed with other additional requirements.

EPA response to comment 269

As stated in Appendix H, section III.2.a.i, a permittee that discharges to water quality limited waterbodies (with bacteria/pathogens as the impairment) shall supplement its residential outreach program with an annual message encouraging the proper management of pet waste. This message will be sent to dog owners at the time of issuance or renewal of a dog license, or at another appropriate time.

270. Comment from New England Civil Eng. Corp:

In MS4s with carry out/carry policies out in parks will the Permittee be required to provide waste containers for disposal of trash and pet waste?

EPA response to comment 270

See also Response to Comments section 2.3.7. This issue is discussed in Permit Section 2.3.7.a.ii.a (Good House Keeping and Pollution Prevention for Permittee Owned Operations). It states that permittees are required to establish an Operations and Maintenance Program. As

part of that plan, they must establish pet waste handling collection and disposal locations at all parks and open space where pets are permitted. They must also establish procedures for management of trash containers and open space (e.g., scheduled cleanings; sufficient number of receptacles). The permit requirements apply even if the MS4 has a carry in/carry out policy for trash and pet wastes in its parks.

271. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

EPA response to comment 271

EPA has added language to the permit to clarify that all four audiences are required unless a specific audience does not exist. For example, if a small community (like Dunstable, Pepperell, or Carlisle) does not have any industrial facilities, then this must be documented in the both the SWMP and each annual report. In such a situation, the municipality does not need to offer public education to that non-existent audience, but should shift the assigned two messages to the remaining audiences. See EPA Response to comments 228 - 229

Changes to permit: Part 2.3.2.b has been updated in accordance with this comment.

272. Comment from the town of Wellesley:

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.

EPA response to comment 272

EPA encourages robust initiatives that include metrics for assessing the initiatives' efficacy. Please refer to EPA response to comments 232 - 263 regarding examples and resources to measure the effectiveness of public education.

273. Comment from OARS Oral Testimony:

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.

EPA response to comment 273

EPA acknowledges the comment. Section 2.3.2.b of the permit specifies that permittees shall include education and outreach efforts for four audiences: (1) residents and/or students; (2)

businesses, institutions, and commercial facilities, (3) developers (construction), and (4) industrial facilities. See also EPA Response to comments 228 - 229.

274. Comment from Keith Saxon:

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.

EPA response to comment 274

EPA's goal was to strike a balance by providing some structure to permittees (i.e., by defining the four audiences), while still providing the municipalities with some flexibility in selecting their messages and format. It is EPA's view that EPA has achieved that goal and will be maintaining the current structure for the public education and outreach program.

Nonetheless, EPA agrees that delivering a specific, targeted message (with specific measurable goals) is important. (Please refer to EPA response to comments 232 - 263 for additional information about measuring the effectiveness of one's message.)

Outreach efforts can take multiple forms. As stated in 2.3.2.c of the permit, this can include printed brochures, electronic materials, mass media such as public service announcement (radio or cable), or targeted workshops. EPA is providing the municipalities with the flexibility to choose the format most appropriate for their audience. The permit has not been changed to require specific distribution methodologies.

275. Comment from the Town of Framingham:

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 be 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.

276. Comment from the City of Fitchburg:

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.

277. Comment from the Town of Weymouth:

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.

278. Comment from the Town of Shrewsbury:

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.

EPA response to comments 275 - 278

40 CFR 122.34(b)(ii) recommends that some of the materials or outreach programs be directly toward targeted groups of commercial, industrial, and institutional entities likely to have significant storm water impacts. While it is true that certain industries obtain their own permits under the EPA-regulated NPDES Multi-Sector General Permit (MSGP) Program, it is still possible for pollutants from these industries to enter a MS4. Any pollutants ultimately discharging from the MS4 are the permittee's responsibility. Under this small MS4 general permit, EPA is not requiring municipalities to educate entities about the MSGP permit requirements. However, it is in each MS4 permittee's best interest to educate a subset of the industries about ways to avoid potential contamination in MS4s.

Similarly, development that results in a land disturbance greater than one acre must obtain a NPDES permit, specifically coverage under the EPA's Construction General Permit (CGP). In addition, developers must comply with applicable federal, state, and local regulations. Nonetheless, it is still possible for pollutants from development to enter a MS4 at which point it is the responsibility of the MS4 that will ultimately be discharging to a surface water. While MS4 permittees are not responsible for educating entities about CGP requirements, it is in each small MS4 general permittee's best interest to educate developers about ways to minimize and avoid possible contamination to the MS4.

EPA notes the Town of Framingham's targeted efforts on the commercial sector as part of their IDDE program. However, EPA disagrees that the public education/outreach control measure requires each town to focus on a "broad audience for commercial operations and businesses." Rather, the town is encouraged to target a subset or group of businesses that are likely to have a significant impact on stormwater. For example, the town could provide information to restaurants on the impact of grease clogging storm drains. Or, a town could educate garages on the impact of oil discharges to MS4s. EPA has balanced the public education/outreach requirement by providing some structure (i.e., setting the four audiences) while still providing the municipalities with flexibility (i.e., ability to choose relevant message and format.)

Also please refer to EPA response to comments 232 - 263 about setting measurable goals and measuring effectiveness of public education/outreach.

279. Comment from the Charles River Watershed Association (CRWA):

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. Given opportunities to collaborate with other MS4s, MS4 consortiums, and watershed associations, we think this is reasonable.

EPA response to comment 279

The language in section 2.3.2.d.i. of the permit is intended to provide suggested topics for the outreach/education program. EPA has taken efforts to provide a balanced approach by adding some structure (i.e., requiring the four specific audience categories), while still allowing some

flexibility for the municipality/permittee to target their program appropriately (i.e., particular message; format). This will allow MS4s to tailor their outreach/education programs appropriately. The requirement of *at least* two messages over the permit term is also reasonable, especially considering the requirement to measure the effectiveness of each message. Section 2.3.2.c specifies that each permittee shall distribute *a minimum of two* (2) educational messages over the permit term to each audience. Therefore the permit has set the minimum number of messages required, however permittees are allowed (and encouraged) to deliver more. EPA has clarified that the topics indicated are suggestions in the final permit. See also EPA response to comment 83.

Changes to Permit: Permit part 2.3.2.d. has been updated accordingly

2.3.3. Public Involvement and Participation

280. Comment from the Massachusetts Rivers Alliance:

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.

281. Comment from the Mystic River Watershed Association (MyRWA):

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.

282. Comment from the Conservation Law Foundation (CLF):

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.

283. Comment from OARS Oral Testimony:

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.

284. Comment from Keith Saxon:

2.3.3 Public Involvement & Participation: Please see comments for 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 and; 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.) 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.

285. Comment by the Charles River Watershed Association (CRWA):

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.

EPA response to comments 280 - 285

EPA agrees that the goal of public involvement and participation is to allow residents and local entities a role in developing, implementing, and reviewing a small MS4's storm water management program (SWMP), as well as their annual reports. This will enable members of a community to provide input and review the activities being implemented and the progress being made by each municipality. In accordance with 40 CFR 122.34(b)(2)(i), MS4s "must, at a minimum, comply with State, Tribal and local public notice requirements when implementing a public involvement/ participation program." Additionally, EPA advises that "opportunities for members of the public to participate in program development and implementation include serving as citizen representatives on a local storm water management panel, attending public hearings, working as citizen volunteers to educate other individuals about the program....or participating in volunteer monitoring efforts." 40 CFR 122.34(b)(2)(ii).

As stated in Permit Section 1.7.4, EPA intends to post each permittee's NOI on the EPA website for a minimum of 30 calendar days. This will provide another opportunity for public comment. In regards to SWMPs, Permit Section 1.10.1.b requires that permittees that have websites post their SWMPs online, in addition to making the SWMP available to the public during normal business hours. One commenter demonstrated concern that an individual department of a municipality might not post a SWMP online if that specific department did not have its own website. Since the municipality (not an individual department) is the official permittee of the MA small MS4 General Permit, the SWMP would need to be posted on the municipality's website. See EPA Response to comments on Section 1.10 for further details on public availability of the SWMP.

As EPA did for the 2003 MA Small MS4 General Permit, EPA intends to continue to post all annual reports and maps on our website:

<http://www.epa.gov/region1/npdes/stormwater/index.html#smallms4program>. In response to comments, EPA has added clarifying language to Section 4.1.a of the permit to ensure that self-evaluations to the SWMP are included in the Annual Report. Since Annual Reports will be posted online (by EPA), the public will have the opportunity to review such material, though EPA will generally not accept public comments on the annual reports. In order to engage the public early, EPA encourages MS4 permittees to post their SWMPs on the municipality's website before submitting the SWMP to EPA. EPA finds that all of these efforts encourage transparency and provide the opportunity for significant public participation and access to information throughout the process.

286. Comment from the Merrimack River Watershed Council:

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.

EPA response to comment 286

EPA acknowledges this comment. Please see the responses to comments 269-274 regarding the opportunities for public participation in the MA Small MS4 general permit process.

2.3.4. Illicit Discharge Detection and Elimination (IDDE) Program

287. Comment from Sue Bass:

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.

EPA response to comment 287

EPA appreciates these comments regarding the importance of the IDDE program and concerns regarding enforcement capabilities. Permittees must comply with all the requirements of the permit, including the IDDE program, and may be subject to enforcement action at any time for permit violations. EPA anticipates increasing the number of MS4 audits to help insure compliance with the terms of the permit.

288. Comment from the Ipswich River Watershed Association:

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.

289. Comment from the Nashua River Watershed Association (NRWA):

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.

290. Comment from OARS Oral Testimony:

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.

291. Comment from Roger Frymire:

Personally, I could accept the Draft as a final permit, but I fear challenges would further delay the improvements I hope to see from a stringent IDDE requirement being implemented firmly but fairly. From personal experience, the largest problem with stormwater continues to be Sewage therein.

EPA response to comments 288 - 291

EPA appreciates these comments regarding the importance of the IDDE program.

292. Comment from the Massachusetts Rivers Alliance:

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 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.

293. Comment from the Mystic River Watershed Association (MyRWA):

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.

EPA response to comments 292 - 293

Under part 2.3.4.7.b.iv. (2.3.4.8.a. of the draft permit) permittees may rely on screening conducted under the 2003 permit or an enforcement action to the extent it meets the requirements of part 2.3.4.7.b.iii.4. Permittees that have conducted substantially equivalent work under an enforcement action can request an exemption from the requirements of part 2.3.4.7.b. Until a permittee receives written approval from EPA for the exemption request, they remain subject to the requirements of part 2.3.4.7.b.

294. Comment from Keith Saxon:

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 disincentivized from doing anything about controlling illicit discharges as they report concerns or conditions and nothing happens (no direct follow up 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.

EPA response to comment 294

EPA appreciates these comments regarding the importance of controlling illicit discharges. Under part 2.3.4.6 of the permit, permittees must identify the roles and responsibilities of town departments in their written IDDE program, which must be publicly available as part of the SWMP. Please also note that towns may choose to address illicit discharges as part of their public education campaign under part 2.3.2 of the permit.

295. Comment from the City of Easthampton and Pittsfield and the Town of Canton:

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.

296. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

297. Comment from the Massachusetts Coalition for Water Resources Stewardship, the Cities of Worcester and Springfield, and the Town of Millbury:

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.

298. Comment from the Town of Needham:

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.

299. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

EPA response to comments 295 - 299

EPA agrees that the IDDE program represents more specific requirements than the more general requirements of the 2003 permit. This is because illicit discharges are illegal and represent a significant impact on water quality and human health in the region. The permit establishes a procedure and schedule to prioritize areas where illicit discharges are more likely or where towns are already aware of illicit inputs into their system. EPA notes that the IDDE requirements in the draft Permit did not include a requirement to conduct TV inspections and that requirement has not been added to the final permit. EPA disagrees that the requirements contained in the IDDE section of the final permit are unproven or unreasonable. Many municipalities in Massachusetts are conducting IDDE investigations following programs similar to the requirements contained in this permit. Over 58 million gallons of untreated sewage have been removed from MS4 systems in the Boston Harbor Watershed using similar IDDE protocol as that required in part 2.3.4 of the Permit. The problem of illicit connections is ubiquitous throughout Massachusetts and is resulting in significant impacts to water quality and threatening human health.

It is unclear why the City of Lowell and the Lowell Regional Wastewater Utility believe mapping costs would exceed \$98,000 per year. A detailed cost analysis by WaterVision (Watervision LLC, 2016) indicates that the total IDDE program cost will range from \$35,500 to \$587,000 (this is total program cost, not a per year cost; costs will be spread out over 10 years) depending on system size and urbanization. Please note that the permit allows for the use of field test kits which will greatly limit analytical costs. Also note that sampling is not required for each outfall, only those with dry weather flows and/or those identified with at least one SVF. EPA plans to make cost estimation spreadsheets available to help permittees estimate IDDE compliance cost.

300. Comment from the Town of Rowley:

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.

EPA response to comment 300

Please note that the requirements of the small MS4 permit are only required to be implemented in the community's regulated MS4 area, although permittees may choose to implement any or all requirements system- or town-wide. The requirements of the permit are for the municipal separate storm sewer system and do not apply to areas not served by the MS4. The IDDE

program is one in which the time and resources expended are proportional to the size of the MS4 system. The Town will likely have fewer outfalls and junction manholes to inspect over the course of the permit term. Much of this work can be done by town staff and EPA intends to provide additional IDDE training for municipalities to the extent that EPA resources allow.

301. Comment from the Town of Concord:

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 with in 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.

302. Comment from the Merrimack Valley Stormwater Collaborative:

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.

303. Comment from the Town of Walpole:

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.

304. Comment from Tighe and Bond:

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.

EPA Response to comments 301 - 304

EPA finds that the level of effort described in part 2.3.4 of the Draft Permit is necessary and appropriate to ensure discharges from the MS4 are limited to the stormwater discharges authorized by this NPDES permit and represents the maximum extent practicable for all permittees.

EPA acknowledges the different challenges faced by heavily urbanized vs. rural areas and EPA finds that the requirements of part 2.3.4 of the permit allow adequate tailoring by each permittee to allow permittees to concentrate work on their priority areas. For instance, rural permittees may end up with many catchments marked as “Low Priority” and permittees can space out program implementation such that the permittee completes their program within 10 years of permit effective date. In contrast, highly urbanized areas may have many outfalls marked as “Problem” or “High Priority” and could require completion of many catchment investigations within five years of the effective permit date. EPA disagrees with the Town of Concord that the IDDE requirements of this permit are not applicable to rural communities. Many rural communities have found and corrected illicit connections to their MS4, including

Concord itself which has corrected eight illicit connections since 2010. In addition, the town of Lexington, Massachusetts implements a substantially similar program as the program outlined by this permit and has removed over 2,000 gallons of raw sewage per day from entering the storm sewer system. EPA disagrees with Tighe and Bond that highly urbanized areas would likely have the majority of outfalls marked as “Problem.” The designation of an outfall and its associated catchment as “Problem” indicates that the permittee is aware of an illicit connection discharging from the outfall or data indicating the possibility of an illicit connection discharging from the associated outfall. If the majority of the permittees outfalls are marked “Problem” that indicates that each outfall currently contains flow from an illicit connection. The probability of this situation is likely very low, however. That would indicate that the majority of outfalls contain illicit flow and steps should be taken as expeditiously as possible to remove those connections. In order to provide more flexibility to permittees, EPA has removed the requirement to complete 80% of catchment investigations in outfalls marked as “Problem” by year 3 and removed the requirement that 40% of all outfall catchments need to be investigated by year 5. The new milestones in the final permit are related strictly to catchments with evidence of illicit flow. The final permit requires permittees to conduct catchment investigations on all outfalls marked as “Problem” within five years of the permit effective date and complete the investigation of all catchments where dry weather screening indicated the potential presence of an illicit connection within seven years of the permit effective date. The new milestones can potentially spread out the program implementation for rural communities, while focusing implementation on catchments with evidence of illicit flow. The example of why wet weather screening is inappropriate provided by the Town of Concord actually serves to highlight the strengths of the protocol required by this permit. Follow-up screening conducted by Concord using the protocol in this permit likely saved Concord costly additional searching for an illicit connection and likely allowed Concord to focus on actions that could mitigate bird congregation or other measures to address bacteria from animals.

Changes to permit: Permit part 2.3.4 has been updated accordingly

2.3.4.1. Definitions and Prohibitions

305. Comment from the Massachusetts Coalition for Water Resources Stewardship, the Cities of Springfield and Worcester, and the Town of Millbury:

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.

EPA Response to comment 305

EPA agrees that the work involved to correct different causes of illicit discharges varies, but the definition of illicit discharge in Sec. 2.3.4.1 is consistent with the definition of illicit discharge found in 40 CFR 122.26(b)(2). System failures as well as mis-connections that result in the introduction of non stormwater to the system and the eventual discharge of non stormwater

flow are not authorized under Permit part 1.3. As such, all sources of non stormwater discharging (unless allowed under Permit part 1.4) need to be addressed and eliminated.

306. Comment from the New England Civil Engineering Corp.:

EPA should define interconnection as related to screening target requirements or catchment delineations.

EPA response to comment 306

Interconnections were defined in the draft Permit part 2.3.4.5. However, the definition of Interconnection has been added to Appendix A of the final Permit.

Changes to Permit: Appendix A of the Permit has been updated accordingly.

307. Comment from the City of Fitchburg:

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.

EPA response to comment 307

This permit authorizes discharges of stormwater from MS4 regulated area and does not contain requirements for any wastewater collection system associated with a Publicly Owned Treatment Works. The work described in the comment will likely assist the permittee in their IDDE program under this Permit, however it does not constitute an adequate replacement. EPA notes that where permittees are under consent decrees or enforcement orders related to IDDE requirements they can write EPA to be relieved of screening and sampling requirements under part 2.3.4.7.b of the final permit.

308. Comment from the Southeastern Regional Services Group:

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?

EPA Response to comment 308

For the purposes of this permit, EPA considers "detection" to mean screening and sampling procedures that result in the detection of non stormwater flow associated with an illicit discharge. This includes but is not limited to:

- Olfactory or visual evidence of sewage;
- Ammonia ≥ 0.5 mg/l, surfactants ≥ 0.25 mg/l, and bacteria levels greater than the water quality criteria applicable to the receiving water;
- Ammonia ≥ 0.5 mg/l, surfactants ≥ 0.25 mg/l, and detectable levels of chlorine.

For the purposes of this permit, “identification” means that the source of the illicit connection has been isolated and located to a single source (e.g., incorrectly connected lateral, cross connection, underdrain, etc.).

Definitions have not been added to the permit.

309. Comment from the Merrimack River Watershed Council:

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.

EPA Response to comment 301

The permit requires that when the source of an illicit discharge or SSO is identified and confirmed, the permittee shall exercise its authority as necessary to require its removal. The permit requires an ordinance or other regulatory mechanism that effectively prohibits non-stormwater discharges into the storm sewer system and the implementation of enforcement procedures and actions. EPA does not believe that further requirements for penalties or enforcement by the permittee are necessary.

2.3.4.2. Elimination of Illicit Discharges

310. Comment from the Connecticut Fund for the Environment (CFE) – Save the Sound and Save the Bay:

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.

311. Comment from the Connecticut Fund for the Environment (CFE) – Save the Sound and Save the Bay:

Specify a maximum time from the date of discovery, by which all illicit discharges and SSOs must be eliminated, and mandate the development of a mechanism for acting upon citizen reports.

312. Comment from the City of Fitchburg:

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. This seems unreasonable, and effectively contradicts the statement that a permittee has 60 days to rectify the situation.

313. Comment from the Town of Framingham:

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.

314. Comment from the City of Waltham:

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.

EPA response to comments 310 - 314

Discharges from an MS4 covered under this permit that contain non stormwater sources not listed in part 1.4 of the Permit are not authorized by this Permit and therefore discharges that contain illicit connections are unlawful. The permit lays out a consistent methodology to detect and identify sources and eliminate illicit connections to the MS4 system, including schedules and requirements necessary to maintain compliance with the permit. However, discharges of illicit connections to waters of the United States from a permittee’s MS4 are unlawful upon detection. While EPA recognizes that delays may occur, the CWA requires that the permit effectively prohibit illicit discharges. CWA section 402(p)(3)(B)(ii). This permit must be consistent with the CWA. No further clarification of these requirements, extended schedules to remove illicit discharges, or maximum timeframes have been added to the permit.

2.3.4.3. Non-Stormwater Discharges

315. Comment from the Connecticut Fund for the Environment (CFE) – Save the Sound and Save the Bay:

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.”

316. Comment from Keith Saxon:

Add a requirement to provide a clear mechanism for public reporting of non stormwater discharges including following with up to reporter.

EPA response to comment 316

Discharges from an MS4 covered under this permit that contain non stormwater sources not listed in part 1.4 are not authorized by this permit and discharges that contain illicit connections are unlawful. Any illicit discharge, whether identified by the permittee, EPA, MassDEP or a third party remains unlawful until eliminated and permittees must eliminate them as expeditiously as possible. EPA finds that no further language to incentivize the removal of illicit connections is needed. EPA notes that the public is not prohibited from detecting illicit connections and alerting the permittees of such discharges, but does not believe the proposed additional requirements are necessary, and we are mindful of the burden that an accumulation of small requirements may impose on municipalities. All reporting of removal of illicit connections, including all monitoring, must be included in annual reports, giving the public adequate information on follow up by permittees. EPA declines to require more frequent sampling during dry weather since the IDDE program requirements include a systematic inspection and sampling of flow within the system to detect illicit discharges. EPA finds that this approach is a more robust way to detect illicit discharges than just relying on outfall sampling.

2.3.4.4. Sanitary Sewer Overflows

317. Comment from the Charles River Watershed Association (CRWA):

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 permittee to notify EPA and DEP should be a permit requirement.

EPA response to comment 317

Discharges from an MS4 covered under this permit that contain non stormwater sources not listed in part 1.4 (including SSOs) are not authorized by this permit and discharges that contain illicit connections (or SSOs) are unlawful. Any illicit discharge remains unlawful until eliminated and permittees must eliminate them as expeditiously as possible in order to remain in compliance with this permit and avoid costly fees or penalties associated with enforcement actions. EPA finds that no further language to incentivize the removal of SSOs or remediation

requirements is needed, and while we appreciate the commenter's interest in expanding notifications we are also mindful of the cumulative impact of the requirements of this permit on municipalities. EPA declines to add a provision for the permittee to notify the public of all SSOs and finds notification of EPA as the permitting authority and MassDEP sufficient. The public will have access to all reported SSOs in each permittee's annual reports and SWMP.

318. Comment from the Mystic River Watershed Association (MyRWA):

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.

EPA Response to comment 318

Combined sewer overflows (CSOs) from a combined sewer system are regulated under individual NPDES permits, and have an EPA-approved long-term control plan for their abatement. This permit does not cover combined sewer systems or areas serviced by those systems and therefore does not address CSOs.

319. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

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.

320. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

321. Comment from the Town of Dedham:

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.

322. Comment from Weston & Sampson, the City of Quincy, and the Towns of Winchester and Milford:

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.

323. Comment from the Town of Watertown:

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.

324. Comment from the City of Fitchburg:

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.

325. Comment from the Town of Weymouth:

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.

326. Comment from the Town of Shrewsbury:

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.

327. Comment from the Town of Framingham:

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.

328. Comment from the Town of Concord:

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.

329. Comment from the Town of Canton and Paul Hogan (Woodard & Curran):

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-backupnotification.html>. These procedures for reporting are well established and allow both verbal or email notification. We see little value to creating a new methodology.

330. Comment from Weston & Sampson and the Towns of Milford and Quincy:

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.

331. Comment from the Towns of Abington, Bellingham, Brewster, Canton, Medway, and Millis and the Cities of Pittsfield and Easthampton:

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.

332. Comment from the Massachusetts Coalition for Water Resources Stewardship, the Cities of Worcester and Springfield, and the Town of Millbury:

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.

EPA response to comments 319 - 332:

While EPA agrees that the draft permit includes requirements addressing SSOs, EPA disagrees that these requirements are a complete duplication of effort with a permittee's wastewater permit and should therefore not be included in the permit. The draft permit appropriately prohibits the discharge of SSOs and requires their removal consistent with 40 CFR 122.34(b)(3)(ii)(B). Furthermore, consistent with standard conditions included in all NPDES permits issued by EPA Region 1, the draft permit requires oral and written notice to EPA

regarding any noncompliance which may endanger health or the environment – such as the occurrence of an SSO. The draft permit expands upon the written notice requirements included in these standard conditions by requiring additional detail on a compilation of the past five years of SSO occurrences and the maintenance of this SSO inventory as part of the permittee's SWMP.

EPA agrees that the oral and written notification requirements for noncompliance found in both this permit and in an NPDES permit authorizing wastewater or CSO discharges should be satisfied by a single notification to EPA. EPA has modified the permit to clarify that where common notification requirements are included in multiple NPDES permits issued to a permittee, a single notification may be made to EPA as directed in the permittee's wastewater or CSO permit.

However, the compilation and maintenance of a current inventory of SSOs in the permittee's SWMP and annual report is not duplicative. EPA considers the comprehensive nature of this inventory to be essential to support the implementation and EPA's oversight of the permittee's IDDE Program.

EPA notes that the SSO inventory required by this Permit is for SSOs that enter the MS4 only, not all SSOs within the permittee's jurisdiction. This has not changed from the draft Permit.

EPA recognizes that integrated planning can be an important cost effective tool for municipalities to meet Clean Water Act requirements, and encourages communities to consult with EPA and DEP about the development of integrated plans where that makes sense. However, integrated planning is based on community-specific considerations and the nature of an integrated plan depends on local conditions. Given the individualized nature of these plans, this general permit – which applies to more than 200 communities – is not an appropriate vehicle for integrated planning requirements. One of the four overarching principles of the 2012 Integrated Municipal Stormwater and Wastewater Planning Approach Framework states:

“The responsibility to develop an integrated plan rests with the municipality that chooses to pursue this approach. Where a municipality has developed an initial plan, EPA and/or the State will determine appropriate actions, which may include developing requirements and schedules in enforceable documents.”

The responsibility to develop integrated plans, including schedules and actions, therefore rests with permit holders. EPA has not included integrated planning language into this general permit. Instead, this permit provides requirements that are applicable to all permittees, and contains requirements that can help inform each permittee if they choose to pursue integrated planning or permitting.

Changes to Permit: Permit part 2.3.4. has been updated accordingly

333. Comment from the Mystic River Watershed Association (MyRWA):

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?

EPA response to comment 333

The permit provides a definition of sanitary sewer overflow in 2.3.4.1. – Definitions and Prohibitions, as, “An SSO is a discharge of untreated sanitary wastewater from a municipal sanitary sewer.” Any discharge of untreated sanitary wastewater from the municipal system that enters the MS4 needs to be eliminated and progress tracked under this Permit. Overflows from combined sewer areas are not included under this definition and are addressed under long-term control plans implemented through enforcement actions, CSO NPDES permits, or both. The example given by the commenter would not require notification to EPA under this permit unless the discharge eventually made it to the MS4 system and was discharged to a receiving waterbody. EPA does not believe that further definition is necessary.

334. Comment from the Mystic River Watershed Association (MyRWA):

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.

335. Comment from Tighe and Bond and the Town of East Longmeadow:

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.

336. Comment from Paul Hogan (Woodard & Curran):

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.

EPA response to comments 334 - 336

EPA agrees that more time may be needed to identify SSOs in the previous five years and has increased the requirement to one year to coincide with the SWMP as commenters suggested. Balancing the burden of collecting more data with the limited value that such data would provide, EPA has concluded that five years is the appropriate period to inform the permittee’s IDDE program.

Changes to Permit: Permit part 2.3.4. has been updated accordingly

2.3.4.5. Outfall/Interconnection Inventory

337. Comment from Weston & Sampson, the City of Quincy, and the Town of Milford:

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.

338. Comment from the Town of Dedham:

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.

339. Comment from the Town of Winchester:

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.

340. Comment from the American Council of Engineering Companies of Massachusetts (ACEC/MA):

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.

341. Comment from the Town of Walpole:

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.

342. Comment from Tighe and Bond:

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.

343. Comment from the Holden Department of Public Works:

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.

344. Comment from the Town of Auburn:

It is required that all outfall and interconnections be inventoried. 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.

345. Comment from the Town of Shrewsbury:

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.

346. Comment from Tighe and Bond and the Town of East Longmeadow:

Part 2.3.4.5.b and c and 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.

347. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

348. Comment from the Town of Chelmsford:

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.

349. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

350. Comment from the Town of Maynard:

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. 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.

351. Comment from the Massachusetts Coalition for Water Resources Stewardship, the Cities of Springfield and Worcester, and the Town of Millbury:

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.

352. Comment from the City of Manchester (NH):

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.

353. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

354. Comment from the City of Brockton:

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.

355. Comment from the Town of North Andover:

The permittee should have more than "one (1) year to complete its outfall and interconnection inventory". Inclusion of "the inventory in each annual report" should not be mandated. 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.

EPA response to comments 337 - 355

EPA is not asking municipalities to re-do work that was satisfactorily completed pursuant to the MS4-2003 permits. In the draft MA MS4 Permit Fact Sheet (p. 79), EPA states that, "If not completed under the MS4-2003 permit, the Draft Permit requires the MS4 to conduct an outfall inventory." While additional time is warranted to collect detailed outfall/interconnection information, an initial listing of outfalls and interconnections can be done within 1 year. Outfall mapping was a requirement under the 2003 MS4 permit, and EPA notes that the mapping of all outfalls for existing permittees was to be done by 2008. To provide additional time to collect detailed outfall/interconnection information, EPA has streamlined the outfall/interconnection inventory to fit closely with the IDDE program and be updated with additional outfall/interconnection information as it is collected as part of IDDE program implementation. The initial inventory can be based on existing information and any information available to create an outfall/interconnection inventory. This initial inventory is then bolstered with specific data elements as they become available when the permittee visits outfalls and interconnections during dry weather screening and updated annually in conjunction with IDDE progress reporting. EPA disagrees that an inventory of interconnections would not be useful as part of the IDDE program. Without treating interconnections as part of the inventory that needs investigation permittees could contribute illicit connection flow to neighboring MS4 or other stormwater systems without any knowledge of the illicit flow. EPA believes it is imperative for each permittee to know their system's assets. Interconnections need to be inventoried and treated like outfalls for the purposes of IDDE implementation to ensure their MS4 is not contributing illicit flow to a neighboring MS4. EPA has augmented the definition of interconnection to exclude sheet flow over impervious surfaces to a neighboring stormwater system.

Changes to Permit: Permit parts 2.3.4.5 – 2.3.4.7 have been updated accordingly

356. Comment from Tighe and Bond:

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 either 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.

357. Comment from the Town of Uxbridge:

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.

358. Comment from the Massachusetts Municipal Association (MMA):

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.

359. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, and Wilbraham:

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.

360. Comment from the Town of East Longmeadow:

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 either 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.

361. Comment from the Connecticut River Stormwater Committee:

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.

362. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

363. Comment from the Town of Ludlow:

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.

364. Comment from the Town of North Andover:

The permittee should not have to "physically label all MS4 outfall pipes (excluding interconnections) with their unique identifier". Many of the areas are covered in snow for 113 of the year.

365. Comment from the Town of Wellesley:

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.

366. Comment from the Town of Lexington:

Section 2.3.4.5.b. states that 'The permittee 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.

367. Comment from the Town of North Andover:

The permittee should not have to "physically label all MS4 outfall pipes (excluding interconnections) with their unique identifier". Many of the areas are covered in snow for 113 of the year.

368. Comment from the Town of Concord:

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 revisiting 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).

369. Comment from the Town of Framingham:

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.

370. Comment from the Town of Webster:

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.

371. Comment from the Massachusetts Highway Association, the Tri-County Highway Superintendents Association, Grant Beckett, The Town of Southwick, and the City of Chicopee:

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.

372. Comment from the Town of Walpole:

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 outfall pipes necessary to monitor water quality.

373. Comment from the Town of Canton and Paul Hogan (Woodard & Curran):

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.

374. Comment from the 495 Metro West Partnership:

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.

375. Comment from the Town of Shrewsbury:

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.

EPA response to comments 356 - 375

While physically labeling outfalls could have multiple benefits including educating the public on what stormwater outfalls are and assisting in locating correct outfalls for sampling as part of the IDDE program, EPA agrees that the requirement to physically label all outfalls for all permittees when GPS coordinates are required to be collected is unnecessary. The permit requires the use of GPS to locate outfalls and while each outfall needs to have a unique identifier for tracking progress, the use of GPS coordinates for location identification is sufficient for proper IDDE program implementation. The requirement to physically label all outfalls has been removed from the permit.

Changes to Permit: Permit parts 2.3.4.5 – 2.3.4.7 have been updated accordingly.

376. Comment from the Town of Dedham:

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.

EPA response to comment 376

The permit specifies a Latitude/Longitude coordinate system because it is a universally recognized coordinate system that is easily understood by the public. UTM coordinates (Northing and Easting) can be easily converted to Latitude Longitude coordinates and a GIS program can display latitude and longitude instead of northing and easting with the simple setting change. Where a waterbody does not have a name the permittee can simply use "Unnamed Waterbody" or other identifier indicating that the waterbody does not have a formal name.

2.3.4.6. System Mapping

377. Comment from the Taunton River Watershed Association (TRWA):

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.

EPA Response to comment 377

EPA appreciates these comments regarding the importance of illicit discharge detection and elimination, and particularly the need for a map to inventory MS4 infrastructure.

378. Comment from the Massachusetts Rivers Alliance:

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.

379. Comment from the Mystic River Watershed Association (MyRWA):

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.

EPA Response to comments 378 - 379

EPA would like to provide flexibility for permittees to implement the mapping in whatever format will be most useful and efficient for their IDDE program. While GIS maps may be the most useful and efficient mapping system for many communities, EPA is recommending electronic mapping rather than requiring it in this permit issuance. Many communities covered under this permit already use GIS mapping of their system and will continue to do so. Many communities currently using paper maps may find that an electronic format is more useful for managing their MS4 assets under a more robust IDDE program, as required by the permit, or they have the flexibility to use paper maps under the permit.

380. Comment from the Town of Watertown:

Section 2.3.4.6-System Mapping: Mapping of private storm water treatment structures should be recommended. Private stormwater treatment structures may discharge to the MS4.

EPA Response to comment 380

EPA agrees with the suggestion that privately-owned stormwater treatment structures should be mapped if that information is available to towns, especially those that will be required to track stormwater BMPs as part of Appendix F requirements. Privately-owned stormwater treatment structures has been added to the list of suggested mapping elements in part 2.3.4.5. of the updated permit, but are not a required element.

Changes to the permit: Permit part 2.3.4.5. has been updated accordingly

381. Comment from the Charles River Watershed Association (CRWA):

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 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."

EPA Response to comment 381

The permit has been updated to specify that certain mapping requirements (including information required under the 2003 permit) must be completed within two years of the permit effective date; others must be completed within the 10-year implementation timeframe of the IDDE program. The system mapping is intended to inform and aid the IDDE program, as well as demonstrate the extent of completed an ongoing investigations and corrective actions. Therefore, while we agree that certain elements are an important first step in managing stormwater, such as developing a rough estimate of catchment delineations from existing information, we also believe that the catchment delineation will be refined and system infrastructure will be required to be mapped during the catchment investigation process. EPA does not intend for the mapping requirements of the IDDE section to delay the investigation and correction of illicit discharges to the system. Permittees are required to report on the progress towards completion of the map in each annual report.

Changes to the permit: Permit part 2.3.4.5. has been updated accordingly

382. Comment from Southeastern Regional Services Group:

2.3.4.6. – 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.

EPA response to comment 382

If the permit relied on a specific 303(d) and 305(b) list for permit requirements, permittees would not be relieved of requirements if a more recent 303(d) list indicates that the waterbody is no longer impaired. See EPA response to comments 145 - 150. In addition, EPA finds that actions required in the permit for those waterbodies that are identified as impaired for pollutants found in stormwater during the permit term are necessary to restore impaired waterbodies to their designated uses.

383. Comment from the New England Civil Engineering Corp.:

Please describe the methods to delineate catchments. Are they to be based on of topography only?

EPA Response to Comment 383

The MS4 catchment delineation process is more complicated than that of a natural watershed; a catchment delineation is based on stormwater flow both above ground and within the underground infrastructure of the MS4. The permittee will need to determine “upstream” catch basins and other points of entry to the storm sewer system associated with a particular outfall, and then determine the area draining to those catch basins based on topography, surface infrastructure, and land use. The American Society of Civil Engineers recommends in *Design and Construction of Urban Stormwater Management Systems* that field inspection, topographic maps, soils maps, aerial photographs, and other sources can be used to delineate catchments. EPA intends to provide further training on catchment delineation to the extent that resources allow.

Please note that the permit has been updated to specify that catchments should be delineated based on existing topographic and system information within the first two years of the permit term, and that these delineations will be refined as a result of field investigations throughout the 10-year implementation timeframe of the IDDE program.

Changes to the permit: Permit part 2.3.4.5.has been updated accordingly

384. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, Wilbraham:

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.

EPA Response to comment 384

MS4 permitting requirements may differ from state to state, as long as they meet the requirements of CWA sections 402(p)(3)(B)(ii) and (iii), implementing regulations in 40 CFR §§ 122.26 and 122.34, and applicable state regulations. We agree with the commenters that the required mapping elements will be useful to permittees in implementing and assessing not only their IDDE program but their overall SWMP. EPA declines to exclude open channel conveyances and stormwater treatment structures from required mapping. EPA believes that knowledge of all stormwater infrastructure whether above or below ground is important to stormwater quality. We believe this infrastructure will be easier to find and map than other MS4 elements and will help the permittee better manage certain programs required under the permit, such as

good housekeeping requirements. Please note the permit has been updated to specify that sanitary and combined sewer infrastructure should be mapped only where that information is available; EPA finds that this information will be important in prioritizing and investigating catchments, but that significant resources should not be put towards mapping the wastewater system as part of this permit.

All catchments, regardless of size need to be delineated but EPA finds that the task of delineating catchments should not delay outfall dry weather screening and investigation of illicit sources. Therefore, the permit has been updated to specify that catchments should be delineated roughly based on existing topographic and system information within the first two years of the permit term, and that these delineations will be refined as a result of field investigations throughout the 10-year implementation timeframe of the IDDE program. Information about the MS4 obtained during outfall screening and catchment investigations may be useful in creating the system map. We agree that “small” catchments may be a lower priority for communities and mapping of their drainage area may not occur until later in the program.

EPA applauds your regional collaboration to address stormwater management in your communities, and encourages you to share available GPS units and GIS capability within your Coalition to support the catchment delineations required under the final MA MS4 Permit. MassDEP and EPA will provide technical assistance as we can, and the delineation of catchments is described in more detail in EPA’s IDDE training manual for EPA reference on EPA Region 1’s website at <http://water.epa.gov/polwaste/npdes/stormwater/Illicit-Discharge-Detection-and-Elimination-IDDE.cfm>.

Local examples of cities and towns that have implemented catchment delineation as part of an IDDE program include Boston, Watertown, Lexington and Salem. EPA may provide more guidance on the IDDE program, including training, after the permit is issued.

Changes to the permit: Permit part 2.3.4.5. has been updated accordingly

385. Comment from Roger Frymire:

One spot I cannot now find in the draft permit documents calls for what I believe to be an unrealistic precision in recording GPS coordinates of outfalls. The EPA STORET standard here of five decimal places in digital degrees (DD.ddddd) seems to be reasonable. A single digit in the fifth decimal place is about three feet - the size of an average pipe of interest. Similarly an accuracy of +/- five meters would allow the use of very reasonably priced GPS equipment. This again leaves more monies available for fixing IDDE problems.

EPA Response to comment 385

This precision of outfall GPS data is not required in the permit; outfalls must mapped and their locations inventoried with a minimum accuracy of +/- 30 feet.

386. Comment from the Town of Dedham:

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 waterbody is within an identified impairment, then listing the impairment seems more important than the actual name.

EPA Response to comment 386

EPA reiterates that the requirement is to include "Waterbodies identified by name and indication of all use impairments as identified in the most recent EPA approved Massachusetts Integrated List of waters report pursuant to Clean Water Act section 303(d) and 305 (b). In this broader context, the purpose of naming the water is to link the water to its impairment status and pollutants of concern. The impaired waters list does not include all unnamed waters and EPA does not expect permittees to track down the names of "unnamed" receiving waters, as it is not likely to affect their impairment status. Where a waterbody does not have a name the permittee can simply use "Unnamed Waterbody" or a local identifier that will be useful to the permittee in implementing their program.

387. Comment from the Southeastern Regional Services Group:

2.3.4.6.a.ii: Does "where available" refer to the existence of sewer systems or maps of sewer systems?

EPA Response to comment 387

The location of sanitary and combined sewer systems must be included in the map if that information (map or narrative locational description) is available to the permittee and does not require a separate mapping of the sanitary system.

388. Comment from the Town of Chelmsford:

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.

389. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

390. Comment from the Town of Concord:

2.3.4.6.a.i/2.3.4.7.c.iii - 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.

EPA Response to comments 388 - 390

EPA agrees with the commenters that delineating catchments is a significant effort that should not interfere with completing other tasks of the IDDE program. We also believe that useful information such as the full extent of the MS4 pipe network and all catch basins may be collected during outfall screening or catchment investigations. The permit has been updated to specify that catchments should be roughly delineated based on existing topographic and system information within the first two years of the permit term, and that these delineations will be refined as a result of field investigations throughout the 10-year implementation timeframe of the IDDE program. (See EPA Response to comment 391).

Catchment delineations will still be a required mapping element that should be completed by the end of the 10-year IDDE program cycle. The delineations will be valuable to the permittee in managing their MS4: they will be important in locating sources of illicit discharges and in preventing future illicit discharges. It will also help permittees prioritize and implement catch basin cleaning and other good housekeeping requirements of the permit.

Please note that under the new timeline, catchment delineations will still be required for “clean outfalls,” just as catchment investigations are required, however, these investigations can be a lower priority for the permittee and are not expected to be refined within the first years of the permit term.

Changes to the permit: Permit part 2.3.4.5. has been updated accordingly

391. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

EPA Response to comment 391

Please note that outfall and receiving water mapping was required to be completed during the 2003 permit term, which expired in 2008. EPA finds that an additional two years to determine surface infrastructure such as catch basins, ditches, and stormwater treatment structures and to include interconnections is reasonable. The permit has been updated to specify that catchments should be roughly delineated based on existing topographic and system information within the first two years of the permit term, and that these delineations will be refined as a result of field investigations throughout the 10-year implementation timeframe of the IDDE program. This will allow permittees to fully map higher priority areas across town as those outfalls and catchments are investigated. The deadline for other elements of the system mapping, such as the location of underground infrastructures such as pipes, has been extended to 10 years as well. The mapping is intended mainly to serve the town’s IDDE program and must

be completed within 10 years, although it may also be useful for other elements of the town's SWMP, including impaired waters and TMDL requirements.

The approach will allow permittees to focus on areas where mapping will initially be more important and should not delay the investigation and removal of known and suspected illicit discharges. The town may choose to prioritize outfalls to impaired waters as a way to fast-track the investigation of those catchments and remove sources of illicit discharges and identify any pollutant sources that may be contributing to the impairment of the receiving water.

Changes to the permit: Permit part 2.3.4.5. has been updated accordingly

392. Comment from the Town of Framingham:

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.

EPA Response to comments 392

The delineation of catchments down to the outfall level will be useful to the permittee in investigating indicators of illicit discharges at the outfall. Please note that the mapping requirements for delineated catchments have been modified so as not to delay the other elements (outfall screening, catchment investigations) of the IDDE program (see EPA response to comments 394 - 402 for further details).

Changes to the permit: Permit part 2.3.4.5. has been updated accordingly

393. Comment from the Towns of Brewster, Canton, Medway, and Millis and the City of Easthampton:

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.

EPA Response to comment 393

EPA has determined that two years is sufficient time to digitize outfall and receiving water information (which was required to be mapped under the 2003 permit) as well as certain above ground infrastructure of the MS4; EPA expects that data for these additional requirements can be easily collected. The deadlines for other required mapping elements have been extended so as not to delay the implementation of the other elements (outfall screening, catchment investigations) of the IDDE program (see EPA response to comments 394 - 402 for further details). EPA would like to clarify that sanitary and combined sewer information must be mapped only when that information (map or narrative locational description) is available to the permittee. The permittee is not required to develop new sanitary sewer mapping or update existing sanitary sewer mapping.

Changes to the permit: Permit part 2.3.4.5. has been updated accordingly

394. Comment from the Town of Chelmsford:

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.

395. Comment from the Town of Westborough:

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.

396. Comment from the Town of Shrewsbury:

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.

397. Comment from the Towns of Holden and Auburn:

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.

398. Comment from the Southeastern Regional Services Group:

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.

399. Comment from the City of Fitchburg:

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.

400. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

2.3.4.6. 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.

401. Comment from the City of Newburyport:

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.

402. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

EPA response to comments 394 - 402

EPA agrees that a full map of the MS4 system should not be required within two years of the permit effective date, and that certain mapping elements may be better incorporated as catchment investigations are occurring to determine the locations and connections of MS4 pipes and other infrastructure. In this Final Permit, EPA has broken down the required mapping elements into different timelines for inclusion:

- MS4 outfalls and receiving waters were required to be mapped under the 2003 permit; permittees will be given two (2) years to update or potentially digitize this information, but EPA expects for the most part for these elements are already complete;
- Certain above ground infrastructure of the MS4 are expected to be incorporated into the mapping by year 2 of the permit;
- Certain below-ground infrastructure must be incorporated into the mapping by year ten (10) of the permit. EPA expects that this information will either be gathered and incorporated to prior to each catchment investigation or will be fully mapped during the catchment investigation, depending on the permittee's preference.
- The permittee is required to map estimated catchment delineations within the first two (2) years of the permit term based on available system information. These delineations must be refined and updated during the catchment investigation process and will be fully mapped by year ten (10) of the permit. Please note that the permit still requires the permittee to delineate all catchments.

Changes to the permit: Permit part 2.3.4.5., 2.3.4.7., and 2.3.4.8. have been updated accordingly

403. Comment from the Town of Walpole:

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.a.i and a.ii 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.

EPA Response to comment 403

EPA does not anticipate all permittees will be required to hire private consultants to inventory and sample outfalls; several communities implementing a robust IDDE program have used citizen volunteers, local university students or conducted the work themselves. EPA intends to share documents, where available, that can be used to update a municipal IDDE program. Please see EPA response to comments 394 - 402 above for a discussion of the changes in mapping element timing.

2.3.4.7. Written Illicit Discharge Detection and Elimination Program

404. Comment from the Charles River Watershed Association (CRWA):

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.

EPA Response to comment 404

The written IDDE program must be incorporated into a permittee's SWMP, which must be updated annually and posted on the permittee's website, if they have one (See part 1.10.2 of the permit).

405. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

2.3.4.7. 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.

EPA response to comment 405

Given the requirements of the written IDDE program, as well as the extension of deadlines in response to comments on other aspects of the IDDE program, EPA will not be extending the reporting deadline for the written IDDE program. The development and planning of a thorough and robust IDDE program is important for its success and this should be the focus of the permittee for the first year of the permit term.

Please note that EPA already includes resources on our website for developing an IDDE program, and we will continue to provide materials for permittees to the extent that resources allow.

406. Comment from the Town of Winchester and the City of Quincy:

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.

407. Comment from Weston & Sampson and the Town of Milford:

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.

EPA response to comment 406 - 407

EPA does not intend to disadvantage proactive permittees with the IDDE program. MS4 permittees that have proactively undertaken outfall sampling in advance of the permit should also be working to locate illicit discharge in any catchment identified as a “problem” in advance of the permit. Problem catchments are intended to be identified by permittees as catchments with known illicit connections to them, meaning that they are actively discharging unlawful inputs into the MS4 and actions are required immediately to protect human health and the environment. The permit recognizes this by allowing the permittee to forgo screening on problem catchments to allow the permittee to immediately commence tracking and removal of the illicit connections.

EPA acknowledges that some permittees have undertaken significant efforts to identify illicit discharges; these efforts can be used to meet the terms of this permit: any outfalls that have already been sampled in accordance with an EPA-approved protocol will not need to be sampled again during the initial outfall screening and sampling, which should save the permittee time and resources that can be put towards investigating catchments and eliminating illicit discharges. EPA notes that just because a outfall has been sampled previously does not mean the permittee must rank all sampled outfalls as “Problem” and instead allows permittees to use all the information they have on their outfalls to inform the outfall ranking. For additional information see EPA response to comment 421.

408. Comment from the Mystic River Watershed Association (MyRWA):

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.

409. Comment from the Massachusetts River Alliance:

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.

EPA response to comments 408 - 409

EPA would like to clarify that the requirements of the IDDE program, like other minimum control measures, may be implemented by other entities in accordance with part 2.3.1.b. of the permit. We agree there may be an opportunity for permittees to benefit from regional coordination or assistance from watershed groups and other volunteer organizations in implementing the IDDE program. Although EPA encourages regional cooperation in fulfilling the IDDE requirements and other requirements of the permits, EPA declines, in this instance, to make a statement of encouragement in the permit to avoid confusion with mandatory requirements. See also EPA response to comment 83.

410. Comment from the Town of Holden:

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.

EPA response to comment 410

EPA does not intend for the delineation of responsibilities of the IDDE program to be a significant effort for the permittee, and we believe it is an effort that clearly provides consistency across departments and over time as staff change. EPA has reached out to other municipal officials and departments in an effort to make them aware of the requirements of the program. However, since each municipality has its own unique structure, we believe that municipal DPWs may be best equipped to share information about the need for inter-department cooperation with other town departments.

411. Comment from the Town of Chelmsford:

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.

412. Comment from the Town of Milford:

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.

EPA response to comments 411 - 412

Similar to a sewer separation project, many towns have not evaluated the resulting stormwater quality once a sewer hookup is complete and cannot speak to the presence or absence of illicit discharges in that system. The purpose of the IDDE program is to systematically evaluate the MS4 and remove any existing illicit discharges. The factors for ranking outfalls, including septic areas or areas formerly served by septic systems, do have a higher potential for improper connections and leaks leading to sewage input into the MS4. If there are specific areas where a permittee has already confirmed that a sewer separation or a sewer hookup has led to "clean" stormwater discharges, that site-specific information can be factored into their priority ranking (see part 2.3.4.7.a.2-3.; which is part 2.3.4.7.c.i-ii. of the draft permit).

413. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

EPA response to comment 413

Please note that a permittee may choose to use other methods of evaluating outfalls in their ranking and in identifying problem and high-priority outfalls in accordance with part 2.3.4.7.a.2-3. (Part 2.3.4.7.c.i-ii. Of the draft permit): "The permittee may also consider additional relevant characteristics, including location-specific characteristics; if so, the permittee shall include the additional characteristics in its written (hardcopy or electronic) IDDE program." The commenter may decide through their own experience that any elevated screening levels are worthy of "problem" or "high-priority" classification and immediate investigation within their particular MS4. In particular, the permit provides the permittee great latitude in ranking catchments as "Problem" and includes no minimum requirements for such a ranking.

However, EPA's methodology for determining likely sewer inputs recognizes that any single exceedance of screening levels (ammonia, surfactants, bacteria, chlorine) does not necessarily indicate an illicit discharge issue. This methodology is based on expert guidance in the stormwater field (CWP, Pitt 2004) and EPA Region 1 field experience; a project analyzing over 3,600 water quality data points was used to determine the most efficient and cost-effective screening parameters to identify illicit discharges (Appendix I to the permit).

The requirements for evidence of illicit discharges as part of any screening or sampling have been reorganized and moved to a footnote, where appropriate, to provide clarity.

Changes to permit: Permit part 2.3.4. has been updated accordingly.

414. Comment from the Town of Holden:

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.

EPA response to comment 414

EPA disagrees that residential neighborhoods, even relatively new construction, necessarily have “a very low potential impact to stormwater quality” and for this reason they are not excluded from the outfall investigation within the IDDE program. A visual outfall assessment with no dry weather flow allows a permittee to classify certain catchments as “low priority,” however, these neighborhoods will need to be investigated more thoroughly within the 10-year implementation period of the IDDE program. While the proximity of the MS4 to sanitary sewer alignments does not necessarily mean there will be illicit connections, it is a risk factor that should be considered along with other factors such as age and construction materials, groundwater levels, etc.

415. Comment from Tighe and Bond and the Town of East Longmeadow:

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.

EPA Response to comment 415

EPA has revised the assessment and priority ranking of catchments to include an initial ranking followed by a re-ranking of outfalls based on dry weather screening and sampling, similar to the protocol suggested by the commenter above.

It is important that the investigation of illicit discharge source begin as soon as a source is detected, and is not be delayed by the need to delineate catchments or inventory infrastructure. We believe information for the catchment delineation and the infrastructure inventory can be more efficiently collected by the permittee during the permittee’s catchment investigation. Therefore, the timeline for mapping catchments has been altered: permittees must complete an estimate of catchment areas based on available information within 2 years and these catchment delineations must be refined during catchment investigations and mapped within 10 years. The catchment investigation procedure has been amended to include collection of this information. Permittees may determine inspection points and map infrastructure and catchments prior to beginning their investigations if they so choose, but they must remain on track with the catchment investigation schedule required in the permit.

Generally speaking, the EPA protocol outlined in section 2.3.4.7. prioritizes catchments that are likely to have illicit discharges based on the permittee’s previous knowledge or dry weather

screening data from outfalls. The permit language for this protocol has been reorganized to provide greater clarity in response to a number of comments regarding the complexity of the language and need for streamlining. However, EPA finds that a robust planning effort (i.e. during the first year of the permit term) will be important in terms of prioritizing staff time and budgeting towards the program, and will ultimately lead to a more efficient and effective IDDE program.

Changes to Permit: Permit part 2.3.4.7. and 2.3.4.8. have been updated accordingly.

416. Comment from the Town of Walpole:

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.

EPA response to comment 416

Generally speaking, the EPA protocol outlined in section 2.3.4.7. prioritizes catchments that are likely to have illicit discharges based on the permittee's previous knowledge or dry weather screening data from outfalls. The permit language for this protocol has been reorganized to provide greater clarity in response to a number of comments regarding the complexity of the program.

Changes to Permit: Permit part 2.3.4.7. and 2.3.4.8. have been updated accordingly.

417. Comment from the Mystic River Watershed Association (MyRWA):

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.

EPA response to comment 417

EPA acknowledges the active role that MyRWA and other organizations have played in the collection of water quality data for outfalls and in receiving waters. A permittee should consider receiving water quality in their ranking and may choose to use other local information in their ranking of outfalls in accordance with part 2.3.4.7.a.2-3. (Part 2.3.4.7.c.i-ii. Of the draft permit): "The permittee may also consider additional relevant characteristics, including location-specific characteristics; if so, the permittee shall include the additional characteristics in its written (hardcopy or electronic) IDDE program." We do not believe additional language to seek out other data sources will necessarily encourage permittees who were not already seeking other data to do so. EPA encourages MyRWA and the Mass Department of Public Health to share their water quality information with permittees to aid in their IDDE outfall ranking.

418. Comment from the City of Fitchburg:

2.3.4.7 – 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 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. 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.

EPA response to comment 418

Please note that all illicit discharges from the MS4 are illegal and subject to fines, enforcement actions and citizen suits. EPA rejects the assertion that the impacts of illicit discharges on water quality are “minimal” or that ongoing discharges should not be investigated because the permittee views investigating them as burdensome. Illicit connections to MS4 deliver untreated sewage to waterbodies and greatly impact water quality and threaten public health. Permittees should be working to eliminate illicit discharges to their system and illicit connections remain unlawful until eliminated; the 2003 permit also required an IDDE program that permittees should be continuing to implement until the updated permit is effective.

The catchment ranking and outfall sampling processes ensure that permittees focus on investigating evidence of illicit discharges in their system and eliminating them as expeditiously as possible to protect the environment and human health. Robust planning and outfall ranking will make sure resources are used in the most efficient manner to investigate and eliminate illicit discharges. The commenter provides no support for the cost claim of outfall sampling and investigation procedure implementation. The draft permit specifically allows for the use of field test kits to address cost concerns with sampling that were raised in previous draft permits.

EPA inspection experience in the region and work conducted by multiple permittees to locate illicit connections indicate that illicit discharges to and from MS4s are much more ubiquitous than the commenter suggests. It appears the commenter’s assertions are based on assumptions rather than actual investigations. For this reason, the draft permit provides a rigorous investigation procedure for towns to follow in order to eliminate these discharges. This methodology is based on expert guidance in the stormwater field (CWP, Pitt 2004) and EPA Region 1 field experience.

419. Comment from the Town of Framingham:

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.

EPA response to comment 419

The initial prioritization of outfalls in part 2.3.4.7.a. allows flexibility for towns to consider any number of characteristics in their ranking. The only information that the permit requires permittees to use in ranking outfalls as high or low priority are:

1. discharging to an area of concern to public health due to proximity of public beaches, recreational areas, drinking water supplies or shellfish beds;
2. determined by the permittee as high priority based on the characteristics listed below or other available information. (The permit then lists 10 factors for the permittee to consider, without a prescribed weighting or minimum criteria).

Permittees may choose to initially rank their outfalls in groups based on sub-basins. Eventually the individual outfall dry weather screening and sampling results will likely result in some outfalls within the same sub basin being prioritized differently for follow-up catchment investigation.

420. Comment from the Towns of Abington, Bellingham, Brewster, Canton, Easthampton, Swampscott, Pittsfield, Medway, and Millis:

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.

EPA response to comment 420

Please note that the permit does not state that absence of any information on screening criteria necessitates that permittees denote those outfalls/catchments as “high priority.” The point of the ranking is to compare outfalls based on information that is available in order to prioritize investigations to target illicit discharges most expeditiously. The permittee should consider the characteristics that EPA has chosen to inform permittees of illicit connection potential but ranking using all characteristics found in the permit is not required. The final permit only requires the re-ranking of outfalls after dry weather screening completion in year 3, however the ranking of outfalls is intended to be an ongoing process where the ranking can be redone at any point by permittees as additional information becomes available. The permittee may also consider other characteristics and information not included in the list at part 2.3.4.7.a.3. in developing its ranking.

The revised outfall ranking and dry weather investigation procedure essentially follows the commenters’ proposed procedure. An initial prioritization completed to follow the 2010 draft permit may be used to initiate the IDDE program provided that it meets the requirements of part 2.3.4.7.a. of the final permit. The permit requires towns to initially categorize outfalls into high or low priority (to the extent they can with existing information) in order to prioritize dry weather outfall screening and sampling and permit part 2.3.4.7 has been reorganized for clarity.

Changes to permit: Permit part 2.3.4.7 of the permit has been updated accordingly.

421. Comment from the Department of Conservation and Recreation (DCR):

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 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.

EPA response to comment 421

EPA disagrees that a prioritization of outfalls and contributing catchments is misguided. Without a prioritization of outfalls based on an initial screening, permittees might spend years investigating catchments with low discharge potential while riskier catchments and potential illicit discharges go uninvestigated.

While the sensitivity of the receiving water may be the same, other screening factors in the Wachusett Reservoir watershed will be different for various entities and outfalls (see list at part 2.3.4.7.a.3.; or 2.3.4.7.c.ii. of the draft permit). For example, DCR has the opportunity to prioritize within the “high” catchments based on proximity to the drinking water supply. Other considerations for prioritization might include outfalls draining more densely populated areas, which have a higher potential for cross-connections and illicit discharges. The final permit contains two ranking steps. The first ranking known as the “initial ranking” is based on information the permittee has at the time of the ranking and includes a requirement to rank discharges in proximity to sensitive areas as high priority. While many outfalls will be initially ranked as high priority if discharging to a beach or public water supply they may not end up

being ranked as high priority in the “follow-up ranking” following outfall sampling. The follow-up ranking of outfalls is intended to be based on outfall screening results and any other information the permittee would like to include in ranking outfalls and their catchments for investigation. During the follow-up ranking the only requirement is that all outfalls that have sewage indicators as defined in the permit be ranked as high priority, all other ranking criteria for the prioritization of outfall catchment investigations is at the discretion of the permittee.

Please note that nothing precludes a permittee from implementing the IDDE program on an accelerated schedule. In accordance with the permit, permittees may also choose to identify any number of their outfalls as “problems” which allows them to forgo dry weather sampling and move straight to catchment investigation.

Comments from several commenters on the draft permit indicate, and EPA agrees, that the IDDE program represents a substantial effort for permittees that will ultimately lead to water quality improvements throughout the Commonwealth. Planning and developing methodologies will ultimately lead to a program that is more efficient and more effective in eliminating illicit discharges from the MS4. Also please note that development of the IDDE program involves more than just developing a catchment ranking methodology; this is the reason that the deadline for this task (and others in the initial IDDE program development) is set at one year and not sooner.

422. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC), Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, Wilbraham:

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.

EPA response to comment 422

In order to alleviate confusion and to clarify how catchments will be ranked, EPA has reorganized the initial outfall ranking and sampling program. Outfalls will initially be ranked based on available characteristics for their contributing catchment. Then, they shall be sampled and re-ranked based on the results of any dry weather screening and sampling (which may happen through field kits). Permittees may not rely solely on existing catchment information to determine there are no illicit discharges to an outfall: this information may be incomplete or inaccurate. Therefore, dry weather screening and a full investigation of the catchment and the drainage system is required to confirm there are no illicit discharges in a catchment.

The objective of this initial ranking and re-ranking in the final permit is for permittees to identify likely areas of illicit discharges to be addressed as quickly and as efficiently as possible within the IDDE implementation timeline. Lower priority areas must eventually be investigated in order to confirm the absence of illicit discharges, but the focus of the program is to identify high priorities rather than exclude low priority outfalls.

Changes to permit: Permit part 2.3.4. has been updated accordingly.

423. Comments from the Massachusetts Department of Environmental Protection:

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.

EPA response to comment 423

It is EPA's view that carefully considering existing information and planning illicit discharge investigations based on risk factors will ultimately lead to a program that is more efficient and more effective in eliminating illicit discharges from and to the MS4.

Please note that the final permit does not require permittees to rank catchments or outfalls as "high priority" based solely on the age of surrounding infrastructure as the commenter suggests. There is no automatic trigger for the initial ranking of an outfall as a high priority in part 2.3.4.7.a. other than if an outfall is "discharging to an area of concern to public health due to proximity of public beaches, recreational areas, drinking water supplies or shellfish beds." In addition, the permittee must consider the ten bulleted list of characteristics of the defined initial catchment area where information is available. None of these ten characteristics is listed as an automatic inclusion criterion. The factors listed in part 2.3.4.7.c.ii. of the Draft Permit and in part 2.3.4.7.a.iii. of the final permit should be considered where information is available to develop the most informed initial ranking. Based on EPA's experience investigating illicit discharges in the region, these factors have been identified as correlating with illicit discharges. The point of the initial ranking is to compare outfalls based on combinations of the identified characteristics for the purpose of prioritizing investigations to target illicit discharges most expeditiously. See EPA response to comment 429 - 431 and EPA response to comment 421 for further discussion.

While all catchments must be investigated under the draft permit, permittees are given a 10-year implementation timeframe for the IDDE program. Lower priority catchments will not need to be investigated until the later part of the program. Illicit discharges from the MS4 system are illegal and the permittee should be working to identify and eliminate their sources. Without investigating all catchments, a permittee might miss sources of illicit discharges that were not

identified by the outfall screening and sampling. EPA intends to provide training and materials to aid towns in their outfall/catchment rankings to the extent that our resources allow.

424. Comment from the Mystic River Watershed Association (MyRWA):

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).

EPA response to comments 424

EPA has determined through inspection experience throughout the region that likely indicators of sewer input are the exceedance of thresholds for ammonia, surfactants, and bacteria or chlorine; an exceedance of one threshold may not necessarily indicate the presence of sewage. For example, elevated bacteria may be from a natural source or a pest animal, such as geese. *Illicit Discharge Detection and Elimination: A guidance manual for program development and technical assessments*, produced by the center for Watershed Protection (CWP) and Robert Pitt (2004) recommends that bacteria (*E. coli* and Enterococci) “can sometimes (>50% of samples) distinguish [sewage] discharge from clean flow types depending on regional characteristics, or can be helpful in combination with another parameter.”

The permit has been updated to specify that permittees may choose to rank outfalls and interconnections based on the results of dry weather screening, regardless of whether they meet the threshold values, i.e., permittees may rank as “high priority” those catchments that exceed the likely sewer input criteria, but they may choose to rank any other outfalls as high priority based on high bacteria counts (see EPA response to comment 413). The requirements for evidence of illicit discharges as part of any screening or sampling have been reorganized and moved to a footnote, where appropriate, to provide clarity.

Please note that all catchments (with the exception of those draining to an excluded outfall) must be investigated during the 10-year implementation of the IDDE program, therefore, if a permittee has few “problem” or high priority” outfalls, they will need to begin investigating “lower” priority catchments identified based on a scheme of their choosing.

Changes to permit: Permit part 2.3.4.7. has been updated accordingly.

425. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC), Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, Wilbraham:

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 ≥ 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 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.

426. Comment from the Town of Dedham:

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.

EPA response to comments 425 - 426

EPA has determined that likely indicators of sewer input are the exceedance of thresholds for ammonia, surfactants, and bacteria or chlorine; an exceedance of one threshold may not indicate the presence of sewage. For example, elevated bacteria may be from a natural source or a pest animal, such as geese. Outfalls where screening indicates the presence of sewage (exceedance of three criteria) must be considered a high priority for catchment investigations and re-ranked as such in accordance with part 2.3.4.7.c (follow-up ranking), see EPA response to comment 421.

The permit's methodology is based on expert guidance in the stormwater field (CWP, Pitt 2004) and EPA Region 1 field experience; a project analyzing over 3,600 water quality data points was used to determine the most efficient and cost-effective screening parameters to identify illicit discharges. EPA has determined that elevated ammonia, surfactants, and bacteria or residual chlorine levels are effective indicators of an illicit discharge.

The thresholds for evidence of illicit discharges as part of any screening or sampling have been reorganized and moved to a footnote, where appropriate, to provide clarity.

Changes to permit: Permit part 2.3.4.7. has been updated accordingly.

427. Comment from the Town of North Andover:

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".

EPA response to comment 427

Catchments may become "high priority" for a variety of reasons, and EPA declines to specify that catchments without the presence of bacteria should not be "high priority." Dry weather outfall sampling that includes ammonia above 0.5 mg/L, surfactants above 0.25 mg/L and detectable levels of chlorine together indicate likely sewage input to the MS4 rather than a potable water source or other cause. In addition, the presence of chlorine may affect the accurate quantification of bacteria concentrations.

428. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

The priority ranking factors for catchments 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.

EPA response to comment 428

EPA appreciates the commenter's suggestion. The threshold values included in the permit are the numbers that EPA has determined indicate likely sewer input to the MS4. The permit's methodology is based on expert guidance in the stormwater field (CWP, Pitt 2004) and EPA Region 1 field experience; a project analyzing over 3,600 water quality data points determined efficient and cost-effective screening parameters (and thresholds) to identify illicit discharges (Appendix I to the permit).

Please note that permittees may choose to rank outfalls based on concentration of dry weather screening results if they so choose. The permit has been updated to allow the permittee to consider other factors in their re-ranking in addition to results exceeding the threshold.

Changes to permit: Permit part 2.3.4.7.c. has been updated in accordingly.

429. Comment from the Town of Concord:

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 40 yrs 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.

430. Comment from the Town of North Andover:

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.

431. Comment from the City of Medford:

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.

EPA response to comment 429 - 431

EPA has included many system and catchment characteristics in the ranking scheme in order to allow permittees to prioritize their outfall dry weather screening and catchment investigations based on the unique circumstances of their community. EPA would like to clarify that the permit does not require the permittee to assign a "high" priority to all outfalls whose catchments have any of the characteristics listed. The point of the ranking is to compare outfalls based on information that is available in order to prioritize investigations to target illicit discharges most expeditiously. The permittee should consider the characteristics that EPA has determined are important in predicting illicit discharge vulnerability where that information is available and can be used to distinguish outfalls and catchment areas. The permittee should consider all of the characteristics in developing a priority ranking, not just a few that the permittee feels are less than useful.

When taken as a whole, the combinations of many of these characteristics for an outfall may be useful in determining the likelihood of illicit discharges in a catchment and the priority for investigation. Regarding the age of infrastructure, while much of Massachusetts' MS4 systems may be greater than 40 years old, the permittee may be able to use this characteristic to assign a lower priority to some younger and newly developed areas with less likelihood of leaking sewer pipes and cross-connections. Past complaints of sewer or other water infrastructure issues should be a priority for the town in terms of likely areas for other illicit or infrastructure problems. Flexibility has been left in this characteristic for permittees to rely on various sources of information or types of complaints.

432. Comment from the Town of Concord:

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.

EPA response to comment 432

EPA recognizes that high bacteria levels alone do not necessarily indicate the presence of sewage in the outfall. EPA has determined that likely indicators of sewer input are the exceedance of thresholds for ammonia AND surfactants AND bacteria or chlorine; an exceedance of the threshold for only one of these indicator parameters may not indicate the presence of sewage.

The requirements for evidence of illicit discharges as part of any screening or sampling have been reorganized and moved to a footnote to provide clarity in response to several commenters' confusion.

Appendix G has also been updated to include Colilert and Enterolert in the list of acceptable bacteria analytical protocol in order to include less costly bacteria methods.

Changes to Permit: Permit part 2.3.4.7. and Appendix G have been updated accordingly.

433. Comment from the Neponset River Watershed Association:

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.

EPA response to comment 433

EPA declines to require a QAPP as part of each permittee's IDDE program. EPA finds that the requirement to produce a written IDDE program along with all inspection and sampling procedures is adequate to implement a successful IDDE program and any further written protocol is unnecessary.

434. Comment from the New England Civil Engineering Corp.:

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).

435. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

2.3.4.7.c. 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.

436. Comment from the Town of Franklin:

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.

437. Comment from the town of Maynard:

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. 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.

438. Comment from the Town of Dedham:

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.

439. Comment from the City of Brockton:

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.

440. Comment from the Town of Milford:

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.

441. Comment from Weston & Sampson, the Town of Milford, and the City of Quincy:

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).

442. Comment from the Town of Canton:

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.

443. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

444. Comment from the Town of Winchester:

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.

445. Comment from Paul Hogan (Woodard & Curran):

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 two/one years; it is recommended that the ranking and prioritization be completed within three/2 years of the effective permit date.

446. Comment from the City of Newburyport:

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 [mapping and creating an IDDE program]. Section 2.3.4.7.c.iii.

447. Comment from the City of Newburyport:

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.

- 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.

448. Comment from the Town of Chelmsford:

- 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.

449. Comment from the Town of Leicester:

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.

450. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

451. Comment from the Town of Weymouth:

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.

452. Comment from the Towns of Danvers and Westwood:

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.

453. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC), Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, Wilbraham:

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).

EPA response to comments 434 - 453

EPA appreciates these comments regarding the timing of the IDDE program. EPA has made a number of changes to the IDDE section so that the IDDE program follows a reasonable and efficient schedule for permittees.

In particular, EPA has revised the initial ranking to specify that it will be based on *outfalls* and not *catchments* in order to not delay outfall and interconnection screening and sampling. The initial outfall ranking shall be due within one (1) year but will only be based on existing information available to the permittee; it is mainly intended to identify “problem” and “excluded” outfalls that will not require follow-up sampling. The results of the outfall sampling will ultimately be the largest factor in prioritizing later catchment investigations; an updated ranking is due at year three (3) of the permit following dry weather screening.

In addition, catchment delineation expectations and full system mapping has also been aligned with system investigations in the final permit. An estimated delineation of catchments based solely on existing system information and mapping must be completed within two (2) years of the permit term. A refined catchment delineation can occur concurrently with catchment investigations as required under part 2.3.4.8. of the final permit, but this updated and “ground-truthed” information must be incorporated into the system map at part 2.3.4.5. within the ten (10) year implementation timeframe of the IDDE program. Please note that the timeframe to map below-ground MS4 infrastructure such as pipes has also been extended to 10 years in part 2.3.4.5., so as not to delay illicit discharge investigations and illicit removals.

Changes to Permit: Permit parts 2.3.4.5., 2.3.4.7., and 2.3.4.8. have been updated accordingly.

454. Comment from the City of Beverly:

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 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.

EPA response to comment 454

This and several other comments indicate confusion on the implementation of the prescribed IDDE program. EPA has reorganized the topics within sections 2.3.4.5 through 2.3.4.5.9 of the draft permit in order to provide a clearer outline of tasks required under this part and to align requirements with program implementation.

Many deadlines have been altered for certain mapping elements, screenings, and catchment investigations in part 2.3.4. Outfall and interconnection dry weather screening and sampling must be completed within three years of the permit effective date (no extension from draft permit). Please note that sampling and analysis is only required where dry weather flow is found in accordance with part 2.3.4.7.b.3. of the final permit. Catchment investigations of problem outfalls must be completed within seven years (four year extension from draft permit) and those with evidence of illicit discharges must also be completed within seven years (two year extension from draft permit), while the remaining catchments must be investigated within ten years of the permit effective date (no extension from draft permit). Wet weather sampling must be completed at all outfalls with system vulnerability factors concurrent with catchment investigations (no extension from draft permit).

It appears that the commenter has incorrectly identified its discharges that are subject to the permit requirements, including 2003 permit requirements. Please note that this permit does not redefine the term “outfall” as defined at 40 CFR 122.26(b)(9), and all outfalls that discharge stormwater from a regulated MS4 to a water of the U.S. are subject to all of the required ranking, screening, and sampling of outfalls, regardless of the receiving water impairment status or permittee specific identifier.

The permit does not require that all outfalls discharging to a waterbody with a bacteria/pathogen TMDL be marked as “problem” and only requires that those outfalls be ranked as “high” priority for the purposes of IDDE program implementation in accordance with Appendix F. However, if the permittee is aware of illicit problems within their system, they must designate those outfalls as “problem”, skip any outfall sampling, and begin working to identify and remove illicit sources in those catchments. Permittees are also able to use the results of previous outfall screenings that meet criteria in the final permit in order to comply with the outfall sampling requirements. For other catchments (not identified as “problem” or “excluded”), it is important for permittees to visually inspect and sample all outfalls during dry weather for the presence of illicit discharges in order to know what is happening in their system, where illicit inputs are obvious and ongoing, and where to prioritize for further investigation. Only outfalls deemed by the permittee as “problem” or “excluded” do not need to be screened or sampled during dry weather. See EPA response to comment 421 for further information regarding ranking.

Illicit discharges from the permittee’s MS4 system are unlawful and remain unlawful until eliminated. Permittees should be working to eliminate these discharge as expeditiously as possible from their systems; part 2.3.4. provides a framework that will make efficient use of resources to address this significant water quality concern.

Changes to the permit: Permit part 2.3.4. has been updated accordingly.

455. Comment from the City of Fitchburg:

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.

EPA response to comment 455

The commenter does not indicate what draft permit condition is the basis for the conclusion that drainage to the Nashua River makes all outfalls a high priority for outfall dry weather screening and catchment investigation. EPA has included many system and catchment characteristics in the ranking factors in order to allow permittees flexibility to prioritize their outfall dry weather screening and catchment investigations based on the unique circumstances of their community. EPA would like to clarify that the permit does not require the permittee to assign a “high” priority to all outfalls whose catchments have any one of the particular characteristics listed in the permit. The point of the ranking is to compare outfalls based on information that is available in order to prioritize investigations to target illicit discharges most expeditiously. The permittee should consider the characteristics that EPA has determined are important in predicting the likelihood of illicit discharges where that information is available and

can be used to distinguish outfalls and catchment areas. When taken as a whole, the combinations of many of these characteristics for an outfall are expected to be useful in determining the likelihood of illicit discharges in a catchment and the priority for investigation. The final permit requires that all catchments with outfalls that have an indication of sewer input based on dry weather sampling results be investigated within 7 years of the permit effective date.

It is not the intent of the program that every outfall should be sampled in wet weather but only where it will aid in the detection and investigation of illicit discharges. Regarding wet weather sampling requirements, the commenter does not indicate what draft permit System Vulnerability Factors are the basis for the conclusion that drainage to the Nashua River triggers a wet-weather sampling requirement for all outfalls. It is not the intent of the program that every outfall should be sampled in wet weather, but only where it will aid in the detection and investigation of illicit discharges. In the final permit EPA has reduced the number of System Vulnerability Factors listed in part 2.3.4.8 (c)(i) that must be considered and that trigger the requirement for at least one wet weather sample at the outfall. Other factors such as infrastructure more than 40 years old, sewer pump/lift stations, and wide-spread code-required septic system upgrades are recommended, but not required System Vulnerability Factors in the final permit.

Changes to permit: Permit part 2.3.4.7. has been updated in accordingly

456. Comment from the Town of Webster:

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.

EPA response to comment 456

While permittees may be able to rank outfalls for screening based on catchment characteristics, it is important for permittees to ground-truth the potential of illicit sources in these catchments with visual inspections and outfall sampling. The benefits may be significant in low-priority catchments where issues are found when the outfalls are actually inspected, which is why EPA expects all outfalls to be screened within three years. Ultimately, the permittee must be able to verify with field data that the outfall/catchment is actually a low priority and does not require a more prompt catchment investigation (these lower-priority catchments must be investigated within the ten year implementation timeframe of the IDDE program). Please note that sampling is only required at outfalls with dry weather flow in accordance with part 2.3.4.7.b.3. of the final permit.

457. Comment from the City of Medford:

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.

458. Comment from the Town of Shrewsbury:

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.

EPA response to comments 457 - 458

A definition of “interconnection” will be added to the permit that includes a discharge point FROM a permittee’s system to another. The downstream MS4 does not need to consider that interconnection point as an outfall/interconnection for their system. Please note that the permit includes provisions for how to proceed when an outfall or interconnection is inaccessible (see part 2.3.4.7.biii.2 of the permit).

Changes to permit: Appendix A and Permit part 2.3.4. have been updated accordingly

459. Comment from Tighe and Bond:

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?

460. Comment from the Massachusetts Coalition for Water Resources Stewardship, the Town of Millbury, and the Cities of Springfield and Worcester:

Section 2.3.4.7.d.i (page 32): The [commenters] object 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.

461. Comment from the City of Manchester (NH):

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 on section 2.3.4.5], 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.

462. Comment from the Town of Concord:

2.3.4.7.d.i - Furthermore, the permit's support "draft" document "EPA New England Bacteria/ 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

EPA response to comment 459 -462

Appendix I has been removed from the permit. All requirements for dry weather sampling are found within part 2.3.4.7.b. of the updated permit.

Change to permit: Permit part 2.3.4.7.b. (formerly part 2.3.4.6.d.) has been updated accordingly

463. Comment from Tighe and Bond:

We are very pleased that EPA developed the Bacterial Source Tracking Protocol to create a consistent procedure for determining the presence of illicit discharges.

EPA response to comment 463

EPA appreciates this comment regarding the Bacterial Source Tracking protocol.

464. Comment from the City of Medford:

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.

465. Comment from the Town of Andover:

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.

EPA Response to comments 464 - 465

The permit has been updated to specify that permittees must revisit a dry outfall within one week if there is evidence of illicit flows at the outfall. Evidence of sewage or other illicit flows warrants follow-up at an outfall, even if there is not flow during the initial screening. Evidence of illicit flows might include toilet paper, soap or FOG (fats, oil, and grease) deposits, staining, or excrement in the vicinity of the outfall.

Changes to permit: Permit part 2.3.4.7.b. has been updated accordingly

466. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

EPA response to comment 466

It is unclear why the commenters feel three years to sample during dry weather is unrealistic. EPA finds that three years to conduct outfall screening represents a realistic timeframe for dry weather screening for all permittees and represents the maximum extent practicable level of effort for this task.

As written in the permit, only outfalls that have dry weather flow are required to be sampled during dry weather investigations. Additionally, permittees are not required to conduct dry weather screening at outfalls where illicit discharges are already known or suspected within the catchment (“problem outfalls”) or in certain low-infrastructure areas (“excluded outfalls”). Permittees are also able to use the results of previous outfall screenings that meet EPA criteria in order to comply with the outfall sampling requirements. For these reasons EPA assumes that communities will be actually sampling only a small subset of their outfalls for dry weather flows. The outfall screening process is not expected to take significant time and is an important aspect of the IDDE program in order for permittees to account for their MS4 assets, especially at the point where they discharge to the

467. Comment from the Town of Dedham:

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.

EPA response to comment 467

Thank you for your suggestions on streamlining the IDDE program. An important part of this program is a thorough investigation of the permittee’s entire MS4 within the ten year implementation timeframe of the IDDE program. EPA inspection experience in the region indicates that illicit discharges to MS4s are common. Except for “excluded” catchments, permittees cannot verify there are not illicit discharges to their system until they have completed a thorough investigation of their infrastructure, including sampling as required. As many commenters noted, many municipalities in Massachusetts have significant portions of

their towns that meet one or more of the catchment characteristics or system vulnerability factors that EPA has determined indicate a higher risk of illicit discharges.

The commenter's suggested procedure for determining dry weather illicit discharges can be part of their IDDE procedure, however this will not relieve them of conducting a thorough investigation of their system as required in the final permit and EPA declines to require the use of sandbags in the final permit.

468. Comment from the Southeastern Regional Services Group:

2.3.4.7.d.iii: Dry weather screening and sampling should not proceed when there is observable snow melt.

EPA response to comment 468

The permit has been updated to specify that dry weather screening and sampling should not proceed when there is observable snowmelt, to the extent practicable.

Changes to permit: Permit part 2.3.4.7.b. has been updated accordingly

469. Comment from the Town of Framingham:

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.

470. Comment from the Town of Holden:

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.

471. Comment from the Town of Auburn:

Outfall dry and wet weather screening and sampling requires at a minimum sampling of 7 parameters (ammonia, chlorine, conductivity, salinity, e coli/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.

EPA response to comment 469 - 471

Except for “excluded” catchments, permittees cannot verify there are not illicit discharges to their system until they have completed a thorough investigation of their infrastructure, including sampling as required. As many commenters noted, many municipalities in Massachusetts have significant portions of their towns that meet one or more of the catchment characteristics or system vulnerability factors that EPA has determined indicate a higher risk of illicit discharges.

The dry weather screening parameters in the permit are intended to detect the presence of potential illicit discharges and not necessarily to address specific receiving water impairments. EPA’s methodology for determining likely sewer inputs recognizes that any single exceedance of screening levels (ammonia, surfactants, bacteria, chlorine) does not necessarily indicate an illicit discharge issue. However, these indicators taken together can give the permittee confidence that an illicit connection issue may be present. Simple visual inspection may not be enough to determine if an illicit connection exists (e.g. dry weather flow where high residual chlorine is masking odor and bacteria), and EPA declines to augment the permit to rely on visual inspection only. The methodology required in this permit is based on expert guidance in the stormwater field (CWP, Pitt 2004) and EPA Region 1 field experience; a project analyzing over 3,600 water quality data points was used to determine the most efficient and cost-effective screening parameters to identify illicit discharges, and it should be noted that sampling parameters (except bacteria and pollutant of concern) can be done with field test kits.

472. Comment from the Town of Wellesley:

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.

EPA response to comment 472

The permit has been revised in order to make certain system vulnerability factors (SVFs) discretionary for the permittee, see EPA response to comments 527 - 551. It is not the intent of EPA that a permittee should sample every outfall in wet weather. The permit contains SVFs that trigger wet weather sampling in areas or where system conditions indicate a high likelihood of illicit discharges during wet weather conditions. While commenters requested that wet weather screening be triggered when several SVFs are identified in a catchment EPA declines to increase the number of SVFs required to trigger wet weather sampling above one (1) per catchment.

Each SVF represents an increased likelihood of illicit wet weather discharge and each SVF in the final permit should be weighted equally. EPA finds that the presence of any one of the SVFs in the final permit is enough to require wet weather screening of that outfall.

The permit has also been revised to require all problem catchments to be investigated within five (5) years and all catchments where sewer input is indicated within seven (7) years. While the benchmarks are different from the draft permit, EPA believes this will give permittees additional time to complete the requirements of the IDDE program and allows additional flexibility to the permittees.

EPA acknowledges that the robust IDDE program is likely to increase the amount that communities are currently spending on IDDE (Watervision LLC, 2016). However, the impact to stormwater quality and in turn the receiving water quality is likely to be significant. Boston Water and Sewer Commission, Brookline, Chelsea, Everett, Lexington, Malden, Medford, Revere, Stoneham, Waltham and Watertown have all implemented IDDE methodology similar to that required by part 2.3.4 of the Permit and in each case have resulted in the removal of significant volumes of untreated sewage from the MS4. Work completed by Boston Water and Sewer removed over 8,000 gallons per day of raw sewage from entering the MS4 in 2013 alone. Watertown has investigated 90% of its system and has removed over 1,800 gallons per day of raw sewage from the MS4. Since 2004, over 58 million gallons of untreated sewage has been removed from MS4 systems in the Boston Harbor Watershed using similar IDDE protocol as that required in part 2.3.4 of the Permit, including wet weather sampling. See EPA Response to comments 301 - 304 for further examples. EPA disagrees that wet weather sampling is not useful and indeed many communities listed above have removed illicit connections that only manifest during wet weather conditions. Please note that all illicit discharges from the MS4 are unlawful and remain unlawful until eliminated, illicit discharges are subject to fines, enforcement actions and citizen suits. Permittees should be working to eliminate illicit discharges in accordance with 40 CFR 122.34(b)(3). Please see the fact sheet to the draft permit for further discussion of the water quality benefits derived from removing these discharges from the MS4.

Changes to permit: Permit part 2.3.4.8. has been updated accordingly

473. Comment from Tighe and Bond and the Town of East Longmeadow:

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 permittees to compare to for wet weather sampling results? Please clarify in the final permit.

474. Comment from the New England Civil Engineering Corp.:

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.

475. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

EPA Response to comment 473 - 475

EPA agrees with NAIOP that wet weather sampling data can be highly variable; however, without data indicating the dry weather benchmarks would not apply during wet weather EPA declines to augment the thresholds in the draft permit. The body of evidence that permittees are able to collect about the outfall, the catchment, and the MS4 infrastructure through the IDDE program, in combination with wet weather sampling data, can be used to determine the likelihood of an illicit discharge. The relationship will not always be clear-cut or the same throughout the MS4 but remains a valuable piece of information to collect during IDDE investigations, where warranted. In addition, the Bacteria Source Tracking document available on EPA's website (formally Appendix I) includes other parameters (e.g.: pharmaceutical products) that permittees may choose to include in their sampling protocol to further inform permittees as to the source of the wet weather discharge, however their inclusion is not required in any permittees IDDE program.

476. Comment from Weston & Sampson, the Towns of Milford and Winchester, and the City of Quincy:

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.

477. Comment from the American Council of Engineering Companies of Massachusetts (ACEC/MA):

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?

478. Comment from the Town of Dedham:

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.

EPA Response to comments 476 - 478

The permit does not define a minimum storm event because a storm event that triggers a discharge will vary from system to system and within each system based on infrastructure configuration and the nature of potential wet weather discharges. EPA does not wish to limit the number of storms that permittees may use to capture a wet weather sample. Permittees may use their discretion and best available information to identify optimal sampling times based on catchment sizes in their MS4 and various storm intensities. Permittees will be expected to collect a wet weather sample from an outfall in order to complete catchment investigations, which may take more than one storm event for certain outfalls. It is not expected that catchment investigations and wet weather screening are conducted throughout the entire MS4 at the same time, which is why the permit allows multiple years for this effort. The permittee will not be sampling all outfalls requiring wet weather samples during a single storm event. EPA expects that the information gathered on the system infrastructure and mapping updates early in the permit term will allow the permittee to better predict which outfalls are expected to discharge during certain storm intensities for the purposes of collecting a wet weather sample.

479. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

Section 2.3.4.7.c.d.iv of the Illicit Discharge Detection and Elimination Program states that “wet weather screening and sampling shall be conducted at ~~every~~ **an** outfall, and/or within the catchment ... 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.” What is the reason for sampling when groundwater is high?

EPA Response to comment 479

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. As the groundwater table rises stormwater system and sewer system pipes may become saturated and expose leaks in either system. For instance, the sanitary system may be leaking but the conduit for entrance to the stormwater system is only available when groundwater is able to enter the stormwater system, carrying the exfiltrated illicit connection with it. In addition a leaky sanitary system could become overwhelmed during high groundwater periods and trigger a cross connection between the sanitary system and stormwater system that would normally not be seen.

480. Comment from the Massachusetts Department of Transportation:

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.

481. Comment from the City of Medford:

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.

482. Comment from the Town of Maynard:

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." 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).

483. Comment from Town of Winchester:

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 storm water 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.

484. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

485. Comment from the 495 Metro West Partnership:

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.

486. Comment from the City of Newton, and the Towns of Danvers and Westwood:

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).

EPA response to comment 480 - 486

Boston Water and Sewer Commission, Brookline, Chelsea, Everett, Lexington, Malden, Medford, Revere, Stoneham, Waltham and Watertown have all implemented IDDE methodology similar to that required by part 2.3.4 of the Permit and in each case the result has been significant volumes of untreated sewage removed from the MS4, including conducting wet weather sampling. Work completed by Boston Water and Sewer removed over 8,000 gallons per day of raw sewage from entering the MS4 in 2013 alone. In Watertown, they have investigated 90% of their system and have removed over 1,800 gallons per day of raw sewage from the MS4. In Lexington, over 150,000 gallons per day of illicit wet weather flow alone have been removed from the MS4. Overall, since 2004, over 58 million gallons of untreated sewage has been removed from MS4 systems in the Boston Harbor Watershed using similar IDDE protocol as that required in part 2.3.4 of the Permit, including conducting wet weather sampling. See EPA Response to comments 301 - 304 for further examples.

Discharges containing illicit connections are unlawful and remain unlawful until eliminated. The volume of wet weather discharges containing illicit connections removed by permittees that have conducted thorough IDDE investigations indicates that illicit connections that are only triggered during wet weather are abundant and represent permit violations for many permittees. Beyond the obvious benefits of protecting public health and the environment, any cost benefit analysis should take into consideration all fines potentially incurred by inaction by permittees, including civil penalties up to \$16,000 per day per violation for the discharge of illicit connections from their MS4. EPA finds that the cost of IDDE implementation (between \$3,500

and \$58,700 per year) (Watervision LLC, 2016) is significantly smaller than potential fines associated with allowing illicit connections to continue. Illicit discharges are a threat to public health and the environment; inaction by a permittee will not eliminate that threat.

Please note that in response to numerous comments about system vulnerability factors (SVFs) and wet weather sampling, EPA has reduced the mandatory SVFs that trigger wet weather sampling and has made certain SVFs discretionary. This will reduce the burden placed on permittees with respect to wet weather sampling.

Changes to permit: Permit part 2.3.4.8. has been updated accordingly

487. Comment from Tighe and Bond:

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.

488. Comment from the Town of Westborough:

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.

489. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

490. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

2.3.4.7.d. 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.

491. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

492. Comment from the Town of Newburyport:

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.

493. Comment from the Town of Reading:

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).

EPA response to comments 487- 493

EPA experience in the region indicates that wet weather sampling as part of a comprehensive IDDE program is necessary to rid the system of illicit connections and EPA disagrees that wet weather sampling does not play a role in locating illicit connections. See EPA response to comment 480 - 486. Neither the permit improvement guide nor the Center for Watershed Protection guidance indicates that wet weather sampling as part of an IDDE program is not warranted. In response to numerous comments about system vulnerability factors (SVFs) and wet weather sampling, EPA has reduced the mandatory SVFs that trigger wet weather sampling and has made certain SVFs discretionary. EPA has also reworded the permit language to encourage wet weather sampling in the months of March – June to capture the high groundwater season, but has removed it as a requirement in order to allow more time for permittees to complete wet weather sampling in a given season. EPA acknowledges that high groundwater and wet weather illicit discharges may occur outside of this season, although regional experience suggests this is the best timeframe to detect wet weather illicit discharges.

Changes to permit: Permit part 2.3.4.8. has been updated accordingly

494. Comment from the Department of Conservation and Recreation (DCR):

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.

EPA response to comment 494

EPA appreciates the suggestions regarding in-stream monitoring. EPA encourages the DCR to continue instream water quality monitoring to assess the efficacy of certain aspects of their SWMP. However, in-stream monitoring does not address the intent of the wet-weather sampling, which is to identify illicit discharges that are triggered by precipitation or a high water table.

Please note that wet weather sampling is required at outfalls where their catchments have one or more System Vulnerability Factors identified in the permit. The permit has been updated to specify that certain of these factors are optional in determining whether wet-weather sampling is warranted.

Changes to permit: Permit part 2.3.4.8.c.1. (part 2.3.4.7.e.i. of the draft permit) has been updated accordingly

495. Comment from the New England Civil Engineering Corp.:

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.

496. Comment from the Town of Reading:

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.

497. Comment from the Neponset River Watershed Association:

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.

498. Comment from the Town of Webster

Please also consider extending the wet weather monitoring period to include summer and fall to give us more time to get to the structures.

499. Comment from Weston & Sampson, the Town of Milford, and the City of Quincy:

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.

500. Comment from the Town of Dedham:

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.

501. Comment from the American Council of Engineering Companies of Massachusetts (ACEC/MA):

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.

502. Comment from the Town of Winchester:

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.

503. Comment from the Town of Leicester:

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.

504. Comment from the Town of Shrewsbury:

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.

505. Comment from the Town of Lexington:

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.

506. Comment from the Town of East Longmeadow:

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.

EPA Response to comments 495 - 506

The reason to target specific months for wet weather sampling, as stated in the permit, is to capture seasonal high groundwater that may trigger wet weather illicit discharges (see EPA Response to comment 479). EPA has reworded the permit language to encourage wet weather sampling in the months of March – June to capture the high groundwater season, but has removed it as a requirement in order to allow more time for permittees to complete wet weather sampling in a given season. EPA acknowledges that high groundwater and wet weather illicit discharges may occur outside of this season, although regional experience suggests this is the best timeframe to detect wet weather illicit discharges.

Changes to permit: Permit part 2.3.4.8. has been updated accordingly.

507. Comment from the New England Civil Engineering Corp.:

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.

EPA response to comment 507

Wet weather illicit discharges (including leaks from sanitary sewer lines) may be triggered by surface infiltration, high groundwater table or issues with the sanitary system, therefore, sandbagging may not be the most effective technique to capture illicit discharges and a thorough inspection of the MS4 system is necessary. Permittees may choose to include sandbagging as part of a catchment investigation for wet or dry weather illicit discharges, provided that all of the requirements of part 2.3.4.8. are also met.

508. Comment from the Town of Dedham:

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.

509. Comment from Weston & Sampson, the City of Quincy, and the Towns of Milford and Winchester:

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.

EPA response to comments 508 - 509

EPA has not specified levels of accuracy for field kit testing methods in the IDDE program. Permittees must use a testing option that can detect the indicators of sewage (ammonia and surfactants) at or below the threshold level specified in the permit. The detection level for chlorine is 0.02 mg/L or 20 ug/L in an EPA-approved method as well as for many field analysis options. The permit will be updated to include these requirements.

Changes to permit: Permit part 2.3.4.7.b.iii.4. has been updated accordingly

510. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

EPA response to comment 510

EPA's methodology for determining likely sewer inputs recognizes that any single exceedance of screening levels (ammonia, surfactants, bacteria, chlorine) does not necessarily indicate an illicit discharge issue. This methodology is based on expert guidance in the stormwater field (CWP, Pitt 2004) and EPA Region 1 field experience; a project analyzing over 3,600 water quality data points was used to determine the most efficient and cost-effective screening parameters to identify illicit discharges. EPA finds that the requirements of this permit are more comprehensive than the guidance provided by the Center for Watershed Protection and provide a methodology that results in identifying the presence of sewage in stormwater in the most cost effective manner for permittees. The permit has not been changed to allow a permittee discretion in selection of sampling parameters for screening.

511. Comment from the Town of Milford:

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.

EPA response to comment 511

The permittee is not prevented from sampling outfalls for additional parameters during wet weather screening. However, this will not be a permit requirement, as EPA finds resources will

be better spent addressing the sources of those pollutants in the MS4 rather than sampling all outfalls (please see the fact sheet to the draft permit for a discussion of the characterization of pollutants in stormwater). The sampling as part of the IDDE program can be used by permittees to locate hotspots but is not intended to accurately characterize the discharge's overall impact on the receiving water and all downstream receiving waters. EPA declines to augment any PCP requirements until the IDDE program and subsequent wet weather sampling has taken place.

512. Comment from the Town of Framingham:

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.

EPA response to comment 512

IDDE sampling under the permit includes salinity and conductivity sampling because both can affect a surfactant MBAS assay; this information is important for interpreting the surfactant sampling results as accurately as possible to identify potential illicit discharges or screen out clean outfalls as lower priority.

513. Comment from Tighe and Bond:

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 de-chlorination chemicals instead of chlorine analysis.

514. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC), Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, Wilbraham:

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).

EPA response to comments 513 - 514

Likely indicators of sewage include the presence of additional parameters other than detectable levels of chlorine. EPA’s methodology for determining likely sewer inputs recognizes that any single exceedance of screening levels (ammonia, surfactants, bacteria, chlorine) does not necessarily indicate an illicit discharge issue. This methodology is based on expert guidance in the stormwater field (CWP, Pitt 2004) and EPA Region 1 field experience; a project analyzing over 3,600 water quality data points was used to determine the most efficient and cost-effective screening parameters to identify illicit discharges. The detection level for chlorine is 0.02 mg/L or 20 ug/L in an EPA-approved method as well as for many field analysis options and this detection level has been added to the permit for clarity. It should be noted that chlorine in the discharge not only provides further disinfection during hold time but can provide disinfection within the MS4 itself as well as mask odors and prevent bacterial growth that would normally be identified during visual screening as a potential sewage indicator.

Changes to permit: Permit part 2.3.4.7.b.iii.4. has been updated accordingly

515. Comment from Roger Frymire:

I am a firm believer in the efficacy of bacterial sampling at outfalls to identify sewage problems. I would be thrilled if every outfall could be sampled quarterly in both wet and dry weather. But that would leave no money for fixing any of the problems found.

Ammonia and to a lesser extent surfactant sampling provide a reasonable quick screen for problem catchments. Boston Water & Sewer did a decent job screening their 200 outfalls this way, and might have avoided a lawsuit if they had put out enough effort to solve the problems seen faster than more problems appeared.

EPA response to comment 515

EPA appreciates the comment regarding the IDDE program, which raises points about the importance as well as the rigor of the program.

516. Comment from the Neponset River Watershed Association:

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
- d. Published studies.....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.

EPA response to comment 516

EPA appreciates the comment regarding the importance of other sources of bacteria in the MS4, and there may be cases where a permittee cannot completely abate these other sources. However, IDDE is still of critical importance to reduce bacteria pollution in Massachusetts waterways. Boston Water and Sewer Commission, Brookline, Chelsea, Everett, Lexington, Malden, Medford, Revere, Stoneham, Waltham and Watertown have all implemented IDDE methodology similar to that required by part 2.3.4 of the Permit and in each case have resulted in significant volumes of untreated sewage removed from the MS4. Work completed by Boston Water and Sewer removed over 8,000 gallons per day of raw sewage from entering the MS4 in 2013 alone. Watertown has investigated 90% of its system and has removed over 1,800 gallons per day of raw sewage from the MS4. Since 2004, over 58 million gallons of untreated sewage has been removed from MS4 systems in the Boston Harbor Watershed using similar IDDE protocol as that required in part 2.3.4 of the Permit. All of these reductions in untreated sewage entering the MS4 have had a significant impact on bacteria in the discharge from these systems and have made large strides in reducing bacteria in waterways draining to Boston Harbor.

517. Comment from Roger Frymire:

I believe any exceedance seen in ammonia, surfactant, or bacterial levels should raise an alert at an outfall - rather than requiring all three to be high before admitting there might be a problem to investigate.

I would require follow up bacterial testing to show problems first found thru ammonia or surfactants have been fully fixed, as well as testing every good outfall at least every five years in wet and dry weather to maintain catchment integrity.

EPA response to comment 517

EPA appreciates the comment regarding the IDDE program. The dry weather screening parameters and thresholds are based on expert guidance in the stormwater field (CWP, Pitt 2004) and EPA Region 1 field experience; a project analyzing over 3,600 water quality data points was used to determine the most efficient and cost-effective screening parameters to identify illicit discharges. Permittees may also choose to rank outfalls based on any water quality data where appropriate to their system, including additional bacteria sampling if they choose to include that as part of their IDDE program.

Please note the program does require follow-up testing to ensure that illicit discharges have been removed; eventually the program will include follow-up testing of outfalls on a regular schedule to eliminate new illicit discharges, however, most permittees are not at that point with their IDDE program.

518. Comment from Roger Frymire:

Characterization of Phosphorous loading from an outfall is complicated and requires multiple samples from multiple storms in all four seasons - possibly a hundred samples per outfall. Requiring sporadic outfall sampling for phosphorous seems a complete waste of time, effort, and money better spent reducing sewage and building infiltration BMPs.

519. Comment from the Mystic River Watershed Association (MyRWA):

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.

EPA response to comments 518 - 519

EPA appreciates the comments regarding stormwater monitoring for receiving water impairments. EPA intends that the impaired waters monitoring, though it will provide limited data, will inform other aspects of the stormwater management plan, including good housekeeping and public education measures in certain catchments. This discharge data may also be combined or used to inform a GIS analysis and identify hotspots. The data is not intended to characterize the discharge and its effects on receiving waters and all downstream receiving waters.

520. Comment from Weston & Sampson, the City of Quincy, and the Town of Milford:

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.

Request: Remove requirement for salinity analysis.

EPA response to comment 520

IDDE sampling under the permit includes salinity and conductivity sampling because increased conductivity or elevated salinity affect a surfactant MBAS assay and indicate a false positive. It will be important to measure and acknowledge these concentrations to interpret surfactant sampling results as accurately as possible to identify potential illicit discharges or screen out clean outfalls as lower priority. In addition salinity measurements can be used to determine if the sample is under the influence of salt water. Salinity and conductivity remain included as monitoring parameters, but they do not include threshold values like the sewer input indicator parameters. Please note that a single water quality probe can provide both salinity and

conductivity readings and therefore it represents a negligible (if any) increase in effort and cost to measure at both parameters.

521. Comment from the Towns of Abington, Brewster, Bellingham, Canton, Easthampton, Swampscott, Medway, and Millis, and the City of Pittsfield:

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.

EPA response to comment 521

EPA inspection experience in the region indicates that illicit discharges to and from MS4s are common. For this reason, the draft permit provides a rigorous investigation procedure for municipalities to follow in order to eliminate these discharges.

Please note that generally, the permit inspection methodology allows flexibility for permittees to determine key junction manholes for investigation as appropriate to the complexity of their system and does not include a specific definition of key junction manhole in order to allow flexibility to permittees for implementation.

The permit includes several steps to prioritize the investigation of catchments where there is dry weather flow at outfalls or where the permittee already knows there are illicit connections. These areas must be investigated more promptly for illicit discharges. The permit requires investigation of the entire storm drain network over a ten year period: permittees must be able to verify through sampling of their discharges and a thorough investigation of their infrastructure that illicit discharges have been eliminated from their system.

Please note that all illicit discharges from the MS4 are illegal and subject to fines of up to \$16,000 per day per violation. Permittees should be working to eliminate illicit discharges in accordance with 40 CFR 122.34(a)(3) as expeditiously as possible.

522. Comment from the New England Civil Engineering Corp.:

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?

EPA response to comment 522

Where no dry weather flow is observed at an outfall, but wet weather sampling indicates an illicit connection, the permittee shall isolate the illicit connection using the manhole inspection methodology developed by the permittee as required by Permit part 2.3.4.8. of the Permit. Once the illicit source is removed, the permittee shall conduct confirmatory screening consistent with Permit part 2.3.4.8.e. The outfall investigation is not complete until the illicit source has been removed from the system and confirmatory screening confirms the illicit source is removed. The permittee may need to use several investigative techniques to local the source of an illicit discharge. A permittee cannot consider an investigation complete until removal of the illicit discharge is verified.

523. Comment from the Southeastern Regional Services Group, Cities of Easthampton and Pittsfield:

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.

EPA response to comment 523

Part 1.4 of the Permit allows uncontaminated groundwater discharges from the MS4. However, if the MS4 is allowing infiltration of contaminated groundwater (regardless of the source) that discharge is not authorized by the Permit and should be treated as an illicit connection. In such a case, the removal of the illicit connection could be repair of the MS4 or lining of the system.

Groundwater discharges from septic systems are not regulated by the NPDES program and are not considered illicit discharges under this permit, however, infiltration of contaminated groundwater into the MS4 is an illicit discharge. In general the connection between groundwater discharges and surface waters is too complex to determine a direct causal effect.

524. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC), Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, Wilbraham:

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.

EPA response to comment 524

While there are many deadlines throughout the Permit, the Permit does not mandate when any work needs to begin, only when it needs to be complete. As such, any permittee can choose to start any of the requirements when they feel it is most suitable to effective implementation of their program. If the permittee would like to discuss system vulnerability factors with POTW staff during SWMP development they are welcome to do so. This approach provides more flexibility to permittees.

525. Comment from the Town of Milford:

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?

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?

EPA response to comment 525

If the MS4 is leaking and allowing the discharge of contaminated groundwater (regardless of the source) that discharge is not authorized by the Permit and should be treated as an illicit connection. In such a case, the removal of the illicit connection would be repair of the MS4, lining of the system, or removal of the source. The permit does not mandate any one of these fixes in particular, and it is up to the permittee to decide how it would like to address the problem. With respect to pollutant removal calculations, EPA considered and included the removal of non-compliant septic systems as part of the IDDE program load reduction factored into the PCP targets, and no credit will be given for removal of illegal discharges from the MS4. However, the permittee is required to track illicit removal and estimate illicit flow removed, and EPA may adjust the required phosphorus reductions for permittees in subsequent permit issuances based on work completed, including taking into account the volume of illicit discharges removed.

526. Comment from the New England Civil Engineering Corp.:

EPA should quantify multiple and widespread failures as related to system vulnerability factors.

EPA response to comment 526

EPA assumes this comment relates to septic system failures. EPA would like to provide flexibility to permittees in determining which sections of their system have potential for septic system discharges to the MS4. As such, EPA has made system vulnerability factors related to septic system failures discretionary and permittees are free to apply their municipality-specific interpretation of “widespread” as it relates to these requirements.

Changes to Permit: Permit part 2.3.4.8 (Part 2.3.4.7 in the draft Permit) has been updated accordingly.

527. Comment from the Towns of Abington, Brewster, Bellingham, Canton, Easthampton, Swampscott, Medway, and Millis and the City of Pittsfield:

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.

528. Comment from the Town of Chelmsford:

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 ...

529. Comment from the Town of Auburn:

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.

530. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

531. Comment from the Town of Lexington:

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 than the storm drain system." We believe this will capture the problems that the wet-weather sampling is looking to identify.

532. Comment from Weston & Sampson, the City of Quincy, and the Towns of Milford and Winchester:

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.

533. Comment from the American Council of Engineering Companies of Massachusetts (ACEC/MA):

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.

534. Comment from the City of Medford:

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.

535. Comment from Southeastern Regional Services Group:

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.

536. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

537. Comment from Tighe and Bond and the Town of East Longmeadow:

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.

538. Comment from the Town of Walpole:

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.

539. Comment from the Town of Lexington:

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 than 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.

540. Comment from the Town of Dedham:

Section 2.3.4.7.e lists one of the SVFs as "Any sanitary sewer and storm drain 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 storm drain and sanitary sewer infrastructure, or other vulnerability factors identified through I/I Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations."

541. Comment from Weston & Sampson, the City of Quincy, and the Towns of Milford and Winchester:

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.

542. Comment from Weston & Sampson, the City of Quincy, and the Towns of Milford and Winchester:

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; therefore, 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.

543. Comment from the American Council of Engineering Companies of Massachusetts (ACEC/MA):

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.

544. Comment from the Town of Concord:

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 61 h 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.

545. Comment from the City of Franklin:

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.

546. Comment from the Town of Canton and Paul Hogan (Woodard & Curran):

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.

547. Comment from the Town of Andover:

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 [in other comments from the Town].

548. Comment from the Town of North Andover:

System Vulnerability Factors - describe nearly all catchment areas. 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.

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.

549. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

550. Comment from the Town of Reading:

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.

551. Comment from the Town of Dracut:

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.

EPA response to comments 527 - 551

Based on comments from many communities, EPA has reduced the number of System Vulnerability Factors that trigger wet weather sampling and made other factors discretionary. The goal of SVFs is to identify catchments that have a high probability of wet weather discharge of untreated sewage to the MS4. As such, each mandatory SVF in the Final Permit focuses on areas where the sanitary system could potentially discharge to the MS4 due to proximity, design, or failure. Other factors that may not be applicable to all systems, including age of infrastructure, are now discretionary and the permittee may consider other factors as SVFs when applicable to their system. EPA declines to remove the SVF related to system defects and leaking pipes or laterals, as this situation represents the type of infrastructure failure that can result in untreated sewage discharged to waterbodies, threatening public health and the environment. In response to the Town of Lexington's comment regarding crossings of the storm drain system and sanitary system, the final Permit includes the language proposed by Lexington to identify only those crossings where the sanitary system is shallower (above) the storm sewer, which represents the situation the SVF aimed to target in the draft Permit. For information related to IDDE timing see EPA response to comment 583. For information related to key junction manholes see EPA response to comment 521.

Changes to Permit: Permit part 2.3.4.8 has been updated accordingly

552. Comment from the City of Newton, and the Towns of Danvers, Maynard and Westwood:

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.

553. Comment from the Town of Winchester:

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.

554. Comment from the Town of Concord:

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.

555. Comment from the Town of Holden:

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 exist. 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.

556. Comment from the City of Fitchburg:

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.

557. Comment from Tighe and Bond and the Town of East Longmeadow:

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.

558. Comment from the Town of North Andover:

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. 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.

559. Comment from the Town of Webster:

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.

560. Comment from the Town of Framingham:

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.

561. Comment from Weston & Sampson, the Towns of Milford and Winchester, the City of Quincy, and the American Council of Engineering Companies (ACEC):

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.

562. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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 nonstructural BMP practices to improve stormwater quality.

563. Comment from the New England Civil Engineering Corp.:

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.)

564. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC), Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, Wilbraham:

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.

565. Comment from the Town of Lexington:

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.’

EPA response to comments 552 - 565

EPA declines to augment the permit to only require key junction manhole inspections where evidence of an illicit connection was found during dry weather inspection. Illicit connections can take many forms (improperly connected lateral, underdrain, dumping, cross connection etc), are not always continuous during dry weather (flow from an improperly connected lateral would be intermittent) and some only activate during wet weather events (when the sanitary system is overwhelmed or groundwater table is high). Given the variable nature of illicit connections EPA has determined that a thorough systematic inspection of each permittee's system is necessary to detect illicit connections to the MS4. Visiting an outfall one time may not lead to the identification of problems on a specific catchment while a thorough investigation of assets will increase the chance of finding illicit connections. The 2004 Center for Watershed Protection Illicit Discharge Detection and Elimination guidance document (Center for Watershed Protection, 2004) identifies thorough investigation and knowledge of stormwater infrastructure as necessary for a successful IDDE program. In addition, Boston Water and Sewer Commission, Brookline, Chelsea, Everett, Lexington, Malden, Medford, Revere, Stoneham, Waltham and Watertown have all implemented IDDE methodology similar to that required by part 2.3.4 of the Permit and in each case have resulted in significant volumes of untreated sewage removed from the MS4. Work completed by Boston Water and Sewer removed over 8,000 gallons per day of raw sewage from entering the MS4 in 2013 alone. Watertown has investigated 90% of its system and has removed over 1,800 gallons per day of raw sewage from the MS4. Since 2004, over 58 million gallons of untreated sewage has been removed from MS4 systems in the Boston Harbor Watershed using similar IDDE protocol as that required in part 2.3.4 of the Permit. Once a "clean sweep" of the system is complete and permittees have inspected and mapped their entire system future IDDE work can be driven by outfall inspections alone. To make better use of municipal resources, EPA has augmented some mapping requirements to coincide with the IDDE program implementation allowing permittees to create thorough system maps while conducting illicit screening procedures. The requirements to open key junction manholes throughout the system in the final Permit allow for proper inspection and mapping of permittee assets while screening for illicit connections and collecting information on the presence of system vulnerability factors for potential wet weather investigation which can now all be done without duplication of effort by the permittee. During this investigation permittees can clean or repair sections of their MS4 as appropriate to free their system of blockages or repair failing sections of their MS4 to ensure proper function of their system which has benefits beyond just illicit connection removal. For additional information regarding system mapping see EPA Response to comments 388 - 390.

566. Comment from the City of Franklin:

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.

EPA response to comment 566

Wet weather sampling deadlines are tied to IDDE milestones and are conducted concurrently with catchment investigation meaning that all catchments with system vulnerability factors need to be sampled during wet weather by 10 years after the permit effective date. The suggestion in this comment would impose a more stringent deadline (completion by the end of year four), which EPA does not believe is necessary. EPA notes there is nothing in the permit that precludes a permittee from finishing their IDDE program before the milestones set forth in the final Permit.

567. Comment from the Town of Leicester:

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.

EPA response to comment 567

Wet weather confirmation sampling is only required on those catchments where System Vulnerability Factors exist. This requirement is to confirm all illicit connections to the MS4 have been eliminated. Where a catchment has potential for wet weather triggered illicit connections, follow-up screening during wet weather is required to ensure all wet weather triggered illicit connections have been removed. Part 2.3.4.8.e.ii details the necessary confirmatory screening that must be completed. If one or more SVF factors have been identified, confirmatory screening shall be conducted in both dry and wet weather.

568. Comment from Weston & Sampson, the Towns of Milford and Winchester, and the City of Quincy:

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.

569. Comment from the Town of Winchester:

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 ongoing 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.

570. Comment from the Towns of Maynard, Danvers, and Westwood:

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. We request EPA provide evidence that spending this on-going expense will have a significant water quality impact.

571. Comment from the Town of Milford:

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.

572. Comment from the Town of Weymouth:

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.

573. Comment from the Connecticut Fund for the Environment (CFE) – Save the Sound and Save the Bay:

(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.

EPA response to comments 568 - 573

Ongoing screening and sampling of outfalls (referred to in the draft Permit as follow-up screening) is retained in the final Permit acknowledging that finding and removing illicit connections is work that permittees must do continuously. It is anticipated that this will be required under all future MS4 permits, see 40 CFR §122.34(b)(3). In addition, illicit connections can manifest through new system failures, new incorrect lateral hookups, illegal dumping and other sources at any time and inspecting the system one time will not prevent illegal connections from occurring in the future. The section of the permit has been renamed and updated for clarity.

Changes to Permit: Part 2.3.4.7.3 (now 2.3.4.10.) has been updated accordingly.

2.3.4.8. IDDE Program Implementation Goals and Milestones

574. Comment from the Town of Framingham:

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.

575. Comment from the Town of Concord:

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 2.3.4.8.a and further suggests the EPA include similar language highlighting 2003 permit "credits" in the Stormwater Management Plan (SWMP) section of the permit.

2.3.4.8.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.

576. Comment from the City of Brockton:

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.

577. Comment from the Towns of Auburn and Holden:

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.

578. Comment from the Town of Shrewsbury:

The three year time period given to complete screening tasks, especially with the wet weather sampling constraints, is unrealistic and five years is recommended.

579. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC), Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, Wilbraham:

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).

EPA response to comments 574 - 579

EPA disagrees with the assertion that dry weather screening cannot be completed within 3 years and declines to augment the schedule in the final permit. An outfall inventory and map was required under the 2003 permit and should have been completed by 2008 so additional time for permittees covered under the 2003 Permit is not needed to locate outfalls (new permittees are given additional time for this task). EPA finds that 3 years to conduct the dry weather outfall screening required by this permit represents what is practicable for all permittees. EPA notes that permittees may rely on screening conducted under the MS4-2003 permit, pursuant to an EPA enforcement action, or by the state or EPA to the extent that it meets the requirements of Part 2.3.4.7.b.3.iv. In addition, one commenter (Concord) noted that it had already conducted substantially equivalent monitoring to that required by Part 2.3.4.7.b. as part of an EPA enforcement action. Such municipalities can request an exemption from the requirements of Part 2.3.4.7.b. by submitting a written request to EPA and retaining exemption approval from EPA as part of the SWMP.

580. Comment from the City of Fitchburg:

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.

EPA response to comment 580

EPA is unaware of any sewer separation projects that require sampling of the new storm drain system to ensure no inadvertent cross connections were made and all laterals were hooked to the sanitary system properly. As such, an area that were once served by combined sewer systems can have a high potential for illicit connects through cross connections. EPA declines to exempt recently separated area from the IDDE program. EPA notes that permittees can prioritize investigations based on knowledge of their system and while EPA finds that areas previously served by combined sewer systems may have a higher potential for illicit connections, permittees may have additional information that suggests this is not the case for their system and could rank outfalls for investigation accordingly.

581. Comment from the Mystic River Watershed Association (MyRWA):

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.

582. Comment from the Massachusetts River Alliance:

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.

EPA response to comments 581 - 582

The permittee is required to include all data used to comply with dry weather screening and sampling requirements in the annual report, including data under the 2003 permit on an enforcement action.

583. Comment from the City of Newburyport:

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.

EPA response to comment 583

Outfalls were required to be mapped under the 2003 permit. EPA finds the town has had ample time to locate all outfalls. As measured from the effective date of the permit, EPA will not be extending the deadline to begin the IDDE program.

584. Comment from Tighe and Bond and the Town of East Longmeadow:

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.

EPA response to comment 584

EPA declines to cap the number of outfalls that investigated each year of the permit term as that will not always represent investigation and removal of illicit discharges "as expeditiously as possible" for all permittees. The final permit no longer contains the requirement to investigate 40% of the outfall catchments within 5 years of the effective date and increased the timing to investigate those outfalls where dry weather screening indicates the presence of an illicit connection from 5 years to 7 years from the permit effective date. This added flexibility will not limit the work a permittee may do in any given year and provides flexibility and extended deadlines for full IDDE implementation.

Changes to the Permit: Permit part 2.3.4.8 has been updated accordingly.

585. Comment from the Town of Dedham:

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.

586. Comment from Weston & Sampson, the Towns of Milford and Winchester, and the City of Quincy:

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.

EPA response to comments 585 - 586

In this Final Permit, EPA has extended the deadlines for the IDDE program and reorganized certain requirements in order to make the program more manageable for municipalities. Permittees must complete problem catchment investigations within seven years, but the interim milestone has been removed. Permittees must also complete investigations of catchments with indicators of sewage within seven years and must complete all catchment investigations (except excluded catchments) within ten years. EPA is also developing a spreadsheet to help municipalities track and organize their outfall screening and catchment investigations in order to aid administration of the program. While the IDDE program lays out a framework for detecting and isolating illicit discharges, these sources are unlawful and must be removed as quickly as possible. Each permittee must come up with their own protocol for confirmation of an illicit source and eventual removal of that illicit source. EPA disagrees that 20 years is needed to complete IDDE program and EPA has clarified that when the source of the illicit connection has been isolated/confirmed the catchment investigation can be marked as complete for the purposes of permit compliance. The permittee then is required to remove the illicit connection within 60 days of isolating/confirming the source, permittees who cannot

remove the illicit discharge within 60 days must provide EPA with a realistic schedule of when the work will be completed.

Changes to Permit: Permit part 2.3.4.8. has been updated accordingly

587. Comment from the Town of East Longmeadow:

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.

1. 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.

EPA response to comment 587

The goal of catchment investigations within the IDDE program is to find and work towards fixing illicit discharges to the MS4. Permittees that are already aware of many illicit issues (as the commenter suggests) should be working to address these illegal discharges under their existing IDDE program. All discharges containing illicit connections are unlawful, are subject to fines and enforcement actions and remain unlawful until eliminated. See EPA response to comments 585 - 586.

588. Comment from the City of Newburyport:

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 requests 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.

EPA response to comment 588

The permit has been updated to specify that catchments should be roughly delineated based on existing topographic and system information within the first two years of the permit term, and that these delineations will be refined as a result of field investigations throughout the 10-year implementation timeframe of the IDDE program. (see EPA Response to comment 391). To make better use of municipal resources, EPA has augmented the full catchment delineation to coincide with the IDDE program implementation, allowing permittees to create thorough system maps while conducting illicit screening procedures.

Changes to Permit: Permit part 2.3.4.5. – 2.3.4.7. has been updated accordingly

589. Comment from the Charles River Watershed Association (CRWA):

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.

EPA response to comment 589

The draft and final permit (Part 2.3.4.2.) state that permittees must eliminate illicit discharges as expeditiously as possible, and must provide a schedule in their annual report if this cannot be done within 60 days. This includes the correction of SSO issues if the overflow enters the MS4 system.

2.3.4.9. Indicators of IDDE Program Progress

590. Comment from the Towns of Auburn and Holden:

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.

EPA response to comment 590

Permit part 2.3.4.9. has been updated to clarify tracking requirements for evaluating program success. The requirements in the final permit represent the minimum that must be documented in each annual report. EPA plans to develop a spreadsheet that could be used to capture all the information necessary to report these measures.

Changes to Permit: Permit part 2.3.4.9. has been updated accordingly

2.3.4.10. Training

591. Comment from Keith Saxon:

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.

EPA response to comment 591

EPA finds that the detailed and technical program training for employees involved in the IDDE program may be of limited benefit to residents and the permit will not require this training to be made available to the community, although permittees are not prevented from doing so. Please note that permittees may also choose to educate residents about certain illicit discharge issues as part of their public education program required under part 2.3.3. of the permit.

2.3.5. Construction Site Stormwater Runoff Control

592. Comment from the Town of Leicester:

The requirements in this section should correlate with the Massachusetts Stormwater Handbook Standards.

593. Comment from the Town of Dedham:

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 measures. This will effectively duplicate existing state regulations.

EPA response to comments 592-593

Construction Site Stormwater Runoff Control requirements in this permit are taken directly from 40 CFR 122.34(b)(4) and represent a different regulatory requirement than state standards or a federal construction general permit. The requirements in Section 2.3.5 represent the minimum control measures as outlined in the regulations and have not changed substantially from the previous permit issuance. Permittees are not prohibited from adopting a construction site stormwater runoff control program consistent with the Massachusetts stormwater standards as long as it fulfills the minimum requirements for this MS4 permit.

594. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

The City of Lowell and the LRWWU find the requirements for the construction site runoff control program to be reasonable.

EPA response to comment 594

EPA appreciates the comment regarding construction site stormwater runoff control.

595. Comment from the Massachusetts Rivers Alliance and the Mystic River Watershed Association (MyRWA):

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.

EPA response to comment 595

The requirement to create a regulatory mechanism to control erosion and sedimentation has not changed from the previous permit issuance; EPA does not believe that most permittees will need to update their ordinances, although they should be revisited during the new permit term as needed. The permit also does not prevent permittees from updating their ordinance or regulatory mechanism in order to better manage stormwater discharges to the MS4 from construction sites or to facilitate other requirements of section 2.3.5. There is no timeframe given to put an ordinance in place for existing permittees because this was required to be done by 2008 and must be in place upon the permit's effective date. A schedule to develop procedures for site plan review, inspection and enforcement within one year from the effective date of the permit is included in Section 2.3.5.c.v.

596. Comment from the Town of Walpole:

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 BMPs 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 SWPPPs.

EPA response to comment 596

The records requirements and documentation in the annual reports are intended to track the municipality's progress with their Construction Site Runoff Control program, not to duplicate EPA and state requirements related to individual projects. EPA finds that the metrics requested in the annual report related to this program (number of project plans reviewed, number of inspections, and number of enforcement actions) are not overly burdensome or costly to track. The previous permit included the other requirements in section 2.3.5 for what must be documented in the SWMP within one year. These should be reevaluated but may not require updating. Please see an independent cost assessment provided by a contractor on our website for an estimate of the cost of compliance with Section 2.3.5 of the permit.

597. Comment from the Massachusetts Rivers Alliance:

We endorse the Section 2.3.5(c)v requirement for procedures for receiving and considering information from the public during site plan reviews.

EPA response to comment 597

EPA appreciates the comment regarding construction site stormwater runoff control. Opportunities for public participation in how municipalities manage stormwater are an important part of the permit.

598. Comment from the Massachusetts Rivers Alliance:

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.

EPA response to comment 598

To avoid duplicating requirements, it is EPA's view that site plan review is more appropriate as a requirement in section 2.3.5 given that plans should be reviewed prior to construction commencing.

599. Comments from the Massachusetts Department of Environmental Protection:

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.

EPA response to comment 599

Construction Site Stormwater Runoff Control requirements in the 2015 permit are in accordance with 40 CFR 122.34(b)(4) and represent a different regulatory requirement than state standards

or requirements for the Construction General Permit. The requirements in Section 2.3.5 represent the minimum control measure as outlined in the regulations and have not changed substantially from the 2003 MS4 permit. Municipalities are not prohibited from implementing more robust programs to manage stormwater from construction sites entering their MS4. In fact, they may choose to create a construction site stormwater runoff control program consistent with the Massachusetts stormwater standards, as long as it fulfills the minimum requirements of the permit.

600. Comment from the Town of Auburn:

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.

601. Comment from the Town of Holden DPW:

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 finds 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.

EPA response to comments 600-601

In Sections 2.3.5 and 2.3.6, EPA intends to provide permittees with the flexibility to implement ordinances and regulatory mechanisms for stormwater management on construction sites as appropriate for their specific municipalities. EPA recognizes that municipalities are organized differently and that different departments or existing review channels may be involved in the site plan review process and for this reason we do not provide standard procedures.

Permittees may use or modify language from EPA's Construction General Permit (CGP), or other approved small or large MS4 programs, among others, when developing an ordinance or regulatory mechanism. EPA has also identified a number of enforcement tools that may be included in local ordinances to improve compliance, including: Notices of Violation, Administrative Fines, Administrative Orders or Stop Work Orders, Civil Penalties, Criminal Penalties, or other Actions – including bonding requirements, requirements to implement BMPs and requirements to perform restoration work.

Regarding the administrative reporting associated with this provision, the federal NPDES MS4 permitting program is not new and has required a local construction site stormwater ordinance be in place since 2008 for existing permittees, including requirements for site plan review and site inspection. This provision merely requires formalization of procedures to implement an ordinance that should already be in place.

Municipalities should continue to focus on the implementation of the site plan review, as well as site inspection and enforcement, and we believe an important part of creating an effective and efficient program is to develop standardized procedures which may be documented in hardcopy or electronic format. (See EPA response to comment 66)

602. Comment from Nitsch Engineering:

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.

EPA response to comment 602

The prior small MS4 permit in Massachusetts has required a local construction site stormwater control program for the last 12 years. EPA does not expect that the new draft permit will add to the recent regulatory burden for development projects, although permittees may update their construction ordinance if they feel it is necessary. The permit allows flexibility for municipalities to customize local ordinances, bylaws, practices, and procedures in order to best manage stormwater for their circumstances. Ultimately, stormwater management is only one of many ways that towns in Massachusetts may regulate local development differently. (See EPA response to comment 604)

603. Comment from the City of Fitchburg:

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.

EPA response to comment 603

EPA agrees that it is important to have local enforcement of construction site stormwater issues. The permit does not require municipalities to create their own permitting process for construction projects, although they may choose to do so to fulfil their obligations under part 2.3.5. There are many other available regulatory and enforcement mechanisms available to comply with this minimum control measure.

Please note that EPA currently regulates stormwater from large and small construction activities that discharge to waters of the United States under the Construction General Permit. Projects are permitted regardless of whether they are located within or drain to a regulated MS4 community. More information on the Construction General Permit can be found at <http://www.epa.gov/npdes/stormwater-discharges-construction-activities#overview>. This minimum control measure is for discharges from construction sites to the MS4 system and the

requirements are meant to minimize sediment and construction materials from entering the MS4 system, acknowledging that the permittee is ultimately responsible for its discharge and the pollutants in it.

604. Comment from the Homebuilders and Remodelers Association of Massachusetts (HBRAMA):

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, 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
- e) Local board of health regulations.

These requirements are in addition to state and federal sources of stormwater regulation, including:

- a) State wetlands protection regulatory requirements
- b) EPA NPDES Stormwater requirements
- c) 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.

EPA response to comment 604

In Sections 2.3.5, the permit provides permittees with the flexibility to implement ordinances and regulatory mechanisms for stormwater management on construction sites as appropriate for their specific municipalities. EPA recognizes that municipalities are organized differently and that different departments or existing review channels may be involved in the site plan review process and for this reason we do not provide standard procedures. EPA does not have the authority through this permit to mandate the way Massachusetts municipalities are able to promulgate local bylaws and addressing that issue is not within the scope of this permit.

EPA also intends to work with DEP to assemble examples of local bylaws and ordinances crafted to comply with parts 2.3.5. and 2.3.6. if resources permit; the examples may lead to standardization of requirements based on what is working well for municipalities and fulfilling the permit requirements.

605. Comment from Southeastern Regional Services Group:

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.

606. Comment from Southeastern Regional Services Group:

2.3.5. Construction Site Stormwater Runoff Control: The "Objective" should be rephrased to restrict the definition to stormwater discharged to the MS4.

EPA response to comments 605-606

The objective of this minimum control measure is to minimize the discharge of stormwater pollution from construction activities to the MS4. For clarity and consistency, permit language describing the objective of part 2.3.5 now states that the objective of the Construction Site Stormwater Runoff Control measure is to control the discharge of pollutants through the MS4 waters of the United States.

Changes to Permit: Permit part 2.3.5 has been updated accordingly.

607. Comment from the Connecticut River Watershed Council (CRWC):

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.

EPA response to comment 607

40 CFR 122.34(b)(4) requires small MS4 permittees to develop a program to reduce pollutants in stormwater runoff to their MS4s from construction activities that result in a land disturbance of greater than or equal to one acre (including smaller disturbance projects part of a larger common plan of development). The NPDES Phase II stormwater regulations, in addition to requiring NPDES permits for discharges from small MS4s, require permits for discharges from small construction activity. See 40 CFR 122.26(a)(9)(i)(B), 122.26(b)(15)(i). Construction activities disturbing less than one acre of land typically do not require NPDES permits for their stormwater discharges unless they are part of a common plan of development. However, permittees are not prevented from regulating smaller earth disturbing activities within their Construction Site stormwater Runoff Control Program, if they so choose.

It is EPA's view that the requirements in Appendix H for MS4s discharging to solids- or turbidity-impaired waters, in addition to fully implementing the minimum control measures required in the permit, will result in an improvement in water quality.

608. Comment from the City of Haverhill:

Inappropriate Transfer of Federal Responsibilities to the City. The Draft Permit requires the City to 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.

EPA response to comment 608

The MS4's Construction Site Stormwater Runoff Control Program is one of the six minimum control measures required of permittees to meet the conditions of a small MS4 permit under 40 CFR 122.34(b)(4). Therefore, the MS4's Construction Site Stormwater Runoff Control Program and EPA's Construction General Permit are different programs required by the Clean Water Act. While the goals of both programs are to reduce the discharge of pollutants associated with construction activity, the construction site minimum control measure for the small MS4 program localizes regulation and enforcement efforts. Small MS4 permittees are ultimately responsible for the construction site stormwater discharges in their MS4s and must have a program in place to effectively control these discharges.

Additionally, please see EPA response to comments 605-606 and subsequent changes to the permit regarding the objective of the Construction Site Stormwater Runoff Control minimum control measure.

2.3.6 Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management)

609. Comment from the Town of Chelmsford:

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.

610. Comment from the Campus Consortium for Environmental Excellence (C2E2):

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.

611. Comment from the Town of East Longmeadow:

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:

2. 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.
3. 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.

612. Comment from Berkshire Regional Planning Commission (BRPC):

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.

613. Comment from CONTECH:

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. 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 storm water 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.

614. Comment from the Wellesley Comment Letter to EPA:

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. feet 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 calculations 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.

615. Comment from the Town of Westford:

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 ordinances 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.

616. Comment from Holden Town Manager/Board of Selectmen:

The Board of Selectmen 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 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 the Board of Selectmen 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.

617. Comment from the Conservation Law Foundation (CLF):

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.

618. Comment from the Town of Framingham:

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 bio-filtration 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.

619. Comment from Nitsch Engineering:

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?

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?

620. Comment from the Homebuilders and Remodelers Association of Massachusetts (HBRAMA):

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.

621. Comment from the Neponset River Watershed Association:

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.

622. Comment from the Neponset River Watershed Association:

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 bio-filtration....

623. Comment from the City of Cambridge:

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 bio-basins 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.

624. Comment from the Towns of Bellingham and Brewster and the Cities of Easthampton and Pittsfield:

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.

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.

625. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

Part 2.3.6.a.ii.a establishes stormwater management standards for newly developed and redeveloped 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.

626. Comment from the Mystic River Watershed Association (MyRWA):

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.

627. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

628. Comment from Nitsch Engineering:

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?

629. Comment from the Town of Canton MS4:

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.

630. Comment from CONTECH:

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.

631. Comment from CT River Stormwater Committee:

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: Storm water 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-offsite-stormwater-compliance-program-in-west-virginia>

632. Comment from Paul Hogan of Woodard and Curran:

Section 2.3.6.: Please define redevelopment in the permit definitions. 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.

633. Comment from the Northern Middlesex Council of Governments (NMSC):

Second, the permit requires that stormwater management systems on new and redeveloped 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 bio-filtration 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.

634. Comment from the Towns of Auburn and Holden:

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.

635. Comment from Tighe and Bond:

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.

636. Comment from the Mystic River Watershed Association (MyRWA):

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. 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.

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.

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.

637. Comment from the Mystic River Watershed Association (MyRWA):

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.

638. Comment from American Council of Engineering Companies of Massachusetts (ACEC/MA), Town of Milford, and City of Quincy:

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.

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.

639. Comment from the Towns of Abington, Canton, and Swampscott:

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.

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

640. Comment from the Town of Winchester:

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 Storm water Policy, and the Zoning Board of Appeal (ZEA) 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,

641. Comment from the City of Fitchburg:

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.

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.

642. Comment from Weston & Sampson:

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.

643. Comment from the Town of North Andover:

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.
- c. This handbook is a product of an extensive public process
- d. Has flexibilities not allowed for redevelopment without which would preclude this redevelopment.
- e. 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 MS4 permit.

644. Comment from Town of Winchester and Weston & Sampson:

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 be defined so that it refers to the area within the limits of work for a development, redevelopment, or other construction project.

645. Comment from the Towns of Medway and Millis:

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.

646. Comment from the Town of Medway and Millis:

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.

647. Comment from the Town of Leicester:

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.

648. Comment from the Merrimack Valley Stormwater Collaborative:

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.

649. Comment from the Merrimack River Watershed Council:

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.

650. Comment from Mass Audubon:

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.

651. Comment from the Town of Uxbridge:

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.

652. Comment from the Town of Watertown:

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 bio-retention 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 Wate1iown 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.

653. Comment from the Massachusetts Rivers Alliance:

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.

654. Comment from the Massachusetts Department of Environmental Protection:

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 storm water 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.

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 bio-filtration ..." 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 Y, 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.

655. Comment from the Town of Walpole:

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 I-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.

656. Comment from the Homebuilders and Remodelers Association of Massachusetts (HBRAMA):

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 bio-filtration 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. To require this standard for all developed and re-developed properties is overly onerous and without documented rationale. 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.

657. Comment from the Town of Rowley:

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.

658. Comment from the Town of Webster:

Storm water 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.

659. Comment from the Town of Concord:

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.

660. Comment from the Town of Shrewsbury:

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 bio-filtration 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.

661. Comment from the Charles River Watershed Association (CRWA):

In Part 2.3.6.a.ii.(a) permittees should not be given a choice between training 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 bio-filtration 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 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

662. Comment from the Department of Conservation and Recreation (DCR):

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/or the same thing.

663. Comment from the Charles River Watershed Association (CRWA):

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 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.

664. Comment from the Department of Defense (DoD):

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."

EPA response to comments 609 to 664

See EPA response to comments 92 - 112.

Some commenters stated that the one inch retention/treatment requirement was too aggressive, while other commenters believed the one inch retention/ treatment requirement to be achievable and appropriate. A lengthy discussion on the basis of the one inch retention/treatment requirement can be found in the Fact Sheet issued with the proposed draft Permit, see Fact Sheet pp. 86-90. In summary of that discussion, EPA has found that retention or treatment of the first inch of runoff from impervious surfaces on new development is necessary to protect waterbodies within the Commonwealth and is necessary and appropriate under the Clean Water Act. While other New England states have adopted one inch retention requirements, Massachusetts has not, to date. Development within the Commonwealth that does not include protective retention or treatment practices on site will cause waterbodies in the Commonwealth to continue to degrade and will not ensure that overall pollutant loads from MS4s will decrease over time through redevelopment controls. It is EPA's view that the Final

Permit's retention requirements are the minimum control measures necessary to ensure that municipalities are reducing stormwater pollutants to the maximum extent practicable.

In response to many comments received on this issue, EPA has made some changes to the one inch retention requirement. In particular, the final permit limits the area in which the one inch retention volume must be calculated to the final impervious cover on the portion of the property where construction activities have occurred. EPA has defined a "site" for the purposes of part 2.3.6. to mean "the area extent of construction activity, including but not limited to the creation of new impervious cover and improvement of existing impervious cover (e.g. repaving not covered by 2.3.6.a.ii.4.d.)". Projects must meet the appropriate retention or treatment level only for the final (post-construction) impervious area within the site area. Please note that the "site" is likely to be a sub-area of the entire property as it only includes the extent of construction activities. It is EPA's view that it is appropriate to limit the scope of the requirements to only the construction site to focus on the new development or redevelopment footprint only.

Additional flexibility has also been added for redevelopment projects. This is discussed further in responses below. Also, certain linear projects are exempt from meeting the full one inch retention requirement as discussed in EPA response to comments 669 to 704.

At the request of many commenters, EPA has changed the treatment requirement for new development to reduce uncertainty in meeting the one inch requirement, and to address comments indicating that meeting the level of treatment of biofiltration was too onerous. For clarity, EPA has also defined impervious surface in Appendix A. The final permit now requires that all stormwater management systems designed for new development be designed to retain the first inch of runoff from the total post-construction impervious area within the site, or be designed to treat the first inch of runoff from the total post-construction impervious area within the site such that 90% of the total suspended solids (TSS) and 60% of the total phosphorus (TP) annual load are removed prior to discharge. The permit conditions provide developers the flexibility of how to meet the retention/treatment requirements by either retaining the required volume of runoff from the total post-construction impervious area within the site, or providing treatment to the appropriate levels (which can include retaining as much of the 1 inch requirement as possible on site). The term "practically feasible" has been replaced with "feasible" in the final permit as it pertains to using LID on site to provide maximum flexibility in meeting these requirements. For the purposes of this permit, "treating" means using a BMP that does not retain the water on-site, but is designed to provide pollutant removal before discharging the stormwater off-site.

For redevelopment, the final permit now requires that all stormwater management systems be designed to retain 0.8 inch of runoff from all impervious area on the site after construction activity is complete, or to treat the runoff from impervious area on site such that 80% of the annual total suspended solids (TSS) and 50% of the annual total phosphorus (TP) load are removed prior to discharge. This is slightly reduced from the requirements for new development in final permit, and EPA finds it appropriate to lower the treatment requirement for redevelopment to acknowledge increased site constraints on redevelopment sites and to promote redevelopment in cities and towns across the Commonwealth. The volume equal to 0.8 inch of runoff times the resulting impervious area on site approximately equals the volume of the 85th percentile storm for Massachusetts (based on Boston precipitation data) and aligns with

similar post construction retention requirements for redevelopment across the country as compiled by EPA in 2011.

For each development project, the permit allows only one retention/treatment requirement to apply for the entire site. When determining what requirement applies to the development project as a whole, the developer must first determine if the project meets the definition of new development. If the project is determined to be taking place on a site that has not previously been developed to include impervious cover on site (new definition added to Appendix A), then the project is considered to be new development and the 1 inch retention requirement and/or the 90% TSS removal and 60% TP removal rates apply to the stormwater management system design for the entire site. If the site had been previously developed and contained impervious cover on site, then the project would be considered redevelopment and the 0.8 inch retention requirement and/or the 80% TSS and 50% TP removal requirement would apply to the stormwater management design for the entire site.

When calculating BMP removal efficiencies to comply with the treatment requirement (if the full retention requirements cannot be met), the BMP efficiencies are not evaluated on a per storm basis. Instead, the removal efficiencies are based on average yearly pollutant removal. The 90% TSS removal efficiency requirement for new development is based on the fact that retention of one inch of runoff from impervious surfaces would equate to the removal of approximately 90% of the sediment load delivered from the impervious surface on site. In addition, many BMPs without infiltration components have efficiencies of greater than 90% when built with a capacity equal to the volume of as little as 0.5 inches of runoff from impervious surfaces (i.e. biofiltration). The TP removal efficiency requirement for new development was chosen at 60% reflecting the fact that treatment-only BMPs are not as efficient at removing phosphorus as they are at removing sediment (Tetra Tech Inc., 2010). For example, a biofiltration system designed with a capacity just over 0.5 inches of runoff (0.52 inches) would remove 60% of the phosphorus load while 95% of the sediment load would be reduced through the same BMP installation. Gravel wetlands display approximately the same ratios, where 90% TSS removal requires a system designed with a capacity equal to 0.57 inches of runoff from impervious surfaces, which would result in a TP removal efficiency of over 60%. For redevelopment, the 80% TSS removal efficiency was chosen to provide some relief for redevelopment sites and to match the Massachusetts Stormwater Standards. The 50% TP annual removal efficiency was chosen reflecting the fact that treatment-only BMPs are not as efficient at removing phosphorus as sediment. See above discussion for new development. The TP annual removal efficiency also was chosen as a surrogate for the removal of other stormwater related pollutants such as metals for which BMP removal efficient relationships are not as extensively developed as they are for phosphorous removal by stormwater BMPs. In order to calculate BMP removal efficiencies, EPA finds it is important to rely on a robust estimate of New England-specific BMP performance information when that information is available. EPA will not adjust the permit conditions to match sediment removal efficiencies in the Massachusetts Stormwater Handbook which are based on average literature values of BMPs throughout the country. To that end, the final permit requires the use of Region 1's BMP Performance Evaluation Tool (Tetra Tech Inc., 2010) or other performance evaluation tools developed by EPA during the permit term to estimate BMP pollution removal efficiencies for BMPs when EPA tools provide pollutant removal estimates for the proposed or installed BMP. When BMPs are installed where EPA Region 1 tools do not provide pollutant removal estimates for the particular BMP being installed, any other state or federally approved BMP performance

estimates can be used to estimate pollutant removal of the proposed or installed BMPs. EPA is aware that the tools currently provided by EPA Region 1 do not cover the entire suite of BMPs available for stormwater treatment, and does not want to limit the options developers may use to treat stormwater. There are many state or federally approved stormwater handbooks and performance estimates for a variety of BMPs not covered by EPA Region 1 tools, and while the performance estimates may not be tailored to be representative of New England climate conditions and stormwater quality, state or federally approved handbooks have gone through a review process with some level of scrutiny and will provide an estimate of pollutant removal that EPA believes will be representative based on the current understanding of the BMP in question's performance.

It should be noted that the draft permit does not require any BMP to be designed with a specified "water quality volume" as required by the Massachusetts Stormwater Standards. This reflects the fact that even small BMPs (treating 0.3 inches of runoff or less) can be very effective at removing pollutants, and allows new development and redevelopment sites to use many green infrastructure practices in combination to meet the retention/treatment requirements at the least possible cost. However, if the permittee wishes to retain the water quality volume requirements in the Massachusetts Stormwater Standards, they are free to do so and would not contradict permit requirements. EPA also notes that when sites meet the 90% TSS reduction and 60% TP reduction requirements for stormwater management systems on new development, OR meet the 80% TSS removal requirement and 50% TP reduction requirement on redevelopment sites, those systems will also meet the 80% TSS reduction requirement imposed in areas subject to the Wetlands Protection Act.

Many commenters refer to a "discrepancy" between the retention/treatment requirement in the draft permit and the infiltration requirements contained in the Massachusetts Stormwater Standards. EPA notes that the Massachusetts Stormwater Standards are only applied to areas under the jurisdiction of the Massachusetts Wetlands Protection Act, and the infiltration requirements contained in the Massachusetts Stormwater Standards are intended to protect and enhance groundwater sources, not necessarily to protect water quality. Infiltration requirements in the Massachusetts Stormwater Standards are based on what is assumed to be technically feasible based on soil conditions on site. Since the retention/treatment requirements contained in the draft Permit did not specify a required infiltration amount, a more appropriate comparison of the post construction requirement in the draft Permit is to the treatment requirements in Massachusetts Stormwater Standard 4, which contains treatment requirements for stormwater management systems. Standard 4 of the Massachusetts Stormwater Standards requires the removal of 80% of the post construction stormwater sediment load and, in most cases, assumes this requirement is met when BMPs are designed on site to treat the first 0.5 inches of runoff from impervious areas and long term control plans are in place. As explained in the following paragraph, EPA finds that this requirement is not protective of water quality, and does not represent what is the MEP for development within the Commonwealth.

Treating the first 0.5 inch of runoff approximately equates to the treatment of 100% of the runoff from 72% of the storm events received each year (based on Boston precipitation data). This is well below the requirements in other New England States such as Vermont, which requires the full retention of 90% of the storm events in post construction requirements. It is also below the retention requirements in Connecticut, Rhode Island, and Maine, which have requirements that the first one inch of runoff be retained on site. This equates to the full

retention of 90% of the precipitation events received each year (based on Boston precipitation data). In addition, as commenters note, the Boston Water and Sewer commission, the towns of Franklin and Newton, and other towns already have post construction stormwater requirements requiring the retention of the first inch of runoff on site (at a minimum), suggesting that the requirement used in other New England states is also practicable in Massachusetts. Furthermore, the one inch retention/treatment requirement equates to capturing 90% of the storm events in New England. The 90th percentile storm is actually less stringent than the suggested retention percentile for federal facilities contained in the Energy Independence and Security Act section 438, which requires retention of the 95th percentile event. For New England, that is equivalent of 1.5 inches of runoff from impervious surfaces. While EPA appreciates, supports, and has adopted many aspects of the Massachusetts Stormwater Standards, more stringent requirements have become technically feasible since the last update of the Massachusetts Stormwater Standards, and this permit is written to reflect what EPA finds is practicable for all regulated entities and protective of water quality.

EPA has considered MassDEP's comments in the final permit, and EPA has moved further in the direction of harmonizing the federal requirements with the Massachusetts stormwater rules, consistent with MassDEP's suggestion. The use of the one inch retention/treatment requirement for new development in the final permit is consistent with MassDEP's suggestion that EPA not use a metric such as bio-filtration treatment efficiency that differs from the inches of infiltration metric for treatment in the Massachusetts Stormwater Standards. EPA removed the draft permit language that would have provided "the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of bio-filtration." Further, the final permit's retention/treatment requirement is closely aligned with MassDEP's suggestion that, "if EPA believes that the current runoff depth requirements in the Standards are not protective enough... it can simply increase those volumetric numbers used in the Standards." In keeping with this suggestion, EPA has modified the volumetric numbers used in the requirement by adapting the requirement to current information and creating retention and treatment options rather than merely increasing the numeric infiltration requirement. In addition, in MassDEP's comment letter dated March 11, 2011 on the previous draft MS4 permit for Interstate, Merrimack and South Coastal watersheds, EPA notes that MassDEP commended EPA on requiring a one inch retention requirement.

While the one inch retention/treatment requirement represents what is practicable for Massachusetts municipalities to require of new development sites, EPA agrees with commenters that the requirements in part 2.3.6 of the Permit should more closely align with the Massachusetts Stormwater Standards, where appropriate. EPA did not think it appropriate to arbitrarily increase the infiltration requirements in the Massachusetts Stormwater Standards as MassDEP suggests, to come closer to the one inch retention/treatment requirement. Instead, the final permit requires that certain standards of the Massachusetts Stormwater Standards be met. Below is a listing and brief description of the Massachusetts Stormwater Standards (1-10) and how they have been incorporated (or not incorporated) into the final permit:

1. "No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth. "

Standard 1 of the Massachusetts Stormwater Standard has direct impact on water quality and EPA finds it appropriate to require adherence to Standard 1 for all new and redevelopment and has included such language in the final Permit.

2. “Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.”

Standard 2 of the Massachusetts Stormwater Standards deals with the regulation of flow rates and EPA has incorporated Standard 2 in the final Permit as necessary for State 401 water quality certification.

3. “Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance.”

Standard 3 of the Massachusetts Stormwater Standards deals with the protection of groundwater resources and EPA has incorporated Standard 3 in the final Permit as necessary for State 401 water quality certification

4. “Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). “

Standard 4 of the Massachusetts Stormwater Standards has not been directly incorporated into the Final Permit, and will require permittees to augment their bylaws to ensure compliance with 2.3.6.a.(c)(7). As mentioned above, EPA finds it necessary and appropriate to preserve the one inch retention/treatment requirement in the final Permit for new development, which is more protective than standard 4 of the Massachusetts Stormwater Standards. EPA suggests that DEP may consider updating the Massachusetts Stormwater Standards, and notes that if the Commonwealth does choose to do so and adopt a 1 inch requirement in place of the 0.5 inch requirement, then any project that complies with the new town bylaw would also comply with Standard 4 of the Massachusetts Stormwater Standards.

5. “For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable.”

Standard 5 of the Massachusetts Stormwater Standard has direct impact on water quality, and EPA finds it appropriate to require adherence to Standard 5 for all new and redevelopment and has included such language in the final Permit.

6. “Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the

Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook.”

Standard 6 of the Massachusetts Stormwater Standards deals with the protection of groundwater resources, and EPA has incorporated Standard 6 in the final Permit as necessary for State 401 water quality certification

7. “A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.”

Since the last update of the Massachusetts Stormwater Handbook, there have been many advances in stormwater BMP technology, including many BMPs that provide excellent stormwater treatment without infiltration. With the vast array of BMPs available to redevelopment sites, EPA finds it inappropriate to allow redevelopment to take place without any performance requirement applied to it, and therefore, is not adopting Standard 7 of the Massachusetts Stormwater Standards exactly as written in the Massachusetts Stormwater Standards. However, EPA is aware that redevelopment projects come with additional complications that new development projects do not, and full compliance with the one inch retention/treatment requirement is not always feasible. EPA would like to thank the Town of Westford in particular for their helpful comments and examples on redevelopment. EPA has augmented the redevelopment requirements in light of their (and others’) comments on redevelopment. While not adopting Standard 7 of the Massachusetts Stormwater Standards as written, the final permit conditions for redevelopment closely align to the language found in Massachusetts Stormwater Standard 7. Consistent with the Massachusetts Stormwater Standards, redevelopment sites are only required to meet part 2.3.6.a.ii.3(a) (Massachusetts Stormwater Standard 1), part 2.3.6.a.ii.3(b) (Massachusetts Stormwater Standard 2), part 2.3.6.a.ii.3(c) (Massachusetts Stormwater Standard 3); and the pretreatment and structural best management practices requirements of 2.3.6.a.ii.3(d) and 2.3.6.a.ii.3(e) (Massachusetts Stormwater Standards 5 and 6) to the maximum extent feasible on site (which can include cost considerations). However, the redevelopment requirements in the final permit go one step further than Massachusetts Stormwater Standard 7 by defining what is meant by “improve existing conditions” which is left ambiguous in the Massachusetts Stormwater Standards. EPA disagrees that redevelopment sites should only be held to a maximum extent practicable threshold for retention and pollutant removal and the lack of performance requirement for redevelopment does not meet the regulatory requirement to reduce pollutants to the maximum extent practicable. The final permit requires redevelopment projects to either retain the volume of runoff equal to 0.8 inch multiplied by the total post-construction impervious area within the site, OR provide treatment such that the annual total suspended solids stormwater load is reduced by 80%, and the annual total phosphorus stormwater load is reduced by 50%, as described above. In addition, the final permit specifically allows offsite mitigation to comply with the aforementioned requirements.

The retention or pollutant removal requirements can be met off site within the same USGS Hydrologic Unit Code (HUC) 10 (<https://water.usgs.gov/GIS/huc.html>) watershed as the redevelopment site. This ensures that the receiving water actually receives less pollutants as a result of any redevelopment project. In this way, municipalities will be able to work with developers to meet the redevelopment requirements to the maximum extent feasible on site and allow developers to make up any gap in retention/treatment through offsite activities. EPA encourages municipalities to draw on the retrofit inventories of municipal properties as required by part 2.3.6.d. to help developers find suitable offsite projects to fulfill the requirements of 2.3.6.a.ii.4.(b). In addition, EPA has defined "Redevelopment" in Appendix A of the final Permit.

8. "A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented."

Standard 8 is specific to the construction phase of projects, and is dealt with in part 2.3.5 of the Permit, and not incorporated into Post Construction Standards.

9. "A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed."

Standard 9 of the Massachusetts Stormwater Standard has direct impact on water quality, and any stormwater system on a new or redeveloped area needs a long term maintenance plan to be effective and continue operation as designed. EPA finds it appropriate to require adherence to Standard 9 for all new and redevelopment and has included such language in the final Permit.

10. "All illicit discharges to the stormwater management system are prohibited."

Standard 10 is specific to illicit discharges, and is dealt with in part 2.3.4 of the Permit, and not incorporated into Post Construction Standards.

For comments related to road maintenance, see EPA response to comments 669 to 704. For comments related DCIA tracking, see EPA response to comments 723 to 760.

Changes to Permit: Part 2.3.6.a of the Permit has been updated accordingly.

665. Comments from the Massachusetts Department of Environmental Protection:

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.

666. Comment from the Wellesley Comment Letter to EPA:

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 Underground 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.

667. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

668. Comment from the Town of Dedham:

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.

EPA response to comments 665 to 667

EPA finds that reviewing as-built drawings and conducting site inspections remains necessary in the final Permit. Proper construction, inspection and maintenance of BMPs installed to meet the terms of this permit or local bylaw requirements are the only way to ensure that BMPs work as designed and continue to work as designed over time without placing overly onerous sampling requirements of every BMP on permittees to ensure compliance with permit conditions. EPA requires the inspection procedures to include town-identified qualifications for people who perform those inspections. EPA does not require that the town report those qualifications to EPA. EPA believes that inspections should be performed by individuals with the knowledge to understand erosion and sediment control BMPs. EPA notes that permittees can require private property owners that discharge to the MS4 to inspect their BMPs using a professional engineer or equivalent to conduct inspections on behalf of the private property owner and submit those inspection and maintenance reports to the permittee, instead of doing the inspection themselves, however, the permittee remains responsible for the information they submit to EPA and for meeting all permit requirements. EPA would also like to note that Massachusetts Stormwater Standards as part of the Massachusetts Stormwater Handbook are only applicable in areas under the jurisdiction of the Wetlands Protection Act and therefore this requirement is not a duplication. EPA has made a date change in part 2.3.6.a.3 to align the requirement to submit as build drawings with the requirements to update post construction ordinances or bylaws (two years from permit effective date)

Changes to Permit: Part 2.3.6.a of the Permit has been updated accordingly.

669. Comment from Congressman McGovern:

Many communities are also distressed that the terms of this Permit will negatively impact projects within the framework of the Massachusetts Department of Transportation's Complete Streets 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.

670. Comment from the Towns of Bellingham and Brewster and the Cities of Easthampton and Pittsfield:

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.

671. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, and Wilbraham:

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.

672. Comment from the Town of Reading:

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

673. Comment from the Town of Reading:

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.

674. Comment from the Towns of Granby and Beckett:

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 1/4 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.

675. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

676. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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."

677. Comment from the Massachusetts Municipal Association (MMA):

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.

678. Comment from the Town of Andover:

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.

679. Comment from the Town of Milford and the City of Quincy:

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 resurfacing 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.

680. Comment from the Towns of Abington and Swampscott:

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.

681. Comment from 495 Metro West Partnership:

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.

682. Comment from the Town of East Longmeadow:

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:

4. 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?

5. 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.
6. 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.
7. 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.

683. Comment from Weston & Sampson:

Comment: Section 2.3.6. The requirements to have pollutant removal equivalent to that of a biofiltration 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.

684. Comment from the Town of Ludlow:

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.

685. Comment from the Town of Lexington:

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 bio-filtration 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 permittee 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 standards 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 sub-base 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 regarded and paved.

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 resent 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.

686. Comment from the Town of Hudson:

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 bike lanes 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 bio-filtration 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-swailes 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.

687. Comment from The Town of Chelmsford:

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.

688. Comment from The Town of Chelmsford:

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.

689. Comment from Chicopee MS4 comments, Tri County Highway Superintendents:

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 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 1/4 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.

690. Comment from the Cities of Springfield and Worcester:

Section 2.3.5-Construction Site Stormwater Runoff Control and 2.3.6. These provisions would also apply to public road reclamation and resurfacing projects involving more than 1/4 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.

691. Comment from the City of Fitchburg:

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.

692. Comment from WalkBoston:

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.

693. Comment from the City of Beverly:

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.

694. Comment from the Towns of Medway, Millis, and Canton:

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.

695. Comment from the Massachusetts Highway Association:

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 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.

696. Comment from the Metropolitan Area Planning Council:

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 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.

697. Comment from the Massachusetts Coalition for Water Resources Stewardship and the Town of Millbury:

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.

698. Comment from the Cities of Springfield and Worcester:

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.

699. Comment from the Town of Uxbridge:

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 anti-degradation 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.

700. Comment from the Massachusetts Department of Transportation:

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.

701. Comment from the Town of Walpole:

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 1/4 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/or 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.

702. Comment from the Town of Southwick:

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 1/4 mile of 30' wide pavement) will require that the first inch of stormwater 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.

703. Comment from Keith Saxon:

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 2014 MS4 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.

704. Comment from CT River Stormwater Committee:

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.

EPA response to comments 669 to 704

See EPA response to comments 92 - 112, particularly in response to the comment that EPA is exercising land use mandates.

EPA appreciates all of the commenter that identified an issue with linear projects and suggested solutions for the final Permit. EPA has defined the term "redevelopment" and has specifically

exempted certain linear roadwork from meeting post construction stormwater management requirements of part 2.3.6.a.(e). It was never the intent of EPA to include maintenance work on roadways as being subject to the one inch retention/treatment requirement. EPA used the exemption for linear projects in the Massachusetts Stormwater Standards to create an exemption for certain linear projects in the final permit conditions and updated the definitions in Appendix A to include definitions for One Lane Width and Redevelopment. EPA would like to note that even when impervious area on linear sites increases by more than one lane width, the requirements to meet the stormwater management requirements in part 2.3.6.a.(c)(7) do not work against the Complete Streets Initiative, as there are many permeable pavement options that allow for increased road or sidewalk width while promoting infiltration of stormwater, along with many other BMP options for linear projects that can be utilized when necessary to comply with the Complete Streets Initiative and the post construction stormwater requirements of this permit. EPA liaisons are working with the Federal Highway Administration to ensure that the goals and directives of both agencies are complementary; EPA will engage with other regulatory entities as it sees fit to protect water quality and human health.

Changes to Permit: Part 2.3.6 and Appendix A of the Permit have been updated accordingly.

705. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

706. Comment from the Massachusetts Rivers Alliance:

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.

707. Comment from the Town of Framingham:

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 bio-filtration 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.”

708. Comment from the Charles River Watershed Association (CRWA):

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.

EPA response to comments 705 to 708

EPA agrees with commenters suggesting that infiltration BMPs should not be prohibited at all industrial sites and the phrase “documented soil contamination” has been removed from the final permit. The final permit has been changed to incorporate Massachusetts Stormwater Standard number 5 into the post construction stormwater management requirements to address stormwater discharges from industrial sites.

Changes to Permit: Part 2.3.6.a. of the Permit has been updated accordingly.

709. Comment from the Massachusetts Rivers Alliance:

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.

EPA response to comment 709

New Development and Redevelopment may result in a wide variety of final uses of the land, and the good housekeeping measures required for permittee-owned facilities may not be relevant or appropriate at all newly developed and redeveloped sites (for example, residential lots, private parklands, etc.). However, the final permit incorporates Massachusetts Stormwater Standard number 5 for stormwater management system design for new and redevelopment of land uses with higher potential pollutant loads (such as industrial sites, auto fueling facilities, and parking lots with high intensity use). This Standard requires proper storage and use of deicing chemicals on those development and redevelopment sites where large quantities of deicing chemicals are stored and used.

Changes to Permit: Part 2.3.6.a. of the Permit has been updated accordingly

710. Comment from the Towns of Bellingham and Brewster and the Cities of Easthampton and Pittsfield:

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.

711. Comment from the Neponset River Watershed Association:

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 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.

712. Comment from the Towns of Newton, Danvers, and Westwood:

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.

713. Comment from the Towns of Abington and Swampscott:

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

714. Comment from the Town of Winchester:

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 Storm water Handbook, as well as EPA, and other state manuals with recent updates that provide acceptable BMP design guidelines.

715. Comment from the Town of Maynard:

Section 2.3.6(d) - 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.

716. Comment from the Massachusetts Department of Transportation:

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.

717. Comment from the Towns of Medway, Millis, and Canton:

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.

718. Comment from the Massachusetts Rivers Alliance:

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.

719. Comment from the Mystic River Watershed Association (MyRWA):

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.

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.

720. Comment from CONTECH:

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 bio-filtration systems. Additional language is provided indicating that the level of pollutant removal provided by any proposed BMP shall be calculated using EPA Region I's BMP Performance Extrapolation Tool. This prescriptive standard is highly inadequate for several reasons. First, it is widely documented that the performance of bio-filtration systems is highly variable and dependent on the bio-filtration media blend, among other variables. A growing body of research including research done by the Washington State Department of Ecology and the University of New Hampshire Stormwater Center demonstrates that bio-filtration 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 bio-filtration 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 bio-filtration cells, the specific level of pollutant removal that is consistently achieved by bio-filtration 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 carefully 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.

721. Comment from the Department of Defense (DoD):

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.

722. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, and Wilbraham:

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 anti-degradation 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.

EPA response to comments 710 to 722

EPA agrees with commenters who stated that Volume 2 Chapter 2 of the Massachusetts Stormwater Handbook may not contain the most relevant and up to date BMPs or BMP designs and has updated the permit to allow for the use of other manuals (including manuals from other States, etc.) that follow sound engineering practices when designing BMPs for their site. In response to these comments, EPA has also provided more clarity in the treatment requirement, as discussed in EPA response to comments 609 to 664. EPA has chosen TSS and TP for treatment metrics due to the volume of BMP performance data on the removal of these two

stormwater constituents. In general, BMPs that remove 90% of TSS load and 60% of the TP load (or 80% TSS and 50% TP for redevelopment) from stormwater runoff will also reduce bacteria/pathogens, metals and oil and grease from stormwater runoff. While some commenters would like to see performance requirements for all stormwater constituents, EPA has chosen to provide consistent metrics for stormwater system design using the two most well-studied BMP pollutant removal metrics, and believes this is a robust way to evaluate stormwater system overall pollutant removal.

The post construction stormwater requirements in the final permit do not require that BMPs be designed with a prescribed storage capacity or “water quality volume” in order to provide the greatest flexibility for stormwater system design. Traditional BMP sizing, like the sizing used in the Massachusetts Stormwater Handbook, does not allow optimization for pollutant removal and associated cost. Recent EPA analyses and research conducted by the UNH Stormwater Center has shown that controls traditionally thought of as “undersized” (e.g., only holding the first 0.3 inches of runoff or less) can be effective at removing stormwater pollutants, and many distributed small capacity systems treating more existing impervious area can be more cost effective than one large system equal in capacity to the sum of all small systems, but treating less impervious area. To accommodate these facts, EPA has not specified any BMP sizing requirements in the final permit and only requires that the entire system be designed to meet the performance requirements in part 2.3.6.a.

To evaluate BMP performance, EPA believes it necessary to use a robust methodology and not rely on literature values and median values of performance from sources such as the International BMP Database¹ where robust data exists. EPA’s BMP performance evaluation tool represents 10 years of BMP modeling calibrated to performance data collected by the UNH Stormwater Center. The pollutant removal performance estimates by the EPA Performance Evaluation Tool are the most accurate representation of average BMP performance for New England. EPA is also currently working on additional tools which build upon the BMP Performance Evaluation Tool for use by permittees and plans to update these tools as additional BMPs are calibrated in an equally robust way to the New England environment. EPA is also currently working on a white paper detailing the level of effort necessary to evaluate new BMPs for future addition to the suite of performance curves available for permit compliance. While EPA understands that commenters would like to use any performance estimate for the BMPs they choose, we feel it is necessary to have consistent methodology to estimate BMP performance for equity across sites where robust New England-specific BMP performance estimates are available. When BMP performance estimates are not provided by EPA Region 1 for a particular BMP, the permit allows for the use of any other state or federally approved stormwater handbook or manual to estimate BMP performance. This includes the ability to use the Massachusetts Stormwater Handbook or any other state’s handbook or other federally approved handbook. EPA is aware that there are many handbooks throughout the country that can be used to estimate BMP performance for a variety of BMPs currently not covered by EPA Region 1 tools and the final permit allows their use where appropriate in order to provide maximum flexibility in stormwater management design. Comments from the Central Massachusetts Stormwater coalition and others incorrectly assume that federal NPDES permits must be consistent with any guidance produced by the States. While federally-issued NPDES permits must be written consistent with EPA-approved state water quality standards, EPA is not

¹ <http://www.bmpdatabase.org/> (retrieved 9/26/15)

required to write NPDES permits consistent with any guidance produced by the state. With this permit, EPA is not challenging or rewriting the Massachusetts Stormwater Handbook, EPA is only providing a more robust way to calculate stormwater BMP performance to evaluate compliance with stormwater management system performance requirements of part 2.3.6.a. and allowing for other methods of calculation of BMP performance where appropriate. See EPA response to comments 92 - 112.

When calculating the volume that needs to be retained on site, the stormwater designer should assume that all impervious area on site is directly connected in order to come up with a total volume that needs to be retained or treated to meet the performance requirements required by 2.3.6.a. of the Permit. When meeting the retention and treatment requirements, the stormwater management design for the site can then take into account how much impervious area is actually disconnected, and estimate the pollutant reduction resulting from that disconnection. This will lower the pollutant reduction needed on site, and disconnection becomes part of the overall stormwater system design.

Changes to Permit: Part 2.3.6.a. of the Permit has been updated accordingly.

723. Comment from the Southeastern Regional Services Group:

2.3.6.a.ii (b) through (d) inclusive: Infiltration systems do not discharge to the MS4 and therefore should not be covered under this permit.

EPA response to comment 723

See EPA response to comments 92 - 112. Parts 2.3.6.a.ii(b) through (d) of the Draft Permit did not regulate or require infiltration systems in order to comply with the applicable parts of the Draft Permit. The purpose of retention requirements in the final permit is to reduce pollutant discharges from the permitted MS4s to the maximum extent practicable in accordance with the statute and regulations. The post construction requirements in the final permit and in the Draft Permit place pollutant removal performance requirements on new and redevelopment but do not prescribe a specific way to meet those requirements. The Final Permit does contain additional requirements for groundwater recharge necessary for Section 401 water quality certification from Massachusetts (See EPA response to comments 609 to 664).

724. Comment from Chicopee MS4, Tri County Highway Superintendents:

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 MassDEP 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.

725. Comment from the Conservation Law Foundation (CLF):

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.

726. Comment from the Town of Shrewsbury:

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.

727. Comment from Tighe and Bond:

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.

728. Comment from The Town of Chelmsford:

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.

729. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, and Wilbraham:

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 "sub-basins" 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 sub-basins delineated by the Agency do not reflect development. The sub-basins

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 sub-basins 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 sub-basin 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).

730. Comment from the City of Beverly:

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.

731. Comment from the City of Brockton:

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.

732. Comment from the Towns of Granby and Beckett:

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.

733. Comment from the Towns of Newton, Danvers, and Westwood:

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.

734. Comment from the Town of Needham:

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.

735. Comment from the Town of North Andover:

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.

736. Comment from the Town of Millbury:

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 I'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 I'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.

737. Comment from the Massachusetts Coalition for Water Resources Stewardship:

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.

738. Comment from the Town of Ludlow:

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.

739. Comment from the Town of Walpole:

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 the 2014 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.

740. Comment from the Town of East Longmeadow:

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.

741. Comment from the Town of Watertown:

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.

742. Comment from the Town of Uxbridge:

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 “sub-basins” 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 sub-basins delineated by the Agency do not reflect development. The sub-basins 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 sub-basins 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 sub-basin 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).

743. Comment from the City of Waltham:

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.

744. Comment from the Massachusetts Rivers Alliance:

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.

745. Comment from the Massachusetts Rivers Alliance:

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.

746. Comment from the Town of Maynard:

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.

747. Comment from the Town of Framingham:

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.

748. Comment from the Town of Holden:

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.

749. Comment from the Town of Dedham:

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.

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.

750. Comment from the Town of Concord:

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.

751. Comment from the Town of Southwick:

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.

752. Comment from the Department of Conservation and Recreation (DCR):

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

753. Comment from the Massachusetts Highway Association:

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.

754. Comment from CT River Stormwater Committee:

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 sub-watershed 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).

755. Comment from the Town of Auburn:

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.

756. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

757. Comment from the Town of Westborough:

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.

758. Comment from the Town of Auburn:

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 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.

759. Comment from the Town of Reading:

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.

760. Comment from the Southeastern Regional Services Group:

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.

EPA response to comments 723 to 760

See EPA response to comments 92 - 112, and responses to comments on Appendices F and H.

While directly connected impervious area (DCIA) is the most important metric when estimating drainage area impact on receiving water quality, EPA has removed the requirement to track DCIA jurisdiction-wide. EPA has determined that estimating DCIA should be tied to actions associated with reducing the amount of DCIA in a particular catchment, and has therefore placed requirements to assess and address DCIA where there will be the greatest environmental benefit. Part 2.2.2 and Appendix F and H of the Final Permit contain requirements for certain impairments to assess DCIA on a sub catchment basis, and prioritize retrofits based on potential pollutant loading (areas with high DCIA) to address in-stream water quality issues where stormwater is causing or contributing to the impairment. In addition, the post-construction stormwater requirements for new development and redevelopment will lower the amount of DCIA within the MS4 area over time.

In addition, part 2.3.6 of the Final Permit includes requirements for each permittee to assess permittee-owned properties for retrofit opportunities to reduce DCIA. These requirements will reduce the overall DCIA in each town over the life of the permit and therefore, tracking total DCIA is not a worthwhile exercise at the municipal level.

EPA agrees that assessment of jurisdiction-wide impervious area and DCIA is an exercise best done at the region or state level with sophisticated flyover mapping techniques, and EPA plans to work with MassDEP and others to continue to pursue impervious cover and DCIA mapping on a larger scale at consistent intervals.

Changes to Permit: Part 2.3.6 of the Permit has been updated accordingly.

761. Comment from the Towns of Bellingham and Brewster and the Cities of Easthampton and Pittsfield:

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 “smart-growth” 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.

762. Comment from the Neponset River Watershed Association:

Finally, it is also very important that permittees 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.

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.

763. Comment from the Towns of Auburn and Holden:

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

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.

764. Comment from the Mystic River Watershed Association (MyRWA):

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.

765. Comment from the Towns of Abington, Canton, and Swampscott:

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 "smart growth" 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.

766. Comment from the Town of Milford and the City of Quincy:

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.

767. Comment from the Town of Winchester and Weston & Sampson:

Comment: Section 2,3,6.b&c, Page 4L 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.

768. Comment from the Town of East Longmeadow:

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.

769. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

770. Comments from the Massachusetts Rivers Alliance:

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.

771. Comment from Tighe and Bond:

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.

772. Comment from 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.

773. Comment from the Town of Medway and Millis:

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 "smart-growth" 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.

774. Comment from the Town of Framingham:

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”.

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-portable 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:...”

775. Comment from the Town of Dedham:

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.

776. Comment from the Connecticut Fund for the Environment (CFE) – Save the Sound and Save the Bay:

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:

- a. Requirements to minimize the creation of impervious cover from parking lots, paved road, and rooftops
- b. Provisions to preserve, protect, create, and restore ecologically sensitive areas that provide water quality benefits and serve critical watershed functions
- c. 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
- d. Measures to avoid or prevent hydro-modification of streams and other water bodies caused by development, including roads, highways, and bridges
- e. Implementation of standards to protect trees and other vegetation with important evapotranspirative qualities
- f. 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. The permit and resulting building codes should tie certain common development practices to required runoff retention or infiltration techniques.

777. Comment from the Neponset River Watershed Association:

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:

- (1) Narrative describing the proposed work including existing site conditions, proposed work and methods to mitigate any stormwater impacts
- (2) ... (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.

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, bio-retention (rain gardens) and infiltration systems.

EPA response to comments 761 to 777

EPA agrees with commenters who believe the assessment of local bylaws and ordinances to remove roadblocks to green infrastructure, and to assess local parking regulations to reduce impervious cover, are necessary to the successful implementation of post construction stormwater management requirements set forth in part 2.3.6.a. of this Permit. EPA disagrees with commenters who believe the requirements of this section do not align with other federal or state programs, such as the Complete Streets initiative. The requirements for the two assessments allow necessary latitude to each permittee to assess their regulations and make changes they see fit. This permit does not mandate road width design standards that must be met, and does not require that regulations be changed such that permittees will not be able to adhere to the requirements of the Complete Streets Program and other state or federal initiatives. EPA also notes that pervious pavements and surfaces can also be used to widen roadways or sidewalks to comply with Complete Streets requirements while not increasing pollutant loading associated with increased road width. EPA is aware of the Complete Streets initiative, and the permit as written does not conflict with that initiative. EPA liaisons are working with the Federal Highway Administration to ensure that the goals and directives of both agencies are complementary; EPA will engage with other regulatory entities as appropriate to protect water quality and human health. EPA agrees that the two assessments required in part 2.3.6 could be done concurrently, and has changed the timing of the assessment reports to coincide with one another. Permittees may combine the requirements into one assessment as long as the requirements of part 2.3.6.b. and 2.3.6.c. are met fully. The requirement to implement all recommendations of each assessment remains, and EPA notes that if a permittee does not wish to implement a part of the assessment, then they should omit that piece from the recommendations of their assessment. These two requirements allow considerable latitude for assessment and implementation, where each permittee needs to actively plan how green infrastructure, LID practices, and impervious cover requirements will interplay with post construction stormwater management requirements. This flexibility is needed for each permittee to address their specific obstacles in ways that make the most sense for the permittee. Requiring specific actions or measures for each permittee regarding these two assessments in the final Permit would require forecasting all potential ramifications on each permittee, and is beyond the scope of this permit. However, in response to comments seeking further protections in Post Construction requirements, part 2.3.6.a. of the final Permit has been updated to include many aspects of the Massachusetts Stormwater Handbook, and now requires bylaws to require the use of LID, reduce pollutant loads, reduce peak flow and erosion, and enhance groundwater recharge and protection (see EPA response to comments 609 to 664 for further discussion). EPA finds it more appropriate to work within the context of the Massachusetts Stormwater Standards instead of the West Virginia requirements provided in comments. To facilitate permittees in the two assessments required by Permit part 2.3.6, EPA plans to post checklists or additional guidance on the EPA website, as the guidance or checklists become available or resources allow.

Changes to Permit: Part 2.3.6.b. of the Permit has been updated accordingly.

778. Comment from Weston & Sampson, Paul Hogan of Woodard and Curran, the Town of Milford, the town of Canton and the City of Quincy:

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.

779. Comment from the Town of Holden:

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.

780. Comment from the Town of Auburn:

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.

781. Comment from the Department of Defense (DoD):

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."

EPA response to comments 778 to 781

EPA agrees that, for traditional MS4s, inventorying 100% of permittee owned properties to identify all sites for retrofits by year 4 may not be practical in all circumstances. The final permit requires each permittee to identify five potential sites for retrofitting 4 years after the effective date of the permit. Each subsequent year the permittee needs to update that list such that the list remains at 5 potential retrofit sites until such a time when the permittee no longer owns 5 sites that have not been retrofitted. In addition, each year beginning 5 years after the effective date of the permit the permittee shall report on which sites have been retrofitted. This will

facilitate off site mitigation projects for redevelopment along with potential retrofits associated with impaired waters requirements contained in Appendix F or H of the Permit. When identifying sites for retrofit opportunities there is no language in the final Permit that would preclude permittees from taking cost into consideration, and, in fact, EPA encourages this.

Changes to Permit: Part 2.3.6. of the Permit has been updated accordingly.

782. Comment from the Massachusetts Rivers Alliance:

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 [footnote: 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]. 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.

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.

783. Comment from the Neponset River Watershed Association:

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 sq. ft., this proposal is unlikely to significantly reduce stormwater pollution from new development and redevelopment.

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 sq. ft.

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:

- a) Permits shall be required for project of ½ acre or more, as well as for projects of more than the minimum size that are "land uses of higher potential pollutant loads" as defined in the MA Wetlands Regulations; and

- b) Projects between 5,000 sq. ft. 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:

- a) For projects which discharge to MS4s that discharge to waters subject to TMDLs;
- b) 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
- c) For projects above the minimum threshold that are land uses with higher potential pollutant loads.”

784. Comment from the Mystic River Watershed Association (MyRWA):

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.

785. Comment from OARS Oral Testimony:

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.

786. Comment from the Parker River Clean Water Association:

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)

787. Comment from Ipswich River Watershed Association:

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.

788. Comment from the Berkshire Environmental Action Team (BEAT) and the Chicopee 4Rivers Watershed Council (C4RWC):

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.

789. Comment from Housatonic Valley Association:

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.

790. Comment from the City of Fitchburg:

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.

791. Comment from the City of Cambridge:

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.

792. Comment from the Conservation Law Foundation (CLF):

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.

793. Comment from the Charles River Conservancy (CRC) MS4 Comment:

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.

794. Comment from the Charles River Watershed Association (CRWA):

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.

EPA response to comments 782 to 794

EPA appreciates the thoughtful comments relating to size threshold for post construction stormwater requirements. In the urban environment a smaller size threshold may be warranted, and, indeed, may be needed to comply with requirements of part 2.2.2 and Appendix F and H of the final Permit. However, this is a general permit which applies to urban environments as well as sub-urban and ex-urban environments where a smaller threshold may not be warranted. 40 CFR 122.34(b)(5) requires post construction requirements to apply to earth disturbances of greater than one acre; areas less than once acre can be included if part of larger common plan, and this permit reflects that regulatory requirement. EPA notes that this threshold can be lowered on a permittee-by-permittee basis and the 1 acre threshold is a "minimum" requirement. A definition of "common plan of development" has been added to Appendix A for clarity. Please note that for the purposes of part 2.3.6., the new and redevelopment retention/treatment requirements apply to the post-construction total impervious area within the site (area extent of construction activity). This has been clarified in part 2.3.6. and a definition of "site" has been added.

Changes to Permit: Appendix A and part 2.3.6. of the Permit has been updated accordingly.

795. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

EPA response to comment 795

The requirements of part 2.3.6.a. of the Permit represent minimum requirements for new and redevelopment. EPA finds that these requirements are the maximum extent practicable control for all permittees in Massachusetts. Municipalities may choose more stringent requirements than those contained in part 2.3.6.a. of the Permit but that decision is up to the municipality. This is not unlike the situation that exists today across Massachusetts and has existed since the first zoning bylaw was written in the Commonwealth. EPA disagrees with the assertion that this permit requirement will lead to inconsistency that doesn't already exist. If anything, the post construction stormwater requirements in the final permit may lead to increased consistency in post construction requirements for new and redevelopment throughout the majority of the commonwealth, not increased disparity. EPA is currently producing BMP accounting and tracking tools to assist municipalities and developers to calculate BMP performance to assess compliance with pollutant removal requirements of part 2.3.6.a. of the Permit and will post links to model stormwater standards where available and appropriate.

796. Comment from the Town of Dedham:

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.

EPA response to comment 796

EPA has defined a "site" in part 2.3.6. to mean "the area extent of construction activity, including but not limited to the creation of new impervious cover and improvement of existing impervious cover (e.g. repaving not covered by 2.3.6.a.ii.4.d.)." For information regarding linear projects see EPA response to comments 669 to 704.

Changes to Permit: Part 2.3.6.a. of the Permit has been updated accordingly.

797. Comment from the Town of Milford:

The Draft permit relies heavily on bio-filtration, 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.

EPA response to comment 797

The post construction requirements in part 2.3.6 of the permit require the retention of the first inch of runoff OR a specific level of treatment for new development. There are many BMP

options available to developers and permittees that provide stormwater treatment without infiltration and while infiltration can be the most cost effective BMP there remains a multitude of options on sites with poor soil. For redevelopment projects with poor soils the permit allows for off-site mitigation for increased flexibility, see EPA response to comments 609 to 664. For information on the phased approach used in the PCP, see EPA response to comment 972; and for a discussion of cost related to TMDL requirements in permits, see EPA response to comment 171. It is unclear why the commenter believes retention will not help with nutrient removal from stormwater discharges. Any volume of stormwater that is not discharged to receiving waters will decrease the phosphorus load delivered to that receiving water from stormwater sources. In addition, there are many BMPs that reduce phosphorus concentrations without infiltration (Tetra Tech Inc., 2010). See EPA response to comment 171 and EPA response to comment 972.

798. Comment from Keith Saxon:

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.

EPA response to comment 798

Each permittee (municipality or non-traditional MS4 operator) is responsible for meeting the terms of the final Permit. How a permittee divides responsibility between individual municipal departments can be included as part of the permittee's SWMP. It is not appropriate in a general permit to identify which department must be responsible for which provisions in this permit.

2.3.7. Good House Keeping and Pollution Prevention for Permittee Owned Operations

799. Comment from Neponset River Watershed Association:

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.

EPA response to comment 799

Other comments received on this section suggest that many permittees already implement all or some of the operations and maintenance procedures described in part 2.3.7.a. The language of the current permit reflects that all required plans and procedures in the good housekeeping section must be designed and implemented by the dates specified in the permit.

800. Comments from the Massachusetts Rivers Alliance:

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.

EPA response to comment 800

EPA appreciates the comment regarding the Good House Keeping and Pollution Prevention for Permittee Owned Operations minimum control measure.

801. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

The requirements are generally consistent with the City of Lowell's and LRWWU's existing practices.

EPA response to comment 801

EPA appreciates the comment regarding the Good House Keeping and Pollution Prevention for Permittee Owned Operations minimum control measure.

802. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, and Wilbraham:

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.

EPA response to comment 802

Based on feedback from the 2003 permit, as well as the ongoing issue of waterbody impairments due to urban stormwater following the implementation of the 2003 permit, this permit includes more specific requirements that have been proven to be effective for reducing stormwater pollution. Because it is a general permit, in some cases the requirements may not be relevant for all municipalities or for the entirety of an MS4 area.

It is EPA's view that there are different and effective strategies for managing stormwater pollution from pet waste. The permit will be updated to read: "Establish pet waste handling collection and disposal locations at all parks and open space where pets are permitted, including the placing of proper signage concerning the proper collection and disposal of pet waste."

The commenter also suggests revising this part of the proposed permit to focus on end points or objectives. This part of the permit requires established and agreed upon pollution prevention methods that will address a wide variety of stormwater pollution issues to the maximum extent practicable, as required by the Phase II stormwater regulations. The water-quality based effluent limits in the permit build upon these best management practices where communities need to focus on end points due to a water-quality-limited receiving water. As the commenter suggests, public education will be an important tool in linking good housekeeping BMPs and their water quality benefits, and EPA plans to provide guidance to permittees as well as flexibility within the permit for permittees to implement effective public education programs.

The written operations and maintenance procedures for municipal activities have been extended to two years; all other "milestones" will remain the same. It is EPA's view that available guidance, and the fact that permittees already implement many of these procedures, make this timeline reasonable.

Changes to Permit: Part 2.3.7.a.ii of the Permit has been updated accordingly.

803. Comment from the Town of Yarmouth:

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.

EPA response to comment 803

It is EPA's view that the current usage of parks and open space in the permit allows permittees to make exceptions for protected and undisturbed areas as they see fit within their stormwater management plan. By providing a definition EPA may restrict the flexibility that the commenter would like to see regarding these provisions. EPA has not provided a definition for these terms.

804. Comment from the Charles River Watershed Association (CRWA):

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.

EPA response to comment 804

EPA appreciates the comment regarding erosion in parks and open spaces. EPA agrees that this represents an effective and inexpensive opportunity for municipalities to lessen stormwater pollution. The permit has been updated to include within the parks and open space inventory a procedure to address erosion or poor vegetative cover in parks and open space when the permittee becomes aware of an issue. MS4 communities may look to EPA's construction general permit and accompanying guidance for information on erosion and sediment controls.

Changes to permit: Permit section 2.3.7 has been updated accordingly

805. Comment from the Town of Maynard:

Section 2.3.7.a/b: 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.

806. Comment from the Town of Watertown:

Section 2.3.7(a) - 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.

807. Comment from the Town of Framingham:

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 stormwater 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.

808. Comment from the City of Newton, the towns of Danvers and Westwood and Paul Hogan of Woodard and Curran:

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.

809. Comment from the Town of Westborough:

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.

810. Comment from the City of Fitchburg:

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.

811. Comment from the Town of Weymouth:

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.

EPA response to comments 805 - 811

The requirement to write operation and maintenance procedures for all municipally-owned properties builds off of the 2003 permit requirement to develop a program to address maintenance activities and schedules as well as inspection procedures for municipally-owned properties. It is EPA's view that a three to five year timeline is too long to develop written documents for procedures that may already be occurring within a municipality.

In order to streamline the development of O&M procedures as well as SWPPPs and to allow for sufficient time for various town departments to coordinate, the deadline for the operation and maintenance plans has been extended to two years in the final permit.

Rather than spending time identifying facilities that ultimately discharge to impaired waters, we would like to see permittees address all their municipally-owned properties within this extended timeframe. In addition, EPA plans to provide guidance information on these procedures after the permit is issued.

Changes to permit: Permit section 2.3.7.a.i has been updated accordingly.

812. Comment from the Town of Dedham:

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 spent 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.

EPA response to comment 812

It is EPA's view that written procedures (which can be electronic) will be valuable to the town. Creating a written plan of how practices will be applied across the town ensures that all reasonable measures are being taken to reduce stormwater pollution from town-owned lands. It also creates consistency as well as continuity across different departments that may be involved in good housekeeping and through staffing changes that will eventually occur. There is a great amount of flexibility in terms of what these procedures look like and what level of detail is required for the town to effectively manage their programs. EPA plans to provide guidance and templates for the written operations and maintenance plans after the permit is issued..

813. Comment from the City of Fitchburg:

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.

EPA response to comment 813

For communities that already implement many of the best management practices required for good housekeeping of municipally-owned lands, the requirements of this part will be simplified. Creating a written plan of how these existing practices are applied across the town ensures consistency as well as continuity for different departments that may be involved in good housekeeping and through staffing changes. There is a great amount of flexibility in terms of what these procedures look like and what level of detail is required for the town to effectively manage their programs. EPA plans to provide guidance and templates for the written operations and maintenance plans after the permit is issued.

814. Comment from the Town of Wellesley:

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.

EPA response to comment 814

EPA appreciates the comments regarding staff training required in the draft permit; we agree that there are opportunities for regionalization of this training and the permit does not preclude the permittee from working with other permittees or stormwater organizations to complete the training requirements of part 2.3.4 and 2.3.7 of the Permit as economically feasible as possible.

815. Comment from the Town of Leicester:

Volume or mass of material removed from catch basins on a yearly basis should not have to be reported.

816. Comment from the City of Brockton:

Section 2.3.7.a.iii.(b) states that the volume or 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.

817. Comment from the Town of Watertown:

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.

818. Comment from the Towns of Abington, Bellingham, Brewster, Canton, Medway, Millis, and Swampscott and the Cities of Easthampton and Pittsfield:

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 (WQBELs), continues to diminish and timeframes within the permit further compromise a community's ability to meet permit requirements under the MCMs 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.

819. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

820. Comments from the Massachusetts Department of Environmental Protection:

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.

821. Comment from the Town of Holden DPW:

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.

822. Comment from the Town of Auburn:

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.

823. Comment from the Town of Chelmsford:

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.

824. Comment from the Town of Shrewsbury:

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.

EPA response to comments 815 - 824

EPA appreciates the comments regarding measuring and reporting material mass or volume removed from catch basins under the small MS4 permit. Based on feedback from many communities as well as a reevaluation of what information will be most useful to EPA to determine water quality impacts and permit compliance, the requirement to measure and report the volume or mass of material removed from each catch basin draining to a water quality-limited waterbody in part 2.3.7.a.iii(b) has been removed.

Overall data on catch basin material removed should be measured in order to comply with state disposal guidelines; this information should already be collected by municipalities or their

contractors. EPA expects that the updated tracking program for catch basin cleaning will ultimately serve an effective and individualized catch basin prioritization, inspection, and cleaning program within permitted MS4s.

In a typical stormwater system catch basin, sumps often serve as the only treatment to remove solids and trash from the storm sewer system; proper maintenance and attention to whether catch basins are functioning properly is an important part of the permit's good housekeeping requirements. In addition, EPA expects that the catch basin cleaning measurement may be a useful metric for the permittee to evaluate other aspects of their SWMP, such as the success of public education messaging regarding leaf litter, trash, etc. This will not only provide valuable information to the community but also fulfill the MS4 permit requirement to determine methods to evaluate the effectiveness of the public education program.

Changes to the permit: Permit part 2.3.7.a.iii(b) has been updated accordingly.

825. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, and Wilbraham:

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.

EPA response to comment 825

Based on feedback from many communities as well as a reevaluation of what information will be most useful to EPA to determine water quality impacts and permit compliance, the requirement to measure and report the volume or mass of material removed from each catch basin draining to a water quality-limited waterbody in part 2.3.7.a.iii(b) has been removed.

Overall data on catch basin material removed should be measured in order to comply with state disposal guidelines; this information should already be collected by municipalities or their contractors. EPA expects that the updated tracking program for catch basin cleaning will ultimately serve an effective and individualized catch basin prioritization, inspection, and cleaning program within permitted MS4s.

A goal volume for all catch basins of 50% full was established in the draft permit based off of information from the Bellevue Urban Runoff Summary Report (Pitt and Bissonnette 1984). This report found that sediment can only be retained in a catch basin sump at a volume of around 60% full. Beyond that depth the catch basins failed to significantly retain sediment and debris.

The permit has been revised to specify that <50% full catch basins are a goal of the program and a consideration for prioritization and follow-up action, not a permit requirement. We believe this goal will allow towns to create a prioritized catch basin inspection and cleaning program that will benefit both receiving water quality and the town in terms of efficiency. While this remains only a goal of the permit, it will be useful for towns to determine the depth of their catch basin sumps (for example, measuring the depth from sump bottom to the stormwater invert following a catch basin cleaning) to aid their knowledge of the system and their stormwater assets in order to better manage their catch basin good housekeeping.

Changes to the permit: Permit part 2.3.7.a.iii(b) has been updated accordingly.

826. Comment from the City of Cambridge:

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 1/2.

827. Comment from the Town of East Longmeadow:

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.

828. Comment from the Town of Lexington:

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.

829. Comment from the Merrimack Valley Planning Commission (MVPC):

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.

830. Comment from the Town of Webster MS4 comment letter:

The requirement that a catch basin sump be not more than 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 consider 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.

831. Comment from the Town of North Andover:

Compliance sump cleaning regulation is unfeasible - Part 2.3.7 .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.

832. Comment from Tighe and Bond:

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 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, 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.

EPA response to comments 826 - 832

A goal volume for all catch basins of 50% full was established in the draft permit based on information from the Bellevue Urban Runoff Summary Report (Pitt and Bissonnette 1984). This report found that sediment can only be retained in a catch basin sump at a volume of around 60% full. Beyond that depth the catch basins failed to significantly retain sediment and debris.

While the 50% volume metric is a goal of the catch basin inspection and cleaning schedule, it will be useful for towns to determine the depth of their catch basin sumps (for example, measuring the depth from sump bottom to the stormwater invert following a catch basin cleaning) to aid their knowledge of the system and their stormwater assets in order to better manage their catch basin good housekeeping. For communities that have surveyed or know the depth of their catch basin sumps, it will be fairly easy for inspectors to assess how full the catch basin is (as a percentage) by measuring the depth of debris below pipe inverts to determine available catch basin space left.

We agree that there are many site-specific factors, such as an effective street sweeping program, that may reduce the accumulation of sediment in catch basins; therefore, there are no set timelines for catch basin cleanings in the permit. We believe that a targeted inspection and cleaning program focused on the volume of material in catch basin sumps as well as site-specific factors known to the municipality will result in a more efficient use of resources and a reduction in pollutant loadings from the MS4.

Changes to the permit: Permit part 2.3.7.a.iii(b) has been updated accordingly.

833. Comment from the Town of Chelmsford:

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.

EPA response to comment 833

We appreciate your comments regarding the efficiency of targeted catch basin cleanings. We also believe it is inefficient to clean catch basins that may not be near the threshold volume for reduced effectiveness (50-60%) because it does not remove the maximum amount of material that could be removed for the same time and resources if fuller catch basins were targeted. The permit allows flexibility for permittees to prioritize catch basin inspections and cleanings,

although from a water quality standpoint that should include a consideration of how full the catch basin is and not just where it is located within town. If the town finds that certain isolated catch basins are more frequently in need of being emptied (e.g., they are more than 50 percent full during two routine inspections/cleanings), the town should investigate ways to reduce the sediment load from the contributing drainage area, reducing the need to clean isolated areas around town.

Please note that the permit has been revised to specify that <50% full catch basins are a goal of the program and a consideration for prioritization and follow-up action, not a permit requirement. We believe this goal will give towns flexibility to create a prioritized catch basin inspection and cleaning program that will benefit both receiving water quality and the town in terms of efficiency.

Changes to the permit: Permit part 2.3.7.a.iii(b) has been updated accordingly.

834. Comment from the Massachusetts Municipal Association (MMA):

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 than just 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.

EPA response to comment 834

Please note that catch basin inspection plan and the catchment investigation procedure in the IDDE program are separate permit requirements within different minimum control requirements of the permit. The information gathered as part of illicit detection work can complement the activities required for good housekeeping and vice versa. Please see the response to comments in section 2.3.4 for a discussion of the catchment investigation procedure.

Based on feedback from many communities as well as a reevaluation of what information will be most useful to EPA to determine water quality impacts and permit compliance, the requirement to measure and report the volume or mass of material removed from each catch basin draining to a water quality-limited waterbody in part 2.3.7.a.iii(b) has been removed.

Overall data on catch basin material removed should be measured in order to comply with state disposal guidelines; this information should already be collected by municipalities or their contractors and we do not expect it to add significantly to the paperwork that must be managed by municipalities. EPA expects that the updated tracking program for catch basin cleaning will ultimately serve an effective and individualized catch basin prioritization, inspection, and cleaning program within permitted MS4s.

Changes to the permit: Part 2.3.7.a.iii(b) of the Permit has been updated accordingly.

835. Comment from Berkshire Regional Planning Commission (BRPC):

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.

EPA response to comment 835

Based on feedback from many communities as well as a reevaluation of what information will be most useful to EPA to determine water quality impacts and permit compliance, the requirement to measure and report the volume or mass of material removed from each catch basin draining to a water quality-limited waterbody in part 2.3.7.a.iii(b) has been removed.

Changes to the permit: Part 2.3.7.a.iii(b) of the Permit has been updated accordingly.

836. Comment from the Town of Dedham:

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.

EPA response to comment 836

The Bellevue Urban Runoff Summary Report (Pitt and Bissonnette 1984) found that sediment can only be retained in a catch basin sump at a volume of around 60% full. Beyond that depth the catch basins failed to significantly retain sediment and debris. While the study did not specify the depth of all catch basins within the study area, the depth of material below the pipe invert was an important factor in the stable volume in the catch basin. We would expect the resuspension and/or bypass of particles and debris in the catch basin that creates the stable volume would occur much more quickly in a shallower sump as materials build up.

Nontraditional sumps and older infrastructure may have additional problems that should prioritize good housekeeping, including more frequent inspections and cleaning or abating significant sources of sediment within the contributing drainage area or system upgrade.

837. Comment from the City of Fitchburg:

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.

EPA response to comment 837

EPA appreciates the comments regarding measuring and reporting material mass or volume removed from catch basins under the small MS4 permit. Based on feedback from many communities as well as a reevaluation of what information will be most useful to EPA to determine water quality impacts and permit compliance, the requirement to measure and report the volume or mass of material removed from each catch basin draining to a water quality-limited waterbody in part 2.3.7.a.iii(b) has been removed.

Overall data on catch basin material removed should be measured in order to comply with state disposal guidelines; this information should already be collected by municipalities or their contractors. EPA expects that the updated tracking program for catch basin cleaning will ultimately serve an effective and individualized catch basin prioritization, inspection, and cleaning program within permitted MS4s.

We agree that a percentage full measurement for each catch basin would be a very useful metric to include in a catch basin inspection log and would generate good data for the town to develop a catch basin cleaning program.

Changes to the permit: Permit part 2.3.7.a.iii(b) has been updated accordingly.

838. Comment from the City of Waltham:

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 Citywide. 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.

EPA response to comment 838

A goal volume for all catch basins of 50% full was established in the draft permit based on information from the Bellevue Urban Runoff Summary Report (Pitt and Bissonnette 1984). This report found that sediment can only be retained in a catch basin sump at a volume of around 60% full. Beyond that depth the catch basins failed to significantly retain sediment and debris.

The permit has been revised to specify that <50% full catch basins are a goal of the program and a consideration for prioritization and follow-up action, not a permit requirement. It is EPA's view that this goal will allow towns to create a prioritized catch basin inspection and cleaning program that will benefit both receiving water quality and the town in terms of efficiency. EPA does not expect real-time monitoring of catch basins or a 24-7 cleaning program managed by a consultant in order to comply with this part. It is likely that the city's rigorous plan to remove sediment will meet many of the requirements of the permit already, but no further details on the plan were provided.

Changes to the permit: Part 2.3.7.a.iii(b) of the Permit has been updated accordingly.

839. Comment from the Town of Framingham:

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 any time 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 any time from being more than 50 percent full.

EPA response to comment 839

EPA encourages towns with existing catch basin cleaning programs to continue to prioritize catch basins based on their particular knowledge of catchment areas and historical information on how quickly catch basins fill with sediment and debris. EPA also supports towns including as part of their catch basin prioritization program an estimation of how full each catch basin sump is during routine inspections. The Bellevue Urban Runoff Summary Report (Pitt and Bissonnette 1984) found that sediment can only be retained in a catch basin sump at a volume of around 60% full. Beyond that depth the catch basins failed to significantly retain sediment and debris.

EPA appreciates your comments regarding the efficiency of targeted catch basin cleanings. It is EPA’s view that it is inefficient to clean catch basins that may not be near the threshold volume for reduced effectiveness (50-60%) because it does not remove the maximum amount of material that could be removed for the same time and resources if fuller catch basins were targeted. The permit allows flexibility for permittees to prioritize catch basin inspections and cleanings, including spatial considerations, although from a water quality standpoint that should include a consideration of how full the catch basin is and not just where it is located within town. If the town finds that certain isolated catch basins are more frequently in need of being emptied (i.e. are more than 50 percent full during two routine inspections/cleanings), the town should investigate ways to reduce the sediment load from the contributing drainage area, reducing the need to clean isolated areas around town.

A goal volume for all catch basins of 50% full was established in the draft permit. The permit has been revised to specify that <50% full catch basins are a goal of the program and a consideration for prioritization and follow-up action, not a permit requirement. We believe this goal will allow towns to create a prioritized catch basin inspection and cleaning program that will benefit both receiving water quality and the town in terms of efficiency. While this remains only a goal of the permit, it will be useful for towns to determine the depth of their catch basin sumps (for

example, measuring the depth from sump bottom to the stormwater invert following a catch basin cleaning) to aid their knowledge of the system and their stormwater assets in order to better manage their catch basin good housekeeping.

Changes to the permit: Part 2.3.7.a.iii(b) of the Permit has been updated accordingly.

840. Comment from the Town of Weymouth:

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.

EPA Response to comment 840

It is important that towns prioritize their catch basin cleanings based on approximately how full each catch basin sump is during routine inspections. The Bellevue Urban Runoff Summary Report (Pitt and Bissonnette 1984) found that sediment can only be retained in a catch basin sump at a volume of around 60% full. Beyond that depth the catch basins failed to significantly retain sediment and debris.

The permit has been revised to specify that <50% full catch basins are a goal of the program and a consideration for prioritization and follow-up action, not a permit requirement.

Further, as you recommend in your comment, the permit has been revised to require only a total volume or mass of material removed from catch basins within the MS4, not individual data from catch basins draining to impaired waters. Based on these changes, the Town of Weymouth is already reporting most if not all of the required catch basin cleaning information that will be required by this permit.

Changes to the permit: Part 2.3.7.a.iii(b) of the Permit has been updated accordingly.

841. Comment from the City of Newburyport:

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.

EPA response to comment 841

It is EPA's view that contracted services can be a part of a catch basin inspection, cleaning, and maintenance program and can be accomplished consistent with the requirements of the permit. However, the decision to contract out services, purchase equipment, or complete permit requirements in-house rests with the permittee; the permit does not dictate who does the good housekeeping requirements of the permit for each permittee.

842. Comment from the Town of Walpole:

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.

EPA Response to comment 842

Based on feedback from many communities as well as a reevaluation of what information will be most useful to EPA to determine water quality impacts and permit compliance, the requirement to measure and report the volume or mass of material removed from each catch basin draining to a water quality-limited waterbody in part 2.3.7.a.iii(b) has been removed.

Overall data on catch basin material removed should be measured in order to comply with state disposal guidelines; this information should already be collected by municipalities or their contractors. EPA expects that the updated tracking program for catch basin cleaning will ultimately serve an effective and individualized catch basin prioritization, inspection, and cleaning program within permitted MS4s.

In a typical stormwater system catch basin sumps often serve as the only treatment to remove solids and trash from the storm sewer system; proper maintenance and attention to whether catch basins are functioning properly is an important part of the permit's good housekeeping requirements. In addition, EPA expects that the catch basin cleaning measurement may be a useful metric for the permittee to evaluate other aspects of their SWMP, such as the success of public education messaging regarding leaf litter, trash, etc. This will not only provide valuable information to the community but also fulfill the MS4 permit requirement to determine methods to evaluate the effectiveness of the public education program.

Changes to the permit: Part 2.3.7.a.iii(b) of the Permit has been updated accordingly.

843. Comment from the Town of Needham:

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.

EPA response to comment 843

EPA recognizes Needham's ongoing efforts to keep up with sediment accumulation in their MS4. We believe it is important that towns prioritize their catch basin cleanings based on approximately how full each catch basin sump is during routine inspections. The Bellevue Urban Runoff Summary Report (Pitt and Bissonnette 1984) found that sediment can only be retained in a catch basin sump at a volume of around 60% full. Beyond that depth the catch basins failed to significantly retain sediment and debris.

The permit has been revised to specify that <50% full catch basins are a goal of the program and a consideration for prioritization and follow-up action, not a permit requirement.

Further, the permit has been revised to require only a total volume or mass of material removed from catch basins within the MS4, not individual data from catch basins draining to impaired waters. Please see an independent estimated cost (Watervision LLC, 2016) for more details on the good housekeeping requirements could cost the municipality.

Changes to the permit: Part 2.3.7.a.iii(b) of the Permit has been updated accordingly.

844. Comment from the Town of Weymouth:

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.

EPA response to comment 844

part 2.3.7.a.iii.(c), now 2.3.7.a.ii.3. does not require the permittee to sweep uncurbed rural roads with no catch basins and allows the permittee to determine how best to manage uncurbed roadways with no catch basins as well as limited access highways: for these roads, the permittee may choose to meet the conditions required for other roads in the town (annual sweeping) or to develop and implement an inspection, documentation, and targeted sweeping plan for those roads. The permit provides flexibility for the permittee to develop their own targeted sweeping plan based on site-specific information and town priorities and no change to permit requirements is necessary.

845. Comment from the Town of Uxbridge:

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.

846. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, and Wilbraham:

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.

EPA response to comments 845-846

EPA finds that annual street sweeping across all streets (with limited exceptions) is an important part of a town's good housekeeping measures, especially after winter sediment accumulation but also to target other pollutants deposited from the atmosphere or vehicle emissions that cannot be assessed visually. Research shows that these pollutants are nearly ubiquitous on roads and can be reduced with street sweeping. As the commenters note, many communities sweep streets more often than annually and are not prohibited from doing so under the permit. The planning requirements of the permit require the municipality to tailor a sweeping program for their streets based on local knowledge and experience, provided they also address all eligible roads at least annually for street sweeping. A higher frequency of street sweeping, especially with a high efficiency vacuum sweeper, will have positive effects on water quality.

847. Comment from the Charles River Watershed Association (CRWA):

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.

848. Comment from OARS Oral Testimony:

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.

EPA response to comments 847 - 848

EPA appreciates the comments regarding street sweeping and water quality. While we agree that more frequent street sweeping, especially with a high-efficiency vacuum sweeper, will have a beneficial effect on receiving waters by removing nutrient buildup from streets, we have not increased the required frequency nor specified a specific sweeping technology.

Based on the volume of comments received regarding cost and relative benefit of street sweeping frequency on the 2010-2011 draft permits, the requirement for street sweeping frequency has been reduced to annually in the final permit but remains a requirement for discharges to certain impaired waterbodies (see Appendix H requirements). EPA finds increased street sweeping in areas discharging to certain impaired waterbodies is appropriate while the requirement for all streets for all permittees is likely unnecessary. Other comments on street sweeping indicate that many municipalities sweep priority streets more often than annually; the permit will require them to prioritize streets and develop a systematic plan for more frequent sweepings, where necessary, including for catchments draining to impaired waters.

849. Comment from the Town of Concord:

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.

EPA response to comment 849

The requirement for street sweeping in the fall is important in catchments that drain to waterbodies that already suffer from an excess input of nutrients. Leaf litter can be a large source of nutrients to waterbodies and making additional efforts to keep leaves and other organics out of waterbodies is necessary to restore impaired waters to designated uses. It is EPA's view that the public education component of the permit also affords the municipality the opportunity to educate residents about the effect of their leaf litter on water quality, which may be used to reduce leaves in the streets and ultimately nutrient inputs to impaired waters. We agree that vacuum sweeping would be an efficient way to target leaf litter for fall sweeping, especially if the material can be reduced through public education. We would like to clarify that "following leaf drop" means that the fall sweeping should occur between the period of September 1 and December 1. We understand many towns' concerns about our early snowfall and it is our intent that the fall sweeping operations occur in the designated time period, which should allow for all streets to be swept prior to significant snowfall and when it will be effective to remove leaf litter.

850. Comment from the City of Fitchburg:

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.

EPA response to comment 850

The requirement for street sweeping in the fall is important in catchments that drain to waterbodies that already suffer from an excess input of nutrients. Leaf litter can be a large source of nutrients to waterbodies and making additional efforts to keep leaves and other organics out of waterbodies is necessary to restore impaired waters to designated uses. While leaf litter contributes nutrients to waterways, phosphorus in particular may build up on streets sorbed to very small particles that cannot be easily observed through an investigation procedure. Additionally, while the mechanisms and exact buildup of small particulate matter on

roadways may vary, it is EPA's view that that investigation to this level of detail is not an efficient use of a community's resources. In this case, it has been shown that more frequent street sweeping, especially with a high efficiency vacuum sweeper, will have positive effects on water quality.

851. Comment from Keith Saxon:

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-ofcatch-basin-cleanings.html>
- 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.

EPA response to comment 851

EPA appreciates the comment regarding proper disposal and/or reuse of street sweepings and catch basin cleanings. The permit will be updated to include reference to the DEP policies listed above (please note the MassDEP website has been updated). EPA declines to require annual certification in order to reduce administrative burden on permittees.

Changes to permit: Part 2.3.7.a.iii.d of the Permit has been updated accordingly.

852. Comment from the Towns of Ludlow and Walpole:

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.

853. Comment from the Town of Southwick:

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.

854. Comment from the Town of Andover:

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.

855. Comment from the Town of Reading:

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.

EPA response to comments 852 - 855

It is EPA's view that the salt reduction plan requirements do not conflict with or compromise public safety and responsible salt application.

This permit is limited to those activities that will be implemented by the town in order to reduce stormwater pollution and protect receiving water quality; the permit provides flexibility for municipalities to incorporate other important municipal responsibilities, such as public safety, into their stormwater management program. For that reason, Appendix H provides flexibility wherever possible for the town to implement a customized Salt Reduction Plan that takes into account the priorities and resources of the town.

EPA references different guidance documents for salt application in Appendix H that describe current best management practices for salt use as well as water quality concerns. Further, EPA finds that the required salt reduction plan aligns with permittees' existing priorities to reduce salt, as stated in the comments.

Please note that a salt reduction plan is only required of MS4s that discharge to waters that are impaired for chloride or that are water-quality limited due to chloride.

856. Comment from the Massachusetts Rivers Alliance:

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.

857. Comment from the Mystic River Watershed Association (MyRWA):

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.

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 – 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 *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.*

EPA response to comments 856 - 857

EPA appreciates the comments regarding enhanced good housekeeping measures related to salt use and storage. While salt use in MS4s may potentially be impacting receiving waters, we do not feel that it is necessary to require additional salt management where a chloride impairment has not been identified. Based on other comments, it appears that salt management and minimization is already a consideration for many municipalities because of its cost.

The requirements of Appendix H are based on known impairments, including chloride, on the Massachusetts 303(d) list. Any data indicating a chloride impairment for an MS4 receiving water should be transmitted to MassDEP and used to inform permittees that they are discharging to a water quality limited waterbody, thus requiring implementation of the reduction requirements of Appendix H (see part 2.2.2 of the final permit).

858. Comment from the Association to Preserve Cape Cod (APCC):

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.

EPA response to comment 858

EPA appreciates the comments regarding innovative BMPs for snow removal. Various guidance documents for salt application are listed in Appendix H, but this is not meant to be an exhaustive resource list. The requirements of the permit allow flexibility for municipalities to incorporate best management practices that have been proven effective into their good housekeeping operations. In particular, the requirement to minimize salt use to the extent

practicable allows for innovate snow and ice removal strategies. The Association did not include specific suggestions of snow removal BMPs that could be incorporated into the permit.

859. Comment from the Town of Auburn:

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.

EPA response to comment 859

Please note that separate state policies govern the allowable use of street sweepings and catch basin cleanings. Street sweepings may be reused or disposed of in a number of ways under Massachusetts policy #BWP-94-092; reuse options which may be more economical for the town include use in landfill cover, as fill in public ways, or as an additive to restricted use compost. Please see full text of the policy for details:

<http://www.mass.gov/eea/docs/dep/recycle/laws/stsweep.pdf>. Catch basin cleanings are typically classified as solid waste and must be disposed of in accordance with 310 CMR 19.000; please see MassDEP website for more details: <http://www.mass.gov/eea/agencies/massdep/recycle/regulations/management-of-catch-basin-cleanings.html>.

Changes to permit: Part 2.3.7.a.iii.d has been updated accordingly.

860. Comment from Keith Saxon:

2.3.7.a.iii.e Infrastructure Operation & Maintenance – Snow Disposal: 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.

EPA response to comment 860

The permit has been updated to specify that snow should not be disposed of into waters of the United States. These are the receiving waters that are protected under the NPDES program, including in MS4 permits.

Changes to permit: Permit part 2.3.7.a.iii.e has been updated accordingly.

861. Comment from Keith Saxon:

2.3.7.a.iii.e Infrastructure Operation & Maintenance: 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.

EPA response to comment 861

This permit regulates stormwater discharges from MS4s, which includes snowmelt, however, the permit does not authorize snow disposal to waters of the United States. This is adequately reflected in permit provision 2.3.7.a.iii.e without a reference to the Massachusetts snow disposal guidelines or the requirement of an annual report certification.

862. Comment from the Town of Watertown:

Section 2.3.7- 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.

EPA response to comment 862

EPA agrees that part 2.3.7.a.iii.(f) was not intended to require the inspection and maintenance of storm drain pipes and this requirement is duplicative of the requirement for an overall program at 2.3.7.a.iii.(a). The reference to the storm drain system has been removed from part (f).

Changes to permit: Permit part 2.3.7.a.iii(f) has been updated accordingly.

863. Comment from the Town of Framingham:

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.

864. Comment from the Town of Franklin:

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.

EPA response to comments 863 - 864

EPA does not believe that its requirement to inspect stormwater treatment structures annually is arbitrary or overly burdensome. Many manufacturers (including those of some products

mentioned in the comments) recommend at least yearly inspections as a best practice for optimal performance. EPA finds that an annual inspection of stormwater treatment infrastructure would be a useful addition to the Stormwater Master Plan to assess stormwater management within the Town of Framingham. Please note that the permit also allows flexibility for critical or high-priority stormwater infrastructure to be inspected more frequently, however, these inspections should not displace the annual inspections of other stormwater treatment structures.

865. Comment from the Town of Milford:

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.

866. Comment from the Town of Canton:

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.

867. Comment from the City of Quincy:

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.

868. Comment from the City of Fitchburg:

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 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.

869. Comment from the Town of Framingham:

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.

EPA response to comments 865 - 869

It is EPA's view that a separate SWPPP, even if it does not contain wholly unique information for the facility, should be available for each eligible town-owned facility. It is important for proper stormwater management that the SWPPP and any other associated protocols and plans are available to facility operators at each site; we also anticipate that there will be unique circumstances at different facilities around town that necessitate customized SWPPP components. For example, certain practices, such as salt storage or vehicle and equipment maintenance may only occur at certain facilities and only need to be addressed in those SWPPPs.

To the extent that town-wide plans or common practices apply to multiple facilities, those same plans and practices can be duplicated in the various SWPPP documents throughout town-owned facilities. EPA will also allow towns the flexibility to include town-wide good housekeeping, spill prevention, and other plans by reference in their SWPPPs in applicable sections, provided the town-wide plans are also available in writing and accessible to the facility operators.

870. Comment from the town of Wellesley:

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.

EPA response to comment 870

Please note that a SWPPP must be developed for municipally-owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater. It is not required for other town-owned facilities where stormwater pollution from industrial sources is unlikely (see part 2.3.7.a.ii). The requirements to develop a SWPPP involve some knowledge of stormwater controls and good housekeeping at industrial facilities, but mostly rely on site-specific knowledge. Templates are available online for the SWPPP to comply with EPA's MSGP, which forms the basis of these requirements. We believe that available MSGP guidance and appropriate templates will allow the permittee to develop a SWPPP within the required timeframe of two years.

871. Comment from Tighe and Bond:

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.

EPA response to comment 871

Where the third party is conducting municipal operations on behalf of the Permittee (e.g. transfer station) the permit requirement to develop and implement a SWPPP at the site remains applicable. EPA expects the permittee will work with the third party to develop and implement the SWPPP on the same schedules provided for in the final permit.

872. Comment from the Town of Westborough:

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.

EPA response to comment 872

EPA finds that a separate SWPPP, even if it does not contain wholly unique information for the facility, should be available for each eligible town-owned facility. It is important for proper stormwater management that the SWPPP and any other associated protocols and plans are available to facility operators at each site; we also anticipate that there will be unique circumstances at different facilities around town that necessitate customized SWPPP components. For example, certain practices, such as salt storage or vehicle and equipment maintenance may only occur at certain facilities and only need to be addressed in those SWPPPs.

To the extent that town-wide plans or common practices apply to multiple facilities, those same plans and practices can be duplicated in the various SWPPP documents throughout town-owned facilities (see EPA response to comments 865 - 869).

A permittee may determine that there are additional locations where municipal waste is stored outside and potentially exposed to stormwater that require further stormwater management considerations in a SWPPP. EPA would like to allow flexibility for permittees to make this determination, therefore, no definition of "waste handling facilities" has been provided.

873. Comment from the Town of Chelmsford:

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.

874. Comment from the Town of Newbury:

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)).

EPA response to comment 873 - 874

The requirement for quarterly inspections is based off of EPA's Multisector General Permit for stormwater discharges from industrial activities. A minimum inspection frequency of quarterly was specified in the MSGP 1) to ensure that inspections were conducted, and 2) that they were conducted with enough frequency to ensure that stormwater control measures are adequate and are operated and maintained properly.

Please note that a SWPPP (including quarterly inspections) must be developed for municipally-owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater. It is not required for other town-owned facilities where stormwater pollution from industrial sources unlikely (see part 2.3.7.a.ii).

875. Comment from the Town of Newbury:

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?

EPA response to comment 875

All permit requirements must be implemented within a municipality's regulated area, but could also apply within the entire MS4 system, if the permittee chooses to implement the permit throughout the town. Therefore, municipal facilities outside of the MS4 area are not subject to the good housekeeping requirements at part 2.3.7.

876. Comment from the Town of Newbury:

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.b.iv)

EPA response to comment 876

Please note that part 2.3.6 requires municipalities to evaluate the opportunities for retrofits on town-owned lands. For more information on property inventory see EPA response to comments 778 to 781. BMP retrofits can be applicable to several permit requirements, including those in parts 2.2 and 2.3.6.

While we agree that BMP retrofits will be an important part of reducing stormwater pollution, we disagree that record keeping and documentation are not valuable. Please consider that the magnitude of recordkeeping and documentation required will generally scale with the size of the community's MS4 and their regulated area. Furthermore, creating a written plan of how practices will be applied across the town ensures that all reasonable measures are being taken to reduce stormwater pollution from town-owned lands. It also creates consistency as well as continuity across different departments that may be involved in good housekeeping and through staffing changes that will eventually occur. Effective recordkeeping and documentation can help create a more effective good housekeeping plan which minimizes the addition of avoidable pollution to stormwater that must be addressed later through retrofits.

3.0. ADDITIONAL REQUIREMENTS FOR DISCHARGES TO SURFACE DRINKING WATER SUPPLIES AND THEIR TRIBUTARIES

877. Comment from Keith Saxon:

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.

EPA response to comment 877

While outlet hoods are one example of a solution to minimize oil and petroleum products from entering waterways, there may be other solutions. EPA declines to mandate their use in order to provide permittees with additional flexibility in minimizing their impacts to surface waters, including public water supplies. However, EPA has modified the post construction stormwater control requirements to include aspects of the Massachusetts Stormwater Handbook that are specifically aimed at protecting drinking water sources and addressing stormwater discharges from land uses with high pollutant loads. See EPA response to comments 609 to 664 and EPA response to comments 705 to 708 for additional discussion.

4.0. PROGRAM EVALUATION, RECORD KEEPING, AND REPORTING

878. Comment from the Neponset River Watershed Association:

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 permittees or EPA finds pursuant to Part 4.0 that current BMPs are not achieving the goals and objectives of the SWMP.

EPA response to comment 878

Part 4.1.b has been updated to specify that permittees must augment or change their BMPs if they are not achieving the objectives of the relevant control measure and the defined measureable goals for those BMPs. Please note that the permit already contains language at part 4.1.c for when EPA or MassDEP determines a BMP is not meeting the objectives of a control measure or measurable goals.

However, the NPDES permitting program in general relies on a self-monitoring, self-reporting compliance model. In terms of the overall effectiveness of the program, the self-reporting model has been determined to be an effective and efficient model for environmental regulation and is in use in numerous federal and state environmental programs. See, e.g., Innes, R., [“Remediation and self-reporting in optimal law enforcement”](#), *Journal of Public Economics*, vol. 72, 379-93 (June 1999).

Changes to the permit: Permit part 4.1.b has been updated accordingly.

879. Comment from the Town of Lexington:

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.

880. Comment from Tighe and Bond:

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.

881. Comment from the Town of East Longmeadow:

Part 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.

EPA response to comments 879 - 881

EPA plans to make available a list of all deliverables required in the permit along with a timeline to aid permittees in determining the information that must be reported to EPA and schedules for these deliverables.

882. Comment from the Massachusetts Rivers Alliance:

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.

EPA response to comment 882

EPA does provide resources to guide municipalities with the many requirements of the MS4 permit which can found on the national EPA NPDES page at:
<http://www.epa.gov/npdes/stormwater-discharges-municipal-sources#overview>. Information and links specific to Massachusetts can be found here:
http://www.epa.gov/region1/npdes/stormwater/MS4_MA.html. EPA plans to update its website with guidance documents specific to this permit after the permit is issued.

883. Comment from the City of Newburyport:

The significant amount of record keeping, 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.

884. Comment from the Town of East Longmeadow:

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.

885. Comments from the Massachusetts Department of Environmental Protection:

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.

886. Comment from the Town of Walpole:

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.

887. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

888. Comment from the Town of Chelmsford:

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.

889. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

890. Comment from Weston & Sampson and the City of Quincy, the Towns of Milford and Winchester:

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.

891. Comment from the Town of Shrewsbury:

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.

892. Comment from the Town of Walpole:

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 requirements to those that directly improve our water quality and remove unnecessary reporting and data collection requirements.

EPA response to comments 883 - 892

See EPA response to comments 92 - 112. EPA is currently compiling a list of all deliverables outlined within the permit along with a timeline to assist permittees. EPA finds that these deliverables are important to tracking the progression of compliance, reducing pollutant discharges, and improving water quality. The NPDES permitting program relies on a self-monitoring, self-reporting compliance model that is based on permittees being responsible for administrative reporting. In terms of the overall effectiveness of the program, the self-reporting model has been determined to be an effective and efficient model for environmental regulation and is in use in numerous federal and state environmental programs. See, e.g., Remediation and self-reporting in optimal law enforcement (Innes, 1999). While EPA has reduced some annual report reporting effort in the final permit (e.g. impervious cover tracking and reporting) it has only done so where lack of reporting would not undermine review of each permittee's program implementation. Some commenters asserted that the draft permit contained over 250 permit action items, however commenters provided no further data or analysis to support this claim. An independent cost estimate of draft permit conditions found that the permit contains 133 action items for the permit term (up to 150 including impaired waters requirements not applicable to all permittees) (Watervision LLC, 2016). Spread out over 5 years this represents a maximum average of 30 permit requirements per year. EPA finds that the remaining requirements for annual reports are necessary to inform EPA of program implementation as well as inform permit holders of program completeness and effectiveness and the public of actions taken by the municipality to protect resources. In addition, while many commenters believe requirements are overly burdensome or unnecessary, fewer provided specific examples of overly burdensome requirements or unnecessary requirements. Where specific suggestions were made, EPA carefully analyzed the requirements and in appropriate cases made changes.

EPA disagrees with the commenter that suggests a third party review of permit conditions is needed. Consistent with EPA's regulations on public notice of permit actions at 40 CFR § 124.10, EPA released the Draft MS4 Permit on September 30, 2014 and provided 151 days (while only 30 days are required for public comment) for all interested parties to comment on the permit conditions. Consistent with 40 CFR § 124.13, "All persons, including applicants, who believe any condition of a draft permit is inappropriate or that the Director's tentative decision to deny an application, terminate a permit, or prepare a draft permit is inappropriate, must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period (including any public hearing) under § 124.10." Permittees and interested parties had the opportunity to comment on all permit

conditions during that time and questions or issues with permit conditions should have been raised during the public comment period. Any additional review of permit conditions would have to be done through reopening of the comment period, which EPA believes is unnecessary given the length of the initial comment period.

EPA is currently developing an Annual Report template for permittees to use. This template will only be a suggested format and each permittee can choose to use it or develop their own report that contains equivalent information. The suggested format form will be in the form of an electronic fillable .pdf. EPA plans to prepopulate these forms for those permittees who send in their NOI electronically either by email or CD and use the suggested fillable NOI template. The prepopulated Annual Reports will be available for download for those permittees who submitted the NOI electronically on the suggested form and will contain all information submitted on the NOI as defaults for that particular permittee. The goal of this is to lower the reporting burden for permittees who would otherwise have to enter much of the same information on the NOI and then on each subsequent Annual Report. In addition, EPA plans to develop checklists and deliverable timelines to facilitate permittees in program implementation to the extent resources allow.

893. Comment from the Massachusetts Department of Environmental Protection:

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.

EPA response to comment 893

EPA had provided and will continue to provide standardized tools, templates, models, reporting forms, and other informational brochures online in order to help guide municipalities comply with the requirements of the MS4-2014 general permit. These links and brochures can be found at: http://www.epa.gov/region1/npdes/stormwater/MS4_MA.html. EPA plans to update its website with guidance documents specific to this permit after the permit is issued.

In addition, EPA encourages MassDEP to provide technical assistance on this permit as their comment suggested.

894. Comment from the Merrimack River Watershed Council:

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.

EPA response to comment 894

EPA's penalty authorities are those provided for in the CWA and codified in 40 CFR 122.41(a) as part of the standard conditions common to all permits. These standard conditions are included in Appendix B of this permit. Specific consequences for violations of the permit are determined on a case-by-case basis and therefore will not be written into the permit. The calculations of penalties and/or the determinations of enforcement orders are based on a variety of factors unique to the violation circumstances.

895. Comment from the Town of Auburn:

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

EPA response to comment 895

In Section 1.10.2 the draft permit requires municipalities to record the name, title, and department responsible for program implementation within the SWMP. The intent of reporting these responsibilities is for permittees to deliberately consider who will be implementing various aspects of their stormwater program in order to ensure that all permit requirements and all actions to properly manage the stormwater system are being undertaken within various town departments. Please note that the permit has been clarified to state that “written” includes both hard copy and electronic. EPA plans to hold information sessions and trainings after the final permit release date.

Changes to Permit: The relevant sections of the Permit have been updated accordingly.

896. Comment from the Towns of Uxbridge and West Boylston:

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.

EPA response to comment 896

EPA does not intend within the permit that all reports must be available in hardcopy form and encourages the use of digital and online systems to manage stormwater programs. The permit will be modified to specify that written programs, reports, procedures, etc. may be either hardcopy or electronic.

However, the intent of the “written” documents is for permittees to deliberately and thoughtfully develop various aspects of their stormwater program and to create reference documents for standardized procedures. The permit specifies that certain important procedures and programs should be written down (whether in hardcopy or via word processing) and standardized within the MS4 in order to most effectively implement the permit requirements.

Changes to Permit: The relevant sections of the Permit have been updated accordingly.

897. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

EPA response to comment 897

EPA supports increased E-reporting in efforts to reduce inefficiencies and increase public access to municipal documentation. EPA recently finalized the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule. 80 FR 64063 (Oct. 22, 2015). In accordance with that rule, the final permit allows for electronic submittal of NPDES reporting information including NOIs and Annual Reports. The permit has been updated to include the email address for electronic annual report submissions.

Changes to permit: Permit part 1.7.3 and 4.4 have been updated accordingly.

898. Comment from the Town of Holden:

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.

899. Comment from the Town of Paxton:

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.

900. Comment from the Town of Uxbridge:

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.

901. Comment from the Town of Westborough:

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.

EPA response to comments 892 - 901

See EPA response to comments 723 to 760, and EPA response to comments 883 - 892.

Based on feedback from many communities as well as a reevaluation of what information will be most useful to EPA to determine water quality impacts and permit compliance, some of the more detailed tracking requirements in section 2.3.7 have been removed or updated:

- The requirement to measure and report the volume of material removed from each catch basin draining to a water quality-limited waterbody in part 2.3.7.a.iii.(b) has been removed.
- The requirement to report the lane miles of streets swept and volume of material removed at part 2.3.7.a.iii.(c) has been modified to specify that one, but not both, of those street sweeping metrics is required to be tracked and reported.

Overall data on catch basin material removed is typically measured in order to comply with state disposal guidelines at 310 CMR 19.000; this information should already be collected by municipalities or their contractors.

Tracking certain metrics for permit compliance will be valuable for the MS4 in many ways. EPA would like communities to focus on tracking metrics that can be more easily used to assess program effectiveness and target areas for more or less frequent street sweeping or catch basin maintenance. EPA expects that the updated tracking program described for street sweeping and catch basin cleaning will ultimately allow for better management of these good housekeeping measures. EPA expects that the good housekeeping data collection, while it will require greater planning and equipment considerations, will not add significantly to workload and required manpower because it will be collected concurrently with the cleaning.

In regards to funding issues, EPA provides resources for municipalities seeking funding through grant programs and other innovative tools for funding. These resources can be found on the EPA MS4 main page at this link: <http://water.epa.gov/polwaste/npdes/stormwater/Municipal->

[Separate-Storm-Sewer-System-MS4-Main-Page.cfm](#). Please see an independent cost estimate provided on our website (Watervision LLC, 2016) for a more detailed analysis of the expected cost to comply with this permit.

Changes to permit: Permit part 2.3.7 has been updated accordingly.

4.1 Program Evaluation

902. Comment from Housatonic Valley Association:

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.

903. Comment from the Neponset River Watershed Association:

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 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.”

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 permittee 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.”

904. Comment from Keith Saxon:

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 permittee 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.”

905. Comment from the Charles River Conservancy (CRC):

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.

906. Comment from the Berkshire Environmental Action Team (BEAT):

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.

907. Comment from the Massachusetts Rivers Alliance:

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.

908. Comment from the Merrimack River Watershed Council:

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.

909. Comment from the Massachusetts Rivers Alliance:

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.

EPA response to comment 902 - 909

EPA agrees with the commenters that the permit should require permittees to change, replace or augment ineffective BMPs and added clarifying language to part 4.1.b indicating that permittees must replace ineffective BMPs. When a BMP is replaced or changed it triggers justification for replacement or change to be reported in the Annual Report. EPA finds that no further language is necessary to perform this analysis. EPA declines to add additional timing requirements on updated BMPs as the updated or replaced BMP would have to be implemented so that the permittee remains in compliance with all permit requirements and adding additional timeframe requirements would be duplicative.

Changes to Permit: Part 4.1.b of the Permit has been updated accordingly.

910. Comment from the Town of Newbury:

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).

EPA response to comments 910

Written justification of ineffective BMPs is important for record keeping purposes and tracking the evolution of BMPs over time. This also provides transparency for the SWMP and ensures that the same missteps are not made in the future with regard to BMP selection.

911. Comment from Keith Saxon:

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.

EPA response to comment 911

This permit and the Phase II program generally rely on self-reporting. EPA declines to move this permit away from the self-reporting model by forcing permittees to hire outside consultants to perform evaluations.

912. Comment from the Town of Framingham:

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.

EPA response to comment 912

The ability of EPA or MassDEP to require that permittees augment an inadequate or ineffective SWMP is essential to ensure all permittees adhere to permit requirements. EPA or MassDEP will work with permittees in the event they require a permittee to augment their program and work in appropriate schedules as necessary. Given the breadth of potential required changes, it is EPA's view that it is inappropriate to provide schedules or allowances in the permit as they will be dealt with in a case by case basis.

4.2. Record Keeping

913. Comments from the Taunton River Watershed Alliance (TRWA):

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 (SWPPP) updates for permittee owned or operated facilities.

EPA response to comment 913

EPA highly encourages frequent engagement and cooperation between municipalities and the public, and suggests that municipalities consider adopting the commenter's suggestion to maintain a notification list for interested members of the public. However, in establishing permit requirements EPA must be mindful of the burdens placed on permittees, including the cumulative effect of many small requirements. On balance we do not believe the permit should mandate such a notification list. The permit already requires public involvement including posting of the SWMP on line (if a website is available) or making it available to the public. In addition, EPA will make the annual reports available to the public upon submission. The permit has not been changed to include the additional notifications suggested by the commenter.

4.3. Outfall Monitoring Reporting

914. Comment from the Town of Milford and Winchester, the City of Quincy, and Weston & Sampson:

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.

EPA response to comment 914

The outfall monitoring done by permittees will vary in accordance with their system; the monitoring requirements for outfalls and interconnections are laid out within the IDDE program in part 2.3.4.7, where they are used to prioritize areas for follow-up and identify potential illicit issues in a catchment. However, permittees are required to report any outfall monitoring information to EPA in the annual report at part 4.3. EPA finds that the submission of stormwater quality monitoring within each annual report is a key requirement of the permit. Inclusion in the annual report allows EPA and the public to evaluate the municipality's compliance with the terms of the permit and to verify that the town's efforts to meet permit requirements are resulting in an improvement to the stormwater, and ultimately the receiving water's quality.

915. Comment from the Town of Framingham:

Part 4.3.c Outfall Monitoring Reporting:

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.

EPA response to comment 915

EPA finds that the submission of stormwater and receiving water quality monitoring data within each annual report is a key requirement of the permit. Inclusion in the annual report allows EPA and the public to evaluate the municipality's compliance with the terms of the permit and to verify that efforts of the town to meet permit requirements are resulting in an improvement to the stormwater, and ultimately the receiving water quality.

The town should not be using data that they cannot verify quality assurance for in any part of their SWMP; this is why the permit requires procedures such as for the IDDE outfall sampling and catchment investigation to be developed and implemented across the town. Further, there is no reason why a volunteer program cannot follow a quality-assured procedure. However, the final permit contains language indicating that only data collected that is being used by the permittee to inform permit compliance or program effectiveness need to be submitted with the annual report

Changes to Permit: Permit section 4.3.c has been updated accordingly.

916. Comment from the Town of Weymouth:

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.

EPA response to comment 916

In the next sentence of this section (4.3.b) the permit specifies what is required for the monitoring results: "The report shall include the date, outfall or interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results of all analyses. The annual report shall include all of this information and data for the current reporting period and for the entire permit period." The permittee may choose to report all of the required information to EPA in whatever format they wish in order to reduce administrative burden.

4.4. Annual Reports

917. Comment from the Mystic River Watershed Association (MyRWA):

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.

EPA response to comment 917

EPA encourages electronic reporting for all municipalities covered under the MS4 permit and plans to provide adequate resources online. If permittees choose to use the electronic .pdf NOI with this permit (see Appendix E for form) and submits the form electronically to EPA, the submitted data will then be used to pre-populate the first annual report which EPA intends to provide back to the permittee in order to reduce the redundancy in information gathering. It is anticipated that the annual report electronic .pdf template will be available on EPA's website. As EPA shifts towards increased electronic reporting, it is expected that report submission and review will become more streamlined.

918. Comment from the Mystic River Watershed Association (MyRWA):

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.

EPA response to comment 918

EPA declines to include language indicating that EPA will provide a written review of each annual report to each permittee. EPA does plan to review all annual reports submitted by permittees and retains the right to require permittees to modify their SWMP where EPA believes modification is necessary. Written responses by EPA to those permittees where changes to the SWMP are necessary are not warranted. Part 2.3.3.b requires that all permittees give the public an opportunity to comment on the SWMP annually which provides all stakeholders an opportunity to comment on a permittee's SWMP before it is submitted to EPA.

919. Comment from the Neponset River Watershed Association:

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 $\frac{1}{4}$ (one quarter) or $\frac{1}{2}$ (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.

EPA response to comment 919

EPA declines to augment the requested permit changes specifying what changes permittees must make when the permittee determines a BMP to be ineffective. EPA finds that the language contained in the permit and added to part 4.1.b as discussed in EPA response to comment 902 - 909 is in keeping with the iterative nature of the program and permittees should be provided the flexibility to augment ineffective BMPs as they see fit. The permit also requires permittees to augment BMPs at the discretion of EPA or MassDEP and in cases where BMPs are not

meeting permit requirements or water quality goals. In such cases EPA or MassDEP will work closely with permittees to augment their programs such that the chosen BMPs will meet permit requirements and water quality goals, which may include some of the requests and examples provided by the permittee where necessary.

920. Comment from the Town of Framingham:

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.

921. Comment from the Town of Franklin:

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.

EPA response to comments 920 - 921

EPA notes that the NOI and Annual Report templates are not requirements. The permittee may choose to submit its own forms as long as all information required in the template is submitted. EPA is providing templates to alleviate reporting burden on permittees and using electronic fillable forms to help permittees in meeting all reporting requirements as part of this permit but is not requiring its use. Because the templates are not required, EPA is not obligated to put the annual report template out for public comment prior to finalization of the permit. However, EPA

anticipates the template will be available to assist permittees prior to the effective date of the permit.

With the exception of outfall monitoring results, the annual report focuses on what the permittee has done during the previous reporting period only to judge compliance with permit provisions. It is unclear how submittal of yearly outfall monitoring data instead of cumulative data would relieve permittees of any reporting burden. Any database or excel spreadsheet where monitoring data is kept would need to be further queried by the permittee to pull out the previous year's data. In addition, cumulative data will allow EPA to assess if permit milestones for system investigation are being met by the permittee. Finally, regarding the commenter's suggestion that annual report data be made available upon request rather than submitted in each annual report, EPA believes the submission of the annual report allows EPA and the public to evaluate the municipality's compliance with the terms of the permit and to verify that efforts or the municipality to meet permit requirements are resulting in an improvement to the stormwater, and ultimately the receiving water's quality.

5.0. NON-TRADITIONAL MS4S

922. **Comment from Nitsch Engineering:**

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.

EPA response to comment 922

The requirements for non-traditional MS4s under the permit are the same as the requirements for municipalities, with some very limited exceptions, as for those for the traditional MS4s. There are no designation criteria for non-traditional MS4s. They are included within the definition of small MS4 (see 40 CFR 122.26(b)(16)). There is not a timeline for such designation of a non-traditional MS4 because they were identified as being subject to permitting upon the release of the Phase II stormwater regulations in 1999. If a non-traditional MS4 is located within an urbanized area and owns or operates a MS4, they are regulated. (See 40 CFR § 122.32(a)). EPA will continue to work to identify potentially regulated non-traditional MS4s.

923. **Comment from the Town of Canton:**

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 "NonTraditional"MS4s.

EPA response to comment 923

Non-traditional MS4s are MS4s owned and operated by the Commonwealth of Massachusetts, counties or other public agencies within the Commonwealth of Massachusetts, and properties owned and operated by the United States (Federal Facilities) within the Commonwealth of Massachusetts. These include transportation agencies. Examples of non-traditional MS4s include, but are not limited to, the separate storm sewer systems at state colleges and

universities, state prisons, military bases, state hospitals, etc. To the extent that these entities exist within the jurisdiction of an urbanized area, they are regulated by the stormwater program. EPA will work to identify potentially regulated non-traditional MS4s.

924. Comment from Paul Hogan (Woodard & Curran):

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

EPA response to comment 924

Although it is the responsibility of the regulated entity to self-identify and seek permit coverage, EPA is aware that some entities may not have done this. EPA is developing a listing of potentially regulated non-traditional MS4s and intends to notify those MS4s of their potential obligations under this permit.

925. Comment from the Campus Consortium for Environmental Excellence (C2E2):

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.

EPA response to comment 925

EPA has not created separate requirements for colleges and universities and does not plan to do so in the small MS4 permit. EPA agrees that colleges and universities are different than industrial and commercial sources. However, this permit does not address commercial and industrial sources, but rather addresses stormwater discharges from MS4s and non-traditional MS4s that share many of the same stormwater characteristics of municipalities. College and university campuses generally reflect the level of development of the surrounding areas, and it

is EPA's view that they are appropriately regulated by this permit. EPA has identified specific areas of the permit where the requirements differ between cities and towns and non-traditional MS4s (e.g. colleges and universities), but as stated previously, we not plan to create any additional separate requirements for colleges and universities.

926. Comment from the Campus Consortium for Environmental Excellence (C2E2):

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.

EPA response to comment 926

See EPA response to comments 92 - 112. The comment period was approximately five months long (September 30, 2014 – February 27, 2015). Additional extensions of the comment period have not been provided. EPA would like to clarify that the draft permit is not a new regulation. The stormwater regulations applicable to small MS4s have been in place since 1999. The document that was made available for public comment is the re-issuance of an existing permit. Outreach to new permittees, including non-traditional MS4s and new permittees, will be provided as EPA resources allow. MassDEP is also encouraged to provide this outreach. During the public comment period, MassDEP identified outreach as a primary stormwater activity for the Commonwealth.

Please note that the IDDE program deadlines for new permittees have been extended by three years in response to comments about the burden of the permit on new permittees. Certain tasks to be implemented as part of the IDDE program have also been extended for all permittees. (See Responses to Comments on part 2.3.4 for further information on the IDDE program). A municipality is responsible for the system that it owns/operates. In this context, this means that a MS4 is responsible for its system up to and including the point it discharges to another stormwater system or to a water of the US. The division of responsibility questioned in the comment follows this operational distinction. Interconnected municipalities are encouraged to cooperate with each other. Each municipality is responsible for oversight of construction projects within their jurisdiction. A city or town would enforce its by-law or ordinance relating to construction activities. A college or university would enforce its local procedures or policies as they pertain to construction on the campus. A discussion on “new discharger” is provided later in this section.

In regards to the second portion of the comment, EPA does not believe that catchment delineation requires the availability of detailed infrastructure mapping. Catchment delineation involves identification of the land area which drains to a particular outfall. Each regulated municipality has the flexibility to determine its priorities and to implement their program in accordance with that. EPA has provided guidance to assist permittee on defining priorities, but the ultimate decision rests with the municipality.

927. Comment from the Campus Consortium for Environmental Excellence (C2E2):

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.

EPA response to comment 927

It is beyond EPA’s authority to mandate that municipalities specifically work with local colleges and universities to develop a comprehensive stormwater plan. Therefore, a requirement to mandate that municipalities work with colleges and universities has not been added to the permit. Certainly, interconnected municipalities are encouraged to work together on any or all of the control measures. The permit does not specify how municipalities and non-traditional MS4s need to develop and implement their SWMP because each municipality and non-traditional MS4 has the flexibility to develop a program that works for them within the framework of requirements of the permit. The permit details elements of the SWMP and the control measures that must be addressed, but the “how” and “who” are at the discretion of the municipality or non-traditional MS4.

928. Comment from the Campus Consortium for Environmental Excellence (C2E2):

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.

EPA response to comment 928

At this time, EPA does not have a formal water quality trading program, and it is not a mandate that EPA or MS4s develop trading programs. EPA appreciates the Consortium's willingness to develop and pilot a trading system in Massachusetts. EPA is not discounting the possibility of a trading system in the future and sees a trading system as being not inconsistent with the permit. Available tools for this purpose include the pollutant reduction credits presented in Appendices F and H.

929. Comment from the Department of Defense (DoD):

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.

EPA response to comment 929

EPA has revised part 5.1.3 and 6.3 to state that non-traditional MS4s do not need to meet the requirements of 2.3.6.c, however they remain subject to 2.3.6.d. The requirements previously proposed in 5.1.3 to inventory and implement green infrastructure practices have been removed in order to not place additional burdens on non-traditional and transportation MS4s.

930. Comment from the City of Pittsfield:

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 disincentivize acceptance of private roads.

EPA response to comment 930

The term "new discharger" is defined at 40 CFR § 122.2. A "new discharger" is not the same thing as a "new discharge." The commenter appears to interchange the different terms "new discharger" and "new discharge." The statement included in the comment "new discharges must be covered under a separate individual permit" in this context, is

not accurate. Consistent with these definitions, a non-traditional MS4 is a “new discharger” if it discharges stormwater from a new facility with an entirely new separate storm sewer system that is not physically located on the same or adjacent land as an existing facility and associated system operated by the same MS4. Permit section 5.1.4 applies to new dischargers.

An MS4 is a conveyance of system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains). 40 CFR § 122.26(b)(8). It is not part of a publicly owned treatment works (POTW) nor is it part of a combined sewer system. The acceptance of a private road by a town would not be considered a new discharger. A private road is typically adjacent to a public road and the public road, by definition, is a part of the MS4. The acceptance of a private road increases the size of the municipal system, but does not trigger the need for an individual permit.

931. Comment from the Department of Defense (DoD):

Comment: This permitting provision only applies to nontraditional 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."

EPA response to comment 931

The language in part 5.0 indicates that the section applies to Federal Facilities which EPA finds is sufficient to indicate that this includes properties that are owned and operated by the United States, however, for additional clarity, the language requested by DoD has been added to the permit. Additionally, a slightly modified version of the language requested by DoD has been added to part 5.1.1

932. Comment from the Association to Preserve Cape Cod (APCC):

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.

EPA response to comment 932

State and Federal agencies meeting the definition of an MS4 are subject to the same, with some limited exceptions, requirements as the traditional cities and towns. Non-traditional MS4s are also required to meet the same water quality goals. Individual stand-alone state or federal buildings are not regulated as MS4s. MassDOT is a regulated MS4 and will be receiving an individual permit to address their stormwater discharges. MassDOT will be required to manage

its stormwater consistent with the same regulatory authorities by which cities and towns are regulated, not at a more advanced degree of regulation.

6.0. REQUIREMENTS FOR MS4s OWNED AND OPERATED BY TRANSPORTATION AGENCIES

933. **Comment from the Massachusetts Department of Transportation:**

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.

EPA response to comment 933

The required number of educational messages for traditional cities and towns and transportation agencies is exactly the same. MS4s are required to provide two educational messages to each of the four identified audiences. There will be a total of eight messages during the permit term. The only difference is the defined audiences.

934. **Comment from the Massachusetts Department of Transportation:**

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.

EPA response to comment 934

The term "new discharger" is defined in regulations at 40 CFR §122.2 and also in Appendix A. For purposes of this permit, the term pertains to non-traditional MS4 operators which includes transportation agencies. Under this permit, a new discharger is a new facility (building, structure, or installation) created at a location that is not contiguous to an existing property. In the scenario described, a new MassDOT depot off of an existing municipal road would not be a new discharger.

935. **Comment from the Cape Cod Commission:**

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.

EPA response to comment 935

As the Region develops the draft MassDOT permit, the Region will work with appropriate parties, including the Commission's technical staff, to ensure the permit requirements reflect the updated 208 Plan. The release of the draft NPDES permit for MassDOT will be done consistently with EPA procedures and EPA will provide all interested parties with an opportunity to review and comment on the draft permit.

936. Comment from the Norton Conservation Commission:

The MS4 General Permit should, at a minimum, very clearly state that MassDOT is responsible for stormwater 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.

EPA response to comment 936

Each regulated MS4, including MassDOT, is responsible for the system that it owns/operates. EPA encourages interconnected municipalities to work together and cooperatively address common issues.

937. Comment from the Norton Conservation Commission:

The MassDOT individual permit draft should be available for public comment and clearly noticed to all municipalities.

EPA response to comment 937

The MassDOT draft permit will be made available for public notice consistent with the requirements in 40 CFR § 124.10.

Appendix A

938. Comment from the New England Civil Engineering Corp.:

EPA should define medium and densely populated areas.

EPA response to comment 938

The section of the permit referencing these areas has been removed, as it was not sufficiently useful as a system vulnerability factor, therefore, no definition is needed.

939. Comment from Weston & Sampson, the Town of Winchester, the Town of Milford, the City of Quincy, and the American Council of Engineering Companies of Massachusetts (ACEC/MA):

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.

940. Comment from Tighe and Bond:

Please define "increased discharge" in Appendix A of the permit.

941. Comments from the Massachusetts Department of Environmental Protection:

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.

942. Comment from City of Easthampton and Pittsfield and the Towns of Medway, Millis, Bellingham, Brewster, Canton, Abington, and Swampscott:

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.

943. Comment from Tighe and Bond:

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.

EPA response to comments 939 - 943

Please see individual EPA responses to the terms requested by multiple commenters:

Common Plan of Development: A definition of this term has been added to Appendix A, consistent with the definition used in EPA's 2012 Construction General Permit (CGP).

New Development: A definition of this term has been added to Appendix A and part 2.3.6. of the permit. EPA finds that the definitions of new development and redevelopment, as defined in the small MS4 permit, will not contradict the narrower definitions provided in the Massachusetts Stormwater Standards. While the definitions provided by EPA are broader, the permit requirements for post-construction specify where and how development and redevelopment must be managed under the permit.

Directly connected impervious area: The requirement to track directly connected impervious area has been removed from part 2.3.6. of the permit. Therefore, no definition will be provided.

Disturbance: A definition of this term will be added to Appendix A, consistent with the definition used in EPA's 2012 Construction General Permit (CGP).

Illicit Discharge is defined in part 2.3.4.1 of the permit. This definition will be added to Appendix A for clarity.

Increased Discharge: EPA finds that the context and requirements for increased discharges are important, and therefore decline to include a definition in appendix A. Please refer to part 2.1.2. of the permit for increased discharge requirements, which have been clarified in the final permit. See EPA response to comments 116 - 136 for further explanation.

Key Junction Manhole: EPA would like to provide permittees with the flexibility to implement site-specific knowledge of their MS4 system to determine key junction manholes, and therefore we decline to expand the definition in Appendix A. EPA plans to provide guidance documents and training materials, after the permit is issued, in order to help municipalities develop an effective IDDE program, including what to consider as key junction manholes.

Redevelopment: A definition of this term has been added to Appendix A and part 2.3.6. of the permit. EPA finds that the definitions of new development and redevelopment, as defined in the small MS4 permit, will not contradict the definitions provided in the Massachusetts Stormwater Standards. Additional language has been added to the permit to address linear projects. While the definitions provided by EPA are broader for new and redevelopment, the permit requirements for post-construction have been updated to specify which construction projects must meet the requirements (earth disturbing activities > 1 acre) and to what extent impervious surfaces must be considered (within the site area as defined in 2.3.6.). The designation of a project as new or redevelopment determines the amount of retention/treatment required for impervious area on the completed project.

Site: a definition of "site" as it is referred to in part 2.3.6. has been added to that part as well as appendix A.

Changes to permit: Part 2.3.6. of the permit and Appendix A have been updated accordingly.

944. Comment from the Town of Newbury:

Do roadside ditches in a residential area, which gradually discharge in a diffused manner to adjacent bordering vegetated wetlands, constitute an outfall?

EPA response to comment 944

40 CFR part 122.26(b)(9) states that an outfall is “a *point source* as defined by 40 CFR part 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.” Note that a point source is any “discernible, confined, and discrete conveyance”; for the full definition, see 40 CFR part 122.2.

If there is any channelized stormwater flow from the ditch to the wetlands, the stormwater discharge constitutes a point source and the point of discharge to the wetlands is considered an outfall.

945. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

EPA response to comment 945

“Impervious” describes any material that is impermeable to water, i.e. designed to prevent water from passing through itself (in most cases to the subsurface). This would include traditional asphalt, cement, and other building materials. Any references to impervious surfaces in the permit refer to relatively permanent (>1 year) structures or installations of materials meeting this definition.

EPA would not consider a green roof to be impervious area where it has been designed to retain and reuse rain water because it is a vegetative cover that provides a building roof with the equivalent of permeability. Neither would permeable paving materials be considered impervious because by definition they are permeable to water.

EPA finds that the definition of imperviousness is self-explanatory and we do not believe it is possible or necessary to compile an exhaustive list of materials that are deemed “impervious.” EPA also does not want to disallow data collected using valid methods of measuring impervious area that do not necessarily reflect the above working definition, such as aerial photograph or satellite interpretation, to be used by municipalities if they so choose.

946. Comment from City of Easthampton and Pittsfield and the Towns of Medway, Millis, Bellingham, Brewster, Canton, Abington, and Swampscott:

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 disincentivize acceptance of private roads.

EPA response to comment 946

The definition of new discharge in Appendix A does not include expansion of the MS4's existing system; this expansion, to include any new drainage element or outfall within the MS4, would not be considered a new discharge. Please see

A self-contained drainage system on a private road (not owned or operated by the permittee) leading to a privately-owned outfall would not be considered part of the MS4 system and would not be subject to any of the requirements of this permit.

947. Comment from Keith Saxton:

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.

EPA response to comment 947

EPA has revised part 2.3.7.a.iii(5) to include the definition of salt from the commenter.

Changes to permit: Part 2.3.7.a.iii(5) of the Permit has been updated accordingly.

948. Comment from Southeastern Regional Services Group:

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?

EPA response to comment 948

See EPA response to comments 92 - 112

EPA finds that it is appropriate to include additional requirements for MS4 discharges to waters that are not meeting water quality standards due to one or more of the pollutants typically found in urban stormwater runoff. The term "Water Quality Limited" acknowledges that the Section 303(d) and 305(n) lists are not all inclusive of waters not meeting water quality standards and are only updated every two years. EPA does not consider any other documents and the definition is only waters that are not meeting applicable water quality standards.

Inclusion of waterbodies experiencing excursions but not listed by the state (or Water Quality Limited Waters) allows permittees to establish additional controls to reduce or eliminate the discharge of pollutants to those waters in accordance with part 2.1.1.c. or 2.1.1.d. in order to maintain compliance with part 2.1.1.a. of the permit. To put it another way, as currently written, if during the permit term, the permittee became aware that their discharge was to a waterbody that was experiencing an excursion above the water quality standard for chloride,

however the most recent Section 303(d) list did not indicate that this water was impaired for chloride, the permittee would need to follow the requirements of part 2.1.1.c. in order to remain in compliance with this permit and part 2.1.1.a. However, if the term “Water Quality Limited” was not used in the permit and the permittee became aware that their discharge was to a waterbody that was experiencing an excursion above the water quality standard for chloride, however the Section 303(d) list did not indicate that this water was impaired for chloride, the permittee would be immediately out of compliance with part 2.1.1.a. and would remain out of compliance until permit reissuance or documentation of receiving water meeting water quality standards.

949. Comment from Southeastern Regional Services Group:

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.

EPA response to comment 949

The regulations for all CWA programs contain the same definition of “waters of the United states.” See e.g. 40 CFR 110.1, 112.2, 116.3, 117.1(i), 122.2, 230.3(o), 232.2. This final permit follows the Clean Water Act regulatory definition of “waters of the United States” and does not create its own definition. As of the date of this final permit’s signature, the 2015 Clean Water Rule (80 FR 37054 (June 29, 2015)) has been stayed. During the stay, the prior regulations defining “waters of the United States” remain in effect.

Appendix B

950. Comment from the Mystic River Watershed Association (MyRWA):

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.

EPA response to comment 950

We agree that the referenced standard permit conditions provide for exceptional circumstances, along with notifications to the Agency. They are required provisions for all NPDES permittees (not just MS4 permittees). The provisions of the appendix are binding and enforceable and EPA does not see a need to duplicate them in the body of the permit. Bypass events are expected to be rare because stormwater treatment systems and BMPs are generally designed for high flows. While this permit includes many requirements to disseminate information to the public, EPA must be mindful of the resource cost to municipalities, including the cumulative burden of many small requirements. In this case we do not believe that an additional notification is warranted. B.

951. Comment from Auburn:

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.

952. Comment from Holden:

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.

EPA response to comments 951 - 952

The language regarding standard permit conditions, including the criminal penalties, was taken directly from 40 CFR § 122.41. These conditions apply to all NPDES permits, including the MA small MS4 general permit. These requirements are not new and were included in part VI of the 2003 Small MS4 General Permit. Similarly, they have been included in their entirety in this permit.

953. Comment from the City of Manchester (NH):

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.

EPA response to comment 953

Section 1.10.a of the draft permits states, "The permittee shall develop and implement a written SWMP. The SWMP shall be signed in accordance with Appendix B, Subsection 11, including the date of signature." Subsection 11 describes the "Signatory Requirements." It does not refer to the Duty to Comply condition, which is Subsection 1 of Appendix B. Nonetheless, the Duty to Comply standard condition applies to all NPDES permittees by regulation and is included in this permit. No changes have been made to the "Standard Conditions" language. Regarding the second portion of the comment, this permit addresses discharges from MS4s, not non-point sources. If the commenter is questioning whether "urban runoff" or "street runoff" is covered by this permit, MS4 discharges certainly include urban runoff and street runoff when it is conveyed and/or discharged by any component of the MS4. (See definition of MS4 in Appendix A.) It is possible that certain urban runoff is not conveyed and/or discharged by a component of the MS4 and, as such, is not regulated under this permit. Such runoff may or may not be regulated under another permit, such as the MSGP. Depending on the municipality's specific ownership, operational, and drainage configurations, stormwater discharges to surface waters most often include particular contributions of street runoff, conveyance drainage pipes, and man-made ditches meeting the MS4 definition, and such contributions are covered by this permit.

Appendix C

No Comments were received on this section

Appendix D

954. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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?

EPA response to comment 954

The State Historic Preservation Officer (SHPO) had the opportunity to comment on the draft MA Small MS4 General Permit, including the screening process and timeline highlighted in Appendix D. EPA did not receive any comments indicating that they could not respond to requests in a timely manner. Activities that may have an effect on historic properties (e.g., control measures which involved subsurface disturbance) require the permittee to submit the documentation indicated in Appendix D and work with the SHPO to determine if any additional documentation is required. While this process will require additional coordination and time, EPA notes that underground BMPs will not be installed by all permittees.

In regards to future repairs and related excavation activity, permit applicants should complete the NHPA certification and submit the NOI based on the best information available at the time of submission. Please note that projects that disturb one or more acres of land are subject to EPA's Construction General Permit which has its own NHPA certification requirements. As time passes and the program develops, new information may become available. If new information becomes available, the permittee may need to reevaluate the NHPA certification criterion to ensure that the permittee maintains permit eligibility with regards to NHPA.

Appendix E

955. Comment from Neponset River Watershed Association:

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.

EPA response to comment 955

EPA is unsure as to which document the commenter is referring. The suggested NOI format in Appendix E does contain many pre-filled BMPs that can be augmented by the permittees prior to NOI submittal. EPA does plan to create an Annual Report template in line with the NOI and pre-fill as much information as possible to relieve some administrative burden on the permittees.

956. Comment from the City of Quincy:

Once the permit is finalized, the City will be required to submit a Notice of Intent (NOI) 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 storm water 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.

EPA Response 956

Each permittee's NOI for permit coverage must contain the information required by 40 CFR 122.34(d), including BMPs used to meet permit conditions, measurable goals associated with each BMP and responsible parties. The NOI represents a municipality's planned activities to meet the terms of the permit. As the permittee implements its SWMP, the initially selected BMPs may change. That is acceptable, and those changes are reported in the annual report.

Appendix F

957. Comment from City of Cambridge:

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.

958. Comment from 495 Metro West Partnership:

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.

959. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

EPA Response to comments 957 - 959

EPA's intention is to allow phosphorus load reduction credits for existing structural stormwater controls regardless of whether the discharge is directly to the waterbody or the MS4 system. To achieve credits for existing structural controls, the permittee shall be required to document the type and actual hydraulic/hydrologic design capacity of each control and verify through annual reporting that each control is being adequately operated and maintained to ensure proper functioning and operation.

As described in the Fact Sheet, the credits for street sweeping are based on best available information related to performance of various sweeper technologies. However, efforts continue to be underway (e.g., Chesapeake Bay Region) to further evaluate the effectiveness of various sweeping technologies and related programs for reducing nutrient loads. EPA Region 1 will continue to monitor progress in these evaluations and, if warranted, EPA intends to revise credits and/or approaches to calculate credits accordingly in the future as new information becomes available. EPA Region 1 plans to re-evaluate all existing credits and add new credits when supporting information is sufficient to support adding credits at regular intervals consistent with the five year permit reissuance cycle. It is anticipated that revised (i.e., updated) and new credit information will be made available so that permittees can account for the latest credit information as they develop each phase of their PCP.

960. Comment from the Town of Millbury:

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".

961. Comment from Town of Shrewsbury:

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 Quinsigamond 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.

EPA response to comments 960 - 961

EPA disagrees with commenters' claims about the adequacy of TMDLs that EPA has used as a basis for developing phosphorus reduction requirements in the draft permit. The commenter did not provide evidence or information to support the statement that "... *most TMDL's developed for Massachusetts waters are lacking in sound science and are instead based on very generic models of watershed loading.*" See also EPA response to comments 92 - 112.

All waterbodies identified in the draft permit for which phosphorus TMDLs have been established and approved by EPA continue to be identified as impaired due to phosphorus on MA's most recent Section 303(d) list, suggesting both that excessive phosphorus loading is still relevant and that phosphorus load reductions are needed. EPA is not aware of additional technical analyses that indicate that any of the original TMDLs approved by EPA and identified in the draft permit are technically flawed, are inadequate for deriving permit phosphorus load reduction requirements, or have been modified through the required regulatory process. Consequently, EPA continues to consider the percent reductions developed in the TMDLs that are identified in the draft permit to be the best available information for deriving permit requirements for stormwater discharges of phosphorus that will ultimately be sufficient to not cause exceedances of related MA Surface Water Quality Standards. The fact that these waterbodies are still impaired due to phosphorus indicates that load reductions are needed.

Given the phased nature of the permit requirements for planning and implementing controls to achieve phosphorus reductions (15 years for MA lakes and ponds and 20 years in the Charles), it

is possible that revised TMDL analyses could be done by MA and submitted for EPA approval in the earlier portion of the long-term PCP schedule. If a TMDL is revised and approved by EPA, then the applicable permittee's phosphorus reduction requirements would be revised in the next permit issuance and reflected in the phased PCPs.

One commenter indicates that because some of the data and loading information used to develop some of the TMDLs is 25 years old or older it is no longer valid or representative, simply because of the data's age. The commenter has provided no basis to support this statement. EPA has reviewed considerable recent stormwater quality nutrient data and has found that the data are generally of similar magnitude to data reported 2 to 3 decades ago. There is no compelling evidence that the physical, chemical and biological processes associated with the generation of stormwater runoff and associated nutrient loads would be different today than they were in the relatively recent past of 2 to 3 decades ago.

The commenter is incorrect that *"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."* EPA directs the commenter to the two approved Charles River phosphorus TMDLs at <http://www.mass.gov/eea/docs/dep/water/resources/a-thru-m/charlesp.pdf> and <http://www.mass.gov/eea/docs/dep/water/resources/n-thru-y/ucharies.pdf>, which describe the extensive data collected and used to support TMDL development. Hundreds of water quality samples were collected for these TMDLs and used to develop and calibrate the models to determine needed phosphorus load reductions.

Clarification for the record: the permit does not require that stormwater pollutant loads be reduced by 100% in 15 years. Rather, it requires that all of the required load *reduction* be achieved in 15 years. The load reduction varies by community but is not 100%.

962. Comment from the Town of Millbury:

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.

EPA response to comment 962

See EPA response to comments 960 - 961 and EPA response to comments 92 - 112.

Similar to waterbodies subject to in-state TMDLs, EPA has set permit requirements for discharges such that the discharge will ultimately not cause exceedances of all applicable surface WQS including those for waters in downstream states. All of the out of state TMDLs identified in the draft permit and for which permit requirements have been developed have specified allocations calling for reductions from upstream state sources that include stormwater discharges. Therefore, EPA has used the TMDLs as a basis for developing the permit requirements to address excessive pollutant loadings that have been determined to cause and contribute to WQS exceedances. Similar to the in-state TMDLs, all of these TMDLs were reviewed and approved by EPA and found to be consistent with regulatory requirements for a TMDL, including public participation.

The commenter makes unsubstantiated statements regarding the Massachusetts TMDL program and the adequacy of the identified TMDLs for determining needed phosphorus reductions. As addressed in the EPA response to comments 960, all EPA approved MA TMDLs have undergone a thorough review and public participation process prior to approval to ensure that the TMDLs satisfy all regulatory requirements.

963. Comment from the Mystic River Watershed Association (MyRWA):

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.

EPA response to comment 963

As explained in the Fact Sheet, EPA has determined that there are a number of compelling factors that have led EPA to choose the 20 year schedule for the Charles River and the 15 year schedule for the phosphorus TMDL lakes and ponds as being “as soon as possible,” commensurate with 40 CFR 122.47 and EPA’s guidance. See Memorandum, “Compliance Schedules for Water Quality Based Effluent Limitations in NPDES Permits,” May 10, 2007. See also EPA response to comment 164. EPA recognizes that there is uncertainty associated with how well and efficiently communities and other regulated entities can expand stormwater management programs to reduce phosphorus loadings in stormwater runoff from inadequately treated developed areas. Prior to issuing future MS4 permits, EPA plans to consider new information developed by permittees as they develop and implement their PCPs and, if warranted, make necessary refinements to the permit’s compliance schedules.

The compliance milestones included in the overall schedule are intended to insure that permittees begin working immediately following permit effective date to develop and implement plans to achieve phosphorus load reductions as soon as possible.

Several potential funding mechanisms are identified in the Fact Sheet (pp. 23-24) for permittees to consider as they develop their programs. Permittees will need to determine the most appropriate funding mechanisms based on their individual needs and characteristics of their MS4 systems. EPA developed the permit to provide permittees with program flexibility and adequate time within the overall schedule to develop and implement the most appropriate funding mechanisms, including incentive programs, in order for permittees to successfully fulfill their permit requirements within the specified schedule.

964. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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).

EPA response to comment 964

The commenter did not provide a source or context for stating *“that phosphorus removal efficiencies for various stormwater BMPs are typically in the range of 40 and 65 percent.”* EPA has determined that there exist many stormwater control options that can achieve significantly greater than the 40 to 65% range (see Attachment 3 to Appendix F of the draft permit and Section J of Attachment 1 to the 2014 Fact Sheet). Consequently, EPA disagrees with the stated reason that it will be necessary for permittees to treat nearly 100 % of their contributing impervious area. Furthermore, stormwater phosphorus load reductions can be achieved by other non-structural measures as described in Attachment 2 to Appendix F to the permit, which will in effect reduce the total load reduction needed by structural stormwater controls.

Regarding the range of values cited by the commenter, EPA is uncertain whether the comment is referring to percent reduction in event mean concentration or percent reductions in long-term cumulative average annual phosphorus loads. The permit requires reductions in average annual phosphorus loads, not TP EMCs, and the reduction efficiencies provided in the permit (Attachment 3 to Appendix F) are for long-term cumulative average annual phosphorus loads. If the values provided by the commenter are percent reductions of EMCs, as is widely reported in many states’ stormwater manuals, then these values are not a valid indicator of the cumulative percent reductions in average annual phosphorus loads as required by the permit.

Typically, the performance values presented in many state stormwater manuals were derived based on summary statistics (e.g., median) of performance data reported in BMP databases such as the International BMP performance database (Geosyntec Consultants and Wright Water Engineers, 2014). These values are reduction efficiencies based on monitoring influent and effluent EMCs for various BMP types and are in no way reflective of cumulative reductions in average annual phosphorus loads. Cumulative percent reductions in average annual phosphorus loads account for the phosphorus load reduced for each and every storm event that occurs throughout the year, while BMP performance databases provide data and statistical summaries of data for EMC reductions for a limited number of storm events and based on limited variation in design capacities.

As described in the Fact Sheet and Attachment 1 to the Fact Sheet, EPA has determined that it is practical and affordable to accomplish the necessary phosphorus load reduction in the 20 year time frame providing that communities develop comprehensive PCPs that optimize the selection of the most cost effective stormwater controls throughout the watershed. EPA has determined that the technical and economic feasibility of retrofitting controls into existing developed impervious areas will increase substantially if permittees consider the use of smaller capacity stormwater controls (e.g., surface infiltration practices - 0.2 – 0.4 inch runoff depth) as a component of their PCP.

Finally, EPA recognizes that there is uncertainty associated future program costs and with how well and efficiently communities and other regulated entities can expand stormwater management programs to reduce phosphorus loadings in stormwater runoff from inadequately treated developed areas. Prior to issuing future MS4 permits, EPA plans to consider new information developed by permittees as they develop and implement their PCPs and, if warranted, make necessary refinements to the permit's compliance schedules.

965. Comment from City of Newton:

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.

966. Comment from Towns of Danvers, Westwood:

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.

967. Comment from the Massachusetts Department of Transportation:

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 storm water 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.

EPA response to comment 965 - 967

See EPA response to comment 964.

EPA intends to provide guidance and also a spreadsheet based stormwater management optimization modeling tool to assist permittees in developing the most cost effective stormwater management plan for achieving required phosphorus load reductions, as well as addressing other stormwater related issues important to the permittee's community. The initial focus of the tool is on structural stormwater controls and it is anticipated that this tool will be available from EPA for pilot testing in 2016.

As described in the Fact Sheet, the credits for non-structural BMPs are based on best available information. However, efforts continue to be underway (e.g., Chesapeake Bay Region) to further evaluate the effectiveness of various non-structural BMPs such as sweeping technologies and catch basin cleaning programs at reducing nutrient loads. Additionally, important research is underway in Wisconsin to quantify the effectiveness of varying leaf litter management programs at reducing annual nutrient loads. EPA Region 1 will continue to monitor progress in these evaluations and, if warranted, revise and/or add credits and/or approaches to calculate credits accordingly in the future as new information becomes available. EPA Region 1 plans to re-evaluate all existing credits and add new credits when supporting information is sufficient at regular intervals consistent with the five year permit reissuance cycle. Revised (i.e., updated) and new credit information shall be made available so that permittees can account for the latest credit information as they develop each phase of their PCP.

For information on legal authority for conditions in this permit see EPA response to comments 92 - 112.

968. Comment from Towns of Danvers and Westwood and Maynard:

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 final permit.

969. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

EPA response to comment 968 - 969

For the Charles River watershed, EPA has provided the baseline phosphorus loads and required phosphorus load reductions based on land use and impervious area coverage conditions of 2005. The 2005 year data is being used by EPA as the most representative dataset for the TMDL analysis period (1998-2002) because it is the year that a digital impervious cover layer became available for the Charles River watershed. As described in Attachment 1 to the Fact sheet and Attachment 1 to the Response to comments, the impervious cover data are a critical component to estimating phosphorus loads based on land use categories because impervious surfaces generate much higher annual phosphorus loading rates than pervious surfaces. EPA's intent for

requiring permittees to update baseline phosphorus loading and required reductions is to ensure that subsequent increases in phosphorus loads associated with new development since 2005 are accounted for and offset in the PCPs.

The Charles River and lake TMDLs did not set allocations to allow for increases in loading from new development and thus, to be consistent with the TMDL, the permit requires permittees/communities to offset increases associated with new development. Furthermore, communities will be making significant investments to reduce phosphorus loads from existing untreated impervious areas and it would be counter-productive to the communities' significant efforts towards implementing the PCP requirements to not account for increases associated with new development in the overall process. Furthermore, communities and permittees should be fully aware of the costs and impacts associated with new development projects with respect to increased phosphorus loadings, and should have the opportunity to take whatever steps are necessary to minimize the increase in loadings associated with new development projects.

EPA recognizes that permittees will need time to develop procedures to collect and track the necessary data to calculate phosphorus load increases associated with new development. Consequently, this requirement does not start until year 6 of the permit. Also, EPA is developing an accounting and tracking tool to assist the permittees in fulfilling reporting requirements associated with the phosphorus reduction requirements, including calculating loads associated with new development. It is anticipated that the tool will become available for testing in 2016.

970. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

971. Comment from Towns of Danvers and Westwood and Maynard:

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.

EPA response to comments 970 - 971

EPA appreciates the commenter identifying the inconsistency in the noted Attachments related to which HSG to use as a default when the HSG is unknown. EPA agrees with the recommended approach of using HSG C as the default for soils with an unknown HSG given the prevalence of HSG C soils in MA watersheds such as the Charles. However, EPA does not agree with using HSGs of surrounding soil types for defining unknown HSGs because unknown soil types are often in densely developed areas where substantial fill materials may have been placed during the development process.

The required stormwater phosphorus load reductions for the Charles River watershed communities in Tables F-2 and F-3 of Appendix F have been revised accordingly based on using the loading rate for HSG C as the default for undefined HSGs instead of the loading rate for HSG

C/D that was used in the draft permit. Also, attachments to Appendix F of the final permit have been revised to be consistent and to identify HSG C as the default HSG for unknown soil categories.

Changes to Permit: Permit language in Attachments to Appendix F have been updated accordingly.

972. Comment from the Town of Needham:

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.

EPA response to comment 972

EPA commends the Town of Needham for proactively considering the challenges of reducing phosphorus loads to the Charles River and beginning the process of developing a watershed management plan in advance of new permit requirements being established.

For this permit issuance, EPA declines to include a permit provision for the Charles River watershed communities to use local data to customize phosphorus load rates from their MS4 systems as part of the PCP for the reasons discussed below.

While EPA has applied its methodology for calculating phosphorus load reduction related permit requirements for Charles River watershed communities in a consistent and straightforward manner across the watershed, it should not be perceived that the technical underpinnings of the methodology are simplistic.

EPA's methodology used to calculate baseline phosphorus loads, phosphorus load reductions and allowable phosphorus loads for the Charles River watershed communities relied on extensive amounts of data and study conducted in the Charles River watershed including the two detailed TMDL loading analyses, as well as an abundance of other relevant data/information related to stormwater phosphorus loadings for MA conditions. Pages 38 to 41 of Attachment 1 to the Fact Sheet summarizes the information evaluated to date by EPA to develop the average annual phosphorus load export rates (PLERs) for nine land use category groups by impervious cover and pervious cover. The development of the PLERs are based on analyses of extensive stormwater quality data representative of MA land use categories and climatic conditions, numerous pollutant loading studies, extensive literature reviews, and detailed continuous simulation hydrologic modelling using MA climatic data for the TMDL period.

Attachments 1 and 2 to the Response to Comment Document provide a detailed description of the analyses conducted to: (1) Calculate required phosphorus load reductions for the Charles River watershed communities (Attachment 1); and (2) Develop the land use based average annual phosphorus load export rates (PLERs) used for calculating loading from TMDL watershed areas and for calculating and accounting for load reductions for planned and implemented stormwater controls (Attachment 2).

As a result of these analyses, EPA considers the PLERs to be reasonably representative of average annual phosphorus loading rates for impervious and pervious land use source areas in the Charles River watershed and even throughout Massachusetts. To calculate baseline loads and needed reductions for each Charles River community, the PLERs were used with Charles River watershed specific geospatial data for each community including soils, land use category, and impervious cover. EPA considers the methodology robust and sufficient for calculating required phosphorus load reductions that are consistent with the Charles River TMDL analysis period. However, as a point of clarification, EPA does not consider these rates to be representative of conditions throughout the country as indicated by the commenter.

The commenter may not be aware of the level of effort that would be needed to conduct a monitoring program to quantify annual phosphorus loadings from local drainages that would be acceptable to EPA and on par with the level of information used in EPA's analysis. In EPA's view, the project would be a substantial undertaking requiring extensive wet weather flow weighted composite sampling, continuous flow gaging, precipitation gaging and development of a robust continuous simulation hydrological models of the watershed areas. The modelling would be necessary to translate the collected quality and flow data into annual loadings for the TMDL analysis period (1998-2002) in order to insure consistency among the watershed permittees. For example, the USGS pollutant loads study to Lower Charles River conducted in 1999-2000 cost approximately \$1 million in year 2000 funds.

Furthermore, based on the experience of developing the PLERs, EPA would not expect an adequate local monitoring program to derive significantly different land use based source area PLERs for the same 1998-2002 climatic period as developed by EPA. However, EPA would not be surprised if additional local investigations into identifying connected and disconnected impervious areas, areas suitable for infiltration, drainage patterns, and soils types as part of the Needham's investigation would yield valuable site specific information that would result in a more focused and cost effective PCP than could be accounted for in a consistent manner with all other Charles River permittees.

EPA intends the process of developing and implementing the phased PCPs during the 20 year schedule to be adaptive and iterative. More specifically, EPA intends to consider new pertinent information at regular intervals consistent with the five year permit reissuance cycle. This means that EPA intends to update and revise as appropriate PLERs, required stormwater phosphorus load reductions, estimates of illicit phosphorus load contributions, and stormwater control efficiencies prior to each new permit issuance. Therefore, information developed by permittees and provided to EPA would be reviewed along with other relevant information to determine whether refinements are warranted for the next phase of the PCP. In other words, if the Town of Needham were to undertake a monitoring program during the first several years of the permit, then it is EPA's intent to consider any information generated by that program prior to the next permit issuance.

Initially, the required phosphorus load reductions in the permit will be used by all permittees to develop and implement Phase 1 of the PCP. Implementation of the Phase 1 PCP targets a total of a 25% of the total reduction needed by year 10, leaving 75% of the total reductions to be accomplished during phases 2 and 3 to be completed by year 20. The iterative process described above would allow for ample time for new and updated information to be incorporated at regular intervals throughout the implementation of the PCP. EPA considers it very important to provide a consistent phosphorus load accounting approach for all Charles

River watershed communities to ensure that all permittees bear the responsibility of reducing average annual phosphorus loads in an equitable manner.

973. Comment from the Town of Needham:

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.

EPA response to comment 973

EPA agrees that infiltration practices are among the most effective of stormwater controls to reduce phosphorus loads. Also, EPA continues to acknowledge that most infiltration systems designed to capture 1 inch of runoff from contributing impervious areas will substantially reduce the amount phosphorus loads (e.g., > 90%) that ultimately reach receiving waters.

The commenter has provided a cost estimate associated with capturing and infiltrating the first 1 inch of runoff from impervious areas. Without more background information, EPA cannot respond directly to the estimated cost but does readily acknowledge that retrofitting existing impervious surfaces with stormwater controls in the Charles River watershed to achieve the required phosphorus load reductions will result in significant cost. For example, it cannot be determined from the information submitted if the estimated cost is based on achieving Needham's required phosphorus load reduction or if it is for treating the first 1 inch from all impervious areas. Based on the some of the Commenter's stated assumptions used for developing the cost estimate, EPA offers the following responses for consideration by the Town of Needham as it continues its future stormwater management planning:

11. EPA considers that infiltration practices will be suitable for HSG C as well as for HSGs A and B, which should substantially expand the potential area within the community suitable for infiltration. For example, the HSG distribution in the Charles River watershed for Needham is as follows:

Hydrologic Soil Group Distribution, Charles River Watershed, Needham, MA						
Community	HSG A	HSG B	HSG C	HSG C/D	HSG D	Not defined
Needham	18.0%	18.1%	11.7%	8.5%	14.0%	29.7%

Including areas with HSG C and some portion of areas with HSG "not defined" will likely add additional opportunities for infiltration practices.

12. The more area that is suitable for infiltration practices, especially for the lower cost surface practices such as infiltration swales, basins and rain gardens, the greater is the opportunity to retrofit more areas with smaller more cost effective systems. Due to the process of phosphorus wash-off from impervious surfaces, smaller systems capture greater amount of phosphorus load per unit volume of design capacity than large traditionally sized systems (e.g., 1 inch). Also, in urban areas with space constraints, smaller systems may simply be more technically feasible and incur lower ancillary costs.
13. EPA has done considerable work on evaluating potential costs associated with retrofitting controls to existing development and has estimated that the most optimal - cost effective plan will likely include a mix of stormwater control technologies and a mix of design capacities ranging from small to large (e.g., 0.2 inch to 1 inch runoff depth storage capacity).

974. Comment from the Town of Needham:

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.

EPA response to comment 974

See EPA response to comment 973.

EPA's long-term performance analyses of stormwater controls shows that stormwater treatment practices other than infiltration practices are effective at achieving significant phosphorus load reductions when site conditions are not suitable for infiltration practices. The practices include a variety of filtering systems and gravel wetlands and their use would eliminate the need for costly pumping and other infrastructure to transport stormwater runoff large distances. Also, similar to infiltration practices, EPA expects that consideration of small design capacities would present cost effective retrofit opportunities for reducing phosphorus loads in runoff from densely developed settings.

975. Comment from the Town of Needham:

For the remaining areas that have no onsite infiltrative capacity nor have drainage systems in the vicinity, both a drainage collection system and 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.

EPA response to comment 975

See EPA response to comment 973 and EPA response to comment 974.

976. Comment from the Town of Needham

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.

EPA response to comment 976

See EPA response to comment 973 and EPA response to comment 974.

This comment indicates that the Town of Needham has estimated the costs associated with a comprehensive monitoring programs to track phosphorus loads from every subcatchment. While EPA agrees that such a program would likely be accurate in tracking progress, EPA does not consider this type of monitoring to be the most cost effective use of monitoring resources. While such an intensive and costly program would document percent reductions, the data collected would not be easily transferred to the watershed wide accounting process being established which is based on phosphorus load conditions that are representative of climatic conditions for 1998-2002. EPA has determined that it would be far more cost effective to focus monitoring efforts on high-quality research efforts that generate data and results that can be transferable and widely used for quantifying source loads and long-term performances of various stormwater treatment technologies. At this time, EPA considers it to not be the best use of limited financial resources to monitor every stormwater control in every community and therefore is not imposing such requirements in the permit.

977. Comment from the City of Waltham:

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 [Draft Total Phosphorus Calculations Using 2010 Conditions in Waltham, MA] and review/revise the EPA TMDL Model for Phosphorus with an updated WLA for Waltham as well as other municipalities within Charles River Basin.

EPA response to comment 977

EPA acknowledges that achieving the necessary phosphorus load reductions through treating stormwater from existing developed areas will be challenging but does not agree that it is impossible. EPA has conducted numerous implementation analyses and has determined that such a reduction can be achieved but that the technical and economic feasibility will be highly dependent upon wise up-front planning.

EPA has reviewed the 2010 memorandum attached to the City of Waltham's comments. EPA commends Waltham on its initiative to address phosphorus loading to the Charles River prior to the establishment of the permit requirements. For reasons discussed below, EPA declines to revise phosphorus load reductions in the permit based on the analysis provided by the

commenter or to reflect year 2010 conditions as requested. See EPA response to comments 92 - 112.

EPA disagrees with the City's assertion that the phosphorus load reduction amounts specified in the permit are based on outdated data, information and studies. EPA notes that the City did not provide any supporting data or information that calls into question the use of the EPA derived average annual phosphorus load export rates (PLERs) that were used to calculate baseline phosphorus loads and required reductions.

As described in the fact sheet, the TMDL wasteload allocations were primarily used by EPA as *relative reductions* to derive phosphorus load reduction requirements for Charles River watershed communities. EPA calculated the phosphorus load reductions to be consistent with the technical foundation of the TMDL analyses that determined necessary phosphorus load reductions for the Charles River to attain phosphorus-related Water Quality Standards. Therefore, the load reductions calculated for the permit are intended to be reflective of the same climatic conditions (e.g., hourly precipitation) and watershed conditions for the 1998-2002 TMDL analysis period. However, the methodology used to quantify baseline phosphorus loads and reductions considered best available information, including much more recent data and information with respect to characterizing phosphorus source areas.

Pages 38 to 41 of Attachment 1 to the Fact Sheet summarize the information evaluated to date by EPA to develop the average annual phosphorus load export rates (PLERs) for nine land use category groups by impervious cover and pervious cover. The development of the PLERs are based on analyses of extensive stormwater quality data representative of MA land use categories and climatic conditions, numerous pollutant loading studies, extensive literature reviews, and detailed continuous simulation hydrologic modelling using MA climatic data for the TMDL period.

As part of these analyses, EPA reviewed extensive stormwater quality phosphorus data and has found that the data are of similar magnitudes to data reported 10 to 15 years ago. As a result of these analyses, EPA considers the PLERs to be reasonably representative of average annual phosphorus loading rates for impervious and pervious land use source areas in the Charles River watershed and even throughout Massachusetts.

To calculate baseline loads and required reductions for each Charles River community, EPA applied the PLERs using Charles River watershed specific geospatial data for each community including soils, land use categories, and impervious cover. The geospatial data used was for the year 2005 because it is the closest year to the TMDL analysis period (most reflective of TMDL watershed conditions) in which both a land use cover and impervious cover data layers are available for the Charles River watershed. Again, EPA's intent was to calculate baseline phosphorus loads and reductions that would be as reflective as possible with watershed and climatic conditions of the Charles River TMDL analysis period. The TMDL did not include wasteload allocations for increased phosphorus loads associated with new development projects, therefore such increases must be accounted for and offset as part of implementing the Phosphorus Control Plan (PCP). The permit requires that the permittees account for development since 2005 and this assessment must be completed in the first performance evaluation required 5 years after the effective date of the permit. EPA has augmented Appendix F Part I to align the first evaluation with the completion of the first phase of the PCP and clarified the date in which permittees must document land use changes.

EPA acknowledges that the use of year 2005 land use and impervious cover data to calculate the load reductions may not reflect changes in current watershed characteristics resulting from new development and redevelopment, the presence of stormwater controls, removal of illicit discharges from on-going IDDE programs and site specific characteristics not reflected in geospatial data sets used in EPA's methodology. However, as indicated above, the use of the 2005 data was intentional in order to best reflect conditions that are representative of the TMDL analysis period as well as the established wasteload allocations. The process for accounting for changes in watershed characteristics due to development projects, installation of stormwater controls, or resulting from more detailed local information will take place in the overall tracking and accounting process for the PCP.

In other words, permittees will have the opportunity, by using the accounting methodologies in Attachments 1, 2 and 3 to Appendix F, to account for:

1. Increased phosphorus loads due to changes in land use conditions due to new development; and
2. Phosphorus load reductions associated with implemented storm water controls.

Also, EPA plans to work with permittees to develop the most appropriate and consistent manner to account for unique situations/conditions (such as exist in Waltham with the Stoney Brook Reservoir) and up-gradient drainage areas, which appear to be reducing phosphorus loads from the up-gradient stormwater discharges.

EPA has considered what would be an appropriate means for demonstrating future compliance with the permit's phosphorus reduction requirements, and EPA continues to conclude, especially for the early stages of the PCP process (i.e., development and implementation of Phase 1 PCP), that the most prudent and equitable manner to demonstrate permit compliance with the phosphorus reduction requirements is for all Charles River watershed communities to use a consistent methodology for accounting and tracking of phosphorus load reductions and increases as part of the permit process.

EPA intends for the process of developing and implementing the phased PCPs during the 20 year schedule to be adaptive and iterative. More specifically, EPA intends to consider new pertinent information at regular intervals consistent with the five year permit reissuance cycle. This means that EPA intends to update and revise as appropriate phosphorus load effluent reductions (PLERs), required stormwater phosphorus load reductions, estimates of illicit phosphorus load contributions, and stormwater control efficiencies prior to each new permit issuance.

Initially, the town specific required phosphorus load reductions in the permit are required to be used by all permittees to develop and implement Phase 1 of the PCP. Implementation of the Phase 1 PCP targets a total of a 25% of the total reduction needed by year 10, leaving 75% of the total reductions to be accomplished during phases 2 and 3 to be completed by year 20. The iterative process described above would allow time for new and updated information to be incorporated at regular intervals throughout the implementation of the PCP. In providing a consistent phosphorus load accounting approach for all Charles River watershed communities it is EPA's intent that all permittees bear responsibility of reducing average annual phosphorus loads in an similar, systematic manner.

Following are some additional responses specific to the attached memorandum. EPA would like to work with Waltham to resolve these outstanding issues and comments.

With respect to refining the permit baseline phosphorus loads to the Charles River, EPA agrees that it is important for Waltham and the other communities with watershed area that drains to the Stony Brook Reservoir to calculate the likely reductions occurring in the Stony Brook Reservoir by calculating input loads and the average annual phosphorus load discharging from the reservoir to the Charles River. However, EPA questions whether the use of the median phosphorus concentrations and total yearly flow to calculate the annual loads adequately reflects the contribution of phosphorus load to the Charles River. It would be more accurate to quantify total phosphorus load using a flow weighted average concentration. This type of analysis would require a more thorough study of the phosphorus concentrations at varying flow rates leaving the Stony Brook Reservoir to better quantify the annual load.

The effects of the Stony Brook Reservoir on its tributary watershed load is already reflected in the TMDL analysis and, therefore, should not be considered as a control practice that can be counted on to offset loads from other Charles River (CR) watershed areas in Waltham that are not tributary to the Stony Brook Reservoir. If, in fact, the Stony Brook reservoir accomplishes phosphorus load reductions equal to or greater than that which would be required for Waltham's tributary drainage area to the reservoir, then (from the perspective of the Charles River only) no additional phosphorus load reduction would be needed for this area. However, if the reduction accomplished by the reservoir is less than the calculated reduction needed for the tributary area to the reservoir, then the difference would need to be achieved elsewhere in the watershed.

The long-term performance of natural wetland systems at retaining phosphorus is highly variable and depends on a number of physical, biological and chemical factors. The memorandum does not provide an adequate basis to assume that the 27 wetland systems identified will function like a gravel wetland system with over a 1 inch runoff depth capacity. The gravel wetland system for which EPA has developed long-term P load reduction estimates is a highly engineered system that carefully controls the hydraulic flow path and provides for both filtering and nutrient uptake. More documentation and analysis would be needed for each wetland system to justify P load reduction credits for untreated stormwater being discharged to natural wetland systems.

In principle, EPA agrees that impervious surfaces that are completely or partially disconnected should be accounted for, as the baseline phosphorus load to the Charles River is updated as implementation of the PCP proceeds. EPA has estimated amounts of disconnected impervious areas as part of the methodology to calculate baseline phosphorus loads, but believes that these estimates could be refined through local investigations and mapping of drainage systems.

With respect to wetland systems, factors such as hydraulic storage capacity, hydraulic connectedness to downstream surface waters, flow path and length within the wetland system, overall retention time, and possibly redox potential should be considered in determining a phosphorus load reduction credit for a natural wetland system.

EPA agrees that existing stormwater controls treating impervious surfaces are worthy of load reduction credits, provided that an individual assessment of each control practice

and its tributary drainage area is performed and that the controls are being regularly maintained to operate as designed.

Changes to permit: Appendix F of the permit has been updated accordingly

978. Comment from the Town of Milford:

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 loadings 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.

EPA response to comment 978

The commenter is incorrect that the Middle/Upper Charles River Phosphorus TMDL was “back-calculated” using the Lower Charles River Phosphorus TMDL and that the TMDL analysis was not based on sampling in the middle/upper watershed. Both TMDLs used the extensive water quality and flow data sets at the Watertown Dam as a boundary conditions (i.e., downstream boundary for the middle/upper TMDL and upstream boundary for the lower TMDL) for developing the water quality models that were ultimately used to develop the TMDLs. Additionally, the middle/upper TMDL analysis involved the use of extensive water quality and flow data collected at numerous locations throughout the middle/upper watershed. Much of these data were collected as part of developing the TMDL. These data are documented in the final TMDL report.

EPA approved this TMDL and has determined through a comprehensive review process that the TMDL fully satisfied the regulatory requirements for establishing a TMDL, and more importantly, has adequately determined the magnitude of overall phosphorus load reductions needed from stormwater and WWTF sources in the watershed. Through development of the phosphorus load reduction requirements for the MS4 permit, EPA has relied on the TMDL analyses as well as other information, data and studies to refine the baseline phosphorus loading estimates and required reductions to be reflective of the most current data available. As a result of this process, EPA continues to find that the phosphorus load reduction for the Charles River watershed is sufficiently accurate for the purpose of calculating MS4 permit load reductions. Therefore, EPA does not conclude that additional or refined phosphorus TMDLs for Charles River are needed at this time.

EPA agrees that it is not reasonable to expect the responsibility of conducting TMDL analyses to fall to permittees. If it is determined that the TMDLs should be refined, then the responsibility of re-establishing the TMDLs would be the responsibility of the Commonwealth of Massachusetts.

Ambient water quality data alone are not sufficient to assess the adequacy of a TMDL analysis.

The estimated loading rates used in the TMDL analyses were developed based on the water quality and flow data available for the Charles River through the model calibration process and are, overall, reflective of the water quality conditions in the Charles River. EPA has determined, through the TMDL review process, that, through the combined use of extensive water quality/flow data and the calibrated water quality model, the phosphorus loading conditions in the Charles River system have been adequately characterized. Therefore, EPA disagrees that additional sampling is needed at this time to refine the TMDL. Substantial phosphorus load reductions are needed in the Charles River system to address excursions of WQS due to phosphorus and cultural eutrophication.

As described in the TMDL report, phosphorus TMDLs were developed for two conditions: 1) overall annual load conditions from a combination of wet weather and dry weather sources to address cultural eutrophication in the numerous impoundments throughout the river system; and 2) for critical low flow conditions in the free flowing sections of the river for which the WWTFs are the primary source of phosphorus. The water quality model was used to simulate low flow conditions and full permitted design flow from the WWTFs. Ambient water quality data are reflective of phosphorus loading and flow conditions at the time of the sampling, and are not necessarily reflective of the critical environmental conditions for which TMDLs must be developed. For, example, it is rare that ambient water quality data are or can be collected at both critical low flow conditions and full permitted design flow from the WWTFs. This is true in the case for the Charles River sampling data used to develop the TMDL. The purpose of developing and calibrating the water quality model for the TMDL was to estimate allowable phosphorus loading for a variety of flow and seasonal conditions.

See also EPA response to comments 92 - 112.

979. Comment from the Town of Milford:

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 EPA's 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.

EPA response to comment 979

See EPA response to comment 978.

EPA does not understand the basis for the commenter's suggestion that EPA's phosphorus loading estimates for Milford are over-estimated because the most upstream segment of the Charles River is not impaired due to nutrients. However, EPA offers the following if the commenter is suggesting that the portions of Milford that drain to this upstream segment should be excluded from the calculations. All of the watershed area contributes phosphorus, and while the immediate receiving water may not be impaired due to phosphorus, phosphorus

loading from the contributing drainage area will travel downstream and contribute to impairments further downstream (e.g., Milford Pond). Therefore, reduction in loadings from this upstream drainage area are still necessary to address downstream impairments. The significance of the upstream segment not being impaired only means that calculations of phosphorus load reductions for that segment specifically are not necessary as part of the TMDL analysis.

For reasons discussed above and in EPA response to comment 978, EPA declines to adjust Milford's phosphorus loading calculation.

980. Comment from City of Newton and the Towns of Danvers, Westwood, and Maynard:

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.

EPA response to comment 980

EPA acknowledges the comment and the suggestion to increase phosphorus load reduction credits associated with redirecting runoff from impervious surfaces to pervious surfaces (i.e., disconnection of IA) for infiltration to be consistent with the phosphorus load reductions represented in the structural infiltration practice curves. However, limited data and research are available on the specific effectiveness of such practices to contain phosphorus. Consequently, EPA has based these reduction estimates on the results of continuous simulation hydrologic modelling to get best estimates of runoff volume reductions associated with a variety of scenarios of routing impervious surface runoff to pervious areas. At this time, EPA declines to adjust the phosphorus load reduction credits as requested for reasons discussed below.

While the process of infiltrating runoff and associated phosphorus load into the ground is the same between structural infiltration practices and the redirection of impervious area runoff to pervious areas (i.e., disconnection of IA), the likely routing of runoff flows that exceed infiltration capacity of the practices will differ such that phosphorus load reduction efficiency for the disconnection of IA may be less efficient, for the following reasons. For structural infiltration practices, runoff flows enter a storage feature that holds runoff while it's infiltrated and also captures/contains some of washed off particulate matter in the storage volume. When the capacity of storage volume is exceeded, flow will either by-pass the system or overflow the system's storage volume and be routed back into the drainage system (often by way of a pipe). In contrast, pervious areas receiving runoff from disconnected IA do not have a surface storage component to maximize the opportunity for infiltration and capture/containment of particulate matter. Once incoming runoff flows exceed the infiltration capacity of the receiving pervious area then excessive flows will travel overland as surface flow and potentially carry particulate matter and possibly phosphorus present on the surface of the pervious area. The lack of a physical surface storage element that promotes both infiltration and containment of particulate

matter has led EPA to use calculated runoff volume reductions as a surrogate for phosphorus load reductions.

As part of the ongoing permit process, EPA is open to using new data and information for updating reduction efficiencies. EPA intends the process of developing and implementing the phased phosphorus control plans (PCPs) during the 20 year schedule to be adaptive and iterative. More specifically, EPA intends to consider new pertinent information at regular intervals consistent with the five year permit reissuance cycle. Therefore, new information such as research data/analyses on the effectiveness of stormwater control technologies, existing and newly developed, shall be considered by EPA to determine whether refinements are warranted for the next phase of the PCP. Revisions to reduction efficiencies shall be used by permittees to recalculate load reductions of implemented control practices at each phase of the PCP process.

981. Comment from Nitsch Engineering:

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.

EPA response to comment 981

EPA's intention is to allow phosphorus load reduction credits for existing structural stormwater controls that have already been implemented. To achieve credits for existing structural controls, the permittee shall document the type and actual hydraulic/hydrologic design capacity of each control, and verify through annual reporting that each control is being adequately operated and maintained to ensure proper functioning and operation. With this documentation as well as with accounting for phosphorous load increases during the same period, permittee can claim credit for pre-TMDL controls. This may be an opportunity and incentive to restore and even enhance existing and possibly outdated controls to more effectively capture phosphorus load reductions. While older controls may have been installed pre-TMDL, EPA suspects that most of the older controls have not been adequately maintained to function as intended. Therefore, EPA sees allowing permittees to claim credit for pre-TMDL controls to be an opportunity to restore and even enhance existing and possibly outdated controls to more effectively capture phosphorus load reductions.

982. Comment from Nitsch Engineering:

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.

EPA response to comment 982

EPA's intent is for the MS4 permittees to develop and implement a phased phosphorus control plan (PCP) that will achieve the required phosphorus load reductions. The permittees will be required to develop whatever mechanisms they need to achieve the required load reductions. The permit does not directly require stormwater control retrofits on privately-owned properties.

983. Comment from OARS Oral Testimony:

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.

984. Comment from the Conservation Law Foundation (CLF):

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.

985. Comment from the Charles River Watershed Association (CRWA):

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 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 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 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.

EPA response to comments 983 - 985

EPA agrees that it is important to reduce phosphorus loading to the Charles River and other impaired waterbodies as soon as possible. However, as explained in the Fact Sheet, there are a number of compelling factors that have led EPA to choose the 20 year schedule for the Charles River as constituting “as soon as possible.” Among these factors, it is important to provide permittees with program flexibility and adequate time within the overall schedule to develop and implement the most cost effective PCP. Moreover, the communities will need ample time to develop and implement appropriate funding mechanisms in order to successfully fulfill their permit requirements within the specified schedule. Based on EPA’s analysis of the factors affecting the schedule, EPA declines to adjust the schedule as requested. Following are responses to specific points made by the commenter.

EPA does not consider it appropriate to shorten the schedule because permittees could have developed program capacity during the last several years prior to final permit issuance. None of the Charles River watershed communities have been under permit requirements to develop stormwater management programs capable of developing and implementing PCPs. Most communities have not allocated resources towards future potential permit requirements due to the uncertainty of what the final permit would require. It appears that most, if not all, Charles River watershed permittees will be starting the PCP process with very basic programs and minimal staff resources that will need to be substantially expanded to have the capacity to first understand the full scope of the permit requirements and then develop well thought out and cost effective PCPs. This process will take time within the budgeting process of local governments.

EPA finds that the technical and economic feasibility of achieving the phosphorus load reductions will greatly depend on how comprehensive the planning process is for developing each phase of the PCP. Permittees will need to invest time and resources to consider and evaluate the best mix of storm water controls that will result in the most cost effective PCP plan. For the Phase 1 PCP, this will require having a thorough knowledge of their drainage systems through mapping and site investigations, as well as a thorough understanding of the effectiveness of various control technologies available for reducing phosphorus loads. Such a process will take time.

In its experience in estimating costs for achieving required phosphorus load reductions in three Upper Charles communities, EPA has found that most communities and stormwater practitioners will likely be unfamiliar with the latest methods and tools for developing the most cost effective PCP. Adequate time is needed within the schedule for the permittees to become familiar with the latest information on retrofitting strategies and the use of stormwater management optimization tools to develop the most cost effective and technically achievable

PCP. Additionally, EPA finds that if permittees do not have sufficient time to expand their knowledge base and become familiar with current cost effective strategies for retrofitting, then the cost of PCPs may become so excessive that it could result in slower overall progress if affordability becomes an issue. For example, EPA has determined that the cost of a retrofit program designed following traditional stormwater control sizing requirements, which is the normal practice followed by most stormwater professionals, could be as much as five times as costly compared with a plan that was developed using optimization tools that consider the use of less costly and more technically feasible small capacity controls.

EPA recognizes that public resources are limited and wants to ensure that permittees have adequate time in the schedule for upfront planning so that available resources are continually put to the best use to yield the greatest environmental return on investments. EPA considers it important for the permittees to have the time necessary to identify the best mix of control practices including the use of non-structural controls as part of the PCP in order to design the best overall management program to accommodate implementation of the selected controls. EPA does not consider it to be prudent to accelerate the schedule and force permittees into making decisions regarding the use of enhanced non-structural controls before a thorough planning process is completed.

EPA recognizes that there is uncertainty associated with how efficiently communities and other regulated entities can expand stormwater management programs to reduce phosphorus loadings in stormwater runoff from inadequately treated developed areas. Prior to issuing future MS4 permits, EPA plans to consider new information developed by permittees as they develop and implement their PCPs and will, if warranted, make necessary refinements to future permit compliance schedules.

See also EPA response to comments 92 - 112, EPA response to comment 164 and EPA response to comment 963.

986. Comment from the Massachusetts Rivers Alliance:

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 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.

EPA response to comment 986

See EPA response to comments 983 - 985.

987. Comment from the Charles River Watershed Association (CRWA):

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. Appendix F should also be modified to require, rather than "to encourage," on line posting of each Phase of the PCP. Since permittees 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. 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.

EPA response to comment 987

EPA agrees that regular reporting on PCP progress, planning, implementation and the milestones in each annual report is needed and has included this requirement in Appendix F of the final permit. EPA declines to require permittees to post PCP plans on line. In the early phase of developing their stormwater management programs and PCPs, EPA is choosing to provide the permittees with flexibility to determine how best to share information with the public.

Changes to Permit: Appendix F Part A.I. has been updated accordingly

988. Comment from Paul Hogan (Woodard & Curran):

Appendix F, page 14: note that the reference to F-6 should be F-8.

989. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

EPA response to comments 988 - 989

The text in part 2.2.1 will be amended to reference Table F-8 for the Bacteria TMDL permittees. EPA declines to adjust the location of the table headings for the permit, since that formatting is consistent with MS4 permit documents issued by the Region.

Changes to Permit: Part 2.2.1 and Appendix F of the Permit have been updated accordingly.

990. Comment from the Town of Maynard:

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. EPA should provide significant support to municipalities if they are to prepare this information on their own. Training sessions and outreach assistance is recommended.

EPA response to comment 990

EPA recognizes that the work needed to satisfy the permit requirements may in some cases be beyond the capacity of existing municipal staff resources and that outside technical assistance may be beneficial. Therefore, EPA intends to provide guidance to permittees and is currently developing a spreadsheet based tracking and accounting stormwater management tool to assist permittees in completing the required calculations, tracking and accounting. The initial focus of the tool is on structural BMP controls, and EPA anticipates that it will be available for pilot testing in 2016.

991. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

EPA response to comment 991

Current Massachusetts water quality standards use Escherichia coli (E.coli) as the chosen bacteria indicator for fresh water. Table F-8 was compiled based on a review of approved bacteria and pathogen TMDLs in Massachusetts, and therefore includes the respective bacteria indicator from the corresponding TMDL. At the time that the Shawsheen River TMDL was finalized and approved, the Massachusetts water quality standards for Class B waters required that fecal coliform bacteria shall not exceed a geometric mean of 200 organisms per 100 ml in any representative set of samples, nor shall more than 10 percent of the samples exceed 400 organisms per 100 ml. In January, 2007, the Surface Water Quality Standards for Bacteria in the

Commonwealth of Massachusetts were revised to E. coli bacteria. Numerous water quality studies conducted nationwide had indicated that E. coli is a more representative in determining the presence of pathogens that are a direct threat to human health. As described in the Addendum: Final TMDL of Bacteria for Neponset River Basin (December 2012), even though Massachusetts adopted the E. coli organism as the determining criteria in its Water Quality Standards, the intent of the fecal coliform criteria still applies. As stated in the TMDL, "Massachusetts believes that the magnitude of bacteria (fecal coliform) loading reductions outlined in earlier TMDLs will be sufficient to attain the revised Water Quality Standards criteria for E. coli" (see: <http://www.mass.gov/eea/docs/dep/water/resources/n-thru-y/neptmdla.pdf>, page 3). This permit does not open any TMDL for additional review or comment.

If the Commenter or a permittee have evidence that an impairment is no longer applicable for a waterbody segment, EPA recommends the permittee submit such evidence to MassDEP to be used to make decisions regarding surface water quality assessments as required by Sections 305(b) and 303(d) of the CWA (see: <http://www.mass.gov/eea/agencies/massdep/water/watersheds/external-data-submittals-for-the-wpp.html>).

992. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

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.

EPA response to comment 992

The relationship between TMDLs and permits is discussed in EPA response to comments 92 - 112.

EPA recognizes that there are additional sources of bacteria and pathogens beyond those identified and targeted by the BMPs in the permit. However, as described in the Fact Sheet to the Draft 2014 Permit (pages 49-50), while the bacteria and pathogen TMDLs do not have MS4-specific reduction requirements for the particular indicator bacteria, the TMDLs do set the WLA and LA for prohibited sources, such as illicit discharges, boat discharges, and failing septic systems, at zero. Therefore, the permit requirements in Appendix F part A.III focus on elimination of illicit discharges, education including pet waste management, and pollution prevention measures.

If there are additional sources contributing to the impairment, there is nothing in the permit that prevents the permittee from incorporating additional enhanced BMPs into their stormwater management plan. EPA encourages all permittees to develop programs that target the specific sources within their regulated areas in addition to the requirements outlined in the permit.

With respect to the ability of a permittee to submit information demonstrating that a discharge does not contain bacteria or pathogens, EPA did not provide a mechanism for permittees to exempt themselves from the additional requirements of Appendix F based on sampling, as these requirements are based on approved TMDLs and the permittees' stormwater discharges have been identified in the TMDLs as contributing to the loading. However, the final permit allows permittees to be relieved of TMDL requirements applicable to it if the TMDL is updated indicating no additional bacteria reductions are necessary from the permittees stormwater sources, see EPA response to comments 92 - 112.

993. Comment from the Northern Middlesex Council of Governments (NMSC):

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 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.

EPA response to comment 993

See EPA response to comments 92 - 112.

While the data from the Assabet River Phosphorus TMDL is more than 15 years old, all water body segments that are included in the Assabet River TMDL continue to be identified as impaired due to phosphorus on MA's most recent Section 303(d) list, indicating that excessive phosphorus loading is still occurring.

If a permittee has evidence that a waterbody segment is no longer impaired, EPA recommends the permittee submit such evidence to MassDEP to be used to make decisions regarding surface water quality assessments as required by Sections 305(b) and 303(d) of the CWA (see: <http://www.mass.gov/eea/agencies/massdep/water/watersheds/external-data-submittals-for-the-wpp.html>).

If there are additional sources contributing to the impairment, there is nothing in the permit that prevents the permittee from incorporating additional enhanced BMPs into their stormwater management plan. EPA encourages all permittees to develop programs that target the specific sources within their regulated areas in addition to the requirements outlined in the permit.

Specifically, in response to the issues raised by the commenter concerning the BMPs for street sweeping included in the permit, it is understood that streets, roads, highways and parking lots accumulate significant amounts of pollutants that contribute to stormwater pollutant runoff to surface waters. Effective street sweeping programs can remove several tons of debris a year from city streets minimizing pollutants in stormwater runoff. EPA agrees that trees are important to the environment and it is not the intent of these programs to compel municipalities to eliminate trees in order to reduce the amount of leaves. EPA notes that the focus of the leaf litter management program is to keep impervious roadways and parking lots as free of leaf litter/organic matter as possible during critical seasonal periods and not to address all leaf litter in the entire watershed. Leaf litter deposits on pervious areas will be subject to a number natural processes that will contain, recycle and attenuate nutrient loads in the watershed.

994. Comment from Town of Wellesley:

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 majority 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.

EPA response to comment 994

See EPA response to comment 968 - 969, EPA response to comment 974, EPA response to comment 977, and EPA response to comment 981.

EPA acknowledges Wellesley's approach to addressing excessive phosphorus loads and its immediate consideration of using enhanced non-structural controls.

995. Comment from Town of Wellesley:

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.

EPA response to comment 995

EPA will provide further guidance on what types of activities/programs would qualify to earn phosphorus load reduction credits for the organic matter/leaf litter management programs. In the meantime, EPA would be pleased to work directly with Wellesley to assess their current program and determine if it meets the intended objective of this practice. The objective is to remove organic materials such as leaf litter from impervious surfaces (e.g., roadways) that are connected directly to drainages systems before these materials can be washed off by runoff and carried into receiving waters. Some municipal programs could unintentionally increase phosphorus loads from leaf litter by asking residents to bring yard wastes to street gutters for pick-up by the municipality. If it should rain or if high winds occur prior to collection then there could be a greater chance of organic materials and leached nutrients getting into drainage systems and receiving waters.

996. Comment from Towns of Bellingham, Abington, Swampscott, Canton and the Cities of Easthampton and Pittsfield:

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.

EPA response to comment 996

The commenter does not provide any technical basis to support several of its points including the statement *“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.”* EPA continues to believe that the record presented in the fact sheet supports the use of the PLERs developed for this permit as being sufficient for the purposes outlined in the permit. Additionally, EPA considers the commenter’s proposed approach to be too vague and undefined, and would likely result in inconsistency and inequity among permittees in fulfilling phosphorus load reduction requirements. Such approaches are not adequate for achieving EPA’s goal of ensuring that all permittees bear the burden of reducing phosphorus loads in a consistent and equitable manner. Therefore, EPA declines to incorporate the permit change requested by the commenter.

Pages 38 to 41 of Attachment 1 to the Fact Sheet summarizes the information evaluated to date by EPA to develop the average annual phosphorus load export rates (PLERs) for nine land use category groups by impervious cover and pervious cover. The development of the PLERs are based on analyses of extensive stormwater quality data representative of MA land use categories and climatic conditions, numerous pollutant loading studies, extensive literature reviews, and detailed continuous simulation hydrologic modelling using MA climatic data. A more detailed description of EPA’s approach to develop the PLERs is provided in Attachment 2 to the Response to Comment Document.

EPA disagrees with commenter’s statement that the PLERs are not suitable for small watersheds. The development of the distinct PLERs was in fact based on storm water quality data and continuous hydrologic simulation modeling that is representative of small source areas within watersheds of all sizes.

The Chesapeake Bay TMDL implementation is similar, in that it is using distinct average annual load export rates to quantify nutrient and sediment loads from various sources.

997. Comment from Towns of Bellingham, Abington, Swampscott, Canton and the Cities of Easthampton and Pittsfield:

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.

EPA response to comment 997

Pages 38 to 41 of Attachment 1 to the Fact Sheet summarize the information evaluated to date by EPA to develop the average annual phosphorus load export rates (PLERs) for nine land use category groups by impervious cover and pervious cover. The development of the PLERs are based on analyses of extensive stormwater quality data representative of MA land use categories and climatic conditions, numerous pollutant loading studies, extensive literature reviews, and detailed continuous simulation hydrologic modelling using MA climatic data. The

PLER analysis is further described in greater detail in Attachment 2 to the Response to Comments Document.

998. Comment from Towns of Bellingham, Abington, Swampscott, Canton and the Cities of Easthampton and Pittsfield:

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.

999. Comment from the Towns of Medway and Millis:

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. 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.

EPA response to comments 998 - 999

See EPA response to comment 972, EPA response to comment 996, and EPA response to comment 997.

Both the composite and distinct PLERs were intentionally developed to represent average annual phosphorus loads from land use source areas without the presence of structural or non-structural control practices. As described in the Fact Sheet, the PLERs were derived from the same technical information but differ in that the composite land use based PLERs are calculated for a specific percentage of directly connected impervious area (DCIA), while the distinct PLERs are specifically for impervious area or pervious area only. The process of accounting for phosphorus load reductions associated with existing structural controls and/or ongoing non-structural practices would be accomplished by the permittee as part of overall PCP program where the appropriate distinct PLERs and control reduction efficiencies would be used to calculate reductions and essentially adjust baseline loads.

If a permittee were to adequately document that an alternative percent DCIA for a specific land use is more appropriate than the value used by EPA to calculate the land use based composite

PLER, then this information should be submitted to EPA with a request to recalculate the composite PLER or accept an alternative baseline load and reduction. Upon consideration, EPA could revise either the methodology or the actual baseline phosphorus load and reductions in a future permit issuance.

1000. Comment from the Towns of Medway and Millis:

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.

EPA response to comment 1000

See EPA response to comment 996 and EPA response to comments 998 - 999.

1001. Comment from Towns of Bellingham, Abington, Swampscott, Canton, and the Cities of Easthampton and Pittsfield:

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.

1002. Comment from the Towns of Medway and Millis:

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.

EPA response to comments 1001 - 1002

Pages 21 and 22 of Attachment 1 to the Fact Sheet and Attachment 1 to the Response to comments summarizes the approach of how EPA calculated phosphorus loads from illicit discharges and accounted for these loads in the overall reduction requirements.

1003. Comment from the Towns of Medway and Millis:

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.

1004. Comment from Towns of Bellingham, Abington, Swampscott, Canton, and the Cities of Easthampton and Pittsfield:

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.

EPA response to comments 1003 - 1004

EPA agrees that directly connected impervious area (DCIA) is the most important impervious cover information for calculating phosphorus loads and reductions. Attachment 1 to the Fact Sheet and Attachment 2 to the Response to comments describes the intended use of the PLERs and how they were developed. As described, the impervious cover (IC) information represented in both the composite and distinct PLERs (for IC only) is DCIA. However, for the non-Charles River phosphorus TMDLs for which permittees will need to define contributing watershed areas, impervious cover information is not directly used to calculate phosphorus loads. EPA intends permittees to use only watershed land use areas and composite PLERs to calculate baseline phosphorus loads and required phosphorus load reductions, See Attachment 2 to the response to comments.

If a permittee were to adequately document that an alternative percent DCIA for a specific land use is more appropriate than the value used by EPA to calculate the land use based composite PLER, then this information should be submitted to EPA with a request to recalculate the composite PLER or accept an alternative baseline phosphorus load and reduction. Upon consideration, EPA could revise either the methodology or the actual baseline phosphorus load and reduction in a future permit issuance.

For calculating phosphorus load reductions associated with non-structural and structural controls as described in Attachments 2 and 3 to Appendix F, EPA intends permittees to use DCIA in the calculations. EPA expects that the DCIA that will either drain to structural control or be subject to a non-structural practice will be well defined as part of the design process.

EPA has clarified in Attachments 2 and 3 to Appendix F of the final permit that DCIA shall be used in the stormwater control phosphorus load reduction calculations.

Changes to Permit: Attachments 1, 2, and 3 to Appendix F have been updated accordingly

1005. Comment from Towns of Bellingham, Abington, Swampscott, Canton, Medway, Mills and the Cities of Easthampton and Pittsfield:

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.

EPA response to comment 1005

EPA's intention is that infiltration rates will be determined by stormwater professionals as part of conducting site investigations during the design process. EPA expects that stormwater professionals will use credible information and/or methods for determining infiltration rates such as those provided in Volume 3 of the Massachusetts Stormwater Handbook. For planning purposes, EPA has used the following infiltration rates based on hydrologic soil group (HSG) for selecting the appropriate infiltration practice performance curve. Massachusetts does not allow the use of infiltration practices when infiltration rates are less than 0.17 inches per hour.

HSG A = 1.02 inches per hour

HSG B = 0.52 inches per hour

HSG C = 0.17 inches per hour

1006. Comment from Towns of Bellingham, Abington, Swampscott, Canton, Medway, Millis and the Cities of Easthampton and Pittsfield:

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.

EPA response to comment 1006

At this time, EPA does not have a simple method to provide for permittees to calculate the net effectiveness of multiple controls in series because of the numerous potential combinations of control types. EPA can foresee several sensible approaches of using the performance curves for

controls in series but has hesitated in outlining these at this time because of the complexity involved. Also, EPA is developing a spreadsheet based stormwater management optimization modelling tool referred to as the “Opti-Tool” that will be suitable for simulating the net performance of multiple controls in series. The modeling tool is being developed to be consistent with the EPA’s distinct PLERs and long-term cumulative performance estimates provided in the permit. It is anticipated that the draft of the Opti-Tool will be completed in 2016.

1007. Comment from Town of Bellingham:

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 bylaws/ 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.

1008. Comment from the Towns of Medway and Millis:

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 bylaws/ 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.

EPA responses to comments 1007 - 1008

These comments highlight the value of promoting regionalization and efficiencies among the MS4 to fulfill legal analysis requirements and the development of model bylaws and ordinances. As indicated in the Fact Sheet, EPA supports efficiencies through regionalization and close coordination/collaboration among the MS4s. See also EPA response to comment 83. EPA anticipates providing examples of by-laws or other legal vehicles to help permittees meet the requirements of the permit.

At this time, EPA does not have a formal water quality trading program, and it is not a mandate that EPA or MS4s develop trading programs. EPA is not discounting the possibility of a trading system in the future and sees a trading system as being not inconsistent with the permit. Available tools for this purpose include the pollutant reduction credits presented in Appendices F and G.

EPA is prohibited by law to request funding from Congress; see EPA Response to comments 1160 - 1172 for further information on funding.

1009. Comment from the Towns of Bellingham, Medway, and Millis:

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.

EPA response to comment 1009

EPA’s primary intention for requiring the PCP funding plan is to ensure that permittees undertake the steps of identifying and developing funding mechanisms that will be needed to support PCP development and implementation. EPA agrees with the commenter that, ultimately, the permittee’s funding plan once implemented should provide sufficient funds to satisfy the PCP requirements. Development of a funding plan in accordance with the permit requirement will demonstrate compliance with this requirement. While inadequate funding may contribute to non-compliance with one of more provisions of the permit, compliance with the requirement for permittees to develop and update a Funding Source Assessment will be based on the timeliness and adequacy of the Assessment, and not on whether it leads to funding.

Given the uncertainties associated with what the actual costs will be for a new PCP program and its implementation through year 10, EPA finds that it is more important to initially require developing a funding plan with recognition that adjustments in funding amounts may be needed as the PCP program unfolds and more detailed information is generated.

1010. Comment from City of Cambridge:

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 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.

EPA response to comment 1010

At this stage of the permit process, EPA is reluctant to spell out a specific methodology for quantifying reduction credits because it may be too restrictive, limited or not readily applicable to certain types of controls and consequently may result in missed opportunities. EPA intends to continue updating phosphorus reduction credits for additional BMPs as controlled research

and investigations of BMP effectiveness continue. EPA also anticipates working with permittees and other entities that are interested in developing credible long-term cumulative reduction estimates for controls not identified in the permit.

1011. Comment from City of Cambridge:

While adjustments were made to the phosphorous loading baseline to account for illicit discharges, we believe the reduction associated with illicit discharges should be greater than the proposed 3,009 Kg/yr detailed in Appendix F. Please see the attached examples.

EPA response to comment 1011

EPA acknowledges the difficulty of accurately estimating the amount of phosphorus loads associated with past and present illicit discharges throughout the Charles River watershed. The characteristics and age of the infrastructure within the Charles River communities vary considerably further making estimating the illicit load a challenge. While the illicit load may be higher, it also could be lower and EPA considers it to be imprudent at this time to adjust the initial estimate based on information from one of the more densely populated communities with very old infrastructure.

EPA agrees with Cambridge that it is critically important to continue to update and refine estimates of illicit loads in future permit issuances based on accounting of past eliminated illicit discharges; continuation of IDDE programs; and overall implementation of the PCPs. As indicated in Fact Sheet Attachment 1, EPA's intention is for permittees to account, track and report illicit loads removed through implementing IDDE programs so that EPA can refine load reduction estimates for illicit discharges and, if necessary, adjust load reduction requirements for storm water discharges in future permits.

1012. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, Wilbraham:

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.

EPA response to comment 1012

EPA recognizes that there may be many management options to reduce phosphorus loads and believes that permittees will need to weigh these options during the development of their phosphorus reduction programs. EPA is not aware of the factual basis for the commenter's statement: *"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."* Generally, EPA disagrees with the statement with regard to the majority of impaired waters. These control practices do much more than just reduce phosphorus loads and include a number of other benefits including collection of other pollutants (e.g., (trace metals, sediments, nitrogen, hydrocarbons, bacteria, etc.) as well as helping to keep drainage systems from clogging from organic matter and causing local flooding. EPA acknowledges that these practices will cost money and that they should be evaluated carefully during development of the plan.

EPA notes that the focus of the leaf litter management program is to keep impervious roadways and parking lots as free of leaf litter/organic matter as possible during critical seasonal periods, and not to address all leaf litter in the entire watershed. Leaf litter deposits on pervious areas will be subject to a number natural processes that will contain, recycle, and attenuate nutrient loads in the watershed.

It is unfortunate that residents appear to associate increased street sweeping programs with trash collection programs and the opportunity to litter. Perhaps additional education is needed to inform residents of the benefits of sweeping and of the additional costs associated with removing of increased trash due to littering through a sweeping program.

1013. Comment from the Charles River Watershed Association (CRWA):

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.

EPA response to comment 1013

EPA agrees with the recommended approach of using HSG C as the default for soils with an unknown HSG given the prevalence of HSG C soils in MA watersheds such as the Charles. The Attachments to Appendix F of the final permit have been revised to identify HSG C as the default HSG for unknown soil categories. Also, the required phosphorus load reductions for each MS4 have been recalculated for the final permit to account for this change (see Tables F2 and F3 in Appendix F to the final permit).

Changes to Permit: Attachments 1, 2, and 3 to Appendix F and Appendix F Part A.I. have been updated accordingly

1014. Comment from Towns of Danvers and Westwood:

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.

1015. Comment from the Town of Maynard:

Appendix F Attachment 3 Table 3-18: We would expect that the credit would be dependent on the relative watershed size to filter course depth. Please clarify.

EPA response to comments 1014 - 1015

The reduction credits for the porous pavement control in Attachment 3 are for the runoff pollutant load from the pavement area only. The reduction efficiencies are a function of only the filtration process that occurs as runoff from the overlying paved areas passes through the filtering course before being discharged by way of an underdrain. No infiltration occurs in the version represented in Attachment 3 due to the simulated presence of highly impermeable soils or an impermeable liner. Therefore, these reduction efficiencies provided are only applicable for porous pavements with a contributing watershed area to filter area ratio of no greater than 1:1. As indicated in the description of porous pavement on page 6 of Attachment 3, if the porous pavement overlies soils that are suitable for infiltration, then reduction estimates for an infiltration trench should be used to calculate phosphorus reduction credits for the porous pavement system. For such circumstances, the contributing watershed area to filter area ratio can be greater than 1:1.

1016. Comment from Towns of Danvers and Westwood:

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 under-drained? This BMP gets very poor performance. A slightly modified swale designs could get much better results and should be included and encouraged

1017. Comment from the Town of Maynard:

Appendix F Attachment 3 Table 3-21: 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.

EPA response to comment 1016 - 1017

EPA acknowledges the commenter identifying the inconsistency between the text and the table related to the grass swale in Attachment 3 to Appendix F. The table and performance curve represent a dry water quality swale without an underdrain. For this practice it is assumed that infiltration is minimal and that pollutant reduction is accomplished primarily through settling. If infiltration is likely, EPA recommends that the performance estimates for surface infiltration be applied using the stored runoff volume as the physical storage capacity. EPA has clarified the text in Attachment 3 accordingly. EPA has included a table in Attachment 3 to Appendix F of the final permit to provide greater clarity on how design storage capacities are to be calculated for using the performance curves.

Changes to Permit: Attachment 3 to Appendix F has been updated accordingly

1018. Comment from Paul Hogan (Woodard & Curran):

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.

EPA response to comment 1018

EPA is aware that the permit requirements represent a notable shift in the way that stormwater management assets are currently managed (or not managed in some cases). EPA considers such efforts to be both necessary and worthwhile considering the investment of public resources that will be expended to achieve the required phosphorus load reductions. To achieve water quality goals, a consistent and equitable accounting and tracking process is needed so that BMP implementation is documented and the burden of achieving needed phosphorus reductions will be shared fairly.

To assist permittees in such efforts, EPA Region 1 is developing an accounting and tracking tool for MS4s referred to as the BMP Accounting & Tracking Tool (BATT). The tool will help to both standardize and facilitate the process of accounting and tracking controls and associated load reduction estimates, as well reporting to demonstrate permit compliance. As resources will allow, EPA intends to provide support to assist permittees in using the new tool.

EPA notes that the commenter did not provide any specific suggestions to streamline the process to make it more manageable for permittees. In light of this comment and similar ones, EPA has evaluated the required framework and continues to believe that the approach described in the permit is needed to ensure documentation, accountability, consistency among permittees, and protection of water quality. However, given the long schedule, EPA sees the PCP process as being adaptive in that modifications to the process are possible at each future permit issuance. Therefore, prior to the next permit issuance, EPA would welcome all relevant information that could improve the process including credible ways to improve the accounting and tracking requirements.

1019. Comment from Neponset River Watershed Association:

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.a, and for retrofit and priority ranking described in Part 2.3.6.d. 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.d shall include consideration of BMPs that infiltrate stormwater where feasible.

1020. Comment from Neponset River Watershed Association:

Proposed MS4 Permit Provisions relating to Bacteria: 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.

EPA response to comments 1019 - 1020

EPA notes the concerns raised regarding bacteria impairments, as they represent a risk to human health and the environment. However, EPA finds that the requirements included in part 2.3.6 and Appendix F and Appendix H will adequately address bacteria impairments. In response to comments received (please see Response to Comments 609 to 664), changes have been made to part 2.3.6 that now includes the requirements for all stormwater management systems on new development sites to be designed to either retain the volume of runoff equivalent to 1”, or remove 90% of the average annual post-construction load of Total Suspended Solids (TSS) generated from impervious surfaces on site AND 60% of the average annual post-construction load of Total Phosphorus (TP) generated from impervious surfaces site. EPA notes that the definition of site has been updated in Appendix A. EPA finds that requiring stormwater management systems that promote infiltration will also control pathogens in stormwater discharges. See EPA response to comments 710 to 722 (part 2.3.6). Also see EPA response to comments 92 - 112.

1021. Comment from the Massachusetts Rivers Alliance:

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.

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.

EPA response to comment 1021

See EPA response to comment 178

EPA notes the concerns raised regarding bacteria impairments, as they represent a risk to human health and the environment. However, EPA finds that the requirements included in part 2.3.6 and Appendix H part III will adequately address bacteria impairments. Changes have been made to part 2.3.6 in response to comments received (please see Response to Comments 609 to 664), that now include the requirements for all stormwater management systems on new and redeveloped sites to be designed to either retain the volume of runoff equivalent to 1" or remove 90% of the average annual post-construction load of Total Suspended Solids (TSS) generated from impervious surfaces on the site AND 60% of the average annual post-construction load of Total Phosphorus (TP) generated from impervious surfaces on site. EPA notes that a definition of site has been added to Appendix A. EPA finds that requiring stormwater management systems that promote infiltration will also control pathogens in stormwater discharges. Please see EPA response to comments 710 to 722 (part 2.3.6).

With respect to the request for revising post-construction bylaws or ordinances to require retention of 1" of runoff for projects that disturb one-half acre or more, EPA declines to make this change. Please see EPA response to comments 782 to 794 (part 2.3.6).

1022. Comment from Neponset River Watershed Association:

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 Meadow Brook.

EPA response to comment 1022

EPA acknowledges the four water bodies included in the comment should be included in Appendix F.A.3 Table F-8. EPA will update part 2.2.1 and Appendix F to reflect these changes as well as any additional TMDLs approved since the 2014 Draft Permit was issued, along with specific requirements for those municipalities that are subject to the approved TMDLs.

Changes to Permit: Part 2.2.1 of the Permit and Appendix F have been updated accordingly.

1023. Comment from Keith Saxton:

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.

EPA response to comment 1023

EPA agrees that ensuring proper management of pet wastes within locations with the highest densities is important, and has already included such provisions as suggested in the comment in part 2.3.7.a.ii.1 of the permit.

1024. Comment from Tighe and Bond:

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.

EPA response to comment 1024

The Commenter is correct in that the permittees required to address TMDLs have public education and outreach requirements beyond those in part 2.3.2. As explained in the Fact Sheet to the Draft 2014 Permit on page 50: “These measures are not meant to take the place of the requirements in part 2.3 of the Permit but instead supplement the requirements where more work is needed to decrease bacteria concentrations in discharges to the impaired waters.” See also EPA response to comment 83.

1025. Comment from CT River Stormwater Committee:

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.

EPA response to comment 1025

Please see EPA response to comments 157 - 158, which deal with overlapping requirements from TMDLs and impaired waters.

In general, if a permittee is subject to multiple impairments or TMDLs, the permittee may combine the requirements for Public Education and Outreach in Appendix F and Appendix H town-wide, in order to eliminate duplication of effort.

1026. Comment from the Rhode Island Department of Environmental Management (RI DEM):

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.

EPA response to comment 1026

As stated in the Fact Sheet to the Draft 2014 Permit on page 57, the bacteria or pathogen TMDLs identified for Rhode Island waterbody segments are included in this permit as the TMDLs identify urban stormwater discharges in Massachusetts as sources that are contributing bacteria or pathogens to the impaired segments. As the Commenter notes, the TMDLs identified in the comment do not specifically identify urban stormwater discharges in Massachusetts as contributing to the impairments in RI waters. Moreover, the four Massachusetts municipalities identified in the comment are covered by approved MA TMDLs for bacteria or pathogens (see Table F-8), therefore these municipalities are subject to the requirements of Appendix F part A.III.

1027. Comment from the Rhode Island Department of Environmental Management (RI DEM):

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 require construction of structural BMPs at priority outfalls similar to the requirement specified for nutrient TMDLs in Part B.11.1.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.

EPA response to comment 1027

The Bacteria TMDL Requirements section referred to by the Commenter is part of the Implementation Plan of the Bacteria TMDL documents produced by RI DEM. If the State or EPA has established a TMDL for an impaired water that includes an assessment of stormwater impacts on impaired waterbodies, this permit contains effluent limits and conditions consistent with the requirements and assumptions of the TMDL. EPA does not approve the implementation plan associated with TMDLs and therefore, while EPA did consider the implementation plans contained in the RI TMDL documents in the development of the MA permit, EPA included permit requirements consistent with the approved WLAs, not the implantation plans in each TMDL. See also EPA response to comments 92 - 112.

Moreover, EPA finds that the requirements included in part 2.3.6 and Appendix F part III adequately address bacteria impairments. Changes have been made to part 2.3.6 in response to

comments received (please see EPA response to comments 609 to 664). The permit now requires that all applicable stormwater management systems on new development sites to be designed to either retain the volume of runoff equivalent to 1" or remove 90% of the average annual post-construction load of Total Suspended Solids (TSS) generated from impervious surfaces on the site AND 60% of the average annual post-construction load of Total Phosphorus (TP) generated from impervious surfaces on the site. EPA finds that requiring stormwater management systems that promote infiltration will also control pathogens in stormwater discharges. Please see EPA response to comments 710 to 722 (part 2.3.6).

1028. Comment from the Rhode Island Department of Environmental Management (RI DEM):

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.

EPA response to comment 1028

As stated in the Fact Sheet to the Draft 2014 Permit, the metal TMDLs identified for Rhode Island waterbody segments are included in this permit where the TMDLs identify urban stormwater discharges in Massachusetts as sources that are contributing bacteria or pathogens to the impaired segments (pg. 58). As the Commenter notes, the TMDLs identified in the comment do not specifically identify urban stormwater discharges in Massachusetts as contributing to the impairments in RI waters.

1029. Comment from the Rhode Island Department of Environmental Management (RI DEM):

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. I.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.

EPA response to comment 1029

The Metals TMDL Requirements section referred to by the Commenter is part of the Implementation Plan of the TMDL documents produced by RI DEM. If the State or EPA has established a TMDL for an impaired water that includes an evaluation of stormwater impacts on the impaired waterbody, this permit contains effluent limits and conditions consistent with the requirements and assumptions the TMDL. EPA does not approve the implementation plan associated with TMDLs and therefore, while EPA did consider the implementation plans contained in the RI TMDL documents in the development of the MA permit, EPA included permit requirements consistent with the approved TMDLs, but not implementation plans in each TMDL completely. Even so, EPA expects that the final permit's new development and re-development

provisions for retaining and/or treating stormwater will address metals as well as TSS and phosphorus. See also EPA response to comments 92 - 112.

1030. Comment from Town of Franklin:

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.

EPA response to comment 1030

EPA agrees that the most cost effective PCP will require addressing phosphorus loads from both private and municipal properties. The permit allows each permittee to choose the scope of their PCP program. Permittees can either choose to meet phosphorus reduction requirements from their regulated area only or from their entire jurisdiction, so long as the controls are in areas draining to the Charles River or its tributaries in both cases.

Regardless of the scope of PCP chosen, the Baseline Phosphorus Loads, required phosphorus reductions, and Allowable Phosphorus Loads include phosphorus loads to the MS4 from private entities, and the final permit specifically allows for the quantification of phosphorus reductions by other entities in meeting the required phosphorus reductions contained in this permit (see Appendix F part I fn. 9). Moreover, at present, it is unclear how much of the land area in private ownership drains to the MS4 systems (in regulated and/or unregulated areas) and how much of these lands drain directly to receiving waters; and, therefore, because the loadings are calculated based on land use, it is not clear how much of the loading is actually discharged through the MS4s. EPA finds it reasonable to assume that all phosphorus loading is discharged through the MS4 given the ubiquitous nature of MS4 systems. Further, as a matter of practical reality, it may be easier for MS4s to address the loadings holistically, rather than attempt to calculate the respective drainage and loadings or to manage and credit them separately. Therefore, it would be prudent for municipalities to consider establishing whatever mechanisms are necessary using local authority to address stormwater runoff loads that enter MS4 systems.

However, for those permittees that would like to update their Baseline Phosphorus Load and related phosphorus reduction requirements, the final permit allows permittees to submit detailed drainage information including the exact extent of their MS4 four years after the permit effective date. EPA will take the detailed information submitted into account when refining Baseline Phosphorus Loads and related reduction requirements in future permit terms.

As a related matter, EPA does intend to require permittees with regulated industrial activities covered under the Multi Sector General Permit (MSGP) within the Charles River watershed to achieve required phosphorus load reductions from their site in a manner consistent with this permit and to report the load reductions to their host municipality.

Alternatively, MS4s could request that EPA use residual designation authority and designate private land areas as needing NPDES stormwater permit coverage. Such an approach would still require close coordination between the MS4 and the private land owners in order to develop a realistic PCP and properly account for load reductions being achieved.

EPA agrees that coordination and establishing mechanisms to address phosphorus loads from private properties will take time. EPA has already considered these issues when developing the overall 20 year schedule for the PCP process. However, EPA sees the PCP process as an adaptive process that can be refined at each subsequent permit issuance. Also, EPA recognizes that there is uncertainty associated with how well and efficiently communities and other regulated entities can expand stormwater management programs to reduce phosphorus loadings in stormwater runoff from inadequately treated developed areas. Prior to issuing future MS4 permits, EPA plans to consider new information developed by permittees as they develop and implement their PCPs and will, if warranted, make necessary refinements to the permit's compliance schedules.

Changes to Permit: Appendix F Part I and Appendix A have been updated accordingly

1031. Comment from Town of Franklin:

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.

EPA response to comment 1031

See EPA response to comment 963, EPA response to comments 983 - 985, and EPA response to comment 1030.

When including compliance schedules in permits, EPA establishes schedules that will result in attainment of WQS "as soon as possible." As discussed in the Fact Sheet, EPA has determined that a 20 year schedule would be "as soon as possible" for the Charles River watershed after considering numerous factors and available information.

1032. Comment from Town of Franklin:

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.

EPA response to comment 1032

EPA has considered the merits of the approach described by the commenter during the development of the permit requirements. EPA developed the PCP requirements and schedule with the specific intention to provide MS4s with the necessary opportunity, flexibility and time to create and implement the most cost effective PCP and make best use of available resources.

For reasons similar to those posed in this comment, the final permit requires a phased PCP approach that provides ramp up time in the earlier years of the implementation schedule.

Implementation of the Phase 1 PCP targets a total of a 25% of the total reduction needed by year 10, leaving 75% of the total reductions to be accomplished during phases 2 and 3 to be completed by year 20. The iterative process described above would allow for ample time for new and updated information to be incorporated at regular intervals throughout the implementation of the PCP. EPA considers the phased PCP approach to be consistent with the commenter's suggested approach.

1033. Comment from Southeastern Regional Services Group:

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.

EPA response to comment 1033

See EPA response to comment 1030. Many municipalities choose to implement their SWMP town wide, acknowledging the benefits of the program town wide, not just in the regulated area. Consistent with 40 CFR §122.32 this permit contains requirements for stormwater discharges from regulated area only. However, Appendix F part A.I and A.II allow the certain permittees to take credit for actions outside of the regulated area for compliance with phosphorus load reduction requirements if they *choose* to. The permit does not require any permittee to extend their regulated area. The option to conduct actions for permit compliance outside of the regulated area is discussed in detail in the Fact Sheet to the Draft Permit (pp 37-38). Because the permittee is committing, where applicable, to either of two distinct numeric goals, compliance with permit requirements will be determined accordingly. Further, any actions completed by a permittee and claimed for permit compliance are subject to potential enforcement by EPA. The legal and regulatory implications associated with permit compliance are specified in the CWA, in EPA's regulations, and in the permit. See also EPA response to comments 92 - 112.

1034. Comment from Southeastern Regional Services Group:

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".

1035. Comment from Town of Franklin:

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.

EPA response to comment 1034 -1035

EPA agrees that the Phosphorus Control Plans Performance Evaluation must include both planned (future) BMPs as well as those already existing, as stated in Description of Phase 1 planned structural controls. The language in the Performance Evaluation section makes that clear: Phosphorus reductions shall be calculated consistent with Attachment 2 to Appendix F (non-structural BMP performance) and Attachment 3 to Appendix F (structural BMP performance) for all BMPs implemented to date. In addition the permittee must estimate any phosphorus load increases due to development since 2005 in the performance evaluation. EPA notes there permittees may claim phosphorus reduction credit for BMPs installed at any point in the past as long as they certify that they are performing as originally designed

1036. Comment from Southeastern Regional Services Group:

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?

EPA response to comment 1036

EPA does not have expectations for the quantity of BMPs implemented in each phase of the Phosphorus Control Plans (PCPs) and only requires permittees to install BMPs necessary to achieve phosphorus reduction requirements consistent with the milestones in Appendix F part A.I. (20% of the required reduction 8 years after the permit effective date, 25% of the required reduction 10 years after the permit effective date, 35% of the required reduction 13 years after the permit effective date, 50% of the required reduction 15 years after the permit effective date, 70% of the required reduction 18 years after the permit effective date, and 100% of the required reduction 20 years after the permit effective date).

1037. Comment from Southeastern Regional Services Group:

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?

EPA response to comment 1037

The tables of permittees in part 2.2.1 and Appendix F identify the MS4s subject to the applicable permit requirements. These tables were developed by EPA through review and analysis of EPA approved TMDLs. While White Island Pond does have an approved TMDL for Total Phosphorus, the load allocation for urban stormwater was given a 0% reduction. Table F-6 and the table of permittees in part 2.2.1.b.ii have been updated to reflect that there are no reductions required for Plymouth and Wareham.

Changes to Permit: part 2.2.1.b.ii and Table F-6 of the Permit have been updated accordingly.

1038. Comment from Southeastern Regional Services Group:

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.

EPA response to comment 1038

EPA is not entirely clear to what the Commenter is referring to by “EPA delegating the allocation to each source”. The percent reductions specified in Appendix F part II Table F-6 were developed by EPA through review and analysis of the EPA approved TMDLs. See EPA response to comments 92 - 112.

1039. Comment from Southeastern Regional Services Group:

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.

EPA response to comment 1039

With respect to the permittees subject to the requirements of Appendix H, EPA agrees that the additional/enhanced BMPs for Impaired Waters, including good housekeeping and stormwater management in new development and redevelopment, are required in the MS4 impaired catchments only. EPA will revise the text of Appendix H to make this distinction clear.

The same is true for the satisfying the permit requirements for Appendix F. EPA has provided two options for the permittees to satisfy phosphorus load reduction requirements: 1) Achieve load reductions for the entire watershed area within the community regardless of regulated area extent through implementation of a program that accounts for controls and associated load reductions throughout the entire jurisdictional area; or 2) Achieve load reductions for the portion of the watershed area that is designated as “urbanized area” subject to MS4 jurisdiction through implementing a program that focuses only this area. Under this first option, the permit phosphorus load reduction amounts are entirely consistent with the load reductions determined to be necessary in the TMDL analyses. As described in the Fact Sheet Attachment 1 and Attachment 1 to the response to comments, the required phosphorus load reduction calculated for the MS4 area only was determined by assuming all area within the MS4 jurisdictional area is discharged by MS4s. EPA finds this approach reasonable given the information available to EPA during permit development and the ubiquitous nature of MS4 systems (see EPA response to comment 1030). It is possible that some of the drainage area within the MS4 jurisdictional area does not drain into MS4 systems and therefore would not be subject to the permit requirements and the permit allows permittees to submit detailed system mapping information if they would like their baseline phosphorus load and required reduction to be recalculated in future permit terms.

Prior to each future permit reissuance, EPA intends to revisit whether adjustments to phosphorus load reduction requirements are warranted based on new information generated during each permit cycle including the mapping of MS4 systems. Additionally, if a permittee were to install controls in non-MS4 drainage areas as part of its program to achieve required

load reductions then the permittee will be required to perform operation and maintenance on the controls and to provide specified tracking and accounting information in order to get credit for the load reductions associated with those controls.

See also EPA response to comments 92 - 112.

1040. Comment from the Charles River Watershed Association (CRWA):

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. 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.

EPA response to comment 1040

EPA disagrees with the comments that the estimated phosphorus load associated with illicit discharges is a credit, and that illicit loads were not accounted for in the phosphorus TMDL analyses. The presence of illicit discharges and their significant contribution to water quality degradation in the Charles River are well documented (e.g., see Lower Charles River Phosphorus TMDL). Both phosphorus TMDL analyses implicitly account for the presence of phosphorus loads from illicit discharges through the development and calibration of watershed and water

quality models. Specifically, watershed modelling and load estimates derived from flow and water quality data in the TMDL analyses reflect the presence of loads from illicit discharges. Additionally, the water quality models used in both TMDL analyses to define loading capacities and determine necessary load reductions were calibrated using extensive ambient water quality data that also reflect the presence of loads from illicit discharges. See also EPA response to comments 92 - 112.

EPA has used the TMDL analyses and specifically the WLAs (where applicable) to derive permit requirements that are consistent with the information and assumptions used to derive the WLAs. Since illicit discharges are prohibited and have been appropriately assigned a zero WLA (see Lower Charles River TMDL), EPA has estimated the amount of illicit load present during the TMDL analysis period (1998-2002) and subtracted it from the total load reduction needed to be consistent with the zero WLA assigned. EPA considers this to be a reasonable interpretation of the WLAs and further considers the IDDE requirements in the permit to be sufficient to achieve the load reductions associated with illicit discharges, and that are also consistent with the WLA of zero. See Fact Sheet Attachment 1 and Attachment 1 to the response to comments.

EPA readily acknowledges the difficulty of accurately estimating the amount of phosphorus loads associated with past and present illicit discharges throughout the Charles River watershed. The characteristics and age of the infrastructure within the Charles River communities varies considerably, further making estimating the illicit load a challenge. While the illicit load may be higher or lower, EPA considers the approach used and described in Fact Sheet Attachment 1 and Attachment 1 to the response to comments to be reasonable, given the magnitude of illicit discharges that have already been identified and eliminated in the Charles River watershed. Therefore, EPA considers that it would be imprudent at this time to adjust the initial estimate method without more detailed information.

EPA appreciates the commenter's information regarding communities that do not have sanitary sewer collection systems and have only on-site sewage disposal systems (i.e., "septic systems"). We recognize that the amount of illicit load from these communities may be notably less than sewered communities, but nevertheless failing septic systems represent a potential source of illicit phosphorus loads. Like the other illicit sources, there is considerable uncertainty about the extent and magnitude of illicit phosphorus load contributions from failing septic systems. As stated above, the intent of the estimated illicit load reduction is to not only account for the illicit load represented in the TMDL analysis, but also for the significant work that has been done and will be done under this permit to find and eliminate illicit discharges.

In terms of equity and fairness, EPA finds that the benefits of the IDDE programs and the corresponding reduction in the overall stormwater phosphorus load reduction burden should be shared by all Charles River communities not just those with known illicit discharges. EPA has estimated the total illicit load to the Charles and then has distributed this load reduction to all MS4s that will be implementing an IDDE program to determine the stormwater phosphorus load reduction requirement in a manner that is proportional to the amount of development (e.g., residential, commercial, and industrial) within the watershed area of each community. Clearly, it would be inappropriate to divide the total illicit load estimate equally among all the communities as it may result in some of the less developed communities with smaller watershed area having little to no stormwater phosphorus load reduction requirements. Also, it would be inappropriate to further reduce the stormwater phosphorus load reduction requirements for

those communities that have a disproportionally high incidence and amount of illicit load discharges.

Continuing to update and refine estimates of illicit loads should allow future permits to be based on an accounting of past eliminated illicit discharges, continuation of IDDE programs, and overall implementation of the PCPs. As indicated in Attachment 1 to the fact sheet, EPA's intention is for permittees to account for, track, and report illicit loads removed through implementing IDDE programs so that EPA can refine load reduction estimates for illicit discharges and, if necessary, adjust load reduction requirements for storm water discharges in future permits. As done for this permit, it is EPA's intent that future adjustments will be done and distributed in an equitable manner and among all Charles River communities.

1041. Comment from the Charles River Watershed Association (CRWA):

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.

EPA response to comment 1041

EPA appreciates the commenter's support of the approach and information developed for the permit. At this time EPA declines to incorporate the commenter's suggestion for added language in Attachment 3 to Appendix F because EPA still needs time to determine and establish the best framework for regularly updating, storing and sharing information with permittees. EPA recognizes the importance of permittees using the latest and best information available in their development of each phase of the PCP and ultimately demonstrating overall compliance at year 20. Therefore, EPA intends to consider new information at regular intervals consistent with the five year permit reissuance cycle and, when appropriate add and/or revise various items related to the PCP including stormwater control efficiencies. Presently, EPA plans to share new information with permittees prior to their development of the next phase of the PCP. For future permit issuances, EPA may very well do as suggested by the commenter and refer all permittees to a location such as a website for key information related to accounting and tracking stormwater phosphorus load reductions. Any change or addition of performance estimates must be approved by EPA in writing.

EPA is currently and has plans to continue to invest resources in developing and refining long-term cumulative performance estimates of both structural and non-structural stormwater controls for permittees use in PCP planning and demonstrating permit compliance.

1042. Comment from Town of Milford:

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.

EPA response to comment 1042

Please see EPA response to comment 964, EPA response to comment 965, EPA response to comment 973, EPA response to comment 974, and EPA response to comment 975.

The phosphorus load reduction requirements in the permit are not based on MEP but on EPA’s determination of the level of control required consistent with TMDL waste load allocations, see EPA response to comments 92 - 112. Also, it is premature to make determinations on technical feasibility of achieving the load reductions until more detailed planning and site investigation are conducted.

1043. Comment from the Town of Watertown:

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.

1044. Comment from the Town of Maynard:

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.

EPA response to comments 1043 - 1044

See EPA response to comments 92 - 112. Also see EPA response to comment 964, EPA response to comment 965, and EPA response to comment 973.

1045. Comment from Cape Cod Commission:

Nitrogen Reduction in Watersheds with a Final TMDL

The draft general permit does not require nitrogen reductions from stormwater wasteload 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.

EPA response to comment 1045

The Commenter is correct that the Cape Cod Nitrogen TMDLs identify stormwater as a source of nitrogen pollution in impaired waterbodies. However, the TMDLs conclude that stormwater nitrogen sources are relatively small when compared to the other nitrogen sources on Cape Cod and establish the waste load allocations (WLAs) at existing load levels. The TMDLs do not provide WLAs for future growth, which means that nitrogen loads from MS4 sources may not increase. Therefore, EPA has included supplemental BMPs for permittees subject to Cape Cod Nitrogen TMDLs to prevent increases in nitrogen inputs to impaired waterbodies or their tributaries from MS4 sources. EPA supports the efforts of the Cape Cod Commission and Cape municipalities in the current Section 208 planning update efforts, which may result in plans to further reduce nitrogen in stormwater. Those plans could be reflected in future permits as appropriate. See also EPA response to comments 92 - 112.

1046. Comment from the Massachusetts Department of Environmental Protection:

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.

EPA response to comment 1046

EPA is in agreement with MassDEP on the potential benefits that could be achieved through a watershed wide phosphorus load reduction trade and crediting program. Development of such a program would require careful forethought and up-front planning that must consider numerous factors related to administration of the program, ground rules for trades and credits, and overall accounting and tracking of controls/reductions as well as the proper assignment of credits to permittees. EPA fully supports the pursuit of program efficiencies that will minimize duplication of efforts and make the best collective use of limited public resources toward achieving the overall goal of the permit's phosphorus load reduction requirements to attain nutrient related WQS in the Charles River. See also EPA response to comments 92 - 112, EPA response to comment 928 and EPA response to comment 83.

EPA finds that the PCP schedule should provide for ample time for serious proponents of a trading and credit program to consider and possibly develop such a program that could be implemented during the phased PCP implementation process. EPA finds that establishing such a program would require extensive local buy-in among watershed permittees and communities and designation of an independent organization to administer the program, or administration by MassDEP in their technical support capacity as indicated in their comments. EPA is not in a

position to administer such a program but would be willing to actively participate in serious efforts to investigate and develop a program for the Charles River watershed.

1047. Comment from the Massachusetts Department of Environmental Protection:

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 a written alternative analysis plan with input and assistance from MassDEP and EPA, the permittee remains subject to the requirements described in Parts 11.1-2 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.

EPA response to comment 1047

EPA understands MassDEP's limited resources and has updated the language related to relief from additional requirements for permittees subject to lake and pond TMDLs accordingly. The new language in Appendix F part A.II no longer affords the permittees the option of working with MassDEP to develop an implementation plan for the lake or pond TMDLs, for additional information see EPA response to comment 178.

Changes to Permit: Appendix F Part A.II has been updated accordingly

1048. Comment from the Massachusetts Department of Environmental Protection:

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.

EPA response to comment 1048

EPA concurs that the water quality standards for pathogens (bacteria) and in some cases the indicator organism have been updated since they development of many pathogen TMDLs. Table F-8 was compiled based on a review of approved bacteria and pathogen TMDLs in Massachusetts, and therefore includes the respective bacteria indicator from the corresponding TMDL. In January, 2007, the Surface Water Quality Standards for Bacteria in the Commonwealth

of Massachusetts were revised. However, as described in the Addendum: Final TMDL of Bacteria for Neponset River Basin (December 2012) by MassDEP, even though Massachusetts adopted the *E. coli* organism as the determining criteria in its Water Quality Standards for Class B waters, the intent of the fecal coliform criteria still applies for TMDLs developed and approved prior to the 2007 updates. As stated in the TMDL: "Massachusetts believes that the magnitude of bacteria (fecal coliform) loading reductions outlined in earlier TMDLs will be sufficient to attain the revised Water Quality Standards criteria for *E. coli*" (see: <http://www.mass.gov/eea/docs/dep/water/resources/n-thru-y/neptmdla.pdf>, page 3).

While MassDEP monitors and assesses bacteria impairments based on current water quality standards, which can be a separate process than the monitoring to determine if TMDL waste load allocations have been met. If MassDEP would like to base bacteria waste load allocations on current water quality criteria, the appropriate bacteria TMDLs need to be modified or replaced.

1049. Comment from the Town of Watertown:

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.

1050. Comment from the Town of Maynard:

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. EPA should provide significant support to municipalities if they are to prepare this information on their own. Training sessions and outreach assistance is recommended.

EPA response to comments 1049 - 1050

See EPA response to comment 965 - 967 and EPA response to comment 974.

EPA Region 1 is developing an accounting and tracking tool for MS4s referred to as the BMP Accounting & Tracking Tool (BATT). The tool will help to both standardize and facilitate the process of accounting and tracking controls and associated load reduction estimates, as well reporting to demonstrate permit compliance. The draft of the tool is planned to be completed in 2016. EPA plans to provide guidance to communities on using this tool.

1051. Comment from the Town of Watertown:

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.

EPA response to comment 1051

Please see EPA response to comments 1049 - 1050, and EPA response to comments 92 - 112. One commenter asserted that TMDLs developed in the early 2000s would not have anticipated their applicability to stormwater discharges. EPA notes that some TMDLs have considered stormwater contributions, and some specifically included stormwater in wasteload and load allocations. As discussed above, the WQBELs in the Final Permit have been carefully designed to reflect the quality and specificity of the information provided in the relevant TMDLs, and include measures specific to the types of pollutants and the sources that cause them to be introduced into the permitted MS4 discharges.

EPA disagrees with the commenter's suggested approach of developing one PCP for the entire 20 year period and moreover that it be based on MEP. Also, EPA has conducted analyses for achieving the required phosphorus load reductions in a substantial portion of the Charles River watershed (1/6th or 50 square miles) and has reviewed stormwater control retrofit work being done in other New England watersheds (e.g., Berry Brook, Long Creek, Lake Champlain), and has generally determined that achieving the required phosphorus load reductions in the Charles River watershed are feasible. As explained in EPA response to comments 92 - 112, the basis for requiring the PCP and its implementation is for MS4s to achieve phosphorus load reductions that are consistent with the assumptions of the TMDLs (Massachusetts Department of Environmental Protection, 2007) or (Charles River Watershed Association, May 2011) and that are needed to attain phosphorus related WQS in the Charles River. EPA considers the development of a long term overall PCP for the full 20 year horizon would be both imprudent and wasteful of valuable planning resources because most of the controls identified in the plan would not be implemented until much later in the 20 year period, see also EPA response to comments 983 - 985. Therefore, EPA has chosen the phased PCP approach in the final permit because it allows permittees to focus resources on developing a plan using relevant up to date information that will identify control strategies that will be implemented in the near term (e.g., the next five years).

Consequently, the final permit at appendix F requires the development of a phased PCP every five years (i.e., Phase 1 – year 5, Phase 2 – year 10 and Phase 3 - year 15). Each phase will focus on the next five years of implementation.

1052. Comment from the Town of Lexington:

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 permittee controlled roadways and parking lots as there are many private roads and parking lots that are not within the permittees control.

EPA response to comment 1052

As indicated in example 2-4 of Attachment 2 to Appendix F, permittees can calculate the load reduction credits for only those impervious surfaces that are cleared of organic materials on a weekly basis during the specified time period. Permittees will have the flexibility to account for reductions for some or all municipal owned impervious surfaces and for privately owned impervious surfaces should there be an established program to clear privately owned impervious surfaces of organic matter (e.g., local requirement by municipality). EPA has refined the permit language in Appendix F to clarify this intention.

Changes to Permit: Appropriate parts of Appendix F has been updated accordingly

1053. Comment from the Town of Milford:

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.

EPA response to comment 1053

EPA declines to reduce the frequency of performance evaluation reporting from annually starting in year 6 to once every three years as requested. EPA understands the commenter's concern of being able to focus limited resources on the highest priority and most essential work such as the actual implementation of stormwater management controls. However, EPA has determined that regular annual accounting and tracking of stormwater controls, their associated phosphorus load reductions, and changes in watershed characteristics (increase and or decreases in impervious surfaces) will be important information to be current in order for permittees to stay on track to achieve their compliance milestones (e.g., for Phase 1- years 8 and 10).

Annual accounting and tracking is particularly important for stormwater management projects because what actually gets implemented may be different than what was originally planned for in the PCP. For example, site conditions may have resulted in the installation of a larger control treating more area than was thought possible during the planning assessment resulting in a higher load reduction. Conversely, the opposite could occur if the implemented controls result in a lower overall reduction. EPA finds this type of information will help permittees to make necessary in course adjustments to their PCP based on actual progress. Current tracking will also allow permittees to account for load reductions and increases associated with projects not specifically planned for by the permittees in the PCP such as a new redevelopment projects that results in less impervious area and load reductions from additional controls.

EPA is aware that the level of effort for accounting and tracking of information for the performance evaluations is not incidental and therefore, is in the process of developing a tool, BMP Accounting and Tracking Tool (BATT) for permittees to use and accomplish this process more efficiently. The tool will help to both standardize and facilitate the process of accounting and tracking controls and associated load reduction estimates, as well reporting to demonstrate permit compliance. It is anticipated that the tool will be completed in 2016.

1054. Comment from the Town of Milford:

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?

EPA response to comment 1054

Methods similar to the methods in Appendix F would be expected to be used by the permittee to demonstrate a reduction in the baseline P load. Primarily this would be through documenting changes in land cover such as shifts from one land use category to another or through elimination of impervious surface that may occur through re-development projects.

The work involved to quantify average annual phosphorus loads would be substantial and costly as explained in EPA response to comment 972. Extensive water quality and flow monitoring would be required along with calibrated models for translating the results to the climatic conditions of the TMDL period (1998-2002).

1055. Comment from the Town of Watertown:

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.

EPA response to comment 1055

EPA agrees that existing stormwater controls treating impervious surfaces are worthy of load reduction credits, provided that an individual assessment of each control practice and its tributary drainage area is performed and that the control is being regularly maintained to operate as designed as required in Appendix F part A.I.3.

One of the reasons that the permit requires permittees to develop the PCP in three phases is to allow information collection in prior periods to be used in designing each phase of the PCP. EPA understands the City's concern of uncertainty and is willing to work with the City during the permit term to minimize future uncertainties by providing input on how new information is being or will be considered for the next permit issuance. EPA notes that permittees would be free to consider new information and its potential impacts to their overall PCP process.

1056. Comment from the Town of Watertown:

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.

EPA response to comment 1056

See EPA response to comment 1054 and EPA response to comment 1055.

EPA agrees entirely with the comment and believes the permit requirements in Appendix F allow for permittees to fully account for such reductions.

1057. Comment from the Town of Watertown:

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.

1058. Comment from the Town of Weymouth:

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.

1059. Comment from the Town of Needham:

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 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 (A.1.1) challenges from property owners absent a clear scientific approach to support the requirement.

EPA response to comment 1057 - 1058

This permit does not require communities to make private property owners install stormwater controls on private property. However, as indicated in the comment, EPA has estimated that MS4s will need to achieve phosphorus load reductions in stormwater runoff from private lands in order to achieve the total load reductions required in the permit. At present, it is unclear how much of the land area in private ownership drains to the MS4 systems and how much of these lands drain directly to receiving waters. Ultimately, MS4s are responsible for all loads that discharge from their systems even if some of the load is from runoff from private properties. Therefore, it would be prudent for municipalities to consider establishing whatever mechanisms are necessary including the use of local authorities to address stormwater runoff loads that enter MS4 systems from up-gradient properties.

EPA does intend to require permittees with regulated industrial activities covered under the Multi Sector General Permit (MSGP) with the Charles River watershed to achieve required

phosphorus load reductions in a manner consistent with this permit and report them to their host municipality.

Alternatively, MS4s could request that EPA use residual designation authority and designate private land areas as needing NPDES stormwater permit coverage as a means for achieving load reductions from private properties. Such an approach would still require close coordination between the MS4 and the private land owners in order to develop a realistic PCP and properly account and track for overall load reductions being achieved.

EPA rejects any assertion that the requirements contained in this permit are not based on sound science and are not appropriate. The Town of Needham provided no evidence suggesting the approach used in this permit to set phosphorus reduction requirements for the Charles River watershed communities is not adequate or not scientific.

The permit implements EPA's regulations that require the use of ordinances or other regulatory mechanisms as allowed by State law, for example, to control stormwater from active construction sites and new and re-development sites that enters into and is discharged by the MS4. See 40 CFR 122.34(b)(4)(ii)(A) and (b)(5)(ii)(B).

See also EPA response to comment 1030.

1060. Comment from the Town of Watertown:

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.

EPA response to comment 1060

While EPA has only evaluated potential costs of fulfilling requirements associated with the permit, EPA is also aware that permittees will have other demands on funding resources. As discussed in the Fact Sheet, EPA is in agreement that it would be prudent for permittees to have flexibility within the overall PCP process to be able to combine efforts to most efficiently address both the PCP requirements as well other needs such as capital improvement projects outside of the permit requirements. Consequently, EPA established the phased PCP approach and the long-term schedule (20 years in the Charles River watershed) to provide such flexibility. This rationale is discussed in the Fact Sheet.

EPA recognizes that there is uncertainty associated future program costs and with how well and efficiently communities and other regulated entities can expand stormwater management programs to reduce phosphorus loadings. Additionally, prior to issuing future MS4 permits, EPA plans to consider new information developed by permittees as they develop and implement their PCPs and, if warranted, make necessary refinements to the permit's compliance schedules.

1061. Comment from the Town of Watertown:

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.

EPA response to comment 1061

Initially, EPA intends to evaluate progress through a combination of tracking and accounting of load reductions achieved by permittees and reviewing available water quality data collected in the Charles River at regular intervals during each five year permit cycle. EPA considers the process of developing and implementing the phased PCPs during the 20 year schedule to be adaptive and iterative where critical information related to the PCP will re-visited prior to each future permit issuance. This means that EPA plans to evaluate and, if warranted, update and revise compliance schedules, PLERs, required stormwater phosphorus load reductions, estimates of illicit phosphorus load contributions, and stormwater control efficiencies prior to each new permit issuance.

1062. Comment from the Town of Watertown:

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.

EPA response to comment 1062

See EPA response to comments 983 - 985, EPA response to comment 1046, EPA response to comment 1061, EPA response to comment 1064, and EPA response to comments 92 - 112.

One commenter asserted that TMDLs developed in the early 2000s would not have anticipated their applicability to stormwater discharges. EPA notes that some TMDLs have considered stormwater contributions, and some specifically included stormwater in wasteload and load allocations. As discussed above, the WQBELs in the Final Permit have been carefully designed to reflect the quality and specificity of the information provided in the relevant TMDLs, and include measures specific to the types of pollutants and the sources that cause them to be introduced into the permitted MS4 discharges.

EPA agrees that in Massachusetts minority and low income communities would be more likely to exist in more densely developed municipalities. Further, Executive Order 12898 directs federal agencies, to the greatest extent practicable and permitted by law, to address disproportional impacts of adverse human health and environmental effects of federal programs. Thus, the Executive Order is applicable to disproportional human health and environmental impacts, but does not extend its purview to disproportional economic impacts, which the commenter claims is at issue in the PCP requirements. The goal of the permit's PCP is to improve the water quality of the entire Charles River for users in all communities, including those of the more densely populated Lower Charles, such as Watertown. Attaining this goal will ensure there is not a disproportional environmental impact in environmental justice communities. EPA has considered these factors during development of the PCP requirements and schedule as discussed in Fact Sheet. The commenter makes a number of valid point related to addressing stormwater phosphorus loads from densely developed areas. Many of these factors are reasons behind the requirements for a phased PCP approach and an overall long term schedule of 20 years.

Less developed M4s have lower relative load reduction requirements than more densely developed communities because they have lower relative amounts of impervious cover, the dominant source of stormwater related phosphorus loads to the Charles River. EPA acknowledges that the more densely developed and older communities will face more challenges in developing and implementing their PCPs. However, EPA has determined that cost effective stormwater management opportunities do exist for even densely developed areas. For example, the use of small capacity stormwater controls such as surface infiltration systems or filters designed to contain relatively small amounts of runoff (e.g., 0.1 to 0.4 inches from contributing impervious area) offer technically feasible and affordable options that can achieve substantial phosphorus load reductions (see Attachment 3 to Appendix F).

EPA is developing a spreadsheet based stormwater management optimization modelling tool referred to as the "Opti-Tool" that can be used to assist permittees in developing optimized cost effective PCPs for their communities. The modeling tool is being designed to be consistent with the EPA's distinct PLERs and long-term cumulative performance estimates provided in the permit. The draft of the Opti-Tool is expected to be completed in 2016.

EPA is open to the possibility of a watershed wide phosphorus load reduction trade and crediting program as indicated in the EPA response to comment 1046. Development of such a program in the Charles could potentially benefit more densely developed communities through being able to obtain phosphorus load reduction credits from other communities at a lower cost than could be accomplished within their own community. EPA fully supports the pursuit of programs that will make the best collective use of limited public resources toward achieving the overall phosphorus load reduction needed to attain nutrient related WQS in the Charles River.

1063. Comment from the Massachusetts Department of Environmental Protection:

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.

EPA response to comment 1063

EPA acknowledges the complex and challenging decisions that Cape Cod communities are currently facing with respect to nutrient management in their estuaries. While the predominant source of nitrogen for many communities is septic systems, the Cape Cod Nitrogen TMDLs do identify stormwater as a source of nitrogen pollution in impaired waterbodies, and conclude that stormwater nitrogen sources are relatively small when compared to the other nitrogen sources on Cape Cod. Therefore, MassDEP established the waste load allocations (WLAs) for stormwater at existing load levels; the TMDLs do not provide WLAs for future growth, which means that nitrogen loads from MS4 sources may not increase. Therefore, the MS4 permit requirements for permittees subject to Cape Cod TMDLs are set up to assist communities with nitrogen management by working to prevent increases in nitrogen inputs to impaired waterbodies or their tributaries from MS4 sources.

1064. Comment from the Town of Watertown:

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 separator green roofs, and phosphorus removal cartridges/inserts.

EPA response to comment 1064

See EPA response to comment 1062.

EPA has determined that several of the stormwater control practices included in Attachment 3 to Appendix F are in fact suitable for installation in densely developed locations provided they are sized accordingly. Infiltration practices, rain gardens, bio retention, tree filters, bio filters, and gravel wetland systems are all practices that can be designed with relatively small capacities to fit into the urban environment and still achieve significant reductions in average annual phosphorus loads.

EPA agrees that there are other promising compact practices for reducing phosphorus that are suitable for urban environs that are not included in Attachment 3. EPA is interested in working collaboratively with others including permittees and academic institutions to develop credible long-term cumulative performance estimates for additional control practices such as those identified by the commenter. EPA plans to continue to work to expand the list of controls for which performance estimates have been developed.

1065. Comment from the Massachusetts Department of Environmental Protection:

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.

EPA response to comment 1065

EPA acknowledges that some work has been done at wastewater treatment plants to reduce the nitrogen load from the upper basin states to the LIS watershed which has resulted in meeting the point source allocation for out-of-basin (MA, NH, VT) point sources. Therefore, MA, NH, and VT POTW permits within the Long Island Sound watersheds require POTWs to not increase their TN load, to monitor, and to optimize TN removal. However, the LIS 2000 TMDL wasteload allocation did not include stormwater. At the time the 2000 TMDL was written, all stormwater discharges (including MS4 discharges) were included in the load allocation because the sources were not subject to NPDES regulation at the time of TMDL approval and because insufficient information was then available to differentiate the permitted stormwater load from the overall stormwater load. The TMDL required 10% reduction from nonpoint and stormwater sources out-of-basin. Current and planned actions will be insufficient to address other adverse impacts to water quality in Long Island Sound and its embayments (New England Interstate Water Pollution Control Commission, 2014). An assessment of stormwater and nonpoint sources of nitrogen completed by New England Interstate Water Pollution Control Commission (NEIWPCC) (New England Interstate Water Pollution Control Commission, 2014) suggests that loads from urban stormwater, onsite- wastewater treatment systems, and turf fertilizer have remained steady or increased. EPA believes aggressive progress on nitrogen reductions are needed to achieve the TMDL and water quality standards throughout Long Island Sound, therefore the nitrogen requirements will remain in the permit.

1066. Comment from the Massachusetts Department of Environmental Protection:

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'. 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.

EPA response to comment 1066

EPA was unable to locate any comments from MassDEP in the Response to Comments for the TMDL for the Ten Mile River Watershed, and those comments were not included as part of the MassDEP's comment for this permit. Therefore, EPA is unable to address that portion of the comment. However, EPA agrees that the Attleboro and North Attleboro wastewater treatment plants have been operating under lower effluent limits for metals since 2007 and 2008. It is not clear why the Commenter feels that lower effluent limits should influence the stormwater discharge requirements to these impaired waters. Stormwater was identified as a major source of pollutants to the Ten Mile River Watershed. As stated in the TMDL report, "Existing data show that elevated levels of metals occur during the wet weather stormflow condition. This is the period when metals are introduced into the water column via stormwater inflows and scour of contaminated streambank and streambed sediments." Therefore, the requirements in Appendix F part B.IV apply to the Massachusetts communities identified in the TMDL. It is important to note that no metals reductions requirements are included in Appendix F part B.IV, rather permittees are subject to additional or enhanced BMPs that target metals. See also EPA response to comments 92 - 112.

1067. Comment from Lawn & Horticultural Products Work Group:

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 I - 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.

1068. Comment from Lawn & Horticultural Products Work Group:

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 Storm water 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 CID, 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 CID, 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.

1069. Comment from the Lawn & Horticultural Products Work Group:

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 (misabeled 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.

EPA response to comments 1067 - 1069

EPA has reviewed these materials and has found the discrepancy identified by the commenter and has determined that a calculation error was included in the spreadsheet entitled *Summary runoff and P yield 7 16 13.xlsx* for the annual runoff yield for HSG C. On worksheets *P 8* and *P8-SWMM* of this file the average annual runoff yield for HSG C was erroneously calculated using linear interpolation to be 0.267 MG/ha/yr. EPA identified this error during the development of the calculated credits provided in the permit, and revised the number to be 0.378 Mg/ha/yr as reported in Table 22 of the Fact Sheet Attachment 1. The correction of this error and the revised annual runoff yield of 0.378 Mg/ha/yr was carried forth in the spreadsheet entitled *SWMM P8 runoff yld 11 5 13.xlsx* used to calculate average annual phosphorus loads for pervious areas with HSGs A, B, C, C/D and D based on SWMM and P8 modeling results. EPA apologizes that the material provided to the commenter contained an error.

It should be noted that the error identified by the commenter did not affect any permit requirements.

1070. Comment from the Lawn & Horticultural Products Work Group:

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 ($[(0.2 \text{ mg/L}) / (0.4 \text{ mg/L}) \times 100 = 50\%]$).

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>).

1071. Comment from the Lawn & Horticultural Products Work Group:

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 test 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 in Attachment] below. See also our comments [...] above on a key reference cited by the EPA (Schueler, 2011).

1072. Comment from the Lawn & Horticultural Products Work Group:

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 sub-watersheds does not indicate that the restriction of P on residential lawns has shown a significant decline in P in surface water.*

1073. Comment from the Lawn & Horticultural Products Work Group:

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 **unfertilized** 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.

1074. Comment from the Lawn & Horticultural Products Work Group:

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 in 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. [see comment for table]

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. [See comment for table]

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.

EPA response to comments 1070 - 1074

Based on numerous considerations discussed below, EPA has made the following changes to the permit as they relate to accounting for average annual phosphorus load reductions associated

with the cessation of phosphorus fertilizer applications to turf grass when it is not needed to support healthy growth.

1. Permittees subject to the Charles River watershed phosphorus reduction requirements will not have to submit a claim for the phosphorus free fertilizer reduction credit as previously specified in Attachment 2 to Appendix F of the draft permit. The required stormwater phosphorus load reduction amounts for each municipality in the Charles River watershed specified in Appendix F have been reduced to account for the anticipated phosphorus load reduction associated with cessation of unnecessary phosphorus fertilizer applications to turf grass (previously provided in Attachment 2 to Appendix F to the draft permit). The previous calculated phosphorus load reductions for each community associated with proper phosphorus fertilizer use has been revised using HSG C as the default soil type for turf grass areas with undefined HSG instead of HSG C/D.
2. Permittees subject to phosphorus load reduction requirements based on lake/pond TMDLs will not have to submit a claim for the phosphorus free fertilizer reduction credit as previously specified in Attachment 2 to Appendix F of the draft permit. The required stormwater phosphorus load reduction percentages identified for each lake/pond in each municipality in Appendix F have been reduced by three percentage points (3%) to account for the anticipated phosphorus load reduction associated with cessation of unnecessary phosphorus fertilizer applications to turf grass. This percentage was calculated using data from the Charles River watershed as being representative of urban/suburban environs that are subject to the wasteload allocations from the TMDLs and that were used to set the overall percentage reductions in the permit.
3. Consistent with the two changes above, Attachment 2 to Appendix F to the permit has been revised so that the explicit 50 percent phosphorus load reduction credit (for not applying phosphorus fertilizer to turf grass on soils that do not need additional phosphorus) has been removed. Permittees are now encouraged to submit to EPA site-specific information related to both municipal and non-municipal phosphorus fertilizer use on turf grass for consideration in revising calculated phosphorus load reductions associated with proper fertilizer use for future permit reissuances.
4. The permit no longer includes the requirement to develop a local ordinance to restrict the use of phosphorus containing fertilizers on turf grasses where underlying soils already have sufficient phosphorus levels to support healthy growth. This requirement is now redundant since Massachusetts has established fertilizer regulations. However, Appendix F to the final permit has been revised to require MS4s to certify in annual reports that their management of municipal owned turf grass areas has been done in accordance with the Massachusetts Regulation 331 CMR 31 pertaining to proper use of fertilizers on turf grasses.
5. Section 2.3.2 of the permit now includes a requirement that the Public Education and Outreach program inform the public of the Massachusetts Regulation 331 CMR 31 pertaining to proper use of fertilizers on turf grasses.

6. Permittees discharging to waterbodies in Table 6 with an associated 0% Phosphorus reduction requirement shall certify that all municipally owned and maintained turf grass is managed in accordance with 331 CMR 31 and are subject to Appendix F part II.2.6. permittees are relieved of the requirements of Appendix F part II.1.i through part II.2.5

There are three primary reasons for these changes:

1. Following public notice of the draft MS4 permit, Massachusetts adopted state-wide fertilizer regulations that are consistent with the previous requirements in the draft permit (see <http://www.mass.gov/courts/docs/lawlib/300-399cmr/330cmr31.pdf>). At present, EPA is willing to assume that turf grass areas in the community's watershed area will eventually, in the relatively near future, come into compliance with 331 CMR 31.

EPA is confident that the implementation of 331 CMR 31 and its associated benefits of reducing phosphorus loads associated with previous over fertilization to turf areas will be realized over time and that there will likely be a transition in fertilizing behaviors in the early years as the new regulation is implemented. Also, "phosphorus free" fertilizers are now widely available throughout the region and are becoming more commonly used. Even states in the Chesapeake Bay region without fertilizer regulations specific to phosphorus use on turf areas have seen large shifts away from use of traditional fertilizers to "phosphorus free" fertilizers because of increased market availability and overall public awareness. EPA finds that Massachusetts' regulatory requirements establishes the necessary framework for changes in turf fertilizer behavior to occur and also to effectively reinforce the importance of wise fertilizer use to the MS4s and their communities.

Upon further consideration, EPA cannot envision a reasonable and practical approach for MS4s to successfully monitor fertilizer use on individual non-municipal properties. Consequentially, for this reason and those discussed above, EPA is choosing to rely on the existence of 331 CMR 31 and annual certification for municipal owned/operated turf areas as the basis for reducing MS4 stormwater phosphorus load reduction amounts by the amount that EPA has estimated for turf grass areas accordingly.

2. EPA finds that it will be more efficient, appropriate and equitable for EPA to calculate the load reductions associated with proper fertilizer use on turf grasses and has adjusted the stormwater phosphorus load reductions accordingly in the current permit. EPA will re-evaluate the anticipated phosphorus load reductions at regular intervals and any changes will be reflected in future permits.
3. Where possible, EPA is interested in minimizing burdens on the permittees if reductions can be accomplished in a more efficient and consistent manner.

EPA has considered the information submitted by the commenter and notes that much of this information was previously considered by EPA Region 1 during the process of estimating the phosphorus load reduction that could be achieved by eliminating the unnecessary applications of phosphorus containing fertilizers to turf grasses on soils that have phosphorus levels already in excess of those needed to support healthy turf growth.

Based on the comments provided, EPA infers that the commenter is concerned that the proposed reduction credit of 50% provided in Attachment 2 to Appendix F to the draft permit may be misinterpreted to be an incentive to not use fertilizers at all, even when use of fertilizers are needed to support robust turf grass growth. This is not EPA's intent, as EPA recognizes that healthy turf grass on soils without excessive P levels will likely result in less phosphorus export than unhealthy turf grass. EPA reiterates that the focus of the load reduction estimate is for cases where turf grasses are on soils with excessive phosphorus levels and that do not need phosphorus fertilizer application to support healthy turf grass growth. For the draft permit, EPA determined that permittees should be able to account for the anticipated phosphorus load reductions associated with proper fertilizer use on turf grasses in order to identify what other stormwater control practices are needed to achieve the remaining required phosphorus load reduction as part of developing the phosphorus control plan (PCP).

As reinforced in the literature reviewed and cited by the commenter, excessive phosphorus fertilizer applications result in increased export of phosphorus loads from turf grasses. Also, the limited body of literature available supports the premise that proper lawn management avoids unnecessary applications of phosphorus-containing fertilizers to lawns where additional phosphorus is not needed to support healthy growth, and will likely result in reduced phosphorus load export. Consequently, based on the available literature and the related technical analyses conducted for this permit, EPA continues to be confident that proper lawn management in Massachusetts, which includes cessation of unnecessary phosphorus fertilization to turf grasses on soils that are not deficient in phosphorus, will result in reduced export of phosphorus loads from urban and suburban areas to receiving waters. Therefore, EPA has determined that anticipated phosphorus load reductions associated with the elimination of unnecessary phosphorus fertilizer applications to turf grasses will be accounted for in the permit.

The goal of the permit for this particular management practice is to provide the best estimate of the potential reductions associated with cessation of excessive phosphorus fertilization, using available information. EPA is aware that many of the turf grasses in the Charles River watershed and throughout Massachusetts are grown on soils with levels of phosphorus that are in excess of what is needed to support healthy growth. Massachusetts has recognized this condition and, in support of reducing phosphorus loads to sensitive receiving waters throughout the state, has passed regulations to stop phosphorus fertilizer applications in areas where it is not needed to support healthy turf grass growth. EPA's stormwater quality data analysis and derivation of average annual phosphorus load export rates support the premise that overall phosphorus loads from areas in turf grass in the Charles River watershed are above what would be expected if turf grasses had only as much phosphorus as needed to support healthy growth.

EPA acknowledges the challenge of deriving a load reduction estimate based solely on the research presented in the literature. While this research is extremely valuable and essential to the continued development of protocols and recommendations for environmentally responsible and optimal turf grass growth management, the research alone is inadequate to derive average annual load reduction estimates based on Massachusetts' climatic conditions that are representative for the Charles River TMDL analysis period. In developing water-quality-related based requirements for the permit, EPA has a responsibility to consider all relevant information, not just peer-reviewed papers as suggested by the commenter. In developing the PCP requirements for this permit, EPA has not only considered the information available in peer

reviewed papers, but has also considered extensive other information including data, results continuous simulation modeling analyses, and independent evaluations of average annual load reductions associated with proper turf grass management. A description of EPA's approach is provided in Attachment 3 to the response to comments document.

EPA continues to consider that the magnitude of the average annual phosphorus load reductions developed for the draft permit are reasonable and well supported by EPA's technical analyses, as well as by the limited information in available literature. EPA disagrees that the load reduction should be set at 0% as suggested by the commenter and finds no supporting basis for this suggestion even in the materials submitted by the commenter. Again, the focus of EPA's load reduction estimate is for ceasing phosphorus fertilizer applications to turf grasses on soils that already have excessive phosphorus levels for healthy turf growth. In the context of the intent of this reduction estimate, EPA does not agree with the commenter's reference to "typical" applications. Turf grasses on soils that already have excess phosphorus and that receive additional applications of phosphorus fertilizers represent a very different condition than turf grasses on soils that are in need of phosphorus to support healthy grass growth and that receive phosphorus fertilizer applications.

The Commenter is correct that the TP concentrations reported in the Schuler document (2011) are a key piece of the information used to arrive at the 50% reduction estimate included in the draft permit as a potential credit for over fertilized lawns. However, this information was not the only information considered by EPA in the development of a phosphorus load reduction credit for ceasing unnecessary phosphorus fertilizer applications to turf grass. EPA reviewed numerous documents related to the topic of lawn fertilization and nutrient export, many of the same cited by the commenter. In the end, EPA's process of deriving the reduction estimate considered all available information, not just this single reference as implied by the commenter.

The work being done in the Chesapeake Bay region is of particular interest because it is a watershed-wide analysis that has estimated long-term cumulative load reductions associated with cessation of *unnecessary* phosphorus fertilizer applications on turf grasses in the watershed. This work is summarized in the report entitled *Recommendations of the Expert Panel to Define Removal Rates for Urban Nutrient Management CBP APPROVED FINAL REPORT* by Schuler and Lane (2013).

EPA has reviewed its records and, based on this review, finds the TP concentrations of 0.4 mg/L for phosphorus fertilized turf grass and 0.2 mg/L for non-phosphorus-fertilized turf grass was developed based on the distribution of stormwater TP EMC data for residential land use. These levels represent flow weighted annual mean concentrations for pervious urban areas and that these values were in general agreement with Chesapeake Bay watershed model results for turf grass in urban lawns.

EPA Region 1 estimates that the concentrations reported in Table 8 of the Schuler document (2011) are generally in agreement with Chesapeake Bay's watershed models results when translated into annual mean flow weighted total phosphorus concentrations for urban pervious areas with and without phosphorus fertilizer applications, 0.36 mg/L and 0.21 mg/L, respectively. Results of the Chesapeake Bay Watershed Model indicate that cessation of unnecessary phosphorus fertilizer applications to turf grass area in the watershed will result in an overall average annual phosphorus load reduction from watershed turf grass area of

approximately 37 percent. EPA Region 1's load reduction estimate for all turf grass area in the Charles River watershed is of similar magnitude at 33 percent.

As described in the Fact Sheet Attachment 1 and Attachment 3 to the response to comments, EPA's phosphorus load reduction estimates associated with proper fertilizer use are based on estimating the eventual change in annual mean phosphorus concentration in runoff from turf grass on soils with excess phosphorus that would result from no longer receiving regular applications of phosphorus fertilizer (i.e., "phosphorus fertilized" to "non-phosphorus-fertilized"). It is assumed that the annual runoff volumes of "phosphorus fertilized" and "non-phosphorus fertilized" conditions are equivalent because it is hypothesized that adequate phosphorus levels will be maintained in soils underlying turf grass to support healthy growth so that runoff conditions will be unchanged. Further, EPA reviewed other evaluations of the benefits of phosphorus fertilizer control regulations to cross-check the Region's approach and results.

EPA agrees that waterfowl may play impact bacteria, phosphorus and nitrogen levels in stormwater and additional requirements have been added to Good Housekeeping to require addressing waterfowl congregation areas at the discretion of the permittee. Permittees should see MassWildlife guidance for dealing with waterfowl:

<http://www.mass.gov/eea/agencies/dfg/dfw/fish-wildlife-plants/mammals/canada-geese-conflict.html>

Changes to Permit: Permit part 2.3.2.d., 2.3.7.a.ii.1, Appendix F Part A.I., Appendix F Part A.II., and Appendix F Attachment 2 have been updated accordingly

1075. Comment from 495 Metro West Partnership:

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 nonstructural 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.

EPA response to comment 1075

See EPA response to comments 1070 - 1074.

EPA agrees with the commenter that it is unnecessary for a permittee in MA to adopt the law to get credit for conforming to the recently adopted phosphorus-fertilizer law and regulations in Massachusetts.

1076. Comment from the Town of Lexington:

Appendix F(3) states that in order to receive the phosphorus credit for no fertilizers containing phosphorus the permittee 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 permittee to get credit for the remaining areas that are no phosphorus zones while allowing flexibility in initial establishment of turf.

EPA response to comment 1076

See EPA response to comments 1070 - 1074.

EPA's intention is for permittees to earn credit for all turf areas that no longer receive application of phosphorus containing fertilizers, defined as having greater than 0.67% phosphorus content.

1077. Comment from the Town of Watertown:

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?

EPA response to comment 1077

See EPA response to comments 1070 - 1074.

1078. Comment from the Charles River Watershed Association (CRWA):

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.

EPA response to comment 1078

See EPA response to comments 1070 - 1074.

The intent of estimating phosphorus load reductions is to account for declining phosphorus loads that are expected to occur from turf areas that have been previously over-fertilized with phosphorus and that are no longer receiving application of phosphorus containing fertilizers. Theoretically, soils that are deficient in phosphorus and that are allowed to receive a phosphorus containing fertilizer applications should not result in increased phosphorus loads from these turf grass area because the added phosphorus will be readily utilized by the turf and improved turf condition could reduce runoff volume.

The default values in Table 2-5 were calculated using best available information as described in the Fact sheet Attachment 1 and EPA is unaware of information that would suggest the estimates are too high. EPA has refined the calculated load reductions by using HSG C as the default soil type for turf grass areas with an undefined HSG designation instead of HSG C/D as was used in for the draft permit. This has resulted in slight reductions to the calculated

reduction amounts when compared to values in the draft permit. However, without specific reasons to refine the overall approach for calculating the anticipated load reduction associated with Massachusetts' new fertilizer regulation, EPA has followed the same general approach for calculating the load reductions for the final permit. Attachment 3 to the Response to Comments document provides a summary of the methodology used to calculate the phosphorus load reductions for proper phosphorus fertilizer use on turf grass areas within the Charles River watershed and lake TMDL watersheds identified in Appendix F to the permit.

Changes to Permit: Appendix F and Attachment 1 to Appendix F have been updated accordingly

1079. Comment from the Taunton River Watershed Alliance (TRWA):

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 anti-degradation 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.

EPA response to comment 1079

EPA considers that the permit requirements addressing stormwater discharges from existing developed areas to be appropriate given available information. Therefore, EPA declines to make the requested adjustments.

As described in the Fact Sheet, EPA's approach for developing permit requirements to address water quality impacts associated with runoff from impervious cover on developed landscapes has been to consider best available information concerning stormwater discharges characteristics and water quality conditions of receiving waters. EPA agrees that further control of stormwater discharges associated impervious cover including new development, re-development and existing development is generally warranted and has consequently included permit requirements (in section 2.3.6) for MS4s to adopt local regulatory mechanisms to substantially increase the level of control on stormwater discharges from new development and re-development projects. The re-development requirements will substantially address pollutant loading from stormwater discharges from existing impervious surfaces associated with re-development projects.

EPA has set specific requirements in the permit to address stormwater loadings to waters that have established TMDLs that included quantitative reductions for developed land stormwater sources where appropriate. The permit requirements are based on the site specific water quality analyses conducted during TMDL development. These waterbodies include not only the Charles River but also numerous lakes and ponds. In the absence of a TMDL analysis, the permittees are required to begin the process of addressing stormwater discharges that are generally known to contribute pollutant loadings to the impaired conditions of the receiving

waters, but where a more detailed site specific type of analysis has yet to be completed. Presently, EPA considers that it would be premature to establish overall quantitative levels of control on stormwater discharges from existing developed areas without a more site specific water quality based analyses to justify specific numeric reductions.

Prior to future permit issuances, EPA plans to continue to build on all information generated by permittees in their fulfillment of existing permit requirements to better estimate justifiable and appropriate levels of control on stormwater discharges from existing development in future permits. EPA plans to use the lessons to be learned in the Charles watershed and other TMDL watersheds to refine and update future permit requirements for other watersheds when appropriate.

1080. Comment from the Charles River Watershed Association (CRWA):

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. We believe that a trading program is a useful tool 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, 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.

EPA response to comment 1080

See EPA response to comment 1046 and EPA response to comment 1062. See EPA response to comments 92 - 112 and EPA response to comment 928.

As indicated in the above responses, EPA is open to the development of phosphorus load reduction trading program for the Charles River. EPA agrees with the commenter that such a trading program could offer numerous potential benefits to permittees and their implementation of PCPs throughout the Charles River. However, EPA considers it to be premature at this stage of the PCP process to add permit language authorizing trading without having thoroughly evaluated how such a program would work.

Given the phased nature of the PCP process and the overall schedule, EPA finds that there is ample time for proponents to develop a technically and administratively sound program that could be successfully implemented during the implementation phases of the PCPs. Future permit issuances could include the necessary language to authorize a program after more thought is given to identify the essential elements of a trading program. EPA would anticipate participating in the process of developing a trading program should such a process be initiated. Also, EPA would welcome the active participation of MassDEP in such a process.

1081. Comment from the Neponset River Watershed Association:

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 Waste load 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 permittees 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 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.

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.

1082. Comment from the City of Newton:

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.

EPA response to comments 1081 - 1082

See EPA response to comments 983 - 985 regarding costs of the PCP and addressing other capital improvement project needs within the community.

See EPA response to comment 1018 regarding the burden of permit accounting and tracking related requirements.

Lastly, EPA finds that the Fact Sheet and the Fact sheet Attachment 1 provide ample reasons why controlling phosphorus loads in stormwater runoff is important and worthwhile. However, EPA will take this opportunity to note that there are potentially numerous other benefits associated with controlling stormwater phosphorus loads that may be cited to further bolster community support for robust stormwater management. These may include reduced flooding, enhanced stream base flow rates, increased stream quality, control of other pollutants such as excessive sediments and bacteria, reduced water use, and aesthetic enhancements through increase sweeping and removal of organic debris as well as greening of the community through the use of green infrastructure to treat stormwater.

Appendix G

1083. Comment from Roger Frymire:

Characterization of Phosphorous loading from an outfall is complicated and requires multiple samples from multiple storms in all four seasons possibly a hundred samples per outfall. Requiring sporadic outfall sampling for phosphorous seems a complete waste of time, effort, and money better spent reducing sewage and building infiltration BMPs.

EPA response to comment 1083

EPA recognizes that limited outfall sampling, as required in the permit, does not provide a characterization of an outfall's phosphorus loading to a waterbody or the MS4's phosphorus contribution to a waterbody. The outfall sampling under the IDDE screening protocol is intended to identify hot spots as well as to help prioritize catchments in order to more expediently address areas with more severe nutrient issues. Outfall sampling is only one tool out of many outlined in the permit for an effective IDDE program.

1084. Comment from the Southeastern Regional Services Group:

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 enterococci?

EPA response to comment 1084

Several TMDLs in the state of Massachusetts were developed using fecal coliform as an indicator of impairment before Massachusetts water quality standards were updated using E. coli and enterococci as bacterial indicators. In accordance with the general procedures the permit outlines to address stormwater pollution to TMDL waters, monitoring in those waterbodies must be for the impairment that the TMDL was developed to address, rather than the more updated indicator bacteria.

1085. Comment from the Neponset River Watershed Association:

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 monitoring 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.

EPA response to comment 1085

The E. coli and Enterococcus methods listed in Appendix G have been updated to include Colilert and Enterolert methods.

Changes to Permit: Appendix G has been updated accordingly

Appendix H

1086. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

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.

EPA response to comment 1086

Appendix H part II.1.a.i.2 outlines enhanced/supplemental BMPs to part 2.3.6 of the permit for permittees discharging to phosphorus impaired waters or tributaries to phosphorus impaired waters. The permit language in Appendix H part II.1.a.i.2 states that new development or redevelopment stormwater management BMPs *be optimized for phosphorus removal*. While there are alternative BMPs that could be optimized for phosphorus removal, EPA continues to focus on infiltration BMPs as these are among the most effective stormwater controls to reduce phosphorus loads. EPA has included the term “feasible” at the end of Appendix H.II.a.i.2 to provide flexibility in meeting these requirements, rather than specify infiltration BMPs. EPA’s long-term performance analyses of stormwater controls shows that stormwater treatment practices other than infiltration practices are effective at achieving significant phosphorus load reductions when site conditions are not suitable for infiltration practices. Please also see EPA response to comments 609 to 664 where EPA has provided more clarity in the treatment standard for part 2.3.6.

1087. Comment from the Towns of Medway, Millis, Abington, and Swampscott and the City of Easthampton:

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/ parking lots in the Town. It might be what was intended, but that is not how the language reads and should be modified.

1088. Comment from the Town of Bellingham:

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.

EPA response to comments 1087 - 1088

EPA agrees that the additional/enhanced BMPs for Phosphorus-Impaired Waters in Appendix H part II, including good housekeeping and stormwater management in new development and redevelopment, are required in the impaired catchments only. EPA will revise the text of Appendix H to make this distinction clear.

Changes to Permit: Appendix H has been updated accordingly.

1089. Comment from the Neponset River Watershed Association:

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.

EPA response to comments 1089

EPA recognizes that there may be a number of permittees that are subject to the requirements for both part 2.2.1 and Appendix F as well as part 2.2.2 and Appendix H. EPA has addressed this overlap in EPA response to comments 157 - 158.

1090. Comment from the Town of Chelmsford:

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.

EPA response to comment 1090

As explained in EPA response to comments 1087 - 1088, the requirement to increase street sweeping to twice a year in Appendix H is applicable in the impaired catchments only; the Final permit text will include this clarification. However, it is well known that streets, roads, highways

and parking lots accumulate significant amounts of pollutants that contribute to stormwater pollutant runoff to surface waters. Effective street sweeping programs can remove several tons of debris a year from city streets minimizing pollutants in stormwater runoff, this includes pollutants that adhere to small particles such as phosphorus. EPA notes that the focus of the leaf litter management program is to keep impervious roadways and parking lots as free of leaf litter/organic matter as possible during critical seasonal periods and not to address all leaf litter in the entire watershed. Leaf litter deposits on pervious areas will be subject to a number natural processes that will contain, recycle and attenuate nutrient loads in the watershed.

EPA agrees that trees are important to the environment and it is not the intent of these programs to compel municipalities to eliminate trees to reduce the amount of leaves.

1091. Comment from the Southeastern Regional Services Group:

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. 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.

EPA response to comment 1091

EPA agrees that the Taunton NPDES Permit Fact Sheet apportions the nitrogen loads between wastewater facilities based on size and impact. However, EPA disagrees that this analysis therefore confirms that stormwater loads do not have an impact on the Taunton River, rather, the analysis contained in the Fact Sheet confirms that the stormwater is recognized as contributing to the impairment. EPA finds that, once fully implemented, the provisions of Appendix H will substantially reduce nitrogen in stormwater discharges where a TMDL does not exist. Future assessments of the water quality limited waterbodies or other information may indicate further reductions are needed in future permit terms, but given the information presently known, EPA finds these provisions are appropriate and protective of water quality. Therefore, EPA declines to incorporate the recommendations outlined in the comment letter. See also EPA response to comments 92 - 112.

1092. Comment from the City of Fitchburg:

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.

EPA response to comment 1092

EPA recognizes the work being undertaken by the City of Fitchburg to separate their combined sewer system to prevent SSOs as well as the upgrades to the East WWTF for enhanced nutrient removal. This work will likely result in improvements to the water quality of the impaired waters of the Nashua River. However, regardless of this work, the permit requirements outlined in the MA MS4 permit for phosphorus are still applicable to the City of Fitchburg as long as the Nashua River remains impaired for Total Phosphorus.

Future iterations of the permit will reflect the most recent Massachusetts Integrated Report of waters listed pursuant to Clean Water Act section 303(d) and 305(b). Therefore, EPA encourages the City of Fitchburg to work with the MassDEP to collect and submit appropriate data for the assessment and evaluation of water quality in the Nashua River (see:

<http://www.mass.gov/eea/agencies/massdep/water/watersheds/external-data-submittals-for-the-wpp.html>).

See also EPA response to comments 92 - 112.

1093. Comment from the City of Fitchburg:

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.

EPA response to comment 1093

If the permittee owns the roadways, then yes, they are included as “permittee-owned” property, and are subject to the requirements in Appendix H, part II.1.c.

1094. Comment from the City of Fitchburg:

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.

EPA response to comment 1094

EPA appreciates the work being undertaken by the City of Fitchburg to separate their combined sewer system to prevent SSOs. This work will likely result in improvements to the water quality of the impaired waters of the Nashua River. However, regardless of this work, the permit requirements outlined in the MA MS4 permit for bacteria are still applicable to the City of Fitchburg as long as the Nashua River remains impaired for bacteria or pathogens. See EPA response to comments 145 - 150.

Future iterations of the permit will reflect the most recent Massachusetts Integrated Report of waters listed pursuant to Clean Water Act section 303(d) and 305(b) and accordingly, any adjustments necessary as to which requirements are applicable to permittees. Therefore, EPA encourages the City of Fitchburg to work with the MassDEP to collect and submit appropriate

data for the assessment and evaluation of water quality in the Nashua River (see: <http://www.mass.gov/eea/agencies/massdep/water/watersheds/external-data-submittals-for-the-wpp.html>).

1095. Comment from the Taunton River Watershed Alliance:

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.

EPA response to comment 1095

The requirements in Appendix H lay out requirements that EPA finds is reasonable for addressing complex or widespread sources of impairments in the absence of a TMDL that establishes the necessary load reductions and allocation. Information gathered by permittees during this permit term will help to refine future permit requirements to address impacts caused by stormwater, including more prescriptive requirements if necessary to meet water quality standards.

1096. Comment from the Taunton River Watershed Alliance:

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.

EPA response to comment 1096

EPA has reconsidered including this text in Appendix H and agrees with the Commenter that the words “of permittee owned properties” should be removed.

Changes to Permit: Appendix H Part I and II have been updated accordingly.

1097. Comment from the Town of Maynard:

Appendix H, Attachment 1 – Street Sweeping and Catch Basin Cleaning Credits: 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.

1098. Comment from the Towns of Danvers and Westwood and the City of Newton:

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.

EPA response to comments 1097 - 1098

As described in the Fact Sheet, the credits for street sweeping are based on best available information related to performance of various sweeper technologies. However, efforts continue to be underway (e.g., Chesapeake Bay Region) to further evaluate the effectiveness of various sweeping technologies and related programs for reducing nutrient loads. EPA Region 1 will continue to monitor progress in these evaluations and, if warranted, revise credits and/or approaches to calculate credits accordingly in the future as new information becomes available. EPA Region 1 plans to re-evaluate existing credits and add new credits when supporting information is sufficient at regular intervals and at least one year prior to the current permit's expiration date. Revised (i.e., updated) and new credit information shall be made available so that permittees can account for the latest credit information as they develop each phase of their PCP.

1099. Comment from the Weston and Sampson:

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.

EPA response to comment 1099

EPA reviewed the most recent Massachusetts Integrated Report for “Total Phosphorus” impairments to determine the list of permittees identified in part 2.2.2.b.i.1. EPA did not consider “dissolved oxygen saturation/dissolved oxygen”, “nutrient/eutrophication biological indicators” or other nutrient related impairments in the development of the list of permittees. EPA agrees with the comment that clarification would be beneficial and will adjust the language in part 2.2.2 to identify the specific impairments considered in the development of the tables in part 2.2.2. Additionally, as noted by the Commenter, EPA also included tributaries to water bodies with “total phosphorus” impairments as phosphorus is known to contribute to downstream water quality impacts (see page 68 of the Fact Sheet for the 2014 Draft Permit).

In order to determine which water bodies are subject to the requirements outlined in part 2.2.2.b, each permittee will evaluate their receiving waters as part of their NOI submittal to determine if the waters are impaired or tributary to an impairment. Permittees are encouraged to utilize the Interactive Mapping of the most recent approved Integrated List of Waters to determine impairments (<http://www.mass.gov/eea/agencies/massdep/water/watersheds/2012-integrated-list-of-waters.html>). If a permittee prefers, a GIS layer of the Integrated List of Waters is available on the MASS GIS website (<http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/layerlist.html>).

Changes to Permit: Part 2.2.2.b of the Permit has been updated accordingly.

1100. Comment from the Weston and Sampson:

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 permittee 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.

1101. Comment from the Town of Framingham:

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.

1102. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

1103. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

EPA response to comments 1100 - 1103

The requirements in Appendix H lay out a timeline that EPA finds is reasonable for addressing complex or widespread sources of impairments in the absence of a TMDL that establishes the necessary load reductions and allocation. EPA also recognizes the many steps that are necessary in the development and planning of a structural BMP as a demonstration project, and is not suggesting that the permittee must wait until year 4 of the permit term to begin planning. As detailed in Appendix H part II, installation of additional structural BMPs beyond the demonstration project will be according to the plan and schedule provided in the year 5 annual report, allowing each permittee latitude to develop a schedule that meets their available funding and planning constraints. Where multiple permitting agencies exist for the installation of BMPs EPA anticipates using its on-going communications with applicable permitting authorities such as MassDEP and US Army Corps of Engineers to facilitate projects that must meet other state and federal permit requirements.

With respect to communities that discharge to more than one water body impaired for phosphorus, those permittees will be subject to the requirements of Appendix H part II for each impairment. As explained in EPA response to comments 157 - 158, the requirements in part II.1.a.i.1, Public Education and Outreach, may be combined between impairments, and the Permittee may complete one Phosphorus Source Identification Report that includes the elements in part II.b.i for both impairments. The permittee is subject to all other requirements in part II in the impaired watersheds, which may result in two demonstration projects for some permittees.

EPA agrees that non-structural controls are also effective for phosphorus reductions, however non-structural controls are already incorporated in the permit requirements through the supplemental BMPs outlined in Appendix H part II.1.a.

EPA also agrees with the comment from NMSC that 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. This statement highlights the importance of the Phosphorus Source Identification Report, detailed in Appendix H part II.1.b.i.

1104. Comment from the Town of Framingham:

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.

EPA response to comment 1104

EPA disagrees with the commenter that a federal rule or state law should be promulgated to deal with watershed or site specific impairments caused by stormwater in a city or town. EPA finds that the NPDES permit process is an effective mechanism for developing requirements to deal with water quality impacts that result from point source discharges and can craft requirements that allow permittees to take into account site specific information and town priorities when meeting permit requirements, something that may not be possible with a federal rule or state law. As explained in the Fact Sheet to the Draft 2014 Permit (pg. 68), "the requirement that BMPs be optimized for phosphorus removal includes requiring infiltration where feasible because infiltration has been shown to cause the adsorption of phosphorus onto soil particles. Other BMPs with known phosphorus removal include BMPs that are designed with a sand/organic filtration component". The permit requirements in Appendix H.II are not intended as changes to BMP design requirements within the MassDEP Stormwater Management Standards. See EPA response to comments 710 to 722, and EPA response to comments 92 - 112.

1105. Comment from the Southeast Regional Services Group:

BMPs listed in "Table 4-2 of Attachment 1 to Appendix H" should include existing BMPs.

EPA response to comment 1105

EPA understands this comment to mean that permittees should be able to track and estimate the nitrogen removal for existing BMPs in addition to any installed by the permittee in response to the requirements of the permit. EPA concurs, and will add language to Appendix H to clarify this.

Changes to Permit: Appendix H has been updated accordingly.

1106. Comment from the Massachusetts Department of Transportation:

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.

EPA response to comment 1106

Attachment 1 to Appendix H provides the method to calculate the BMP nitrogen load and the methods to calculate nitrogen load reductions for structural BMPs; nitrogen load reduction credits for illicit connection removal are not included in this attachment. At this time, tracking and accounting for nitrogen load reductions is for informational purposes only; if this changes in the future, municipalities will be able to get credit for previously installed and maintained BMPs, similar to how that is handled in this permit for Phosphorus BMPs. Rather than multiple permittees developing alternative methods as the commenter seems to be proposing, EPA sees the approach outlined in Appendix H Attachment 1 as a more equitable and less resource intensive requirement for all permittees. EPA will continue to monitor progress in nitrogen BMP curves and, as appropriate, revise credits and/or approaches to calculate credits accordingly in future permits as new information becomes available.

1107. Comment from the Massachusetts Department of Transportation:

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 Cazenias, 2009) that includes stormwater sampling data from different MassDOT roadways to characterize nitrogen loads from highways.

EPA response to comment 1107

EPA agrees that different land uses also affect nitrogen loads, similar to the phosphorus load calculation methodology in the permit. EPA also agrees that, in the future when the data is available, the same level of detail should be applied to the nitrogen load calculation methodology. EPA will continue to monitor progress in nitrogen BMP curves and, as appropriate, revise credits and/or approaches to calculate credits accordingly in future permits as new information becomes available. EPA is aware of the studies cited by the commenter and will use it in future refinement of nitrogen loading estimates and BMP performance estimates.

1108. Comment from the Berkshire Environmental Action Team (BEAT), the Chicopee 4Rivers Watershed Council (C4RWC), the Mystic River Watershed Association (MyRWA):

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.

1109. Comment from the Merrimack River Watershed Council, Housatonic Valley Association, Charles River conservancy (CRC):

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.

1110. Comment from the Massachusetts River Alliance:

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 [see comment in Section 2.2.2].

1111. Comment from the Mystic River Watershed Association (MyRWA):

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.

EPA response to comments 1108 - 1111

EPA appreciates the concerns raised regarding bacteria impairments, as they represent a risk to human health and the environment. However, EPA finds that the requirements included in part 2.3.6 and Appendix H part III will adequately address bacteria impairments. Changes have been made to part 2.3.6 in response to comments received (please see EPA response to comments 609 to 664), that now include the requirements for all stormwater management systems on new development sites to be designed to either retain the volume of runoff equivalent to 1" or remove 90% of the average annual post-construction load of Total Suspended Solids (TSS) generated from impervious surfaces on the site AND 60% of the average annual post-construction load of Total Phosphorus (TP) generated from impervious surfaces on site. EPA finds that requiring stormwater management systems designed to meet this standard will also control pathogens in stormwater discharges. Please see EPA response to comments 782 - 794 (part 2.3.6).

While EPA agrees that bacteria in stormwater can come from a variety of sources, EPA finds that the single largest source of bacteria in stormwater today is illicit connections. Therefore, the permit requires significant effort to remove illicit connections to protect waterbodies and public health. However, in light of the impact that waterfowl may play in bacteria levels additional requirements have been added to Good Housekeeping to require addressing waterfowl congregation areas at the discretion of the permittee. Permittees should see MassWildlife guidance for dealing with waterfowl: <http://www.mass.gov/eea/agencies/dfg/dfw/fish-wildlife-plants/mammals/canada-geese-conflict.html>

With respect to the request for revising post-construction bylaws or ordinances to require retention of 1" of runoff for projects that disturb one-half acre or more, EPA declines to make this change. Please see response to comments 782 - 794 (part 2.3.6).

Future assessments of the water quality limited waterbodies or other information may indicate further reductions are needed in future permit terms but given the information presently known, EPA finds that these provisions are appropriate and protective of water quality.

Changes to Permit: Permit part 2.3.7.a.ii(a) has been updated accordingly

1112. Comment from Roger Frymire:

The mother of modern sanitary science and first female MIT graduate Ellen Swallow Richards created the famous "Normal Chlorine" map of Massachusetts which shows that prior to road salt proliferation most of Massachusetts fresh water averaged only ~ 2ppm chloride - rising near the coast to ~ 9ppm due to blown salt spray effects. Road salt usage has devastated aquatic and wetland ecosystems and helped the wide spread of invasive plants in areas stressed by this salt. However, requiring permittees to test for chlorides will do nothing to fix the problem, if it is solvable. At most I might like to see annual reporting of salt tonnage applied for every permittee. As one graph in MyRWA's comments shows - even at the end of a spring, summer, and fall to rinse away a prior winter's salt and before the first snow requires new salt to renew the cycle ... Alewife Brook runs consistently above EPA stress levels for aquatic life in salinity. In winter most Mystic River watershed streams and ponds regularly cycle into EPA listed Toxic salinity levels.

Chloride is one thing, Chlorine testing at outfalls is another. While the EPA standard for bacterial sampling calls for using sodium THIOSULFATE to neutralize free chlorine which might otherwise kill fecal bacteria prior to culturing - I have seen several recent QAPPs which do not include this requirement. The IDDE requirement for chlorine testing might be obviated if the bacterial sampling standard were adhered to. In personally taking thousands of bacterial samples, the only instance where chlorine was hiding bacterial contamination, chlorine was obvious as an odor. Besides bleach from laundry, which should cause surfactant hits, only drinking water and swimming pools regularly raise chlorine levels. Swimming pools are extremely seasonal and too sporadic to be seen in this testing, while drinking water leaks should be traced and fixed for their own merits - not under this program.

EPA response to comment 1112

"Chlorine" and "chloride" are two very different substances with different environmental impacts and fates. Chloride is a component of salts and enters the environment primarily through the use of deicing material on impervious surfaces to lower the freezing temperature of water. Chlorine is a disinfectant additive to potable water sources and swimming pools primarily for killing bacteria and pathogens that may be present in those waters. With respect to chloride impairments in Massachusetts, EPA agrees that chloride is an important pollution problem. EPA has included supplement requirements for permittees discharging to chloride impaired waters, as outlined in Appendix H part IV. Please also see EPA response to comments 193 - 200. EPA disagrees with the assumption that methods neutralizing chlorine would render chlorine testing duplicative. Numerous sampling events by EPA enforcement have indicated that the presence of detectible chlorine can mask bacterial contamination. The presence of chlorine would eradicate the bacteria before sampling occurs and neutralizing it via test methods would not overcome the eradication of bacteria by chlorine within the MS4. It is not the intent of this sampling to be able to track all swimming pool discharges but instead to inform the illicit connection program and overcome false low bacteria counts where real problems occur but are being masked by potable water discharges.

1113. Comment from the Southeastern Regional Services Group:

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.

EPA response to comment 1113

See EPA response to comments 92 - 112. One commenter asserted that TMDLs developed in the early 2000s would not have anticipated their applicability to stormwater discharges. EPA notes that some TMDLs have considered stormwater contributions, and some specifically included stormwater in wasteload and load allocations. As discussed above, the WQBELs in the Final Permit have been carefully designed to reflect the quality and specificity of the information provided in the relevant TMDLs, and include measures specific to the types of pollutants and the sources that cause them to be introduced into the permitted MS4 discharges.

EPA finds that the requirements laid out in Appendix H are reasonable for addressing complex or widespread sources of impairments in the absence of an approved TMDL that establishes the necessary load reductions and allocations. Under the CWA, the development of TMDLs and TMDL implementation plans is one means of restoring waters to attain Water Quality Standards. This does not negate the need to protect and restore water quality with other NPDES permit conditions, particularly in the absence of an approved TMDL for an impaired receiving water.

Appendix I

1114. Comment from the City of Lowell and the Lowell Regional Wastewater Utility:

Permittees are required to adopt a screening and screening 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.

EPA response to comment 1114

Each permittee may develop their own IDDE tracking protocol, including selecting parameters they see fit as long as the parameters include: ammonia, chlorine, conductivity, salinity, *E. coli*. (freshwater receiving water) or enterococcus (saline or brackish receiving water), surfactants (such as MBAS), temperature and pollutants of concern (at a minimum). Language has been changed in the Permit to indicate that the protocol in Appendix I is one example permittees may use to comply the requirement to have an IDDE screening protocol, but it is not the one required screening protocol that must be adopted. EPA has also removed Appendix I from the final permit and will make the Bacterial Source Tracking Protocol available on the EPA R1 MS4 webpage.

Changes to Permit: Part 2.3.4.7.d. of the Permit has been updated accordingly; Appendix I has been removed from the permit.

1115. Comment from Weston & Sampson and the Towns of Milford Winchester and Quincy:

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.

1116. Comment from the Southeastern Regional Services Group:

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".

1117. Comment from the Town of North Andover:

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 MS4 permit.

EPA response to comments 1115 - 1117

EPA has amended the language in part 2.3.4.7 to indicate that the IDDE field inspection protocol found in Appendix I is one example permittees may use to fulfill the requirements, Permittees are given the flexibility to produce their own field screening protocol. EPA has also removed Appendix I from the final permit and will make the Bacterial Source Tracking Protocol available on the EPA R1 MS4 webpage The protocol in the Bacterial Source Tracking Protocol provides a comprehensive investigation protocol that can be easily adopted by permittees and EPA encourages permittees to use parts of the protocol in the Bacterial Source Tracking Protocol, or the protocol in its entirety. Permittees are not required to sample for pharmaceuticals or personal care products as part of this permit. However, EPA notes that pharmaceutical and personal care product testing has proven to be a reliable way to track and locate illicit connections, despite the assertion by the Town of North Andover. In addition, the holding times included in Appendix I are not incorrect as Weston & Sampson and the Towns of Milford Winchester and Quincy state, they are provided as the standards developed specifically for the Bacterial Source Tracking Protocol.

Changes to Permit: Part 2.3.4.7. of the Permit has been updated accordingly and Appendix I has been removed from the permit.

1118. Comment from Tighe and Bond:

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.

EPA response to comment 1118

EPA has removed Appendix I and made the Bacterial Source Tracking Protocol available on the EPA R1 MS4 webpage.

Changes to Permit: Appendix I has been removed from the permit

General Comments on the Draft Permit

1119. Comment from Art Pinelli:

The taxpayers of Southwick currently face a significant financial burden from current regulatory mandates in regards to Education, Public Safety, American Disability Act, and Environmental 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.

1120. Comment from the Town of Needham:

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, 11.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.

1121. Comment from the City of Fitchburg:

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? 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.

EPA response to comments 1119 - 1121

This permit is not a regulation and is not subject to the Unfunded Mandates Reform Act (UMRA). However, EPA recognizes that permittees may incur compliance costs as a result of being covered under an NPDES permit. EPA took these costs into consideration when promulgating the Phase II stormwater rule, on which the requirements in this permit are based. For the final rule, EPA prepared an economic analysis of costs and benefits under the UMRA, 2 U.S.C. § 1531–1538. Based on that analysis, the Agency concluded that the benefits of the rule were expected to outweigh the costs with respect to MEP. For a discussion of the analysis and EPA’s consideration of the impacts on small governments, see 64 Fed. Reg. at 86,796-99. EPA is not legally permitted to consider cost when setting WQBELs in a permit. However, this permit does mitigate cost to some extent by providing a variety of flexible ways for permittees to build on existing BMPs and implement new BMPs to comply with the permit over the course of several years. See e.g. Responses to Comments for Part 2.1, 2.2, 2.3, and Appendices F and H.

Some state and federal assistance to communities is also available. Stormwater management loans may be available through the Massachusetts Clean Water State Revolving Fund (CWSRF), which is funded by both EPA and Massachusetts.

The 2014 Water Resources Reform and Development Act (WRRDA) expanded eligibility categories for CWSRF assistance. CWA Section 603(c)(5), as amended, states that each CWSRF may provide financial assistance “for measures to manage, reduce, treat, or recapture stormwater or subsurface drainage water.” Publicly and privately owned, permitted and unpermitted projects that manage, reduce, treat, or recapture stormwater or subsurface drainage water are eligible. This language eliminates ownership constraints on regulated stormwater projects. For example, projects that are specifically required by a MS4 permit are now eligible, regardless of ownership. Please see EPA’s “Interpretive Guidance for Certain Amendments in the Water Resources Reform and Development Act to Titles I, II, V, and VI of the Federal Water Pollution Control Act,” January 6, 2015.

http://www2.epa.gov/sites/production/files/2015-04/documents/water_resources_reform_and_development_act_guidance.pdf

1122. Comment from the Massachusetts Department of Environmental Protection:

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 response to comment 1119

The cost analysis for permit compliance with the Draft Permit provided by the commenter incorrectly interprets results from the Sustainable Stormwater Funding Study (Horsley Witten, 2011). The costs reported in that study for each community's stormwater program go beyond basic permit requirements and were intended to provide each community with base stormwater program costs. These are not tied to permit compliance costs. For instance, towns included costs for stormwater master planning, land acquisition, road and bridge engineering, sanitary sewer inflow and infiltration programs, roadway maintenance, roadway and BMP construction costs, staff salaries, leaf litter pickup programs and streambank stabilization programs among other tasks some not required by either the 2003 permit or the 2014 draft. The results of the study were used to provide town-specific estimates of future capital needs to implement a phosphorus control program and tasks associated with the 2010 draft MS4 Permit above what they were already spending on town-defined stormwater programs. Using the baseline stormwater program costs and the total stormwater program costs for the three towns as the estimated cost to comply with the 2010 Draft Permit or 2014 draft Permit is therefore inappropriate. In addition, using the cost analysis for compliance with the Residual Designation

Authority (RDA) draft permit as a direct correlation with compliance with the TMDL requirements of the 2014 draft MS4 permit is also flawed. They are two separate permits with two separate sets of requirements and the analysis contained in the Sustainable Stormwater Funding Study is specifically for compliance with the RDA draft Permit, not the 2014 draft MS4 permit. The Sustainable Stormwater Funding Study does contain useful information for estimating compliance costs with many draft permit conditions but its use by the commenter without further breakdown and analysis is not warranted. When drafting the conditions contained in the 2010 draft MS4 permit and the 2014 draft MS4 permit, EPA did try to estimate permit compliance cost. In doing so, EPA took into account information on costs provided during the public comment period on the 2010 draft MS4 Permit as well as the Sustainable Stormwater Funding Study and other information. The draft permit conditions contained requirements that EPA finds represent the minimum level of effort required across the commonwealth to meet the requirements of the Clean Water Act. For additional information on estimated compliance costs with the final permit see the cost analysis conducted by WaterVision (Watervision LLC, 2016) available on the EPA website and as part of the administrative record of the final permit. For information related to phosphorus control plan implementation and the implementation schedule to address feasibility see the extended discussion in the Fact Sheet to the draft permit. The commenter provided no examples of requirements they believe are “unnecessary.” However, the final permit contains extended schedules and reduction of permit requirements where EPA found the reduction in requirements did not undermine the objectives of the permit provisions. See EPA response to comments 723 to 760 and EPA response to comments 1310 - 1318.

1123. Comment from OARS Oral Testimony:

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.

1124. Comment from the Nashua River Watershed Association (NRWA):

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 NR WA, 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.

1125. Comment from the Massachusetts Rivers Alliance:

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.

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.

1126. Comment from the Massachusetts Watershed Coalition:

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.

1127. Comment from Ipswich River Watershed Association:

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.

EPA response to comments 1123 - 1127

EPA appreciates the comments regarding funding options for a stormwater program. EPA recognizes and appreciates the work of various watershed groups and municipal associations in providing information and support to permittees.

The small MS4 permit does not prevent municipalities from establishing utilities, collaborating with other permittees, and seeking alternate funding sources for their program. EPA also provides information about various funding opportunities and information on stormwater utilities on the EPA MS4 website:

http://www.epa.gov/region1/npdes/stormwater/MS4_MA.html.

1128. Comment from the City of Fitchburg:

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 infiltrating runoff from impervious surface, which has the largest negative impact on stormwater quality.

1129. Comment from the City of Haverhill:

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.

EPA response to comments 1128 - 1129

Good Housekeeping measures such as street sweeping and catch basin cleaning, along with a robust IDDE program including outfall monitoring, can have a significant impact on runoff water quality. See responses to comments on section 2.3. Many of these requirements are already line items in many municipal budgets across the state and have benefits beyond pollutant removal from stormwater (e.g. cleaning catch basins to prevent flooding). EPA notes that outfall

inventory was to be completed by 2008 under the 2003 MS4 permit which Haverhill is a permittee.

EPA recognizes and acknowledges the financial implications of the permit. EPA has taken steps to remove unnecessary administrative responsibilities in the final permit and plan to provide tools and templates to assist with permit implementation and compliance (see EPA response to comments 883 - 892). EPA has also funded a detailed and independent cost estimate for the permit from a third party available on the EPA MS4 website to help permittees estimate permit compliance costs (Watervision LLC, 2016).

1130. Comment from the Town of Southwick:

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.

1131. Comment from the Town of Framingham:

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.

1132. Comment from the Town of Uxbridge:

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.

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.

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.

1133. Comment from Holden Town Manager/Board of Selectmen:

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, the Holden Board of Selectmen 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 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.

1134. Comment from the Town of Auburn:

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.

1135. Comment from the Town of Grafton:

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.

1136. Comment from the Town of Dracut:

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.

1137. Comment from the City of Pittsfield:

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.

1138. Comment from City of Newburyport:

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.

1139. Comment from the Town of Winchester:

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.

1140. Comment from Nitsch Engineering:

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.

1141. Comment from the Merrimack Valley Stormwater Collaborative:

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.

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.

1142. Comment from the Town of Leicester:

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.

1143. Comment from 495 Metro West Partnership:

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 Utilities are more common in states where there is some level of county government to provide for more efficient and regional solutions to addressing stormwater.

1144. Comment from the Town of North Andover:

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.

EPA response to comments 1130 - 1144

In Massachusetts, stormwater discharges are the leading water pollution source, causing or contributing to at least 55% of impairments in all Massachusetts' assessed waters. The MS4 general permit is a key step towards improving the overall quality of all Massachusetts waters and will have long-term benefits for the health of water systems in Massachusetts. Specific permit requirements to address illicit discharges, stormwater from new development and construction sites, as well as more stringent good housekeeping measures for MS4s will lead to water quality improvements and a more engaged approach to stormwater management throughout the Commonwealth that will protect water quality. In addition, thoughtful stormwater management, proactive asset maintenance and the implementation of green infrastructure practices over time will improve the resilience of communities across the Commonwealth and lessen the potential impacts of localized flooding that have caused millions of dollars' worth of damage in Massachusetts.

EPA recognizes that there are costs and administrative responsibilities associated with the small MS4 permit. The NPDES permitting program relies on a self-monitoring, self-reporting compliance model that necessarily imposes significant administrative responsibilities upon permittees as well as the regulatory agency. In terms of the overall effectiveness of the program, the self-reporting model has been determined to be an effective and efficient model for environmental regulation and is in use in numerous federal and state environmental programs (Innes, 1999). In response to comments on the draft permit, EPA has attempted to reduce the administrative responsibilities of the permit without compromising the transfer of necessary information to EPA.

In addition, EPA has developed several tools and templates to aid permittees with compliance with the administrative and technical requirements of the permit. Information on permit cost and available funding mechanisms can be found on our website. In addition, an independent third party cost analysis conducted by WaterVision (Watervision LLC, 2016) looked at estimating costs for all permit requirements, including compliance with impaired waters requirements and is available on the EPA MS4 website to facilitate compliance cost estimation by permittees. Generally the report estimated annual costs for permittees over the permit term of between \$39,400 and \$492,000 per year. This cost estimate is slightly lower than estimates previously released by EPA and represents a more robust analysis of permit costs than was previously available.

The permit does not mandate the use of a particular source of funding for permit compliance, nor is permit compliance contingent upon successful funding of the program by the permittee.

For additional information of program funding see the Fact Sheet to the Draft Permit pp. 23- 25.
See also EPA response to comments 1119 - 1121.

1145. Comment from the Town of Uxbridge:

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.

1146. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, Wilbraham, and West Boylston:

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.

1147. Comment from the City of Fitchburg:

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.

1148. Comment from the Town of Northborough:

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.

1149. Comment from the National Association of Clean Water Agencies (NACWA):

NACWA represents the interests of nearly 300 publicly owned wastewater and stormwater utilities nationwide, including eight public agency members in Massachusetts.

1. 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.

1150. Comment from the Town of Millbury:

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. (See notes to right)

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% MI-II 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 storm water 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.

EPA response to comments 1145 - 1150

EPA has published extensive guidance to address instances where immediate compliance with Clean Water Act requirements is not affordable because of the economic circumstances in a community. The assessment of affordability is more complex than the percentages of household income noted in the comments. However, where the cumulative impact of Clean Water Act obligations does raise real affordability concerns, EPA does have mechanisms to address those concerns, including the development of integrated plans which allow communities to prioritize compliance activities over a long-term schedule. In order to address affordability for certain permit requirements contained in this permit, EPA has included compliance schedules extending beyond the 5 year permit where extended time is warranted. For instance, full implementation

of the IDDE program is not required until 10 years after the permit effective date. Commenters assert that compliance with this permit may be close to 10% of MHI, however no data were submitted to substantiate such a claim. EPA will be providing tools on EPA's website to facilitate municipalities in estimating program compliance costs using data generated by WaterVision for EPA (Watervision LLC, 2016). Generally the report estimated annual costs for permittees over the permit term of between \$39,400 and \$492,000 per year. For additional information of program funding see the Fact Sheet to the Draft Permit pp. 23- 25 and EPA response to comments 1174-1175. For information regarding the WPI study see EPA response to comments 1192-1195.

1151. Comment from the Town of Needham:

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 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.

EPA Response to Comment 1151

EPA recognizes that public resources are limited and set up the compliance schedules to include adequate time for upfront planning so that available resources are continually put to the best use to yield the greatest environmental return on investments. EPA considers it important for the permittees to have the time necessary to identify the best mix of control practices including the use of non-structural controls as part of the PCP in order to design the best overall management program to accommodate implementation of the selected controls. Moreover, an independent cost estimate (Watervision LLC, 2016) is available on the EPA MS4 website to facilitate permittees in estimating potential permit compliance costs. For this permit term WaterVision estimated the permit compliance costs to be between \$39,400 and \$492,000 per year, this includes all water quality based requirements for the permit term and is significantly lower than the cost estimates provided by the commenter. It should be noted that the permit does not require the purchase and use of vacuum sweepers.

See EPA response to comment 973 and EPA response to comment 974.

1152. Comment from the Town of Milford:

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.

EPA Response to Comment 1152

Please note that EPA cannot independently appropriate funding. Any funding provided by EPA is within a scope that is defined by Congress. See EPA Response to comment 1110 for a discussion of the estimated permit costs from the *Sustainable Funding Report* (2011). Overall, EPA finds that the technical and economic feasibility of achieving the phosphorus load reductions will greatly depend on how comprehensive the planning process is for developing each phase of the PCP. Permittees will need to invest time and resources to consider and evaluate the best mix of storm water controls that will result in the most cost effective PCP plan.

EPA disagrees that communities will be forced to increase square footage of development; several potential funding mechanisms are identified in the Fact Sheet (pp. 23-24) for permittees to consider as they develop their programs. Permittees will need to determine the most appropriate funding mechanisms based on their individual needs and characteristics of their MS4 systems. EPA developed the permit to provide permittees with program flexibility and adequate time within the overall schedule to develop and implement the most appropriate funding mechanisms in order for permittees to successfully fulfill their permit requirements within the specified schedule.

See EPA Response to comments 1160 - 1172 below for more information on federal funding.

See EPA Response to comment 1032 for a discussion of the phased PCP approach.

1153. Comment from the Massachusetts Municipal Association (MMA):

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.

EPA Response to Comment 1153

EPA recognizes that public resources are limited and set up the compliance schedules to include adequate time for upfront planning so that available resources are continually put to the best use to yield the greatest environmental return on investments. It should be noted that this program is not new and the first MS4 general permit was issued for Massachusetts municipalities in 2003. Since the expiration of the 2003 permit in 2008, two draft permits were proposed in 2010 to replace the 2003 MS4 permit and built incrementally on the requirements of the 2003 permit. EPA received hundreds of comments on these permits and in response, issued a new draft permit in 2014. The 2014 draft permit was on public notice for 151 days, during which time all interested parties were given the opportunity to comment on the conditions of the draft permit. EPA declines to further defer action on this permit and feels that 6 years, 2 draft permits and 2 extended comment periods provided a more than adequate opportunity for comment on the permit requirements. Many communities have been proactive and made the required investment in stormwater controls to address environmental problems and may not need to increase their budgets in order to comply with this final permit and permit. The permit does not require a particular funding source and EPA notes that a community's decision to not adequately fund a stormwater program does not excuse any permit violation.

See EPA Response to comments 1160 - 1172 below for more information on federal funding. An independent cost estimate (Watervision LLC, 2016) is available on the EPA MS4 website to facilitate permittees in estimating potential permit compliance costs.

See EPA response to comments 1119 - 1121.

1154. Comment from the Town of Franklin:

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).

EPA Response to comment 1154

EPA recognizes that public resources are limited and set up the compliance schedules to include adequate time for upfront planning so that available resources are continually put to the best use to yield the greatest environmental return on investments. EPA considers it important for the permittees to have the time necessary to identify the best mix of control practices including the use of non-structural controls as part of the PCP in order to design the best overall management program to accommodate implementation of the selected controls. See responses to comments on Appendix F.

Several potential funding mechanisms are identified in the Fact Sheet (pp. 23-24) for permittees to consider as they develop their programs. Permittees will need to determine the most appropriate funding mechanisms based on their individual needs and characteristics of their MS4 systems. EPA developed the permit to provide permittees with program flexibility and adequate time within the overall schedule to develop and implement the most appropriate funding mechanisms including incentive programs in order for permittees to successfully fulfill their permit requirements within the specified schedule.

1155. Comment from the Town of Bellingham:

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.

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".

EPA Response to comment 1155

For EPA-approved TMDLs that include an assessment of the impacts of stormwater discharges on impaired waters, this permits contains water quality based effluent limitations consistent with the approved TMDL (see EPA response to comments 92 - 112). By including requirements consistent with approved TMDLs, NPDES permits help meet TMDL requirements and are a concrete way to improve water quality and restore designated uses. See EPA response to comment 1119.

1156. Comment from the Town of Watertown:

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.

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.

EPA Response to comment 1156

See EPA response to comments 977, 0 and 1062.

EPA acknowledges that achieving the necessary phosphorus load reductions through treating stormwater from existing developed areas will be challenging but does not agree that it is impossible. EPA has conducted implementation analyses and has determined that such a reduction can be achieved but that the technical and economic feasibility will be highly dependent upon community-specific planning.

As described in the Fact Sheet and Attachment 1 to the Fact Sheet, EPA has determined that it is practical and affordable to accomplish the necessary phosphorus load reduction in the 20 year time frame providing that communities develop comprehensive PCPs that optimize the selection of the most cost effective stormwater controls throughout the watershed. EPA has determined that the technical and economic feasibility of retrofitting controls into existing developed impervious areas will increase substantially if permittees consider the use of smaller capacity stormwater controls (e.g., surface infiltration practices - 0.2 – 0.4 inch runoff depth) as a component of their PCP.

Finally, EPA recognizes that there is uncertainty associated future program costs and with how well and efficiently communities and other regulated entities can expand stormwater management programs to reduce phosphorus loadings in stormwater runoff from inadequately treated developed areas. Prior to issuing future MS4 permits, EPA plans to consider new information developed by permittees as they develop and implement their PCPs and, if warranted, make necessary refinements to the permit's compliance schedules.

1157. Comment from the Town of Holden DPW:

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.

EPA response to comment 1157

See EPA response to comment 1191 for a discussion of implementation of this permit nationally and see EPA Response to comments 1160 - 1172 for further discussion of federal funds and congressional support.

1158. Comment from the Town of Dalton:

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 SWMC 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 additional 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 SWMC 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 sub-contractual 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.

EPA response to comment 1158

See EPA Response to comments 1160 - 1172 below for further discussion of federal funds and congressional support. See EPA response to comments 1302 - 1309 for information on permit timing and EPA response to comments 1310 - 1318 for information on deadlines extended in the final permit in response to comments on the draft permit.

1159. Comment from the City of Quincy:

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 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.

EPA response to comment 1159

As outlined in the notes, many of the significant costs of the program (particularly drainage system construction modifications and improvements) already appear to be included in the City's I/I framework. Significant infrastructure repair costs would be required of any IDDE program in order to eliminate known illicit discharges, which are unlawful, and are not unique to this permit. Some items, including outfall monitoring, cleaning and inventory vs. outfall sampling and CCTV investigations appear to be double-counted in the cost estimate and EPA would like to note that the use of CCTV is not mandated by this permit. EPA has reorganized the IDDE program requirements in order to clarify the permit requirements for this program and will provide additional resources and templates to the extent practicable to help permittees organize an IDDE program. An independent cost estimate derived by a contractor is available on EPA's website to aid permittees in estimating compliance costs with all of the requirements of the permit. Generally the report estimated annual costs for permittees over the permit term of between \$39,400 and \$492,000 per year (Watervision LLC, 2016), significantly lower than the commenter suggests. See EPA Response to comments 1160 - 1172 below for more information on federal funding. See also EPA response to comments 1119 - 1121. One commenter asserted that TMDLs developed in the early 2000s would not have anticipated their applicability to stormwater discharges. EPA notes that some TMDLs have considered stormwater contributions, and some specifically included stormwater in wasteload and load allocations. As discussed above, the WQBELs in the Final Permit have been carefully designed to reflect the quality and specificity of the information provided in the relevant TMDLs, and include measures specific to the types of pollutants and the sources that cause them to be introduced into the permitted MS4 discharges.

1160. Comment from the City of Newburyport:

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.

1161. Comment from the City of Easthampton:

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 waterbodies 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.

1162. Comment from the Housatonic Valley Association:

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.

1163. Comment from the Town of Bellingham:

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. 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 entering 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 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.

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/nonprofit 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.

1164. Comment from the Town of Franklin:

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.

1165. Comment from Congressman McGovern:

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.

1166. Comment from the Town of Framingham:

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.

1167. Comment from the Towns of Medway, Millis, Abington and Swampscott and City of Pittsfield:

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.

1168. Comment from the Berkshire Regional Planning Commission (BRPC):

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.

1169. Comment from the Town of Andover:

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.

1170. Comment from the Town of Milford:

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.

1171. Comment from the Town of Auburn:

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.

1172. Comment from the Town of Winchester:

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

EPA Response to comments 1160 - 1172

Many comments suggest that EPA establish a grant program similar to the grant programs of the 1970s and 1980s. During that time, the agency provided more than \$60 billion in grants for the construction of publicly owned wastewater treatment facilities. In the 1987 amendments to the Clean Water Act, Congress set 1990 as the last year grant funds would be appropriated for the Construction Grants Program. The phasing out of the Construction Grants Program shifted the method of municipal financial assistance from grants to loans. The Clean Water Act State Revolving Fund (CWSRF) has replaced the Construction Grants Program. Through the CWSRF program, each state and Puerto Rico maintain revolving loan funds to provide independent and permanent sources of low cost financing for a wide range of water quality projects. The funds for the CWSRF are provided through federal grants to the states and a state matching fund that is equal to 20 percent of the federal grant. The CWSRF monies are loaned to communities and loan payments are recycled back into the program to fund additional water quality projects. The revolving nature of the program allows for an ongoing funding source. The 2014 Water Resources Reform and Development Act (WRRDA) expanded eligibility categories for CWSRF assistance. CWA Section 603(c)(5), as amended, states that each CWSRF may provide financial assistance “for measures to manage, reduce, treat, or recapture stormwater or subsurface drainage water.” Publicly and privately owned, permitted and unpermitted projects that manage, reduce, treat, or recapture stormwater or subsurface drainage water are eligible. This language eliminates ownership constraints on regulated stormwater projects. For example, projects that are specifically required by a Municipal Separate Storm Sewer System (MS4) permit are now eligible, regardless of ownership. Please see EPA’s “Interpretive Guidance for Certain Amendments in the Water Resources Reform and Development Act to Titles I, II, V, and VI of the Federal Water Pollution Control Act,” January 6, 2015.

http://www2.epa.gov/sites/production/files/2015-04/documents/water_resources_reform_and_development_act_guidance.pdf. CWSRF are administered by MassDEP, for more information see: <http://www.mass.gov/eea/agencies/massdep/water/grants/state-revolving-fund.html>.

EPA does not have authority to appropriate monies for grant or loan programs; this authority rests with Congress. Since Congress has not provided in its appropriations to the Agency a grant program similar to the one used to fund the construction of wastewater treatment facilities for stormwater infrastructure projects, such a program does not exist. Furthermore, unless established by Congress, EPA does not have independent authority to appropriate funds for such a grant program. At this time, federal funding is limited to the mechanisms currently available.

Nevertheless, EPA intends to provide materials and templates to aid permittees in permit compliance to the extent that our own resources allow. Administrative requirements in the permit have been reduced where appropriate to remove unnecessary burden on communities in response to many comments on the draft permit, for example the requirement to track DCIA has been removed from the permit.

1173. Comment from the Massachusetts Municipal Association (MMA):

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.

EPA response to comment 1173

See EPA Response to comments 1160 - 1172 above for further information on federal funding. The commenter identifies a permit compliance cost from the Special Water Infrastructure Finance Commission report from 2009. This report overestimates the cost of permit compliance by assuming that all 260 permittees covered by the MS4 permit would be subject to requirements contained in the Residual Designation Draft Permit and all permittees would need to retrofit every acre of impervious surface. Both of these assumptions are incorrect. The MS4 permit requirements are separate and distinct from requirements contained in the Residual Designation Draft Permit and this permit does not require the retrofit of every acre of impervious cover in the commonwealth. The result is a significant overestimate of compliance cost, even considering retrofit requirements in future permits. An independent cost estimate (Watervision LLC, 2016) is available on the EPA MS4 website to facilitate permittees in estimating potential permit compliance costs. Generally the report estimated annual costs for permittees over the permit term of between \$39,400 and \$492,000 per year (Watervision LLC, 2016), which indicates that permit compliance cost is likely significantly lower than the estimate by the estimate by the Special Water Infrastructure Finance Commission.

1174. Comment from the Association to Preserve Cape Cod (APCC):

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

1175. Comment from the Massachusetts Municipal Association (MMA):

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.

EPA response to comments 1174-1175

The commenters indicate that program funding is tied to each municipality's general fund which is limited by Proposition 2 ½; however, EPA notes that the permit does not require or recommend a specific funding mechanism or funding alternative to be used for permit compliance. There are several funding options available to permittees; these include service fees, formation of a stormwater utility, and use of the general fund of the municipality, grants, and loans. Many communities within Massachusetts have made the necessary investments by funding a stormwater program through a utility or other means. In addition, MGL c.40 §39M allows municipalities that adopt the law to impose a surcharge on real estate property at a rate of up to three per cent (3%) and all the revenue collected does not need to be counted for the purposes of establishing the limit on the local tax levy imposed by Proposition 2 ½. The funds can be used exclusively used for maintenance, improvements and investments to municipal drinking, wastewater and stormwater infrastructure assets.

1176. Comment from the City of Medford:

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.

EPA response to comment 1176

EPA agrees that addressing known illicit issues should be a focus of the program. The permit includes provisions to expedite the investigation and removal of known or suspected illicit connections. However, permittees should continue to build an organized program that will be able to systematically evaluate the entire MS4. Several deadlines for the IDDE program have been extended in order to allow the program and complete system investigation to be completed over a 10-year timeframe while providing additional flexibility to prioritize activity. See responses to comments on section 2.3.4.

1177. Comment from the Town of Ludlow:

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.

1178. Comment from the Towns of Granby and Beckett, the Town of Chicopee MS4 Comments, and the Tri-County Highway Superintendents Association MS4 Comments:

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 underestimate 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.

1179. Comment from the Massachusetts Highway Association:

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 underestimate 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.

1180. Comment from the City of Fitchburg:

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.

EPA response to comments 1177 - 1180

EPA does not have the authority to mandate that municipalities develop a stormwater utility. Currently, municipalities have the authority under state law to develop a utility but this is optional. Massachusetts has the authority to mandate that each municipality create a stormwater utility as Fitchburg suggests, but EPA questions the usefulness of restricting how municipalities choose to fund stormwater programs. EPA does not endorse or require any specific funding mechanism for the MS4 program and quotes used by several commenters from EPA personnel have been taken out of context. EPA disagrees with the statement that "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" and notes that the commenter is taking EPA comments on stormwater utilities out of context. Stormwater utilities can serve as the most equitable source of funding for stormwater where the largest contributors

of stormwater to the MS4 incur the largest cost burden; however, EPA is not indicating that a utility is needed to fund permit compliance; that decision rests with each permittee. EPA also disagrees that this permit requires everything to be done "overnight" as commenters suggest. The permit contains numerous schedules and milestones where additional time to complete work is needed (e.g. the timeframe to complete IDDE work is 10 years). Information on cost of the program and funding opportunities is available on our MS4 website. Please see EPA Response to comments 1160 - 1172 for further information on the issue of federal funding for permit compliance.

1181. Comment from the Towns of Abington and Swampscott:

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.

1182. Comment from the City of Pittsfield:

Affordability; Integrated Planning (IP): The water quality protection objectives of the NPDES storm water 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.

1183. Comment from the Towns of Medway, Millis, and Canton:

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.

1184. Comment from City of Easthampton and the Towns of Bellingham and Brewster:

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.

EPA response to comments 1181 - 1183

EPA recognizes that integrated planning can be an important and cost effective tool for municipalities to meet Clean Water Act requirements, and encourages communities to consult with EPA and DEP about the development of integrated plans where that makes sense. However, integrated planning is based on community-specific considerations and the nature of an integrated plan depends on local conditions. Given the individualized nature of these plans, this general permit – which applies to more than 200 communities – is not an appropriate vehicle for integrated planning requirements. One of the four overarching principles of the 2012 Integrated Municipal Stormwater and Wastewater Planning Approach Framework states:

“The responsibility to develop an integrated plan rests with the municipality that chooses to pursue this approach. Where a municipality has developed an initial plan, EPA and/or the State will determine appropriate actions, which may include developing requirements and schedules in enforceable documents.”

The responsibility to develop integrated plans, including schedules and actions, therefore rests with MS4 permittees. EPA has not included integrated planning language into this general permit. Instead, this permit provides requirements that are applicable to all permittees, and contains requirements that can help inform each permittee if they choose to pursue integrated planning or permitting. With multiple permittees, the MS4 general permit does not represent a viable means for integrating a particular municipality’s NPDES MS4 stormwater discharge responsibilities with the other CWA responsibilities that a particular municipality may have. That being said, the affordability approach of EPA’s Integrated Strategy has been applied within this permit to sequence certain requirements in a priority order. The sequencing of catchment investigations in the IDDE program based on priorities established by each community is an example.

See EPA response to comments 1145 - 1150 for information on affordability analyses associated with wastewater NPDES permits.

1185. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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.

EPA response to comment 1185

EPA notes that the permit does not require or recommend a specific funding mechanism or funding alternative to be used for permit compliance. There are several funding options available to permittees; these include service fees, formation of a stormwater utility, and use of the general fund of the municipality, grants, and loans. Many communities within Massachusetts have made the necessary investments by funding a stormwater program through a utility or other means. It is unclear why the commenter believes that the cost burden will fall on commercial properties. Decisions on how to fund a municipality's stormwater program ultimately rest with each municipality and will likely address any local concerns or issues applicable in that municipality.

1186. Comment from the Massachusetts Municipal Association (MMA):

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.

EPA response to comment 1186

Section 319 of the Clean Water Act provides federal funds for *nonpoint source* pollution prevention and abatement. Small MS4s have been regulated as point sources discharges of pollution since the Phase II stormwater regulations were finalized in 1999. Section 319 funds are provided to support organizations who wish to voluntarily address their nonpoint pollution issues. Section 319 funding may not be used to carry out activities required by any final point source permit, including stormwater permits. EPA has provided information on other funding opportunities and options on our website as well as in the draft permit factsheet.

1187. Comment from Home Builders and Remodelers Association of Massachusetts (HBRAMA):

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, pre-formatted 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 if funding becomes mandatory, it will put most municipalities into noncompliance within a very short time period.

EPA response to comment 1187

EPA does not have the authority under the Phase II stormwater regulations to require small MS4s to maintain a funding source similar to the Phase I requirements for large and medium MS4s which includes identification of fiscal resources. EPA recognizes that there will be costs associated with the permit requirements, which EPA has deemed necessary to protect and restore water quality. EPA finds that the conversations at public meetings, this response to comments document, and public workshops, as well as information on funding on our website, have been sufficient to convey our general recommendations on funding a stormwater program. For this reason, the encouragement to maintain an adequate funding source has been removed from the permit. In an effort to provide more concrete guidance on this matter, EPA plans to continue to provide up-to-date cost estimates for the permit as well as information on potential funding resources on our website. See EPA response to comment 1119 for further information on the three towns funding study for the Charles River TMDL implementation.

Changes to Permit: Permit part 1.10 has been updated accordingly.

1188. Comment from the City of Pittsfield and Easthampton:

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.

1189. Comment from the Towns of Medway, Millis, Abington and Swampscott:

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.

EPA response to comment 1188 and 1189

This permit does not require communities to make private property owners install stormwater controls on private property and the 2011 "Sustainable Stormwater Funding Evaluation" Final Report was not intended to fully inform the overall cost of compliance with this permit. The cities of Pittsfield and Easthampton, or any other municipality, may petition EPA to use its residual designation authority pursuant to 40 CFR 122.26(f) to designate private property owners within their jurisdiction that the petitioner believes are significant contributors of pollutants to waters of the United States. However, EPA encourages permittees to coordinate with private property owners and work within their authorities to control stormwater discharges into their MS4 before petitioning EPA to use its residual designation authority.

1190. Comment from the Town of Dracut:

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.

EPA response to comment 1190

The EPA does not have the authority to grant municipalities the authority to develop stormwater utilities or other revenue generating mechanisms; that authority lies with the State of Massachusetts. Indeed, Massachusetts has passed legislation allowing municipalities to establish stormwater utilities: MGL c.83 §16 and MGL c.40 §1A. In addition, MGL c.40 §39M allows municipalities that adopt the law to impose a surcharge on real estate property at a rate of up to three per cent (3%) and not the revenue collected does not need to be counted for the purposes of establishing the limit on the local tax levy imposed by Proposition 2 ½ and the funds can be used exclusively used for maintenance, improvements and investments to municipal drinking, wastewater and stormwater infrastructure assets. The permit does not mandate a specific source of funding be used to fund compliance with the provisions of this permit. There are several funding options available to permittees; these include service fees, formation of a stormwater utility, and use of the general fund of the municipality, grants, and loans. 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.

1191. Comment from the Town of Westborough:

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 similar:

- (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.

EPA response to comment 1191

The MS4 permit program is national in scope and allows flexibility to permit writers in different regions and states based on localized conditions (e.g. local TMDLs, different rainfall patterns, differing state and local laws, etc.). Furthermore, many MS4 permit requirements have built in flexibility afforded to permittees to make decisions on the local level that address local concerns when implementing permit requirements. Broad federal or state laws may not contain this same level of flexibility in requirement development or implementation. This permit attempts to address watershed concerns raised by the commenter through the requirements contained in Appendix F and H which detail watershed-wide requirements where appropriate. For example, requirements for Charles River watershed communities are consistent across town boundaries ensuring equitable implementation of phosphorus reduction techniques. For additional information of program funding see the Fact Sheet to the Draft Permit pp. 23- 25; see also responses to comments on Appendices F and H and EPA response to comments 1119 - 1121.

1192. Comment from the Worcester Polytechnic Institute (WPI):

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. *[Note: entire document not included here but can be found on http://www3.epa.gov/region1/npdes/stormwater/MS4_MA.html (retrieved 2/29/16)]*

1193. Comment from Holden Town Manager/Board of Selectmen:

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.

1194. Comment from the Town of Holden DPW:

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.

1195. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, Wilbraham, and West Boylston:

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 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.

EPA response to comments 1192-1195

EPA would like to recognize MassDEP and WPI for working with Millbury, Holden and Southbridge to understand costs associated with each municipality's stormwater program and potential cost increases associated with the Draft Permit. However, EPA cautions against using the WPI document to estimate permit compliance for other Massachusetts municipalities and cannot verify the cost estimates contained in the document. The WPI document does not differentiate between the costs associated with each municipality's stormwater program and the cost of permit compliance. For instance, the largest costs for Millbury and Southbridge to comply with minimum control measure 6 (Good Housekeeping) were the use of road salt and winter road maintenance activities; however, the permit does not mandate the use of salt on roads and does not require the purchase of snow plows or other equipment for winter road maintenance, and these associated costs should not be included in permit compliance estimates. In addition, many assumptions made in the WPI document on increased costs with the Draft Permit did not contain an adequate basis for determination of cost increases. For instance, cost increases associated with many minimum control measures only provide correspondence with Frederick Civian (MassDEP) as the source of information regarding item cost. While the document produced by WPI likely helped the towns of Holden, Southbridge and Millbury estimate their overall stormwater management costs, it should not be considered to be generally applicable to other municipalities regarding compliance costs. In order to help permittees estimate permit compliance cost more accurately, an independent cost estimate derived by a contractor is available on EPA's MS4 website (Watervision LLC, 2016).

1196. Comment from the City of Fitchburg:

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.

EPA response to comment 1196

EPA recognizes that there are many important issues facing Massachusetts municipalities on a local level and many priorities for limited funds. While the commenter would like to fund other projects besides stormwater projects, the Clean Water Act and federal regulations require that Fitchburg have an NPDES permit to discharge stormwater from their MS4. Stormwater discharges are the leading water pollution source, causing or contributing to at least 55% of impairments in all Massachusetts' assessed waters. The small MS4 general permit is a key step towards improving the overall quality of all Massachusetts waters and will have long-term benefits for the health of water systems in Massachusetts, the resiliency of cities and towns to deal with flooding and benefits for the quality of life for all Massachusetts residents. Stormwater controls may be incorporated into already-planned infrastructure and can represent an asset for the town in terms of managing water quality and flooding issues within the town. Please see EPA response to comments 1130 - 1144 for further information on funding.

1197. Comment from the Homebuilders and Remodelers Association of Massachusetts (HBRAMA):

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 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.

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, and 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.

EPA response to comment 1197

See responses to comments on part 2.3.6. The requirements in part 2.3.6 of the permit were written, in part, to provide consistency across town boundaries concerning post construction requirements. Currently, in Massachusetts, the Massachusetts Stormwater Standards apply to areas under the jurisdiction of the Wetlands Protection Act while other portions of each municipality may require different post construction standards depending on local ordinances. The final permit language attempts to integrate the Massachusetts Stormwater Standards into a broadly applicable post construction standard that EPA finds represents the maximum extent practicable for Massachusetts permittees. The requirements of part 2.3.6 aim to provide more uniformity in post construction requirements across the Commonwealth than currently exists. The permit does not require or recommend a specific funding mechanism or funding alternative to be used for permit compliance. Ultimately the funding mechanism choice is left to each permittee and will be implemented to address local concerns or issues, hopefully allocating compliance costs fairly among users.

1198. Comment from the Town of Rowley:

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 lessened 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 currently 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.

EPA response to comment 1198

Permit conditions in the draft Permit as well as this final permit require fewer resources for implementation in rural communities compared to urban communities. For instance, IDDE requirements will likely be less onerous for rural communities with fewer outfalls. In addition, street sweeping requirements will be greatly reduced for rural communities as roadways with no curbing and catch basins are exempt from sweeping requirements in this permit. In addition, WaterVision estimates that urban communities will spend at least 5 times what rural communities will spend on permit compliance (Watervision LLC, 2016). EPA does plan to offer technical assistance to permittees and will continue to produce tools to help in permit compliance as resources allow.

1199. Comment from the Town of Shrewsbury:

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. 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. 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 1/2 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.

EPA response to comment 1199

The commenter highlights the role impervious cover plays in negatively impacting receiving waters and EPA agrees that impervious cover is a large driver for poor stormwater quality. The large amount of impervious cover identified by the commenter has led to waterbody deterioration within the jurisdiction of the municipality and requires investment by the commenter to improve the quality of these receiving waters. The cost estimates provided by the

commenter are based on generalizations likely not applicable to specific situations. It is important to note that the first five years of permit requirements (i.e. this permit term) do not contain any phosphorus reduction requirements for those permittees subject to lake or pond phosphorus TMDLs and allows permittees to plan for program implementation, including setting up a funding source if necessary. For this permit term, a permit cost analysis conducted by an independent contractor estimates that the LPCP for Shrewsbury (assuming suburban setting and medium sized watershed) would be \$72,000 over 5 years or \$14,400 per year in addition to the costs associated with the 6 minimum control measures (Watervision LLC, 2016). Implementation of structural controls will add additional costs in future permit terms but the cost of compliance will not be known until careful planning is conducted during this permit term. Requirements beyond 5 years in the LPCP are also back end loaded: for the first 10 years permittees need only meet 40% of their required phosphorus load reduction. This will allow permittees to implement the most cost effective BMPs as well as take advantage of redevelopment opportunities to reduce phosphorus loads before more costly retrofits need to be implemented. This timeframe also allows for potential refinement of TMDL required reductions if necessary by MassDEP which can inform future permit requirements.

1200. Comment from the Town of Dracut:

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.

EPA Response to comment 1200

An incentive for all communities is their interest in providing clean, safe water for their residents. Compliance with this permit will lead to increased water quality in streams, rivers, lakes and ponds throughout the Commonwealth leading to more waterbodies meeting their designated uses including fishing, swimming and boating by the citizens of the Commonwealth. The increased water quality will also protect human health in the Commonwealth. While the Clean Water Act does not provide specific incentives for permit compliance, EPA hopes that achieving environmental goals valued by citizens will be an important motivator.

1201. Comment from the City of Newburyport:

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.) 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.

EPA response to comment 1201

The comment demonstrates commitment to identifying necessary cost for permit compliance as well as the costs associated with necessary capital improvements and asset management to protect citizens from flooding and other potential hazards associated with infrastructure neglect. In order to assist permittees with estimating permit compliance, EPA has commissioned an independent contractor to produce tools that can be manipulated by permittees to estimate

permit compliance costs. Once developed, these tools will be available on the EPA Region 1 website.

1202. Comment from the Town of Shrewsbury:

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.

EPA response to comment 1202

EPA agrees that it can take time to properly establish a stormwater utility. However, the draft Permit and the final permit do not require a permittee set up a utility to fund permit compliance nor does the permit require a specific funding source be used for permit compliance. Moreover, the final permit will not contain additional time for funding mechanism development. EPA notes that the first draft permit to replace the 2003 permit was released in 2010, and in the time since the first draft, many municipalities in Massachusetts have set up stormwater utilities over the past six years and others are actively pursuing such utilities. The commenter does not identify specific schedules in the permit that are too aggressive, therefore EPA cannot respond completely to that piece of the comment. Several potential funding mechanisms are identified in the Fact Sheet (pp. 23-24) for permittees to consider as they develop their programs. Permittees will need to determine the most appropriate funding mechanisms based on their individual needs and characteristics of their MS4 systems. EPA developed the permit to provide permittees with program flexibility and adequate time within the overall schedule to develop and implement the most appropriate funding mechanisms including incentive programs in order for permittees to successfully fulfill their permit requirements within the specified schedule.

1203. Comment from the Town of Danvers:

The Town of Danvers is in receipt of a copy of the revised draft General Permit under the Clean Water Act - NPDES 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.

EPA response to comment 1203

While the permit does contain more prescriptive measures in line with the iterative nature of MS4 permits, the draft Permit did not contain requirements to map all privately owned stormwater treatment structures nor did it contain requirements for permittees to map MassDOT's MS4 system and these conditions have not been added to the final permit. Please note also that permittees can define "key junction manholes" that must be investigated in order to most efficiently track illicit sources; every manhole in an MS4 is not required to be inspected under the permit. For information on DCIA tracking see EPA response to comments 723 to 760. For information on wet weather screening and IDDE investigations see EPA response to comment 480 - 486.

1204. Comment from the Southeastern Regional Services Group:

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?

EPA response to comment 1204

EPA apologizes for the confusion related to percentages of program cost contained in the fact sheet. All percentages were based on percentage of a total program cost that included contingency in order to be conservative and therefore the percentages are based on slightly higher program costs than the ones in the fact sheet. In order to help permittees plan for permit compliance cost EPA commissioned an independent contractor to create spreadsheet tools that can be manipulated to estimate compliance costs. Once developed, these tools will be available on the EPA Region 1 website.

1205. Comment from the Towns of Millbury and the Massachusetts Coalition for Water Resources Stewardship:

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.

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.

1206. Comment from the City of Haverhill:

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 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.

1207. Comment from the Town of Westborough MS4 Comment:

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.

1208. Comment from the Town of Weymouth:

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

1209. Comment from Tighe and Bond:

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.

1210. Comment from the Holden Town Manager/Board of Selectmen:

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.

1211. Comment from the National Association of Clean Water Agencies (NACWA):

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" 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.

1212. Comment from the Massachusetts Municipal Association (MMA):

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.

1213. Comment from the Town of Concord:

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.

1214. Comment from the Cities of Springfield and Worcester and Comment from the Massachusetts Coalition for Water Resources Stewardship:

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.

1215. Comment from the City of Haverhill:

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 storm water 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, 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 necessary 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.

1216. Comment from the Town of Franklin:

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).

1217. Comment from the Town of Weymouth:

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.

EPA response to comments 1205 to 1217

For information on permittees' obligations under the CWA to not only reduce pollution to the maximum extent practicable but also meet water quality standards, and for the explanation of why this final permit differs from the 2003 MA MS4 permit, see EPA response to comments 92 - 112.

See also EPA response to comments 1130 - 1144. EPA also notes that the permit contains no in stream monitoring requirements on communities and leaves waterbody assessments to MassDEP.

In Massachusetts, stormwater discharges are the leading water pollution source, causing or contributing to at least 55% of impairments in all Massachusetts' assessed waters. The small MS4 general permit is a key step towards improving the overall quality of all Massachusetts waters and will have long-term benefits for the health of water systems in Massachusetts.

EPA recognizes that there is an administrative burden associated with all NPDES permitting, including small MS4 general permits. The NPDES permitting program relies on a self-monitoring, self-reporting compliance model that necessarily imposes administrative responsibilities upon permittees as well as the regulatory agency. Within this context, reporting on actions by permittees is necessary to inform EPA, MassDEP, and the public of each permittee's progress on meeting permit and CWA requirements. The self-reporting model has been determined to be an effective and efficient model for environmental regulation and is in use in numerous federal and state environmental programs (Innes, 1999). See EPA response to comments 815 - 824 for further information on the importance and benefits of certain data gathering and reporting.

EPA disagrees that the permit is written in an overly prescriptive or "one-size-fits-all" format as alleged by some commenters. Within the basic federal regulatory framework, examples of flexibility from a one-size fits all approach are:

- Flexibility to use electronic formats to develop "written documentation"
- Freedom for each community to weigh a variety of factors in prioritizing catchments for investigation
- Establishing procedures appropriate for the community for management of trash containers at parks
- Flexibility in how to prioritize of inspection and maintenance for catch basins near construction sites
- Flexibility in the selection and design public education messages in a way appropriate for each particular community
- Flexibility in what BMPs to select for phosphorus control plans for the identity relevant municipalities
- Flexibility in what systematic and progressive procedures to use to select key junction manholes to select for IDDE obstruction and monitoring
- Flexibility in how to weigh a variety of factors in developing a municipality's IDDE program, such as system vulnerability factors and characteristics of high priority outfalls.

1218. Comment from the Massachusetts Coalition for Water Resources Stewardship, the Cities of Millbury, Springfield, and Worcester:

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.

EPA response to comment 1218

EPA recognizes that integrated planning can be an important and cost effective tool for municipalities to meet Clean Water Act requirements. Many of the communities subject to this MS4 permit have other Clean Water Act obligations, and integrated planning creates a process to prioritize and sequence a community's efforts where it is infeasible to meet all of these obligations at once. Since an integrated plan is highly dependent on the specific needs of an individual community, it is not realistic to specify how implementation schedules might be modified for all of the communities covered by this permit. This would be addressed in individual discussions with those communities who choose to pursue an integrated plan. EPA also notes that one of the four overarching principles of the 2012 Integrated Municipal Stormwater and Wastewater Planning Approach Framework states:

"The responsibility to develop an integrated plan rests with the municipality that chooses to pursue this approach. Where a municipality has developed an initial plan, EPA and/or the State will determine appropriate actions, which may include developing requirements and schedules in enforceable documents."

The responsibility to develop integrated plans, including schedules and actions, therefore rests with permit holders. EPA has not included integrated permit language into this general permit. Instead, this permit provides requirements that are applicable to all permittees, and contains requirements that can help inform each permittee if they choose to pursue integrated planning or permitting.

1219. Comment from the Association to Preserve Cape Cod (APCC):

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.

EPA response to comment 1219

The final permit contains requirements that are implemented on different schedules and timeframes that reflect priorities in consideration of factors such as the ease of implementation, cost, and environmental benefit. EPA finds that these schedules and timeframes are reasonable and appropriate and focus on greatest environmental benefit. It is unclear from the comment which requirements the commenter believes should be reprioritized.

1220. Comment from the town of Auburn, Uxbridge, and Holden:

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.

EPA response to comment 1220

It is EPA's view that it is reasonable to require municipalities to sweep streets two times per year when discharging to certain impaired waters. This is also necessary to address nutrient sources when discharging to a waterbody impaired due to nutrients. Leaf litter can be a large source of nutrients to waterbodies and making additional efforts to keep leaves and other organics out of waterbodies is necessary to restore impaired waters to designated uses. It is unclear from the comment what requirements the commenter believes will not result in quantifiable improvements to runoff water quality or receiving water health. EPA finds that this permit and the requirements contained in it will lead to increased stormwater quality and will improve the water quality of receiving waters throughout the commonwealth once fully implemented.

1221. Comment from the CMRSC (Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, Wilbraham):

The [Towns] reserve 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.

EPA response to comment 1221

EPA has responded to all comments properly submitted during the public comment period. In some cases, EPA has revised this final permit in response to public comments, and has noted where the final permit differs from the proposed permit. 40 CFR § 124.19 describes the procedure for appealing NPDES permit decisions.

Commenters may exercise any and all rights allowed pursuant to the CWA and its implementing regulations. However, commenters are not entitled to reserve rights not granted or otherwise allowed under the CWA and its implementing regulations. The NPDES regulations do not extend a right to commenters to supplement the comments they make during the public comment period with additional comments submitted after the close of the public comment period. The vast majority of EPA-issued permits have public comment periods of only 30 days, which EPA has found to be sufficient even where complex technical matters are at issue. This timeframe is consistent with and satisfies EPA's procedural regulations regarding public comment periods for NPDES draft permits. See 40 C.F.R. § 124.10(b). The comment period for this permit was five (5) months, sufficient for many commenters to assemble a large number of detailed comments. Under applicable federal regulations, EPA is only required to respond to materials submitted *during* the public comment period. See 40 C.F.R. § 124.17(a)(2). "That is, within the interval of time between the beginning and end of the public comment period, not before, not after." *In re*

Avon Custom Mixing Servs., Inc., 10 E.A.D. 700, 706 (EAB 2002); *see also, In re City of Phoenix, Arizona Squaw Peak and Deer Valley Water Treatment Plants*, 9 E.A.D. 515, 524-31 (EAB 2000); *In re Steel Dynamics, Inc.*, 9 E.A.D. 165, 194 n.32 (EAB 2000) ("Permitting authorities are under no obligation to consider comments received after the close of the public comment period."). Further, EPA regulations do not provide any additional time for a commenter to comment on changes made to the permit by EPA in response to comments, or to provide comments on EPA's response to comments.

1222. Comment from the Massachusetts Department of Environmental Protection:

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 (Cohasset), 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.

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.

EPA response to comment 1222

The fact sheet to the draft Permit contains the basis for permit provisions contained in the draft Permit and is not updated based on comments received or additional information. While the fact sheet did incorrectly identify (or omit) some pathogen TMDLs, the final Permit list was

checked again to ensure all waterbody segments with approved TMDLs were included. With respect to the LIS, Cape Cod and Assabet River TMDL requirements, these TMDLs are still in place and require all point sources to hold the nitrogen load delivered to the receiving water (at a minimum), see fact sheet of the draft Permit. EPA agrees with DEP's comment that MS4 nitrogen reduction requirements should not be based on an anticipated future TMDL for Long Island Sound – the requirements in this permit are based on the existing, approved TMDL. Until such a time that MassDEP or other State Agency responsible for TMDL development determines that those waters with TMDL requirements are meeting designated uses, requirements for point sources (which includes MS4 sources) will continue to be consistent with all approved EPA TMDLs. If MassDEP has data indicating that waters currently listed as impaired on the section 303(d) list are now meeting designated uses, MassDEP should use that data to update their section 305(b) report and section 303(d) list.

1223. Comment from the City of Quincy, the Towns of Medway, Abington, Swampscott, Easthampton, Bellingham, Brewster and Millis:

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

EPA response to comment 1223

EPA would like to thank the commenters for identifying inconsistencies in the draft Permit. The corrections listed above have been made in the Final Permit documents.

Changes to permit: Appendix F has been updated accordingly.

1224. Comment from Weston and Sampson and the Towns of Winchester and Milford:

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.

EPA response to comment 1224

Each page of the appendices clearly identifies the appendix to which it belongs; therefore, we do not believe it is necessary to update the page numbers in the appendices.

1225. Comment from the Town of North Andover:

Non Delegated State Status – 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.

1226. Comment from the Blackstone River Coalition:

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 eutrophication 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 storm water 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.

1227. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Northborough, Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, and Wilbraham:

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.

1228. Comment from the Town of West Boylston:

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.

1229. Comment from the Town of Uxbridge:

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.

EPA response to comments 1225 -1229

Since Massachusetts has not formally sought authorization from EPA to administer the NPDES permit program within the Commonwealth, EPA is the NPDES permitting authority. The decision whether or not to apply for authorization to administer the program is solely the decision of MassDEP.

MassDEP has jointly issued this final permit with EPA.

1230. Comment from the Town of Auburn:

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.

1231. Comment from the Town of Holden DPW:

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.

EPA response to comments 1230 - 1231

The permit does not require a municipality to provide outreach to other entities regulated by this permit. The education and outreach that municipalities are required to provide is educational material to the users of their systems or those who have the potential to contribute pollutants to their system. The required audiences are detailed in part 2.3.2 of the permit.

As in the past EPA anticipates conducting workshops that are open to interested parties on green-infrastructure and other practices that reduce stormwater pollution. School districts, housing authorities, and state facilities are welcome to participate. Further, the entities mentioned in the comments may meet the eligibility requirement for MS4 coverage as a non-traditional MS4. EPA plans to review public facilities in urban areas to assess their eligibility for MS4 coverage

1232. Comment from the City of Easthampton:

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.

1233. Comment from the City of Pittsfield:

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.

1234. Comment from the City of Fitchburg:

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 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.

1235. Comment from the Town of Franklin:

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.

1236. Comment from the Towns of Abington and Swampscott:

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.

1237. Comment from the Town of Bellingham:

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.

1238. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

1239. Comment from Keith Saxon:

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 permissible 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.

EPA response to comments 1232 - 1239

EPA agrees that decision makers within an MS4 need to understand the requirements of this permit. EPA has reached out to this audience in the past, and will continue to try to connect with these officials. EPA notes that many outreach sessions on the draft permit over the past year were open to any town official or department, or any member of the public. EPA will continue its outreach efforts following the issuance of the final permit.

1240. Comment from the Town of Paxton:

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.

EPA response to comment 1240

EPA acknowledges this comment. EPA appreciated the level of effort involved in the implementation of the permit. MEP will vary depending on the municipality. EPA encourages municipalities to evaluate all activities they currently undertake that may fulfill or work towards requirements of this permit. A municipality may be able to include existing activities as addressing the terms of this permit. In addition, EPA plans to provide training and other materials to the extent that resources allow in order to aid communities with the MEP requirements of the permit.

1241. Comment from Cape Cod Commission:

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 Area wide 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 Area wide 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 storm water 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.

EPA response to comment 1241

While watershed permits may eventually have the potential to address nutrient reductions from both point, this permit is not a watershed permit and does not set up a system of establishing off-site pollutant reduction credits for other permits or regulatory programs. The concept of a nutrient reduction tracking system has multiple benefits and can be explored by the Cape Cod Commission or other organization in a manner that is not inconsistent with the requirement of this permit. As the concept of the watershed permit develops, subsequent MS4 permits may include watershed permit features.

1242. Comment from the Town of Chelmsford:

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.

EPA response to comment 1242

EPA appreciates the suggested materials. The following materials have been developed:

1243. Comment from the Town of Chelmsford:

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 inter-departmental coordination required under the new permit.

EPA response to comment 1243

MassDEP has jointly issued this final permit with EPA.

EPA agrees that decision makers within an MS4 need to understand the requirements of this permit. EPA has reached out to this audience in the past, and will continue to try to connect with these officials. This audience will be included in EPA's outreach efforts following the issuance of the final permit. Also please see EPA response to comments 1232 - 1239.

1244. Comment from the Town of Chelmsford:

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 excel while maintaining the core principles of the permit.

EPA response to comment 1244

The matter of cost is addressed in EPA response to comments 1130 - 1144 and similar responses. EPA reviewed the submitted annual reports for this municipality in preparation of its response. The permit requires a complete map of the separate storm sewer system: this municipality has reported that it has mapped 100 percent of its outfalls, culverts, headwalls, and watersheds and has mapped over 95 percent of its catch basins, drain manholes, pipes and detention basins. For this municipality, other than completion of the catchment delineations, the requirements of part 2.3.4.7 have been met. The annual reports indicate that all catch basins have been cleaned and all streets and sidewalks are swept. The permit sets a goal of the catch basins being no more than 50 percent full and encourages optimization of catch basin cleaning based on a municipality's knowledge of its system. There is not a specified frequency in the permit. If a municipality is able to clean all basins in a given year, they are likely surpassing the required catch basin cleaning. Similarly, the permit requires a minimum of annual sweeping of streets: based on the information in the annual report, it appears that this requirement has also been met. The permit does not require water quality sampling. The permit does require sampling as part of illicit discharge detection and elimination. As mentioned previously, EPA has reviewed the reporting requirements and reduced them, where appropriate. Since the information provided in the reviewed annual reports indicates that many of the terms of these permit are already being achieved, it is unclear to EPA which permit requirements exceed existing capacities of this municipality.

EPA encourages municipalities to evaluate all existing activities that address stormwater management within a city or town. Many of the requirements in the permit are not new to standard operations within a municipality and EPA finds that some current existing activities will meet the terms of this permit.

1245. Comment from Tighe and Bond:

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).

EPA response to comment 1245

EPA anticipates updating any existing guidance as appropriate. The application requirements for an individual permit for a small MS4 are found in 40 CFR 122.33(b)(2) and application forms and instructions are available on EPA's NPDES web page. EPA does not anticipate developing additional guidance related to this topic, specific to MS4s.

1246. Comment from the Town of Yarmouth:

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.

EPA response to comment 1246

EPA has shared this comment with MassDEP. However, the decision regarding the classification of this material as compost as opposed to another type of waste is not a subject of federal jurisdiction and thus rests with the State.

1247. Comment from the Town of Webster MS4 Comment Letter:

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.

EPA response to comment 1247

EPA anticipates development of a table with the specific permit requirements and due dates and other tools upon issuance of the final permit.

1248. Comment from the Northern Middlesex Council of Governments (NMSC):

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.

EPA response to comment 1248

As mentioned previously, EPA anticipates the development of tools to assist municipalities with meeting the term of the final permit. Among the tools planned for development and outreach are a summary table listing permit requirements and the schedule for each requirement and a summary table of major changes between the current and draft permits, as suggested in this comment. Other tools include record keeping templates as suggested in this comment, including electronic reporting forms.

1249. Comment from the Town of Dalton:

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.

EPA response to comment 1249

In response to each item listed above:

Provide flow charts to guide lay people through the permit process: Regarding the permit process for a general permit, EPA has already developed and released a draft permit for public comment. Next, in this document EPA has developed responses to comments that are being made publicly available along with the final permit. This permit contains an effective date which is the triggering date for most of the permit's schedules. An initial scheduled requirement is for permittees to submit a Notice of Intent (NOI) to be covered under the general permit. This must be submitted to EPA in order to receive authorization to discharge stormwater under the terms of the general permit. Upon receipt, EPA will review the NOI, allow public comment, and then, if acceptable, send a letter to the permittee authorizing the discharge under the terms of the permit and NOI. Once authorized a regulated entity must comply with the terms and conditions of the final permit. As indicated in the response to a previous comment, among the tools

planned for development and outreach are a summary table listing permit requirements and the schedule for each requirement.

Technical assistance is available from the contact people identified on EPA's webpage. Additionally, staff from Mass DEP are also available for technical assistance.

Model of plans/procedures EPA anticipates the development of a template for the stormwater management program.

Acceptable methodologies -Please refer to responses in the Public Education and Outreach section addressing acceptable methodologies for evaluating the effectiveness of educational programs.

Endangered species- Information is available from FWS as detailed in Appendix C of the permit. Information on historic properties is available from the National Registry of Historic Properties. EPA has no plans to develop GIS maps for each community with information about endangered species or historic properties. EPA however has developed maps of each community which identify impaired waters within the municipality. This information is currently available on EPA's website.

The stormwater management program does not need to be submitted. It should be maintained locally and made available upon request. EPA has developed electronic reporting formats for information that must be reported under the permit. Additional information on electronic reporting is available in the "Reporting" section of this document.

Provide training – EPA will provide some training opportunities which may meet some of the training required by the permit. EPA will not provide training that must be tailored to specific municipal circumstances (e.g. training for employees responsible for implementation of site specific SWPPP). Each municipality must train its employees on its specific plan(s). Training opportunities are not limited to EPA sponsored events. Permittees may attend events sponsored by other organizations or participate in webinars etc. These activities can be used to meet the training requirements of the permit.

1250. Comment from the Town of Winchester:

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.

EPA response to comment 1250

Upon release of the final permit, EPA intends to provide training to assist communities with the permit requirements. Additionally, EPA will also provide tools to assist with reporting such as an annual report template, a SWMP template, and IDDE tracking spreadsheet.

1251. Comment from New England Civil Engineering Corp:

Will EPA provide a clear consolidated schedule of requirements for each BMP similar to what was presented when the 2010 Draft Permit was issued?

1252. Comment from the Town of Weymouth:

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.

EPA response to comments 1251 - 1252

As mentioned previously, EPA intends to provide materials to assist the municipalities upon final issuance of the permit, including a chronological list of all the permit's requirements and associated deadlines, as suggested. These tools will be available on the EPA website.

1253. Comment from the CT River Stormwater Committee:

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.

EPA response to comment 1253

EPA cannot change the language in CWA section 319. Any changes to the statute must be made by Congress. EPA has provide training to NGOs on use of the "stormwater toolbox equipment." This was a loan program that took place earlier this year. While EPA does not have the resources to individually train municipalities, it is possible that a group of municipalities could be trained and EPA is currently assessing the availability of resources to provide such a training.

1254. Comment from the Association to Preserve Cape Cod (APCC):

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.

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.

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.

EPA Response to Comment 1249:

EPA anticipates providing training on specific elements of the permit including nutrient management. EPA continues to engage in research activities associated with stormwater management. EPA works closely with the University of New Hampshire Stormwater Center as they test new stormwater BMPs. As funding permits, EPA also works with our Office of Research and Development (ORD). EPA will share new information as it becomes available. EPA agrees stormwater management should not be a paper exercise but rather should achieve on the ground results. Further, EPA agrees that MS4 program management and enforcement are important and necessary components of an effective MS4 permitting program.

1255. Comment from the Neponset River Watershed Association:

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.

EPA response to comment 1255

Cross references have been added to part 1.10.2, the SWMP requirements. They have not been added to all areas suggested in the comment in order to avoid unnecessary cross-referencing among permit parts.

1256. Comment from Nitsch Engineering:

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?

EPA response to comment 1256

Oversight of the MS4 program is a priority for the Region 1 EPA. While future levels of funding are uncertain, there has been continuous funding of Region 1 EPA Clean Water Act regulatory programs for many years.

1257. Comment from Keith Saxon:

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 permittee 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.

EPA response to comment 1257

As stated in EPA response to comment 1256, oversight of the MS4 program is a priority for the region. EPA agrees that enforcement is an important and necessary component of an effective MS4 permitting program.

1258. Comment from the City of Fitchburg:

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.

EPA response to comment 1258

EPA appreciates the suggestion, but does not have the resources to fund the case study described in this comment. As the commenter notes, extensive research has shown that runoff from impervious surfaces contributes to decreased water quality. A wealth of additional research (see Factsheet to the draft permit) indicates that the good housekeeping measures of the permit will have a positive impact on water quality. Extensive regional experience with IDDE program implementation indicates that removal of illicit discharges in the MS4 system can also have a significant impact on water quality (see EPA response to comments on the IDDE program in part 2.3.4.).

1259. Comment from the Town of Franklin:

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.

1260. Comment from the City of Haverhill:

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 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 storm water and wastewater systems.

EPA response to comments 1259 - 1260

The small MS4 permit as written does not prevent a municipality from requesting the use of an integrated plan to meet its CWA obligations. Integrated planning is voluntary and allows a municipality to prioritize its CWA obligations such as wastewater, stormwater and CSOs. The development of the integrated plan rests with the municipality. The decision to utilize integrated planning can be through and enforcement action or through permitting. Use of an integrated plan does not eliminate any CWA obligation, it instead allows a municipality and EPA to agree to a prioritization of the municipality's CWA obligations. EPA anticipates that any MS4 implementing an integrated plan to fulfill its NPDES MS4 requirements through the permitting process will need NPDES coverage under the terms of an individual permit. This approach is available to MS4 permittees. Due to the site specificity necessary for development of an integrated framework for permitting, the general permit is not the appropriate mechanism.

1261. Comment from the Town of Franklin:

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 storm water 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?

EPA response to comment 1261

Water quality in the Charles River has improved in many respects in recent years, but significant problems remain, including persistent algae blooms driven by phosphorus, much of which comes from stormwater. As detailed in the preamble to the Phase II rule, the requirements for MS4s are anticipated to be iterative and adaptive. The MEP standard should continually adapt to current conditions and BMP effectiveness and strive to attain water quality (64 FR 68754). This new permit "raises the bar" of expectation of MEP from the previous permit consistent with the iterative approach described in the Preamble. Specifically, in the final permit, EPA has

included specific IDDE requirements that reflect the illicit discharge detection and elimination approach taken by some of the most successful programs in Massachusetts. Additionally, EPA reviewed the annual reports that have been submitted and determined that the broad, open ended requirements of the 2003 MS4 permit were insufficient to achieve the goals of the CWA. EPA finds that permits with clear and measurable milestones are most appropriate. Additional information is provided in the fact sheet in the discussion of the six minimum control measures.

1262. Comment from the Town of Franklin:

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.

EPA response to comment 1262

Part 2.3.1. of the permit states that permittees may work together on implementation of the minimum control measures. EPA agrees that it is cost effective for municipalities to work together. However, cooperation and collaboration across communities are voluntary activities that EPA cannot mandate. Further, the commenter does not identify any incentives which would encourage these behaviors.

1263. Comment from the Southeastern Regional Services Group:

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.

EPA response to comment 1263

There are several differences between the proposed Interstate, Merrimack, South Coastal (IMS) general permit released for public comment on October 26, 2010 and the draft permit released on September 30, 2014. The IMS draft included requirements for wet weather sampling at all outfalls. The exemption based on 10 percent impervious cover for wet weather sampling applied to catchments with less than 10 percent impervious cover. This was included as an opportunity for a municipality to decrease the number of outfalls which needed to be sampled. A similar exemption is not included in this permit because a permittee is not required to conduct wet weather sampling at every outfall. Wet weather sampling is required only for a subset of

outfalls within a system with described wet weather vulnerabilities and only for implementation of the illicit discharge program. The draft IMS permit required an outfall monitoring program not directly associated with illicit discharge detection. Since this permit removed the wet weather monitoring for all outfalls, it is not necessary to continue with the exemption. Furthermore, as part of the IDDE program, the permit allows permittees to identify catchments as “excluded.” These catchments are those which have no potential for illicit discharges. Areas identified as exclude are similar in concept to those areas which were excluded in the IMS draft permit. Despite the fact that exact language has not been retained between this permit and the IMS draft permit, the overarching concept of providing an opportunity for a permittee to reduce the number of outfalls which must be evaluated remains the same. EPA disagrees that there are “minimal impacts in areas with less than 10% impervious cover” in all situations as the commenter suggests. The commenter provides no additional studies beyond the 2004 Boston Water and Sewer IDDE protocol for their assertion and EPA finds that more recent studies have indeed indicated that water quality can be impacted in areas with less than 10% impervious cover, for example the King et. al study referenced by the commenter. In addition the study can be found readily here: <http://www.baylor.edu/content/services/document.php/144006.pdf> (retrieved 4/1/2016).

1264. Comment from the Town of Shrewsbury:

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 Management Policy should be given credit as well, and the permit language should more clearly define allowed credits and a timeframe for those credits.

EPA response to comment 1264

EPA acknowledges that many towns have already implemented controls to address stormwater. The commenter has not provided the specific type of post stormwater controls for which the commenter is seeking credit. The final permit generally provides that prior work that has been completed by the municipality that meets the terms and conditions of the permit does not need to be repeated and a municipality can receive “credit” for their existing best management practices. They should be documented in the SWMP and can be used towards compliance with this permit. Specific examples are found in the outfall monitoring portion of the IDDE requirements and in the PCP phosphorus reduction credit allowances in Appendix F.

1265. Comment from the Towns of Danvers and Westwood Draft NPDES Permit:

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.

EPA response to comment 1265

EPA appreciates the recognition of the level of effort put into the draft permit. EPA has reviewed and responded to all comments.

1266. Comment from the Association to Preserve Cape Cod (APCC):

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 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 area wide 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.

EPA response to comment 1266

EPA appreciates the level of effort in the development and release of the 208 plan. EPA agrees that coordination among the various efforts to address water issues on the Cape is important and we will continue to participate in the 208 planning and implementation efforts.

1267. Comment from 159 Citizens via Form Letter²:

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

² Comment submitted by: Douglas Macdonald, Eliza Hewat, Mark Mcleod, Suzanne Towne, Shirley Mccready, Mary Leue, Janet Bowers, Gary Gogel, Charlotte Rose, Charlene Brotman, Alison Conant, Timothy Havel, Steven Lowen, Pamela Frothingham, Daniel Biegner, Richard Siewert, Thomas Weiner, Rebecca Arnoldi, Margot Douaihy, Lisa Russell, David Schreiber, James Babson, Daria Hemmings, David Parks, Christina Knapp, Alexander Brown, Sarah Lombard, Lois Tow, Paul Peckham, Karin Hemmingsen, Mary Racsko, Edith Fuller, Kenneth Cheek, Diane Cummings, John Nelson, Paulette Loomis, Paul Rosa, Steve Swingle, Anna Shenk, Allan Rodgers, James Koger, Doug Hodgkins, Claude Austin, Noreen Troccoli, Thomas Picton, Kate Matthews, Myra MacLeod, Mary Devine, Melissa Warren, Janice Thalín, Terry Murphy, William Cotten, Elaine Bowditch, Mari Roberts, Barbara Brandt, C.L. Messerschmitt, Christina Law, Paul Caswell, M. Elizabeth Cinquino, Babette Loring, Christine Farrell-Riley, Diane Simpson, Emilie Welles, Emilie Woodward, Ron Goldberg, Dw Wiegand, Henrietta Light, John Terry, Molly Martone, Aaron Vega, Sarah Metcalf, Penelope Jencks, Ruthbetty Shippee, Joshua Rachlin, Linda Veiga, Jean Berman, Ethan Scarl, Robert Petersen, Henry Linschitz, Catharine May, Christine Carlsen, Michele Meagher, John Gauley, William Cooper, Walter James Hall, Tobias Yarmolinsky, Susan Dunham, Kathleen Amato, Robert McDonough, Roland Small, Richard Hyland, Phyllis Menken, Allan Rodgers, Lydia Vickers, Bruce Glover, Erin Joyce, Sarah Bayer, Ruth Potwin, Rita Abraham, Paul Shanahan, Elaine Savignano, Adele Rustino, Chobee Hoy, Sophie Glasser, Carol Messerschmitt, Joan Toussaint, Robert Pertersen, Whiston Glasby, Jo Valens, Kathryn Wadleigh, Rebecca Knapp, Valerie Carlson, Holly Edwards, Richard Sens, Robert Comer, Seth Kellogg, John Travers, William Eger, Carlotta Hayes, Mark Hodgson, David Marshall, David Spanagel, John Firmin, Elizabeth Brown, Anne Nyman, Leo O'Keefe, Helen Randolph, Dana Moser, Preston Browning, Anne Shumway, Peter Valentine, John MacDougall, Carl Saviano Md, Morris Terry, Claire Bateman, Rebecca Strauss, Margot Trout, Julie Walsh, Gary Potwin, Carla Becker, Shirley Winer, Cornelia Van Der Ziel, Karl Smith, Patricia Burkhart, Richard Legault, Allan Moniz, Brenda Steinberg, Connie Turner, Marie-Dolores Solano, Jon Ball, Suzanne Allen, David & Sandra Lyons, Linda Cohen, Lynn Kline, F Peter Duffy, Dinah Starr, William Twombly, Dawn Ramage, Joseph Bolles, Susan Rice

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.

1268. Comment from Laurie Wodin:

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.

1269. Comment from Lawrence Freed:

Obviously, this interconnection [of surface waters] 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.

1270. Comment from the Mystic River Watershed Association (MyRWA):

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.

1271. Comment from the Neponset River Watershed Association:

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.

1272. Comment from the Nashua River Watershed Association (NRWA):

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.

EPA response to comments 1267 - 1272

EPA appreciates the public support for addressing stormwater pollution in the small MS4 permit.

1273. Comment from the Massachusetts Watershed Coalition:

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.

1274. Comment from the Mystic River Watershed Association (MyRWA):

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.

- (1) 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.
- (2) 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.
- (3) 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.
- (4) 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.
- (5) 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.
- (6) 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.

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.

1275. Comment from the Mystic River Watershed Association (MyRWA):

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.

1276. Comment from OARS Oral Testimony:

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 base-flow 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.

1277. Comment from OARS Oral Testimony:

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 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.

1278. Comment from the Ipswich River Watershed Association:

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.

1279. Comment from the Charles River Conservancy (CRC) MS4 Comment:

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.

1280. Comment from the Hoosic River Revival:

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.

EPA response to comments 1273 - 1280

EPA's permit issuance process includes both an opportunity for public comment and a requirement for EPA to respond to those comments. During the public notice of the draft permit, EPA received over 160 comment letters containing over 1000 comments. EPA acknowledges the delay in the release of the final permit and recognizes the frustration associated with the delay. EPA is committed to release a permit that recognizes the concerns of both the environmental organizations and the municipalities and achieves the goals of the Clean Water Act. The time involved in crafting such a permit and responding to comments has resulted in an extended time for the release of the permit. EPA believes the final permit provides clarity of regulatory expectations for municipalities during their implementation of the MS4 permit.

1281. Comment from the Massachusetts Rivers Alliance:

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 Illicit 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.

1282. Comment from Mike Young:

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 permittees 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.

1283. Comment from Norton Con Com:

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.I 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.

1284. Comment from the Connecticut Fund for the Environment (CFE) – Save the Sound and Save the Bay Draft MA MS4 General Permit:

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.” 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.

1285. Comment from the Housatonic Valley Association:

As such, we are aware of the seriousness of the impacts of storm water 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 storm water 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 storm water in Massachusetts, and we will see a marked improvement in the Commonwealths waterways.

1286. Comment from the Charles River Conservancy (CRC) MS4 Comment:

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, bays, 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.

EPA response to comments 1281 - 1286

EPA recognizes and appreciates the time and effort involved in the public's review of the draft permit, the depth of understanding of the detailed permit requirements as well as the ultimate

purpose and public and environmental benefits of improved water quality, reduced erosion and flooding, and protection of base flow in the Commonwealth's water resources.

1287. Comment from the Housatonic Valley Association:

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 need assistance.

1288. Comment from the Merrimack River Watershed Council:

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 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.

1289. Comment from the Mystic River Watershed Association (MyRWA):

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.

1290. Comment from the Charles River Watershed Association (CRWA):

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.

1291. Comment from the Cape Cod Commission:

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 Cape wide 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.

EPA response to comments 1287 - 1291

EPA recognizes the numerous stormwater program management challenges faced by municipalities. We acknowledge and appreciate the municipal assistance and support, at each phase of stormwater program implementation, provided by so many dedicated watershed associations across the Commonwealth.

Supporting informational resources are available from EPA Headquarters and EPA Region 1. At the national level, EPA offers materials and training on BMPs, Green Infrastructure, Low Impact Development, and Illicit Discharge Detection and Elimination. At the regional level, EPA Region 1 offers links to a stormwater BMP performance tool, technical reports, and useful external sources. The region also plans to develop training and materials for municipalities specific to the small MS4 permit to the extent that resources allow. These will include tools and templates to be used for permit-related tracking and reporting.

1292. Comment from the Commercial Real Estate Development Association of Massachusetts (NAIOP):

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 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.

1293. Comment from 495 Metro West Partnership:

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.

1294. Comment from the Town of Danvers:

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 completed 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.

1295. Comment from the Town of Webster:

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.

1296. Comment from the City of Newton:

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)
- 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.

1297. Comment from the Massachusetts Department of Transportation:

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).

1298. Comment from the Town of Winchester:

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.

1299. Comment from the Berkshire Regional Planning Commission (BRPC) and the Chicopee 4Rivers Watershed Council (C4RWC):

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 sub-contractual 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.

1300. Comment from the Massachusetts Municipal Association (MMA):

Another concern is the aggressive schedule that the EPA proposes for implementation of the program. It is unrealistic to provide permittees 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.

1301. Comment from the Town of Maynard:

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.

EPA response to comments 1292 - 1301

In response to the above comments EPA has extended many deadlines for the first year of the permit term (see EPA response to comments 1310 - 1318 for further details on due date extensions). In addition, EPA notes that there will be over a one year delay between permit finalization and permit effective date to allow permittees to gather information required for the NOI. EPA would like to note that any Phosphorus Control Plan associated with TMDL requirements is due in Year 5, not year 1. EPA has chosen not to extend the outfall/interconnection inventory as an outfall inventory needed to be complete during the first permit term that ended in 2008 and much of that work should be complete.

1302. Comment from the Town of Walpole:

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.*

1303. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, Wilbraham and the Town of West Boylston MS4 Comment:

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.

1304. Comment from the Massachusetts Coalition for Water Resources Stewardship

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).

1305. Comment from the Cities of Springfield and Worcester:

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).

1306. Comment from the Town of Northborough:

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.

1307. Comment from the Merrimack Valley Stormwater Collaborative:

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 inter-municipal Collaborative programs for sharing personnel, equipment and/or testing labs.

1308. Comment from the Town of Leicester:

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.

1309. Comment from the Town of Franklin:

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).

EPA response to comments 1302 - 1309

EPA plans to set the effective date of the Permit a minimum of six months after the release of the final Permit to give permittees additional time to gather information and to align with municipal budget cycles. The permit will not be effective until July 1, 2017, allowing all municipalities to plan for final permit requirements. EPA declines to change the permit effective date for individual permittees as this would create a complicated mix of deliverable dates throughout the Commonwealth and it is unclear from comments why this would be necessary when all communities in Massachusetts have budget cycles that begin on July 1 of each year. Because this Permit is a reissuance of a permit that was originally issued in 2003, many of the permit requirements and the program in general should not be unfamiliar to town staff and elected officials.

1310. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC) and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, and Wilbraham

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”.

1311. Comment from CT River Stormwater Committee:

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.

1312. Comment from the Cities of Springfield and Worcester and the Town of Millbury:

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.

1313. Comment from the Town of Northborough:

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.

1314. Comment from the Central Massachusetts Regional Storm Water Coalition (CMRSWC), and the Towns of Auburn, Boylston, Charlton, Dudley, Grafton, Hardwick, Holden, Hopkinton, Leicester, Millbury, Northbridge, Northborough, Oxford, Palmer, Paxton, Rutland, Shrewsbury, Southbridge, Spencer, Sterling, Sturbridge, Upton, Uxbridge, Ware, Webster, and Wilbraham:

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".

1315. Comment from the Town of Framingham:

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.

1316. Comment from the City of Haverhill:

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."

1317. Comment from the Massachusetts Department of Environmental Protection:

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 other sources. EPA should assure Towns will have the adaptive flexibility needed to concentrate on the most cost-effective pollution reduction measures, whatever their source.

1318. Comment from the Connecticut River Stormwater Committee:

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.

EPA response to comments 1310 - 1318

In response to numerous comments related to the significant efforts required under the permit, EPA has extended certain timeframes throughout the permit. In general, most permit requirements must still be fulfilled within the 5-year permit term. 40 CFR 122.46(a) states that the duration for a NPDES permit cannot exceed 5 years and therefore this permit term must remain 5 years. Where appropriate and necessary EPA has added compliance schedules to this permit to allow permittees extra time to complete requirements where warranted. See also EPA response to comments 92 - 112, EPA response to comment 164, EPA response to comment 963 and EPA response to comments 983 - 985.

The following due dates or timelines have been modified, but this is not an exhaustive list of permit changes:

- Contents of SWMP were organized to reflect the due dates in the permit; part 1.10 now specifies all of this information is not expected when the SWMP is due.
- In part 2.3.4. the due date for an SSO inventory was extended from 120 days to one year.
- In part 2.3.4., the due date for the outfall and interconnection inventory was extended from one year to two years.
- In part 2.3.4., the due dates for specific mapping elements required for the system map have been extended to align with the MS4 inspection schedule.
- In part 2.3.4., the 5-year milestone for the IDDE program completion has been removed.
- In part 2.3.4., the due date for investigation of all problem catchments in the MS4 has been extended from five to seven years.
- In part 2.3.4., the due date for investigation of all catchments with indicators of sewer input in the MS4 has been extended from five to seven years.
- In part 2.3.6., the timeframe for the municipality to require the submission of as-built drawings for onsite stormwater controls was extended from one to two years.
- In part 2.3.6., the due date for the street and parking assessment report and the creation of excess impervious cover report has been extended from three to four years.
- In part 2.3.7., the due date for O&M plans at municipally-owned properties has been extended from one to two years.
- The requirement to track material removed from individual catch basins has been removed in part 2.3.7.

Changes to the permit: the permit has been updated accordingly.

1319. Comment from Lawrence Freed:

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 order and the MS-4 [sic] 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.

EPA response to comment 1319

EPA acknowledges the comment and agrees that strong local bylaws are integral in carrying out many provisions of this permit. While EPA appreciates the suggestions, EPA cannot dictate staffing requirements for a municipality. The majority of the permit requirements for local

bylaws or other local regulatory mechanisms stem directly from federal municipal stormwater regulations, and in appreciation for the number of municipal responsibilities resulting from the permit, EPA is not dictating further bylaw requirements beyond those in the final permit.

1320. Comment from the Town of Milford:

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.

EPA response to comment 1320

The residual designation process is a separate action not associated with the issuance of this permit. EPA intends to reevaluate the proposed RDA for the towns of Milford, Franklin and Bellingham. EPA will continue to use its discretion in applications of residual designation and acknowledges that any residual designation permit in the Charles River watershed will need to work in conjunction with the requirements of this permit.

1321. Comment from the Town of Weymouth:

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.

EPA response to comment 1321

It is unclear as to which permit section this comment refers. The final permit does not dictate where stormwater structural controls should be placed and does not require entrance onto private property that municipalities do not own or control.

Rather, the permit implements EPA's regulations that require the use of ordinances or other regulatory mechanisms as allowed by State law, for example, to control stormwater from active construction sites and new and re-development sites that enters into and is discharged by the MS4. See 40 CFR 122.34(b)(4)(ii)(A) and (b)(5)(ii)(B).

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MA MS4 General Permit Response to Comments

Watervision LLC. (2016). Technical Memorandum: Stormwater Program Cost Evaluation for Massachusetts.

Attachment 1 to MA MS4 Response to Comments

Date: March 31, 2016

Subject: Overview of Methodology to Calculate Baseline Stormwater Phosphorus Loads and Phosphorus Load Reduction Requirements for Charles River Watershed – Final MA MS4 Permit

This memorandum is intended to provide a broad overview of the permit limit derivation process for the Charles River Watershed permittees contained in Part 2.2.1 and Appendix F of the final permit.

This memorandum is an update to a similar memorandum developed for the draft Small Massachusetts MS4 permit and dated April 22, 2014 that described the permit limit derivation process for the Charles River Watershed permittees for the Draft Permit. The revisions incorporated in this memorandum are in response to public comments received by EPA Region 1 on the draft MS4 permit. The revisions result in generally minor changes to the overall approach used to calculate baseline phosphorus loads and required phosphorus load reductions for each Charles River watershed community/entity eligible for coverage under this permit. The revisions are a result of the following two changes: 1) Hydrologic Soil Group (HSG) C is now used as the default soil type for calculating average annual phosphorus loads from areas with undefined HSG soils instead of using HSG C/D; and 2) Required stormwater phosphorus load reductions have been lowered to account for the calculated average annual phosphorus load reductions resulting from proper use of fertilizers on turf grasses in accordance with Massachusetts Regulation 331 CMR 31 see <http://www.mass.gov/courts/docs/lawlib/300-399cmr/330cmr31.pdf>).

The following is an overview of the steps taken to calculate baseline stormwater phosphorus loads (P loads) and P load reduction requirements for Charles River Watershed Communities, Massachusetts Department of Transportation (MassDOT) (which will receive an individual permit) properties, and Massachusetts Department of Conservation and Recreation (DCR) properties within the Charles River watershed for use in the Final Small MA MS4 General Permit. All calculations can be found in the Excel file *12 2015 CRW_LU_Imp_Analysis.xlsx*. The process described in this document was used to refine baseline P load and reduction requirements described in the Lower Charles Nutrient TMDL (Massachusetts Department of Environmental Protection, 2007) and the Upper/Middle Charles Nutrient TMDL (Charles River Watershed Association, May 2011) consistent with the following assumptions in each TMDL:

“It should be noted that the WLA values are estimates that can be refined in the future as more information about the MS4s, illicit discharges, and land use specific loadings become available.” Lower Charles Nutrient TMDL Section 5.2.5 (Massachusetts Department of Environmental Protection, 2007)

And

“The WLA values are estimates that can be refined in the future as more information becomes available” Upper/Middle Charles Nutrient TMDL Section 6.2.2 (Charles River Watershed Association, May 2011).

1. Refined Baseline P load calculations and estimated permittee specific baseline P loads.

- a. New GIS data layers from those available at the time of the two Charles River watershed TMDLs that contain refined information were compiled for the Charles River watershed (CRW) to quantify the areal extent of several watershed attributes such as land use,

hydrologic soil group (HSG), impervious area, urban area, and ownership by Mass DOT or DCR for each municipality within: 1) the entire Charles River Watershed; 2) the Upper Charles watershed upstream of Watertown Dam; and 3) the Lower Charles Watershed downstream of the Watertown Dam. Baseline P loads were then equitably apportioned to each municipality, Mass DOT and DCR. The following attributes were quantified for each community within the CRW, building upon the analysis conducted in the 2 TMDL reports:

- i. Massachusetts Land Use Groups (MassGIS, 2009) were first aggregated into the following 10 land use groups (see *01 2016 PLER MEMO SW Permittees for Details*(Attachment 2 to the Response To Comments)):
 1. Commercial;
 2. Industrial;
 3. High Density Residential;
 4. Medium Density Residential;
 5. Low Density Residential;
 6. Highway;
 7. Open Land;
 8. Forest;
 9. Agriculture; and
 10. Water
- ii. Total Impervious Area (TIA) (MassGIS, 2007) by Land Use Group;
- iii. Massachusetts Hydrological Soil Groups (HSGs) (MassGIS, 2012) by Land Use Group:
 1. HSG A;
 2. HSG B;
 3. HSG C;
 4. HSG C/D;
 5. HSG D; and
 6. Undefined
- b. These data were then used to compute community-specific average annual composite phosphorus load export rates (PLERs) for each aggregated land use type. Aggregated land use types were based on community-specific distribution of impervious area and pervious area (as defined by HSG) for each land use type in that community.
- c. Community-specific baseline P loads were then calculated for each Charles River watershed community using community-specific PLERs and associated land use area within each community. Baseline P loading was also calculated for DCR and DOT land area and those annual P loading estimates were removed from each communities calculated baseline to avoid double counting. Two sets of baseline P loading were calculated for each Charles river community, DCR area and DOT area: 1) the entire jurisdiction in the Charles River watershed and 2) each permittees regulated area only.
- d. Total Charles River Watershed refined stormwater baseline P load was 40,576 kg/yr which is approximately 2% greater than the TMDL baseline P loading estimates from stormwater sources (39,796 kg/yr).

2. Calculating permittee-specific required P load reduction requirements and allowable load targets

- a. The following information was taken directly from the two TMDL reports to determine reduction rates and calculate required P load reductions from the refined community specific P load baselines:
 - i. Wasteload allocations in the form of percent reductions for the Upper Charles River watershed and the Lower Charles River watershed
 - ii. Process for quantifying necessary P load reductions based on watershed-specific land use distribution and phosphorus load export rates from different land use groups
- b. P load reduction requirements for each community were calculated for municipal-only (community jurisdictional area minus MassDOT and DCR area), Mass DOT, and DCR area within each community for the entire CRW. P load reductions were calculated by multiplying the baseline land use-based P loads calculated in step 1.c above by the percent reductions specified in the WLA of the TMDL Reports for that land use. Different reduction rates apply to the Upper CRW and Lower CRW, based on the two TMDL analyses. Table 1 identifies the reduction rates taken from the TMDL reports, which were used to calculate the community specific P load reduction requirements based on land use within each community. For those communities that have land area in both the Upper CRW and Lower CRW, P load reductions in each of those communities are equal to the sum of the P load reductions calculated for the community's combined area in the Upper and Lower CRW.
- c. The natural watershed dry weather baseflow P load was added to the forested land use group P load so that the P load estimates and reductions for other land use groups would not include natural dry weather baseflow P load, but only SW and illicit P loads. This was done because the reduction rates from the TMDL analyses are intended to apply to the watershed P load, excluding the natural baseflow load. For this analysis, the natural baseflow P load is added to the forest load, since no reductions are being specified for forested lands.
- d. Total Charles River Watershed refined allowable P load from stormwater sources is 20,652 kg/yr which is approximately 11% higher than the allowable stormwater load to the Charles River basin from the two TMDLs. This is partially due to reclassification of land uses for the refined analysis based on additional data. EPA chose to follow the relative percent reduction from watershed sources in the TMDLs and not change the required relative reductions based the refined analysis done for the permit consistent with implementation recommendations of the Upper/Middle Charles TMDL and the Lower Charles TMDL:

“For this TMDL, emphasis is placed on the relative percent reductions for the purposes of implementation activities” (Massachusetts Department of Environmental Protection, 2007).

“This implementation plan emphasizes the relative percent annual phosphorus load reductions needed for each land use type” (Charles River Watershed Association, May 2011)

Table 1: TMDL Waste Load Allocation (WLA) P load Reduction Rates applied to Land Use Groups in Upper and Lower Charles River Watersheds

Land Use Group	Upper TMDL WLA % Reduction Rate	Lower TMDL WLA % Reduction Rate

Commercial	65%	62%
Industrial	65%	62%
High Density Residential	65%	62%
Medium Density Residential	65%	62%
Low Density Residential	45%	62%
Highway	65%	62%
Open Space	35%	62%
Agriculture	35%	62%
Forest	0%	0%

3. Correcting permittee specific P load reduction requirements for the presence of illicit connections.

- a. The WLA percent reduction rates (Table 1) taken from the TMDL reports were intended to apply the total land-based watershed P load, which included the presence of illicit discharges (but excluded WWTFs and CSOs). Therefore, an additional step was taken to estimate the portion of the P load reduction that would be achieved through elimination of illicit discharges (required under the permit, and also consistent with the TMDL phosphorus wasteload allocation for illicit discharges of zero (0 kg/yr). For this reason, subtraction of the illicit P load from the total watershed P load reduction is needed to determine the SW-only P load reduction requirement for the CRW.
- b. The portion of the land-based watershed P load due to the presence of illicit sanitary discharges discharging to the Charles River is estimated to be 10% of the calculated P load from the commercial, industrial, and all residential land use groups. The resulting estimated illicit P load is 2,924 kg/yr, or approximately 7% of the total estimated land-based watershed P load to the Charles River (40,576 kg/yr). In other terms, the illicit P load estimate is 0.7% of the estimated total sanitary sewage P load (434,000 kg/yr). The illicit P load estimate is based partially on the magnitude of illicit loads that have been already identified and eliminated from communities within the CRW. For this permit and for the associated stormwater P load reduction calculations, the illicit P load value should be considered a default value that will be re-evaluated and refined, if needed, in future permit re-issuances. Communities will be required to track and report illicit P load reductions over the course of each permit term so that EPA can make needed adjustments to the baseline P loads subject to reduction requirements in future permit issuances

4. Correcting permittee specific P load reduction requirements for the new Massachusetts fertilizer legislation

- a. During 2014-15, Massachusetts enacted fertilizer legislation and regulations to require proper fertilizer use on turf grasses throughout the State.
- b. EPA has calculated the estimated phosphorus load reductions that are anticipated to result from implementation of the new MA fertilizer regulation designed to eliminate excessive phosphorus fertilization to turf grasses. EPA's documentation for calculating those phosphorus load reductions is provided in *Calculation of Phosphorus Load Reductions for Cessation of Excessive Phosphorus Fertilization of Turf Grass in the Charles River Watershed* (Attachment 3 to the Response to Comments). Table 2 below presents the calculated average annual phosphorus load reductions for proper phosphorus fertilizer management for each Charles River small MS4 community. For the final permit, total

required phosphorus load reductions for each Charles River small MS4 have been reduced by the amount of phosphorus load reduction calculated for proper phosphorus fertilization management.

Table 2. Annual Phosphorus Load Reductions for Charles River Watershed Small MS4s Resulting from Proper Phosphorus Fertilizer Management

Charles River watershed Community	Ave. Annual P load reduction kg/yr
Arlington	0.7
Ashland	1.2
Bellingham	7.3
Belmont	5.0
Brookline	32.9
Cambridge	5.1
Dedham	14.2
Dover	12.7
Foxborough	0.0
Franklin	40.6
Holliston	23.6
Hopedale	1.6
Hopkinton	7.1
Lexington	10.3
Lincoln	7.7
Medfield	14.8
Medway	21.4
Mendon	0.2
Milford	22.9
Millis	11.6
Natick	23.9
Needham	26.7
Newton	63.9
Norfolk	12.2
Sherborn	9.9
Somerville	4.7
Walpole	2.8
Waltham	26.4
Watertown	12.1
Wayland	0.9
Wellesley	33.5
Weston	29.8
Westwood	12.2
Wrentham	4.7
TOTAL	504.6

5. Final refined permittee P load reduction requirements for the 2016 MA MS4 permit.

- a. Stormwater P load reduction requirements were calculated for municipal-only, Mass DOT and DCR for each community by taking into account the expected reductions from illicit discharge elimination work and implementation of the Massachusetts fertilizer regulations for turf grasses. First, the total stormwater P load reduction for the CRW is determined by subtracting the illicit P load and the calculated excess phosphorus

fertilization reduction P load from the total watershed P load reduction determined in step 6 (see Table 4):

$$19,924 \text{ kg/yr} - 2,924 \text{ kg/yr} - 505 \text{ kg/yr} = 16,505 \text{ kg/yr}$$

(Total watershed P Load Reduction – Illicit P Load – Excess P fertilizer Load = Stormwater P Load Reduction)

- b. P load reduction requirements for each community were reduced by the illicit load and excess phosphorus fertilization load calculated for that community. No adjustments were made to the P load reduction requirements for MassDOT and DCR because it is assumed that the municipality's IDDE program will be the means for achieving the illicit load reductions.
- c. Table 3 below provides the proposed P load reduction requirements for municipal-only (community jurisdiction with MassDOT and DCR area subtracted), Mass DOT and DCR for each community assuming that all CRW area is managed.
- d. Final P load reduction requirements were also calculated for designated Urban Area (UA) within each CRW community. (Note: UA is defined by the 2010 Census and is used to define regulated area for MS4 permittees.) UA was determined through GIS analyses, and represents a subset of areas used in the above discussed analysis. The same approach as described above in step numbers 1-4 above was used to calculate the stormwater P load reduction requirements for municipal-only, Mass DOT and DCR in each community in UA only. Table 4 below presents the Urban Area stormwater only P load reduction requirements by community for municipal only, Mass DOT and DCR.

Table 3: Stormwater Only Phosphorus Load Reduction Requirements by Community for Municipal Only, MassDOT and DCR, Entire CRW

Annual Stormwater Phosphorus Load Reduction by Municipality, Charles River Watershed (excludes required DOT and DCR)				MADOT Annual Stormwater Phosphorus Load Reduction by Community, Entire Charles Watershed				DCR Annual Stormwater Phosphorus Load Reduction by Community, Entire Charles Watershed			
Community	Baseline Phosphorus Load, kg/yr	Required Stormwater Phosphorus Load reduction, kg/yr	Percent Reduction in Stormwater only Phosphorus Load (%)	Community	Baseline Stormwater Phosphorus Load, kg/yr	Required Stormwater Phosphorus Load reduction, kg/yr	Percent Reduction in Stormwater Phosphorus Load (%)	Community	Baseline Stormwater Phosphorus Load, kg/yr	Required Stormwater Phosphorus Load Reduction, kg/yr	Percent Reduction in Stormwater Phosphorus Load (%)
Arlington	106	57	53%	Arlington	0.8	0.5	-	Arlington	10	6	-
Ashland	67	22	34%	Ashland	0.3	0	-	Ashland	0	0	-
Bellingham	947	331	35%	Bellingham	46	26	-	Bellingham	0	0	-
Belmont	202	86	42%	Belmont	3	2	-	Belmont	5	2	-
Boston	6886	3545	51%	Boston	0.7	0.4	-	Boston	0.3	0.2	-
Brookline	1635	789	48%	Brookline	29	17	-	Brookline	19	8	-
Cambridge	512	263	51%	Cambridge	18	11	-	Cambridge	13	8	-
Dedham	805	325	40%	Dedham	67	37	-	Dedham	73	15	-
Dover	831	137	17%	Dover	0.1	0.0	-	Dover	35	7	-
Foxborough	2	0	0%	Foxborough	0.2	0.1	-	Foxborough	0	0	-
Franklin	2344	817	35%	Franklin	85	48	-	Franklin	58	1	-
Holliston	1543	395	26%	Holliston	18	7	-	Holliston	0	0	-
Hopedale	107	37	34%	Hopedale	6	4	-	Hopedale	0	0	-
Hopkinton	292	65	22%	Hopkinton	8	4	-	Hopkinton	0	0	-
Lexington	530	194	37%	Lexington	101	60	-	Lexington	6	1	-
Lincoln	593	101	17%	Lincoln	0.2	0.1	-	Lincoln	0	0	-
Medfield	955	277	29%	Medfield	0.3	0.1	-	Medfield	19	1	-
Medway	1063	314	30%	Medway	2	1	-	Medway	0	0	-
Mendon	29	9	32%	Mendon	3	2	-	Mendon	0	0	-
Milford	1611	663	41%	Milford	75	43	-	Milford	0.6	0.2	-
Millis	969	248	26%	Millis	0.2	0.0	-	Millis	0	0	-
Natick	1108	385	35%	Natick	25	15	-	Natick	0.2	0.1	-
Needham	1772	795	45%	Needham	68	40	-	Needham	42	2	-
Newton	3884	1940	50%	Newton	128	80	-	Newton	34	8	-
Norfolk	1004	232	23%	Norfolk	4	1	-	Norfolk	11	0.3	-
Somerville	646	331	51%	Somerville	18	11	-	Somerville	0.3	0.2	-
Sherborn	846	131	15%	Sherborn	0	0	-	Sherborn	0	0	-
Walpole	159	28	18%	Walpole	3	0.9	-	Walpole	0	0	-
Waltham	2901	1461	50%	Waltham	71	44	-	Waltham	42	15	-
Watertown	1128	582	52%	Watertown	7	4	-	Watertown	20	11	-
Wayland	46	15	33%	Wayland	10	6	-	Wayland	0	0	-
Wellesley	1431	661	46%	Wellesley	64	36	-	Wellesley	8	2	-
Weston	1174	281	24%	Weston	110	63	-	Weston	14	3	-
Westwood	376	114	30%	Westwood	18	10	-	Westwood	0.3	0.2	-
Wrentham	618	171	28%	Wrentham	46	23	-	Wrentham	12	0.2	-
Totals	39119	15805	40%	Totals	1036	599	58%	Totals	421	91	22%

Table 4: Stormwater Only Phosphorus Load Reduction Requirements for Urban Area of CRW Communities, Mass DOT and DCR

Urban Area Annual Stormwater Phosphorus Load Reduction by Municipality, Charles River Watershed (excludes required DOT and DCR)				Urban Area MADOT Annual Stormwater Phosphorus Load Reduction by Municipality, Urban Area Charles River Watershed				Urban Area DCR Annual Stormwater Phosphorus Load Reduction by Municipality, Urban Area Charles River Watershed			
Community	Baseline Watershed Phosphorus Load, kg/yr	Required Stormwater Phosphorus load reduction , kg/yr	Percent Reduction in Stormwater only Phosphorus Load (%)	Community	Baseline Stormwater Phosphorus Load, kg/yr	Required Stormwater Phosphorus load reduction, kg/yr	Percent Reduction in Stormwater Phosphorus Load (%)	Community	Baseline Stormwater Phosphorus Load, kg/yr	Required Stormwater Phosphorus load reduction , kg/yr	Percent Reduction in Stormwater Phosphorus Load (%)
Arlington	106	57	53%	Arlington	0.8	0.5	-	Arlington	10	6	-
Ashland	67	22	34%	Ashland	0.3	0.0	-	Ashland	0	0	-
Bellingham	801	291	36%	Bellingham	46	26	-	Bellingham	0	0	-
Belmont	202	86	42%	Belmont	3	2	-	Belmont	5	2	-
Boston	6886	3545	51%	Boston	1	0.4	-	Boston	0.3	0.2	-
Brookline	1635	789	48%	Brookline	29	17	-	Brookline	19	8	-
Cambridge	512	263	51%	Cambridge	18	11	-	Cambridge	13	8	-
Dedham	805	325	40%	Dedham	67	37	-	Dedham	73	15	-
Dover	282	54	19%	Dover	0.1	0.0	-	Dover	15	4	-
Foxborough	2	0	0%	Foxborough	0.2	0.1	-	Foxborough	0	0	-
Franklin	2312	813	35%	Franklin	85	48	-	Franklin	52	1	-
Holliston	1359	369	27%	Holliston	18	7	-	Holliston	0	0	-
Hopedale	107	37	35%	Hopedale	6	4	-	Hopedale	0	0	-
Hopkinton	280	65	23%	Hopkinton	8	4	-	Hopkinton	0	0	-
Lexington	525	193	37%	Lexington	101	60	-	Lexington	6	1	-
Lincoln	366	63	17%	Lincoln	0.2	0.1	-	Lincoln	0	0	-
Medfield	827	269	32%	Medfield	0.3	0.1	-	Medfield	19	1	-
Medway	1037	305	29%	Medway	2	1.0	-	Medway	0	0	-
Mendon	10	4	43%	Mendon	3	1.4	-	Mendon	0	0	-
Milford	1486	653	44%	Milford	68	40	-	Milford	1	0.2	-
Millis	501	159	32%	Millis	0.1	0.0	-	Millis	0	0	-
Natick	994	358	36%	Natick	25	15	-	Natick	0.2	0.1	-
Needham	1771	795	45%	Needham	68	40	-	Needham	42	2	-
Newton	3884	1940	50%	Newton	128	80	-	Newton	34	8	-
Norfolk	1001	231	23%	Norfolk	4	1	-	Norfolk	11	0	-
Somerville	646	331	51%	Somerville	18	11	-	Somerville	0	0	-
Sherborn	203	38	19%	Sherborn	0	0	-	Sherborn	0	0	-
Walpole	159	28	18%	Walpole	3	0.9	-	Walpole	0	0	-
Waltham	2901	1461	50%	Waltham	71	44	-	Waltham	42	15	-
Watertown	1128	582	52%	Watertown	7	4	-	Watertown	20	11	-
Wayland	46	15	33%	Wayland	10	6	-	Wayland	0	0	-
Wellesley	1431	661	46%	Wellesley	64	36	-	Wellesley	8	2	-
Weston	1174	281	24%	Weston	110	63	-	Weston	14	3	-
Westwood	346	108	31%	Westwood	18	10	-	Westwood	0.3	0.2	-
Wrentham	556	159	29%	Wrentham	44	22	-	Wrentham	8	0.2	-
Totals	36344	15351	42%	Totals	1026	595	58%	Totals	392	89	23%

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Attachment 2 to MA Small MS4 Response to Comments

Date: March 31, 2016

Subject: Updated Annual Average Phosphorus Load Export Rates (PLERs) for Use in Fulfilling Phosphorus Load Reduction Requirements in EPA Region 1 Stormwater Permits

Introduction:

This document describes the development of average annual Phosphorus Load Export Rates (PLERs) for use by permittees subject to stormwater-related phosphorus load reduction requirements in upcoming General Stormwater Permits issued by EPA Region 1 for discharges in MA and NH. This document is an update to the memo dated 4/22/2014 entitled *Annual Average Phosphorus Load Export Rates (PLERs) for Use in Fulfilling Phosphorus Load Reduction Requirements in EPA Region 1 Stormwater Permits*.

The first set of PLERs described in this document is intended to be used by **all** permittees (including Charles River communities) for accounting and tracking stormwater phosphorus load reduction credits as part of demonstrating compliance with phosphorus load reduction permit requirements. These PLERs are developed for several land use categories and provide distinct estimates of average annual phosphorus loads from directly connected impervious area (DCIA) and pervious area (PA) in each land use category. For example, PLERs for the commercial land use category consist of a PLER specific to DCIA and five other PA PLERs based on hydrologic soil conditions.

The second set of PLERs are intended to be by only those permittees that are subject to phosphorus reduction requirements **not including Charles River Phosphorus TMDLs**. For these permittees outside of the Charles River watershed, baseline phosphorus loads from their area of phosphorus control plan implementation and required phosphorus reductions can be calculated using composite PLERs discussed in this document. The composite PLERs estimate the combined average annual phosphorus load from both impervious area (IA) and PA for each specified land use group.

PLERs for calculating baseline phosphorus loads in Charles River Watershed are not discussed in this document but are described in attachment 1 to the response to comments document with the subject heading: *Overview of Methodology to Calculate Baseline Stormwater Phosphorus Loads and Phosphorus Load Reduction Requirements for Charles River Watershed – Final MA MS4 Permit*.

I. Methodology for Developing Distinct Phosphorus Load Export Rates (PLERs) for Accounting and Tracking of Phosphorus Reduction Credits

A. Summary

Table 1 presents the Distinct Phosphorus Load Export Rates for use in the Massachusetts MS4 permit. These PLERs represent estimates of the average annual phosphorus load that would be delivered from directly connected impervious and pervious surfaces for nine (9) land use categories, and are to be used for calculating phosphorus load reduction credits. Individual PLERs for DCIA and PA surfaces are provided to improve the accounting of phosphorus reduction credits for individual BMPs. In many cases BMPs are targeted to address runoff from primarily impervious surfaces. As indicated in Table 1, the DCIA PLERs for each of land use groupings are much higher than their corresponding PA PLERs because impervious surfaces generate much greater volumes of runoff than pervious surfaces and because phosphorus is more readily washed off from impervious surfaces than from pervious surfaces.

Table 1: Average Annual Phosphorus Load Export Rates for use in the MA MS4 Permit

Phosphorus Source Category by Land Use	Land Surface Cover	Phosphorus Load Export Rate, Kg/ha/yr	Comments
Commercial (Com) and Industrial (Ind)	Directly connected impervious	2.0	Derived using a combination of the Lower Charles USGS Loads study and NSWQ dataset. This PLER is approximately 75% of the HDR PLER and reflects the difference in the distributions of SW TP EMCs between Commercial/Industrial and Residential.
	Pervious	See* DevPERV	
Multi-Family (MFR) and High-Density Residential (HDR)	Directly connected impervious	2.6	Largely based on loading information from Charles USGS loads, SWMM HRU modeling, and NSWQ data set
	Pervious	See* DevPERV	
Medium -Density Residential (MDR)	Directly connected impervious	2.2	Largely based on loading information from Charles USGS loads, SWMM HRU modeling, and NSWQ data set
	Pervious	See* DevPERV	
Low Density Residential (LDR) - "Rural"	Directly connected impervious	1.7	Derived in part from Mattson Issac, HRU modeling, lawn runoff TP quality information from Chesapeake Bay and subsequent modeling to estimate PLER for DCIA (Table 14) to approximate literature reported composite rate 0.3 kg/ha/yr.
	Pervious	See* DevPERV	
Highway (HWY)	Directly connected impervious	1.5	Largely based on USGS highway runoff data, HRU modeling, information from Shaver et al and subsequent modeling to estimate PLER for DCIA for literature reported composite rate 0.9 kg/ha/yr.
	Pervious	See* DevPERV	
Forest (For)	Directly connected impervious	1.7	Derived from Mattson & Issac and subsequent modeling to estimate PLER for DCIA that corresponds with the literature reported composite rate of 0.13 kg/ha/yr (Table 14)
	Pervious	0.13	
Open Land (Open)	Directly connected impervious	1.7	Derived in part from Mattson Issac, HRU modeling, lawn runoff TP quality information from Chesapeake Bay and subsequent modeling to estimate PLER for DCIA (Table 14) to approximate literature reported composite rate 0.3 kg/ha/yr.
	Pervious	See* DevPERV	
Agriculture (Ag)	Directly connected impervious	1.7	Derived from Budd, L.F. and D.W. Meals and subsequent modeling to estimate PLER for DCIA to approximate reported composite PLER of 0.5 kg/ha/yr.
	Pervious	0.5	
*Developed Land Pervious (DevPERV)- Hydrologic Soil Group A	Pervious	0.03	Derived from SWMM and P8 - Curve Number continuous simulation HRU modeling with assumed TP concentration of 0.2 mg/L for pervious runoff from developed lands. TP of 0.2 mg/L is based on TB-9 (CSN, 2011), and other PLER literature and assumes unfertilized condition due to the upcoming MA phosphorus fertilizer control legislation.
*Developed Land Pervious (DevPERV)- Hydrologic Soil Group B	Pervious	0.13	
*Developed Land Pervious (DevPERV) - Hydrologic Soil Group C	Pervious	0.24	
*Developed Land Pervious (DevPERV) - Hydrologic Soil Group C/D	Pervious	0.33	
*Developed Land Pervious (DevPERV) - Hydrologic Soil Group D	Pervious	0.41	

Table 1 provides a brief description of the basis used to develop the land use based PLERs. The nine land use categories identified in Table 1 represent aggregated land use categories made up of land use categories identified by MassGIS and grouped according to similarities in terms of generating phosphorus loads. Appendix A below provides the cross walk between the Mass GIS land use categories and the land use groups used for calculating phosphorus loading in Table 1.

The export rates presented in Table 1 have been developed based on detailed analyses of the following types of information:

- Stormwater quality data from the National Stormwater Quality Database (NSQD, 2008) for rainfall Regions 1 and 2;
- Various stormwater quality datasets collected in New England (many sources);

- Hydrologic Response Unit (HRU) Modeling: Results of long-term (5 year) continuous hydrologic model simulations using the Stormwater Management Model (SWMM) and P8 Model (Curve Number Method) that are representative of local climatic conditions (hourly precipitation and daily temperature). These models were applied to watershed areas with homogeneous land characteristics relating to surface type (impervious or pervious), hydrologic soil condition (e.g., hydrological soil groups A, B, C and D) and vegetative cover (e.g., grass or forested).
- Various stormwater/watershed modeling efforts, including the following pollutant loading analyses:
 - o *Streamflow, Water Quality, and Contaminant Loads in the Lower Charles River Watershed, Massachusetts, 1999-2000*, Breault, et al., 2002;
 - o *Measured and Simulated Runoff to the Lower Charles River, Massachusetts, October 1999–September 2000*, Zariello and Barlow, 2002;
 - o *Calibration of Phosphorus Export Coefficients for Total Maximum Daily Loads of Massachusetts Lakes*, Mattson and Isaac, 1999;
 - o *Optimal Stormwater Management Plan Alternatives: A Demonstration Project in Three Upper Charles River Communities*, Tetra Tech, Inc., December 2009;
 - o *Updating the Lake Champlain Basin Land Use Data to Improve Prediction of Phosphorus Loading*, Troy, et al., 2007;
 - o *Literature Review of Phosphorus Export Rates and Best Management Practices, LaPlatte River Watershed Project*, Artuso, et. al., 1996;
 - o *Lake Champlain Nonpoint Source Pollution Assessment*, Budd and Meals, 1994; and
- Literature values from various sources including the *Fundamentals of Urban Runoff Management*, (Shaver, et al., 2007); *Review of Published Export Coefficient and Event Mean Concentration Data* (Lin, 1994); and the *Draft Chesapeake Stormwater Network (CSN) Technical Bulletin No. 9, Nutrient Accounting Methods to Document Local Stormwater Load Reductions in the Chesapeake Bay Watershed, Version 1.0*, (Schueler, 2011);
- Data collected by the USGS in the study of *Potential Reductions of Phosphorus in Urban Watershed using a High-Efficiency Street-Cleaning Program, Cambridge, Massachusetts*, Sorenson, 2011; and
- Sutherland models to estimate directly connected impervious area from total impervious area.

The PLERs presented in Table 1 were developed based on a weight-of-evidence approach summarized below.

- Representative stormwater quality event mean concentration (EMC) data were compiled and reviewed to determine phosphorus characteristics and relative differences among land use source types. This process was used to aid identification of appropriate groupings of land use categories for characterizing phosphorus loadings, to determine the relative strength of phosphorus loading among the various land use groups and to determine the typical magnitude of phosphorus concentrations in stormwater runoff from developed lands;
- Hydrologic Response Unit modeling was conducted to estimate average annual runoff yields and corresponding average annual PLERs for a varying stormwater phosphorus quality based on land surface type, hydrologic soil condition, vegetative cover and regional climatic conditions. The HRU modeling result assisted in developing the linkage between stormwater monitoring results that measured EMCs (mg/L) for many individual storm events and average annual PLERs (kg/ha/yr);
- For certain categories such as forested, agricultural sources and rural/open space type sources, estimates of PLERs are based both directly and indirectly on reported values from published papers and reports. For example, the PLERs for low density residential, highway and forested are based in part on reported “composite” PLERs values (i.e., represent combined influence of areas with both impervious and pervious surfaces) and subsequent HRU modeling to estimate the individual PLERs

for impervious and pervious surface within that source category. For example, the composite PLER for forested (For) of 0.13 kg/ha/yr (Mattson and Isaac, 1999) is used as a starting point, and then refined further into distinct PLERs for DCIA and PA by using continuous simulation hydrologic modeling with regional climatic data, estimated % DCIA, average % impervious associated with forested, and a typical pervious runoff total phosphorus (TP) concentration (0.1 mg/L) to estimate PLERs of 1.7 kg/ha/yr for impervious surfaces and 0.13 kg/ha/yr for pervious areas.

- Various pollutant loading studies were evaluated in combination with the HRU modeling results to assist in developing the relationship between source category phosphorus EMC data and annual loading rates. The USGS pollutant load study for the Lower Charles River, MA (Breault, et. al, 2002) provided relevant information in that it included extensive flow and quality monitoring data for each of three land use categories, medium density residential, multi-family residential and commercial. Additionally, the USGS developed and calibrated hydrologic (SWMM) models of these drainages and estimated annual phosphorus loads for the year-long flow-gauging and monitoring period (water year 2000). EPA used HRU modeling results in combination with the USGS data and the robust NSQD dataset to estimate impervious and pervious PLERs for these land use groupings.
- For all source categories included in Table 1, EPA cross-checked various sources of information to ensure that the PLERs are in reasonable agreement with other reported information related to phosphorus loading.

The distinct PLERs in Table 1 are for all permittees to estimate load reduction credits for BMPs treating runoff from varying land uses, and to provide a consistent accounting methodology that is applicable for all municipalities within a given watershed. Ultimately, the calculated reductions based on the provided PLERs are for a permittee to demonstrate compliance with its phosphorus load reduction requirements.

B. Stormwater Runoff Quality Data – Total Phosphorus Event Mean Concentrations (EMC)

EPA compiled and evaluated readily available stormwater total phosphorus (TP) event mean concentration (EMC) quality data that were and are considered to be representative of precipitation patterns in Massachusetts and the New England region in general. Results of a previous analysis of precipitation data from various precipitation gauging stations located in each of the six New England states showed that precipitation patterns among the New England States were generally consistent (Tetra Tech, 2008). Furthermore, EPA accessed and reviewed the extensive stormwater quality data available from the National Stormwater Quality Database (NSQD) compiled by Pitt for EPA (Pitt, 2008). The NSQD included storm water quality data collected from Phase 1 MS4 permittees from around the nation. However, for use in informing the development of PLERs in MA and New England, only EMC data from Rainfall Zones 1 and 2 were considered in the Region's data analysis.

Rainfall Zones 1 and 2 included New England and the northern mid-west area of the country (Zone 1), and the mid-Atlantic region (Zone 2). The vast majority of the data for Rainfall Zones 1 and 2 in the NSQD were collected in the mid-Atlantic region (Zone 2). A review of precipitation data from gauging stations located in the mid-Atlantic region (Reagan National Airport) and New England (Boston, MA) found there to be similar precipitation patterns in terms of event precipitation depth distributions and intermittent dry periods between events (See Appendix B). Therefore, EPA chose to include the EMC data from Zone 2 in order to substantially increase the size of the overall data set being evaluated, and to improve the robustness of the analyses. Inclusion of the stormwater TP EMC data collected from Zone 2 into the data analysis described below increased the number of TP EMC events analyzed from about 50 to over 1400.

In addition to the NSQD, the Region compiled readily available TP EMC data that have been collected under various projects throughout the New England Region and that were not included in the NSQD. The Regional TP EMC data were assessed separately from the NSQD in order to assess the overall representativeness of the NSQD for use in informing the development of PLERs for New England.

The primary objectives for analyzing representative stormwater TP EMC data were to:

1. Determine the typical magnitude of TP stormwater EMCs for runoff from major land use categories such as residential, commercial and industrial;
2. Evaluate the **relative** strengths of the TP EMCs among the various land use groups; and
3. Identify appropriate groupings of land use categories for characterizing phosphorus loadings.

B.1 National Stormwater Quality Data Base (NSQD)

Stormwater EMC data from the NSQD were filtered as follows:

1. EMC data for rainfall zones 1 and 2 were included;
2. Only EMC data for whole events (not first flush) were included; and
3. Only composite sampling results were included.

TP EMC data reported in the NSQD as < (less than) or < minimum reporting levels (MRL) were treated as follows:

1. < set to equal 0.01 mg/L; and
2. < MRL set to equal $\frac{1}{2}$ (MRL)

The TP EMC data were organized and summarized for 10 sets of conditions based on varying precipitation depths and duration of dry periods preceding the monitored rain events. Also, data were summarized for various predominant land use conditions identified in the NSQD. For each condition and associated land use groupings the data were summarized by:

1. Count (i.e., number of samples in the grouping);
2. Arithmetic Mean;
3. Median;
4. Geometric Mean;
5. Coefficient of Variation
6. 1st Quartile (25th Percentile);
7. 3rd Quartile (75% Percentile); and
8. Range (i.e., minimum – maximum).

These summary statistics are intended to indicate the general distribution of the data with emphasis on characterizing the values that are representative of the central portion of the distributions. As indicated above, a primary objective of estimating PLERs is to select values that are representative of **average annual** conditions for climatic conditions in the New England region. Therefore, the summary statistics for central tendency, arithmetic mean, median, and geometric mean, and the lower and upper quartiles that bracket the central portion of the distribution are of particular interest for this analysis.

A stepwise approach was performed in analyzing the NSQD TP EMC data and developing the summary information presented in Table 2 below:

Condition No. 1: Filtered TP EMC data for all storms are grouped together and separately by land use category. A comparison of median and geometric mean values for each of these land use groupings indicates that all land use groups (1 a, b, c, e, and f) with the exception of the industrial data (1 d) have

median and the geometric mean values that are very similar in magnitude (differences range from 0.00 to 0.02 mg/L). In contrast, median values for all of these groups are notably less than the corresponding arithmetic mean values (differences range from 0.10 to 0.13 mg/L). This pattern indicates these data distributions may be log-normal and that median and geometric means are likely to be better indicators of central tendency than arithmetic means. For the industrial category, the median is slightly higher than the geometric mean (difference of 0.04 mg/l) and less than the arithmetic mean (difference of 0.04).

Comparison of the TP EMCs summary statistics among the land use groupings indicate that stormwater TP EMCs for commercial and industrial groups are similar but lower in magnitude than TP EMCs for both the residential and open land groupings. As the data source for the NSQD is Phase 1 MS4s, the open land category likely represents stormwater quality of managed lands in suburban/urban environs.

Table 2: Summary of NSQD (2008) Stormwater TP EMCs data for Various Land Use Groups and Conditions

National Stormwater Quality Database, V. 3 Feb 2008, Analysis of Precipitation Events in EPA Rainfall Regions 1 and 2 - Data filtered to include only composite samples from automatic samplers. Values below detection were assumed to be 1/2 of MRL	Summary of Stormwater Event Mean Concentrations Total Phosphorus, mg/L							
	Data set description	count	arithmetic mean	median	geometric mean	Coefficient of Variation	25th %	75th%
1) Rain Region 1&2, all precip. events								
1 a) all land uses - all storm events	1435	0.36	0.25	0.24	1.45	0.15	0.41	0.01 - 10.20
1 b) all commercial & industrial	557	0.30	0.20	0.19	1.42	0.11	0.34	0.01 - 6.72
1 c) commercial & mixed commercial	329	0.33	0.20	0.20	1.57	0.12	0.36	0.01 - 6.72
1 d) industrial & mixed industrial	234	0.25	0.21	0.17	0.88	0.10	0.34	0.02 - 1.29
1 e) all residential	733	0.41	0.29	0.29	1.47	0.18	0.47	0.02 - 10.20
1 f) open	63	0.39	0.27	0.27	1.09	0.16	0.46	0.04 - 2.50
2) Rain Region 1&2								
2 a) all data - precipitation ≤ 0.5 in	659	0.39	0.26	0.25	1.50	0.16	0.44	0.01 -9.67
2 a) all data - precipitation ≤ 0.4 in	532	0.40	0.25	0.26	1.58	0.14	0.44	0.01 -9.67
2 b) all data - precipitation ≤ 0.3 in	380	0.39	0.27	0.26	1.13	0.16	0.47	0.01 - 3.67
2 c) all data - precipitation ≤ 0.2 in	224	0.40	0.26	0.27	1.05	0.16	0.47	0.01 -3.06
3) Rain Region 1&2 , precip. ≤ 0.3 in								
3 a) all data	380	0.39	0.27	0.26	1.13	0.16	0.47	0.01 -3.67
3 b) all commercial & industrial	170	0.33	0.23	0.21	1.30	0.12	0.38	0.01 -3.67
3 c) all commercial & mixed commercial	111	0.37	0.22	0.22	1.39	0.13	0.38	0.01 -3.67
3 b) all industrial & mixed industrial	62	0.28	0.23	0.20	0.85	0.12	0.38	0.03 -1.21
3 c) all residential	176	0.40	0.30	0.29	0.89	0.17	0.49	0.05 -1.98
3 d) open	10	0.60	0.31	0.36	1.21	0.22	0.67	0.04 -2.50
4) Rain Region 1&2, precip. ≤ 0.3 in, IDP ≥ 7days								
4 a) all data	68	0.49	0.36	0.33	1.09	0.20	0.58	0.03 -3.67
4 b) all commercial & industrial	29	0.50	0.30	0.29	1.42	0.14	0.50	0.03 -3.67
4 c) all residential	35	0.47	0.38	0.36	0.75	0.21	0.59	0.08 -1.45
5) Rain Region 1&2, precip. ≤ 0.3 in, IDP < 7days								
4 a) all data	119	0.38	0.26	0.26	1.28	0.17	0.38	0.03 -3.56
4 b) all commercial & industrial	48	0.32	0.25	0.22	1.37	0.12	0.36	0.03 -3.06
4 c) all residential	63	0.36	0.26	0.27	0.98	0.18	0.37	0.05 -1.98
6) Rain Region 1&2, precip. ≥ 1.0 in								
5 a) all data	229	0.37	0.29	0.29	0.84	0.20	0.43	0.02 -2.27
5 b) all commercial & industrial	99	0.22	0.15	0.16	0.91	0.10	0.27	0.02 - 1.00
5 c) all residential	165	0.39	0.30	0.30	0.87	0.20	0.44	0.02 -2.27
7) Rain Region 1&2, precip. ≥ 1.0 in, IDP ≥ 7days								
5 a) all data	41	0.36	0.26	0.26	0.90	0.16	0.42	0.03 -1.76
5 b) all commercial & industrial	14	0.23	0.18	0.17	0.89	0.10	0.27	0.03 -0.83
5 c) all residential	26	0.43	0.38	0.33	0.83	0.20	0.55	0.08 -1.76
8) Rain Region 1&2, precip. ≥ 1.0 in, IDP < 7days								
5 a) all data	107	0.29	0.24	0.24	0.65	0.16	0.36	0.02 -0.92
5 b) all commercial & industrial	31	0.25	0.16	0.18	0.89	0.11	0.32	0.06 -0.82
5 c) all residential	65	0.30	0.25	0.25	0.58	0.20	0.36	0.02 -0.92
9) Rain Region 1&2, precip. ≥ 1.5 in								
5 a) all data	129	0.32	0.26	0.23	0.98	0.14	0.39	0.02 -2.27
5 b) all commercial & industrial	43	0.19	0.13	0.13	0.99	0.08	0.23	0.02 -0.82
5 c) all residential	77	0.40	0.31	0.31	0.90	0.21	0.43	0.02 -2.27
10) Rain Region 1&2, precip. ≥ 2.0 in								
5 a) all data	75	0.29	0.23	0.21	0.89	0.12	0.38	0.02 -1.57
5 b) all commercial & industrial	29	0.19	0.11	0.12	1.01	0.07	0.24	0.02 -0.82
5 c) all residential	39	0.37	0.29	0.30	0.79	0.21	0.41	0.11 -1.57
Precip = precipitation, IDP = inter-event dry period								

Condition No. 2: TP EMC data collected from precipitation events less than 0.5 inches are analyzed to assess TP runoff quality primarily associated with impervious surfaces. Based on modeling results and reported empirical literature, small precipitation events on pervious areas are expected to generate little to no runoff. TP EMC data are evaluated using different precipitation depth thresholds of less than or equal to 0.2, 0.3, 0.4 and 0.5 inches (see Condition No. 2 in Table 2). As indicated, the results for each

of these datasets (2 a) – 2 d)) are very similar for the various depths analyzed indicating that runoff quality from impervious surfaces is generally similar for smaller sized precipitation events among the land use groups. In light of these results, and after considering typical initial abstraction values and runoff coefficients for pervious areas with varying hydrologic soil conditions (see Table 3), a depth threshold of ≤ 0.3 inches is selected for further analyses of impervious area runoff quality among the land use groupings (Condition Nos. 3, 4 and 5).

Table 3: Developed Land Pervious Area Runoff Depths based on Precipitation Depth and Hydrological Soil Groups (HSGs)			
Rainfall Depth, Inches	Runoff Depth, inches		
	Pervious HSG A/B	Pervious HSG C	Pervious HSG D
0.10	0.00	0.00	0.00
0.20	0.00	0.01	0.02
0.40	0.00	0.03	0.06
0.50	0.00	0.05	0.09
0.60	0.01	0.06	0.11
0.80	0.02	0.09	0.16
1.00	0.03	0.12	0.21
1.20	0.04	0.14	0.39
1.50	0.11	0.39	0.72
2.00	0.24	0.69	1.08

Notes: Runoff depths derived from combination of volumetric runoff coefficients from Table 5 of *Small Storm Hydrology and Why it is Important for the Design of Stormwater Control Practices*, Pitt, 1999 and using the Stormwater Management Model (SWMM) in continuous model mode for hourly precipitation data for Boston, MA, 1998-2002.

Condition No. 3: Summary statistics for TP EMC data for a precipitation depth threshold of ≤ 0.3 inches are provided for each of the land use groups. A comparison of these results with results for Condition No. 1 shows that the mean, median and geometric mean values are slightly higher than the corresponding summary statistic values for all storm events (Condition No. 1). Similar to Condition No. 1, the commercial data set and the industrial data set have similar median, geometric mean, 25th percentile and 75th percentile values. Due to the similarity of these statistics for the commercial and industrial categories in Conditions No. 1 and 3, these data sets are combined into one grouping (commercial & industrial) for all further TP EMC data analyses (Condition Nos. 4 through 10). Also, consistent with Condition No. 1, the summary statistics for residential and open land use categories are again higher than the values for commercial and industrial. However, the number of EMC samples analyzed for the open land category drop to 10 for Condition No. 3, which is significantly less than the number of samples for the other categories. Open land is excluded in further data analyses (Condition Nos. 4 through 10) because the number of TP EMC samples available further declines.

Condition Nos. 4 and 5: Further analyses of TP EMC statistics for precipitation events of ≤ 0.3 inches are accomplished by segregating the data based on the length of time between rain-events, noted as the inter-event dry period (IDP) in Table 2. The IDP is expected to be an important factor affecting impervious area runoff quality because it is the time during which pollutant build-up occurs on impervious surfaces. Based on the build-up wash-off theory related to runoff quality from impervious surfaces, pollutants continue to accumulate on impervious surfaces over time (until a maximum holding capacity is reached) of which a portion are available for potential wash-off during the next rain event (Pitt et. al, 2004). Theoretically, the longer the IDP, the higher the potential is for having increased pollutant concentrations for small precipitation events, providing there is sufficient energy (i.e., rainfall intensity) to wash-off pollutants. Based on the results for Condition Nos. 4 and 5, TP EMCs are higher for the IDP ≥ 7 for both land use groupings (commercial & industrial and residential) when compared to values for IDP ≤ 7 days. Also, again similar to Conditions Nos. 1 and 3, residential TP EMCs

statistics for $IDP \geq 7$ (Condition No. 4) are notably higher than the corresponding values for the commercial & industrial grouping.

Condition Nos. 6 through 10: Additional analyses are performed on data sets with varying precipitation depth thresholds (1.0, 1.5 and 2.0 inches) and IDP. These analyses are performed to assess the similarities and differences in stormwater TP quality among the land use groups for larger storm events where pervious runoff is likely to be contributing to TP EMCs. Following are observations from these results:

1. Statistical measures are generally consistent for the residential TP EMC data sets for all precipitation depth thresholds evaluated when not considering IDP. For example, median EMC values for depth thresholds of 0.3, 1.0, 1.5 and 2.0 inches are 0.30, 0.30, 0.31 and 0.29 mg/L, respectively. Consistency among the summary statistics for the higher precipitation depth thresholds of ≥ 1.0 , 1.5 and 2.0 inches indicates that pervious area runoff is a contributor of TP for larger storm events, since TP EMC statistic values do not change much as storm events increase in size. As discussed below, this is clearly a different pattern than is revealed by the results for the commercial & industrial group, where the summary statistics decline as precipitation depths increase.

Residential land areas are typically made-up of predominantly pervious areas, including turf with impervious areas comprised of roads, driveways and roof tops. Typically, the percent imperviousness for residential areas is in the range of 20-50% impervious. If pervious area runoff were not a notable contributor of TP, then it would be expected that TP EMCs would decline for the larger storm depths due to dilution from the larger precipitation volumes with lower TP content, and the exhaustion of the phosphorus mass available for wash-off from contributing impervious surfaces. On street surfaces, a significant portion of phosphorus is typically associated with very fine particles (< 100 microns) (Walker and Wong, 1999) which can be readily washed off during small precipitation events or the early portions of larger storms.

2. Summary statistics for the commercial & industrial group decline as precipitation depth thresholds increase. For example, median values for depth thresholds of 0.3, 1.0, 1.5 and 2.0 inches are 0.23 mg/L, 0.15 mg/L, 0.13 mg/L and 0.11 mg/L, respectively. However, the values among the higher depth thresholds of 1.0, 1.5 and 2.0 inches are generally consistent. Unlike residential areas, commercial and industrial areas are typically made up of predominantly impervious surfaces such as roads, parking lots and roof tops, (typically 60-90% impervious) with relatively little pervious area. A possible explanation for the lower TP EMCs for the higher precipitation depth thresholds is that after initial wash-off, TP EMCs decline due to dilution from rainfall with lower TP content, and because there is less phosphorus on the surfaces available for wash-off. These results also indicate that pervious runoff is less of a factor in contributing to the overall TP EMCs when compared to the results for residential areas.

B.1 Summary and Conclusions for the NSQD Analysis:

1. Summary statistics of TP EMCs for commercial and industrial areas are similar, and consequently, have been grouped together for the purposes of informing the development of PLERs;
2. Summary statistics of TP EMCs for residential land uses are notably higher than the commercial and industrial grouping for all precipitation depth thresholds evaluated;
3. For increasing precipitation depth thresholds, pervious areas in residential areas contribute TP and appear to maintain consistent TP EMC statistics even with increasing precipitation depths,

indicating that TP quality of pervious area runoff is overall fairly consistent for the precipitation depths evaluated; and

4. Ratios of the statistical measures describing the central portion of the distributions (median, geometric mean, 25th% and 75%) between the commercial & industrial grouping and the residential group are fairly consistent (see Table 4), indicating that the two distributions are proportional to one another and may be used to inform the relative magnitude of the PLERs for the two land use groups.

Table 4: Ratios of Summary Statistics for TP EMC Data of the Commercial & Industrial Group to the Residential Group					
All Precipitation Events, NSQD, 2008 (Rain Zones 1&2)	Median, mg/L	Geometric mean, mg/L	25th %, mg/L	75th %, mg/l	Average of ratio C&I:R
Commercial & Industrial (C&I)	0.21	0.21	0.12	0.37	
Residential (R)	0.28	0.29	0.18	0.44	
Ratio of C&I:R	0.75	0.72	0.67	0.84	

B.2 New England Region Stormwater TP EMC Data

Table 5 summarizes statistical measures of TP EMC collected from several investigations conducted in the New England region. These data are compiled to assess TP EMC characteristics of stormwater runoff collected in the New England region, and to assess the representativeness of the NSQD data for informing development of PLERs in MA, NH and New England. Data from the New England studies that are representative of residential and commercial land uses are compiled and analyzed to assess the representativeness of the NSQD for New England (see Table 6), and to inform the selection of PLERs. While the size of the aggregated residential and commercial data sets for New England are relatively small compared to the NSQD data sets, the statistical results of the corresponding data sets are similar, indicating that use of the NSQD to inform setting PLERs is reasonable for New England.

Table 5: Summary of Stormwater TP EMC Data for Individual Investigation in New England Region

Summary of Stormwater Event Mean Concentration (EMC) Data for Total Phosphours Collected in New England			Total Phosphorus EMC, mg/L							
Location (source)	Predominant Land Use	Station	Count (n)	arithmetic mean	median	geomean	standard deviation	25th%,	75th%	range
Lower Charles River Watershed, MA (USGS, Breault et. al., 2002)	Single-family residential	USGS -01104630	8	0.39	0.35	0.39	0.26	0.20	0.50	0.10 - 0.93
Lower Charles River Watershed, MA (USGS, Breault et. al., 2002)	Multifamily residential	USGS-01104673	8	0.24	0.25	0.24	0.13	0.10	0.33	0.10 - 0.40
Lower Charles River Watershed, MA (USGS, Breault et. al., 2002)	Commercial (01104677)	USGS-01104677	9	0.22	0.30	0.22	0.10	0.10	0.30	0.10 - 0.30
MA Highways - Low traffic volume (USGS, Smith & Granato, 2009)	Highway	Rte 119-P 424209071545201	17	0.10	0.05	0.05	0.13	0.03	0.10	0.01 - 0.51
MA Highways - Medium traffic volume (USGS, Smith & Granato, 2009)	Highway	Route 2 -P 423027071291301	18	0.13	0.12	0.09	0.10	0.05	0.16	0.01 - 0.34
MA Highways - Medium/High traffic volume (USGS, Smith & Granato, 2009)	Highway	Interstate 495 -P 422821071332001	17	0.19	0.14	0.11	0.17	0.08	0.21	0.01 - 0.68
MA Highways High traffic volume (USGS, Smith & Granato, 2009)	Highway	Interstate 95 -P 422620071153301	18	0.17	0.13	0.12	0.13	0.08	0.21	0.03 - 0.54
Englsby Watershed, Burlington, VT (UVM, J. Nipper, 2012)	Medium - High Residential	Inlet to Wet Pond	46	0.72	0.49	0.48	0.75	0.24	1.03	0.052 - 3.690
Butler Farms Subdivision - South Burlington, VT (UVM, J. Nipper, 2012)	Agriculture	Upstream in stream	36	0.175	0.164	0.150	0.094	0.115	0.195	0.024 - 0.390
Butler Farms Subdivision - South Burlington, VT (UVM, J. Nipper, 2012)	Low Residential	SW-West Pipe	17	0.103	0.084	0.086	0.068	0.055	0.091	0.034 - 0.240
Butler Farms Subdivision - South Burlington, VT (UVM, J. Nipper, 2012)	Low Residential	SW-East Pipe	11	0.071	0.054	0.062	0.040	0.041	0.093	0.030 - 0.160
Butler Farms Subdivision - South Burlington, VT (UVM, J. Nipper, 2012)	Agriculture	Downstream in stream	51	0.190	0.122	0.142	0.172	0.091	0.255	0.036 - 0.855
University of New Hampshire Parking lot near Stormwater Center	Institutional	parking lot	16	0.12	0.10	0.10	0.07	0.07	0.15	0.02 - 0.29
Tedeschi Parking Lot, Durham, NH (UNH 2011-12)	Commercial	parking lot	9	0.23	0.20	0.19	0.13	0.15	0.28	0.06 - 0.49

Table 6: Summary of Residential and Commercial Stormwater TP EMC Data – New England and NSQD, 2008

Data Set - Source	Total Phosphorus Stormwater EMC, mg/L					
	Count	Arithmetic Mean	Median	Geometric Mean	25th%	75th%
NE Region - Residential	90	0.45	0.30	0.24	0.10	0.50
NSQD, 2008 Residential	733	0.41	0.29	0.29	0.18	0.47
NE Region - Commercial	18	0.22	0.23	0.11	0.12	0.30
NSQD, 2008 – Commercial & Industrial	557	0.30	0.20	0.19	0.11	0.34

C. Hydrologic Response Unit Modeling

EPA conducted Hydrologic Response Unit (HRU) modeling for the purpose of providing a linkage between representative stormwater quality data for various land uses (measured in terms of EMCs) and average annual PLERs for impervious and pervious surfaces based on MA climatic conditions. EPA used continuous simulation hydrologic models to estimate average annual runoff yields for impervious surfaces and pervious surfaces with varying hydrologic soil (Hydrological Soil Groups (HSGs) A, B, C and D) and vegetative cover conditions. The runoff yields were then used to calculate PLERs using a range of potential representative annual flow-weighted mean stormwater total phosphorus (TP) concentrations, henceforth referred to as “annual mean TP concentrations”. For this analysis, the HRU modeling was done using the Stormwater Management Model (SWMM) and the P8 model. Hourly and daily temperature records for Boston were used as inputs to the models to reflect Massachusetts climatic conditions for the Charles River TMDL simulation period (1998-2002). This timeframe corresponds to the timeframe during which most of the other phosphorus TMDLs were prepared.

The SWMM and P8 models are both continuous simulation models capable of generating long-term estimates of runoff from impervious and pervious areas using long-term climatic records (e.g., hourly precipitation and daily temperature data). SWMM is a process driven mechanistic model that explicitly represents key hydrologic processes such as precipitation, infiltration, and evapo-transpiration. In contrast, the P8 model simulates runoff from pervious areas using the widely used empirical Curve Number Method (CN Method) developed by the Soil Conservation Service (now the Natural Resource Conservation Service, NRCS). Both models are used by EPA for developing average annual runoff yields for land areas because each offers strengths in representing varying land conditions. For example, SWMM includes infiltration sub-models that simulate the dynamics of infiltration based on soil conditions, including constantly changing percent saturation related to climatic conditions. The CN method is an empirical model that was developed based on extensive observations of runoff from varying surface types such as wooded and grassed areas with varying underlying soil characteristics.

SWMM-derived runoff yields and calculated PLERs are provided in Table 7. A range of PLERs are calculated for each surface type and associated runoff yield using stormwater annual mean TP concentrations ranging from 0.1 mg/L to 1.0 mg/L. As indicated, there are significant differences among runoff yields and associated PLERs based on surface type and hydrologic soil condition. For example, using an annual mean TP concentration of 0.3 mg/L, PLERs for pervious surfaces range from a low of 0.08 kg/ha/yr (for well drained HSG A soils) to 0.78 kg/ha/yr (for poorly drained HSG D soils), while the corresponding PLER for impervious surface is significantly higher at 2.94 kg/ha/yr. Also, the results in Table 7 illustrate the change in PLERs based on varying annual mean TP concentrations.

Table 7: SWMM Continuous Simulation Modeling Results & Estimates of PLERs for Varying Stormwater TP Concentrations

Runoff yield by SWMM hourly rainfall Boston MA (1998-2002)				Annual Phosphorus Load Export Rate (PLER), kg/ha/yr					
	MG/acre/yr	MG/ha/yr	Avg Annual Flow weighted SW TP conc., mg/l --->	0.10	0.20	0.30	0.40	0.50	1.00
Impervious surface	1.05	2.59		0.98	1.96	2.94	3.92	4.90	9.79
Pervious area HSG A	0.03	0.07		0.03	0.05	0.08	0.10	0.13	0.25
Pervious area HSG B	0.08	0.21		0.08	0.16	0.24	0.32	0.40	0.79
Pervious area HSG C	0.16	0.41		0.15	0.31	0.46	0.62	0.77	1.54
Pervious area HSG D	0.28	0.69		0.26	0.52	0.78	1.04	1.30	2.60

The P8 model is being specifically used in this analysis to supplement runoff yield estimates for forested and grassed areas with varying HSGs. Figure 1 shows average annual runoff yields derived from the P8

model for a range of runoff curve numbers. The runoff curve number is the parameter used in the CN Method to characterize watershed hydrologic features. Table 8 provides information on selecting curve numbers for different vegetative covers and HSGs, and Table 9 presents tabulated runoff yields and calculated PLERs based on the P8 modeling. As the CN method is an empirical model developed from extensive observed runoff data, the estimated runoff yields reflect volume losses due to evapo-transpiration, which can be significant for areas with complete vegetative cover. Table 10 presents the P8-generated runoff yield estimates, and a range of calculated PLERs for grassed and wooded areas for each HSG and for varying vegetative cover conditions (good, fair and the average of good and fair). As indicated by the footnote in Table 10, the concentrations used to calculate PLERs are values considered to be representative of runoff from fertilized and non-fertilized lawns, based on work done in the Chesapeake Bay region.

Figure 1: Curve Number Method - Average Annual Runoff Yield for Varying Curve Numbers - P8 Model Continuous Simulations, Boston, MA 1998-2002

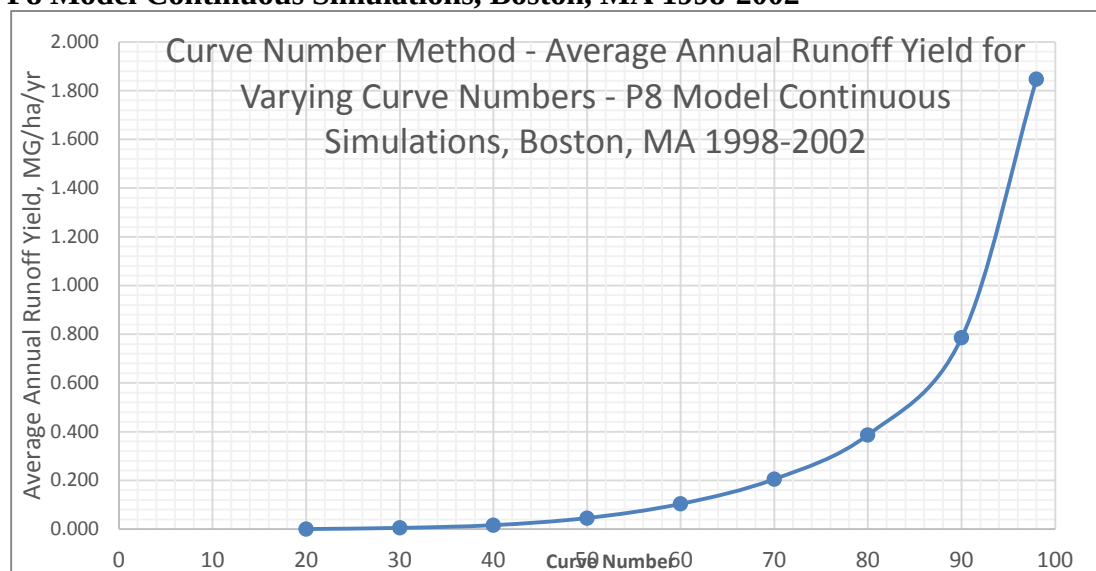


Table 8: Curve Numbers for Curve Number Method

Runoff Curve Numbers for Curve Number Method						
The specified SCS Curve Number (CN) reflects an area-weighted-average of the pervious areas, which generally reflect land cover and soil hydrologic group.						
This is a change from previous P8 versions (<=3.2), which assumed that the specified CN value also reflected indirectly connected impervious areas (see below). When input files from previous versions are read, the indirectly connected fraction is set to 0, so simulation results should not change relative to previous versions. If a distinction between pervious and indirect impervious areas is desired, the specified CN values should be revised to reflect only the pervious portions.						
The following table lists typical CN values as a function of land use, hydrologic condition, and soil group:						
Land Use	Hydrologic Condition	Hydrologic Soil Group -->	Curve Number			
			A	B	C	D
Grassed Areas	Good (>75% Cover)		39	61	74	80
	Fair		49	69	79	84
	Poor (<50% Cover)		68	79	86	89
Meadow / Idle	Good		30	58	71	78
Woods	Good (thick forest)		25	55	70	77
	Fair		36	60	73	79
	Poor (thin, no mulch)		45	66	77	83
Construction Site	Newly Graded		81	89	93	95
Impervious	Not Connected (Draining to Pervious Areas)		98	98	98	98

The runoff yield results for impervious surfaces by SWMM and P8 modeling are nearly identical at 2.59 and 2.60 MG/ha/yr, respectively. This is expected, since the methodology to calculate impervious

runoff used by both models is essentially the same. However, runoff yields calculated for pervious areas by the two models do differ notably, as indicated in Table 11. Differences in the estimates are expected because of the differences in vegetative cover and soil conditions simulated by the models. For example, estimated runoff yields from forested areas are lowest because of the greater volume losses due to interception/evapo-transpiration.

Table 9: P8 Continuous Simulation Modeling Results & Estimates of PLERs for Varying Stormwater TP Concentrations

P8 model simulations - Boston, MA hourly precipitation, 1998-2002			Average Annual Flow Weighted Total Phosphorus Concentration, mg/l							
			0.025	0.050	0.100	0.200	0.300	0.500	0.700	1.000
c u r v e n u m b e r	Curve Number, CN	Runoff yield, MG/ha-yr	Annual phosphorus load yield - kg/ha-yr							
	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	30	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02
	40	0.02	0.00	0.00	0.01	0.01	0.02	0.03	0.04	0.06
	50	0.05	0.00	0.01	0.02	0.03	0.05	0.09	0.12	0.17
	60	0.10	0.01	0.02	0.04	0.08	0.12	0.20	0.27	0.39
	70	0.21	0.02	0.04	0.08	0.16	0.23	0.39	0.54	0.78
	80	0.39	0.04	0.07	0.15	0.29	0.44	0.73	1.02	1.46
	90	0.79	0.07	0.15	0.30	0.59	0.89	1.49	2.08	2.97
	98	1.85	0.17	0.35	0.70	1.40	2.10	3.50	4.90	6.99
100%IA		2.60	0.25	0.49	0.98	1.97	2.95	4.92	6.89	9.84

Table 10: Average Annual Runoff Yields and Calculated PLERs for Wooded and Grassed Pervious Areas from P8 Continuous Simulation Modeling Results (i.e., Curve Number Method) – Boston, MA (1998 – 2002)

Curve number Method- P8 Continuous Simulation Boston, MA (1998-2002)				Annual Mean TP concentration, mg/L				
Vegetative cover	HSG	CN	Runoff yield, MG/ha/yr	0.10 Forested	0.15	0.20* grass - unfertilized	0.30 Grass -50% fertilized	0.40* grass - fertilized
				Average Annual PLER, kg/ha/yr				
Grass good	A	39	0.015	0.01	0.01	0.01	0.02	0.02
	B	61	0.113	0.04	0.06	0.09	0.13	0.17
	C	74	0.278	0.11	0.16	0.21	0.32	0.42
	D	80	0.387	0.15	0.22	0.29	0.44	0.59
Grass fair	A	49	0.042	0.02	0.02	0.03	0.05	0.06
	B	69	0.195	0.07	0.11	0.15	0.22	0.29
	C	79	0.378	0.10	0.15	0.20	0.30	0.40
	D	84	0.546	0.21	0.31	0.41	0.62	0.83
Grass avg of good & fair	A		0.029	0.01	0.02	0.02	0.03	0.04
	B		0.154	0.06	0.09	0.12	0.17	0.23
	C		0.328	0.10	0.15	0.21	0.31	0.41
	C/D		0.398	0.14	0.21	0.28	0.42	0.56
	D		0.467	0.18	0.26	0.35	0.53	0.71
Woods good	A	25	0.001	0.00	0.00	0.00	0.00	0.00
	B	55	0.080	0.03	0.05	0.06	0.09	0.12
	C	70	0.205	0.08	0.12	0.16	0.23	0.31
	D	77	0.320	0.12	0.18	0.24	0.36	0.48
Woods fair	A	36	0.002	0.00	0.00	0.00	0.00	0.00
	B	60	0.103	0.04	0.06	0.08	0.12	0.16
	C	73	0.250	0.09	0.14	0.19	0.28	0.38
	D	79	0.380	0.14	0.22	0.29	0.43	0.58

Woods avg of good & fair	A		0.002	0.00	0.00	0.00	0.00	0.00
	B		0.092	0.03	0.05	0.07	0.10	0.14
	C		0.228	0.09	0.13	0.17	0.26	0.34
	C/D		0.289	0.11	0.16	0.22	0.33	0.44
	D		0.350	0.13	0.20	0.26	0.40	0.53

*Taken from Table 8 of the *Chesapeake Stormwater Network (CSN) TECHNICAL BULLETIN No. 9-Nutrient Accounting Methods to Document Local Stormwater Load Reductions in the Chesapeake Bay Watershed, Version 1.0- REVIEW DRAFT* (Schuler, 2011),

Table 11: Average Annual Runoff yields for Pervious Areas by SWMM and Curve Number Method			
Hydrologic Soil Condition (HSG)	Average Annual Runoff Yield, MG/ha/yr		
	SWMM Pervious	CN Method - P8, Grass -Average of Good & Fair	CN Method - P8, Woods - Average of Good & Fair
A	0.067	0.029	0.002
B	0.210	0.154	0.092
C	0.407	0.328	0.228
C/D	0.547	0.397	0.289
D	0.686	0.467	0.350
Avg. A/B/C/D	0.343	0.244	0.192
MG= Million Gallons, ha = hectare			

The results of the HRU modeling are initially used with results of stormwater TP EMC data analyses and other stormwater quality information to narrow the range of PLERs for specific surfaces associated with land use categories in the New England region. For example, if the annual mean TP concentration for an industrial & commercial impervious surface is bracketed by the median and mean TP EMC values of 0.20 and 0.30 mg/L, respectively (see Table 2), then the associated PLER for this group should fall within the range of 1.96 to 2.94 kg/ha/yr (see Table 7).

D. Annual Average Phosphorus Loading Information

D.1 Phosphorus Load Export Rates

Following the Region's review of pertinent PLER information and pollutant loading studies to inform the derivation of PLERs for MA and the New England region, Table 12 presents some of the relevant PLER information considered in this analysis. As indicated, Table 12 identifies land use categories typically studied in storm water research with reported PLERs (kg/ha/yr) from land use-based research collating numerous storm water studies (2nd column) and calculated PLERs based on the results of using the Simple Method (Schueler, 1987)(6th column). The Simple Method includes an empirical runoff model, and has been widely used in the field of stormwater management as it takes into account annual rainfall, impervious cover, and stormwater TP strength to calculate annual loadings (see Appendix C). Also included in Table 12 are ranges of typical percent imperviousness of various land uses, based on general storm water research (3rd column) and average percent impervious of land uses in the Charles

River watershed, MA (discussed further below). The PLERs in Table 12 represent “composite” PLERs, which represent the combined loading from both impervious and pervious surfaces within the designated land use category.

Table 12: Annual Average Phosphorus Load Export Rates (PLERs) reported in literature and by land use using Simple Method					
Land Cover	Literature reported phosphorus load export rate kg/ha/yr ^(source)	Ranges in percent impervious values typical for various land uses (Schueler 1987 & Charles River)	Range of annual phosphorus load export rates developed using the Simple Method, Schueler, 1987 ⁽⁵⁾ kg/ha/yr	Charles River watershed percent impervious by land use (MassGIS, 2005)	Annual phosphorus load export rates for Charles River using the Simple Method, Schueler, 1987 ⁽⁵⁾ kg/ha/yr
Commercial	1.679 ⁽¹⁾	60-90%	1.17 - 2.57	61.4%	1.20
Industrial	1.455 ⁽¹⁾	60-90%	1.17 - 2.57	69.1%	1.35
High Density Residential	1.12 ⁽¹⁾	35-60%	0.80 - 1.76	43.3%	1.13
Medium Density Residential	0.56 ⁽¹⁾	20-35%	0.59 - 1.09	27.4%	0.76
Low Density Residential	0.30 ⁽³⁾	5-25.2%	0.25 – 0.71	25.2%	0.71
Agriculture	0.50 ⁽²⁾	0-7.2%	0.22 – 0.60	7.2%	0.60
Forest	0.13 ^(3&4)	0-6.2%	0.07 - 0.15	6.2%	0.15
Open Space	0.30 ⁽³⁾	0-20.4%	0.11 - 0.59	20.4%	0.59

1. Shaver, E., Horner R., Skupien J., May C., and Ridley G. 2007 Fundamentals of urban runoff management: technical and institutional issues. Prepared by the North American Lake Management Society, Madison, WI, in cooperation with the U.S. Environmental Protection Agency.

2. Budd, Lenore F. And Donald W. Meals. February 17, 1994. Draft Final Report. Lake Champlain Nonpoint Pollution Assessment.

3. Mattson, Mark D. and Russell A. Isaac. 1999. Calibration of phosphorus export coefficients for Total Maximum Daily Loads of Massachusetts's lakes. Lake Reservoir. Management, 15:209-219.

4. USEPA. 1974. Relationships between drainage area characteristics and non-point source nutrients in streams, Working Paper No. 25. National Eutrophication Survey Pacific Northwest Environmental Research laboratory, Corvallis, Oregon.

5. Schueler, Thomas R. July 1987. Controlling urban runoff; a practical manual for planning and designing urban BMPs. For this Table stormwater TP concentrations of 0.26 mg/L was used residential and open space uses, 0.20 mg/l for commercial & industrial uses, 0.5 mg/L for agriculture and 0.15 mg/L for forested.

6. Values in red are specific to the Charles River watershed, MA.

EPA determined that the composite PLERs in column 2 were reasonably representative of the New England region, based on a loading analysis that was conducted as part of developing the implementation plan for the Lower Charles River Phosphorus TMDL in MA (MassDep, 2007). The Charles River watershed analysis was conducted to gain insight into the magnitude of phosphorus source categories within watershed. The Charles analysis was conducted using GIS spatial data layers and literature reported PLERs to estimate average annual phosphorus loading for the five year TMDL

analysis period (1998-2002). The calculated net watershed load results were compared to “measured” loads to the lower Charles that were derived based on extensive information including: 1) the results of a USGS year-long investigation of watershed pollutant loads to the Lower Charles River (Breault, et. al, 2002)(Zariello and Barlow, 2002); 2) continuous flow gauging; 3) extensive water quality monitoring (dry and wet weather); 4) the application of calibrated hydrologic models developed by the USGS (Zariello, 2002) and the MWRA; and 5) a calibrated water quality model of the Charles River. Net watershed loads calculated by using the composite PLERs were found to be in very close agreement with the annual average of the P loads that were estimated, based on the more detailed and rigorous methods used for the TMDL analysis (Mass DEP and EPA, 2007).

Using the literature reported PLERs in Table 12, additional modeling analyses were conducted as part of a follow-up stormwater management optimization analyses conducted by Tetra Tech, Inc. for EPA and Mass DEP (Tetra Tech, Inc. 2009). For this study, *Optimal Stormwater Management Plan Alternatives: A Demonstration Project in Three Upper Charles River Communities*, it was necessary to estimate phosphorus loads for impervious and pervious surfaces separately for each of the land use categories.

For this analysis, the model was used to estimate PLERs for impervious areas and pervious areas by taking into account the average percent imperviousness of the land use categories in the Charles River watershed, local climatic data, and representative total phosphorus (TP) concentrations for pervious runoff (0.3 mg/L for developed land uses, 0.1 mg/L for forested). This modeling analysis resulted in estimates of impervious and pervious PLERs that, when combined, would equal the literature reported composite PLER for the given land use.

Table 13 presents the results of the continuous simulation hydrologic modeling analysis using SWMM.

Table 13: Composite Phosphorus Load Export Rates (PLERs) and estimated PLERs for impervious and pervious surfaces by land-use for the Charles River Watershed (Table 3-2 from the <i>Optimal Stormwater Management Plan Alternatives: A Demonstration Project in Three Upper Charles River Communities</i> (Tetra tech, Inc. 2009))				
Land use	TP load export rate (kg/ha/yr)	Land surface cover	Average Annual P Load Export rate (kg/ha/yr)	Source of export rate
Agriculture *	0.5	Pervious	0.5	1
Commercial **	1.679	Impervious	2.5	2
		Pervious	0.3	
Forest	0.13	Impervious	1	3
		Pervious	0.1	
Freeway	0.9	Impervious	1.5	2
		Pervious	0.3	
High-density residential	1.119	Impervious	2.5	2
		Pervious	0.3	
Industrial	1.455	Impervious	2	2
		Pervious	0.3	
Low-density residential (rural)	0.30	Impervious	1	3
		Pervious	0.15	
Medium-density residential	0.560	Impervious	1.5	2
		Pervious	0.3	
Open space	0.30	Impervious	1	3

		Pervious	0.25	

Sources: (1) Budd and Meals 1994; (2) Shaver et al. 2007; (3) Mattson and Isaac 1999

Notes:

* Agriculture includes row crops, actively managed hay fields and pasture land.

** Institutional type land uses such as government properties, hospitals, and schools are included in the commercial land use category for the purpose of calculating phosphorus loadings.

The PLER information presented in Table 13 provided insights into the relative magnitudes of PLERs among impervious and pervious surfaces for various land uses. However, EPA has continued to further evaluate and refine the results of this analysis by incorporating other information from regional loading studies, results of continuous hydrologic modeling, and the results of the stormwater TP data analyses discussed above. An additional analysis was performed considering the amount of “effective” impervious area, rather than total impervious area, in order to better estimate the contribution of DCIA and PA to the composite PLERs. Sutherland equations, for calculating the amount of DCIA based on drainage system characteristics and total impervious area, were employed to refine the estimates provided in the Tetra Tech study. For this analysis, PA PLERs were calculated based on land use, HSG distribution, HRU modeling and annual mean TP concentrations of 0.3 mg/L for developed land PA, and 0.1 mg/L for forested PA.

Table 14 provides the results of applying the Sutherland equations to estimate DCIA using the total impervious area (TIA) percentages for the Upper Charles River watershed above Watertown Dam (268 sq. mi). The results of estimating distinct PLERs for DCIA using the Sutherland equations are generally similar to the Tetra Tech estimates especially for the land uses that have higher percentages of TIA (Com, Ind, and HDR) and for which drainage systems are typically highly connected. The differences become greater for the land uses with more disconnected TIA. The purpose of this analysis is obtain deeper insight into the relative magnitudes of DCIA and PA PLERs that when combined would be of similar magnitude to the reported composite PLERs. As indicated in column 4 of Table 12, PLERs vary depending on the amount of impervious cover.

Table 14: Estimates of Distinct PLERs for DCIA in the Charles River Watershed based on Reported Composite PLERs

Land Cover	Composite Literature reported Phosphorus Load Export Rates (PLERs) kg/ha/yr.	Weighted Average Upper Charles River watershed percent TIA by land-use (Mass GIS 2007)	Sutherland Eqt. Used To Estimate Directly Connected Impervious Area (DCIA)	DCIA Eqt. description	Estimated DCIA - weighted average Upper CRW, %	DCIA PLER, kg/ha/yr.	Weighted Average Pervious Area PLER*, kg/ha/yr.	Calculated composite PLER - weighted average CRW, kg/ha/yr.
Commercial	1.679 ⁽¹⁾	62.2	DCIA=0.4(TIA) ^{1.2}	Highly connected	56.8	2.60	0.38	1.64
Industrial	1.455 ⁽¹⁾	71.1	DCIA=0.4(TIA) ^{1.2}	Highly connected	66.7	2.00	0.35	1.45
High Density Residential	1.12 ⁽¹⁾	41.5	DCIA=0.4(TIA) ^{1.2}	Highly connected	35.0	2.40	0.42	1.11
Medium Density Residential	0.56 ⁽¹⁾	28.6	DCIA=0.1(TIA) ^{1.5}	average	15.3	2.20	0.33	0.57
Low Density Residential	0.30 ⁽²⁾	22.9	DCIA=0.1(TIA) ^{1.5}	average	11.0	1.70	0.25	0.41
Freeway	0.90 ⁽¹⁾	57.9	DCIA=0.1(TIA) ^{1.5}	average	44.1	1.50	0.39	0.92
Open Space	0.30 ⁽²⁾	19.1	DCIA=0.1(TIA) ^{1.5}	average	8.3	1.70	0.25	0.32
Agriculture	0.50 ⁽³⁾	6.2	DCIA=0.01(TIA) ^{2.0}	Mostly disconnected	0.38	1.70	0.43	0.43
Forest	0.13 ⁽²⁾	2.5	DCIA=0.01(TIA) ^{2.0}	Mostly disconnected	0.06	1.70	0.14	0.14
1. Shaver, E., Homer R., Skupien J., May C., and Ridley G. 2007 Fundamentals of urban runoff management: technical and institutional issues. Prepared by the North American Lake Management Society, Madison, WI, in cooperation with the U.S. Environmental Protection Agency.								
2. Mattson, Mark D. and Russell A. Isaac. 1999. Calibration of phosphorus export coefficients for Total Maximum Daily Loads of Massachusetts's lakes. Lake Reservoir. Management, 15:209-219								
3. Budd, Lenore F. and Donald W. Meals. February 17, 1994. Draft Final Report. Lake Champlain Nonpoint Pollution Assessment.								
Notes:* Weighted average pervious area PLER is based on hydrologic soil distribution by land use in the upper Charles River Watershed (CRW), HRU modeling runoff yield results for HSG groups and annual mean TP concentrations of 0.3 mg/L for all LU categories except Ag and For where TP concentrations of 0.5 mg/L and 0.1 mg/l were used, respectively.								

D.2 USGS Lower Charles River Pollutant Loads Analysis

EPA evaluated the USGS's Lower Charles River pollutant loads and modeling studies, *Streamflow, Water Quality, and Contaminant Loads in the Lower Charles River Watershed, Massachusetts, 1999-2000* (Breault, et al., 2002), and *Measured and Simulated Runoff to the Lower Charles River, Massachusetts, October 1999–September 2000*, (Zariello and Barlow, 2002). The results of these USGS studies were particularly relevant for this analysis because they included investigations of stormwater discharges from specific land uses that involved continuous flow gauging, collection of stormwater pollutant EMC data, development and calibration of detailed hydrologic models, and estimations of annual loadings using local climatic data.

Table 15 presents annual flow yields, composite PLERs and calculated TP annual mean concentrations for dry weather flows (i.e., base flow), stormwater flows and total flow for the 9 gauging locations included in the studies. One important point to note is that the commercial site in this study was found to be highly contaminated with raw sewage from illicit discharges. This is evidenced by the extremely high PLERs for total flow and dry weather flow and the elevated PLER for stormwater flow.

Table 15: Lower Charles River Watershed Phosphorus Loading as determined by the USGS (Breault, et. al, 2002) (Zariello & Barlow, 2002)

USGS -Lower Charles Monitoring Water Year 2000 (Breault, 2002)			Water Year 2000 Flow Yields MG/ha-yr			Water Year 2000 Phosphorus Loads kg/ha/yr			Calculated WY 2000 Annual Mean (Annual Flow-Weighted) Total Phosphorus concentration, mg/l		
Sub-basin	Estimated DCIA, %	Drainage Area (ha)	Dry Weather	Stormwater	Total	Dry Weather	Stormwater	Total	Dry Weather	Stormwater	Total
Single Family Residential	17	92.2	0.26	0.51	0.77	0.18	0.43	0.62	0.19	0.22	0.21
Commercial	86	6.0	7.51	2.67	10.18	6.38	3.53	9.90	0.22	0.35	0.26
Multifamily	73	9.8	0.15	2.16	2.31	0.25	2.03	2.29	0.44	0.25	0.26
Laundry Brook	11	1217.3	0.16	0.35	0.51	0.05	0.23	0.28	0.08	0.18	0.15
Faneuil Brook	14	461.0	0.27	0.53	0.80	0.11	0.37	0.48	0.10	0.18	0.16
Muddy River	42	1636.9	0.42	1.13	1.55	0.18	0.78	0.41	0.11	0.18	0.07
Stoney Brook	19	3315.3	0.58	0.53	1.10	0.20	0.69	0.90	0.09	0.35	0.21
Charles River at Watertown Dam	N.E.*	69413.2	1.14	0.50	1.65	0.33	0.19	0.52	0.08	0.10	0.08

* Not Estimated

Using the information available from these USGS studies, together with results of the EPA HRU modeling, and the storm water quality data analyses discussed above, EPA estimated stormwater PLERs for DCIA and PA for each of the USGS land use stations and two of the smaller watershed monitoring locations, as presented in Table 16 below. EPA used the following steps to derive the impervious and pervious yields for these locations listed in Table 15 above:

1. Compile composite stormwater runoff yields (CSRY) in million gallons per hectare per year (MG/ha/yr) and phosphorus yields (CSPY) in kg/ha/yr for selected gauging/monitoring locations as reported by USGS;
2. Conduct independent continuous simulation modeling using SWMM (same model as used by USGS) to estimate the annual average impervious area runoff yield (IARY) using Boston, MA hourly precipitation data (IARY = 2.76 MG/ha/yr) (see Table 17 below);
3. Calculate pervious area runoff yield (PARY) using the following equation: $PARY = (CSRY - (DCIA * IARY)) / (1 - DCIA)$. Where DCIA = fraction of directly connected impervious area in drainage area as determined through USGS model calibration;
4. Calculate pervious area phosphorus yield (PAPY) by setting the annual flow-weighted pervious runoff TP concentration to 0.3 mg/L and multiplying by the pervious area runoff yield (see following equation): $PAPY = PARY \times 0.3 \text{ mg/L} \times (1 \text{ kg} / 1,000,000 \text{ mg}) \times (1,000,000 \text{ gal} / 1 \text{ MG}) \times (3.7854 \text{ L} / 1 \text{ gal})$. The selection of 0.3 mg/L TP is based on results of the NSQD analyses described above and representative TP EMC for turf grass areas as discussed more fully in *Calculation of Phosphorus Load Reductions for Cessation of Excessive Phosphorus Fertilization of Turf Grass in the Charles River Watershed* (Attachment 3 to the RTC). Regarding the NSQD, the median and geometric means of residential TP EMC data sets for the larger precipitation depth-thresholds ($\geq 1.0, 1.5$ and 2.0 inches) are consistent at around 0.3 mg/L. As discussed earlier, pervious runoff for larger precipitation depths in residential areas is believed to be a significant contributor to measured TP EMCs; and
5. Calculate impervious area phosphorus yield (IAPY) using following equation: $IAPY = (CSPY - ((1 - DCIA) * PAPY)) / DCIA$.

Table 16 below present estimates of annual impervious and pervious flow and phosphorus yields for water year 2000 for each of the locations.

Table 16: Estimated Impervious and Pervious PLERs for Monitored Sub-Watersheds to the Lower Charles River

USGS -Lower Charles Monitoring Water Year 2000 (Breault, 2002)			Water Year 2000 Flow Yields MG/ha/yr				Water Year 2000 Phosphorus Load Yields kg/ha/yr		
Sub-basin	Estimated DCIA	Drainage Area (ha)	Composite Stormwater Runoff Yield (CSRY) (1)	Impervious Area Runoff Yield (IARY)(2)	Calculated Pervious Area Runoff Yield(PARY)(3)	Likely Hydrological Soil Group (HSG) based on PARY	Composite Stormwater Phosphorus Yield (CSPY) (1)	Calculated Impervious Area Phosphorus Yield (IAPY)(5)	Pervious Area Phosphorus Yield(PAPY)(6)
Single Family	17%	92.2	0.51	2.76	0.05	A	0.43	2.27	0.06
Commercial	86%	6.0	2.67	2.76	2.15	N/A(4)	3.53	3.70	2.44
Multifamily	73%	9.8	2.16	2.76	0.53	C/D	2.03	2.56	0.61
Laundry Brook	11%	1217.3	0.35	2.76	0.05	A	0.23	1.65	0.05
Faneuil Brook	14%	461.0	0.53	2.76	0.16	A/B	0.37	1.49	0.19

(1) As reported by USGS in the Lower Charles Rive Load Study (Breault,2002)

(2) Derived from SWMM modeling for WY 2000 using hourly precipitation data for Boston, MA

(3) Calculated assuming runoff yield for IA is 2.76 MG/ha/yr and using: $PARY = (CSRY - (DCIA * IARY)) / (1 - DCIA)$

(4) Not Applicable -This monitoring location indicated the presence of significant non-SW sources (e.g., illicit discharge presence)

(5) Calculated assuming pervious area phosphorus yield (PAPY) = $PARY \times TP \text{ concentration of } 0.3 \text{ mg/L (CSN, 2011 \& NSQD, 2008)}$ and using : $IAPY = (CSPY - ((1 - DCIA) * PAPY)) / DCIA$

(6) $PAPY = PARY \times 0.3 \text{ mg/L} \times (1 \text{ kg} / 1,000,000 \text{ mg}) \times (1,000,000 \text{ gal} / 1 \text{ MG}) \times (3.7854 \text{ L} / 1 \text{ gal})$

Table 17: Calculated Runoff Yields using SWMM and P8 Hydrologic Models for WY 2000 and the 1998-2002 Period

Period of analysis - hourly precipitation, Boston, MA	Impervious cover -Average annual runoff yield, MG/ha/yr	
	P8 Model	SWMM Model
1998-2002	2.61	2.59
WY 2000	2.78	2.76

The calculated DCIA PLERs for the single family residential and multi-family residential stations of 2.27 and 2.56 kg/ha/yr, respectively (shown in Table 16 above), are of similar magnitude with the calculated PLERs for medium density and high-density residential (2.2 and 2.4 kg/ha/yr, respectively) that were derived from literature reported PLERs using estimates of DCIA from the Sutherland equations, as shown in Table 14 above. The relatively similar magnitude between the USGS calculated values and the literature-derived values provides added support that the literature values are reasonably representative for the New England region. Unfortunately, the presence of significant contamination at the USGS commercial monitoring station lends the results for this station not useful for informing PLERs for commercial impervious surfaces.

E. Selection of PLERs for Final MA MS4 Permit

The Region considered all of the above referenced information in deriving the PLERs for use in MA and the New England region. The purpose of this analysis was to derive PLERs that: (1) reasonably represent the magnitude of average annual phosphorus loading for land use based source categories that are present in MA watersheds; and (2) adequately characterize the **relative** magnitude among the various sources.

Table 18 below (same as Table 1 above) provides the recommended PLERs for each of the phosphorus source categories by land use and is followed by a description of the basis for selecting the PLERs.

Table 18: Average Annual Phosphorus Load Export Rates for use in the MA MS4 Permit

Phosphorus Source Category by Land Use	Land Surface Cover	Phosphorus Load Export Rate, Kg/ha/yr	Comments
Commercial (Com) and Industrial (Ind)	Directly connected impervious	2.0	Derived using a combination of the Lower Charles USGS Loads study and NSWQ dataset. This PLER is approximately 75% of the HDR PLER and reflects the difference in the distributions of SW TP EMCs between Commercial/Industrial and Residential.
	Pervious	See* DevPERV	
Multi-Family (MFR) and High-Density Residential (HDR)	Directly connected impervious	2.6	Largely based on loading information from Charles USGS loads, SWMM HRU modeling, and NSWQ data set
	Pervious	See* DevPERV	
Medium -Density Residential (MDR)	Directly connected impervious	2.2	Largely based on loading information from Charles USGS loads, SWMM HRU modeling, and NSWQ data set
	Pervious	See* DevPERV	
Low Density Residential (LDR) - "Rural"	Directly connected impervious	1.7	Derived in part from Mattson Issac, HRU modeling, lawn runoff TP quality information from Chesapeake Bay and subsequent modeling to estimate PLER for DCIA (Table 14) to approximate literature reported composite rate 0.3 kg/ha/yr.
	Pervious	See* DevPERV	
Highway (HWY)	Directly connected impervious	1.5	Largely based on USGS highway runoff data, HRU modeling, information from Shaver et al and subsequent modeling to estimate PLER for DCIA for literature reported composite rate 0.9 kg/ha/yr.
	Pervious	See* DevPERV	
Forest (For)	Directly connected impervious	1.7	Derived from Mattson & Issac and subsequent modeling to estimate PLER for DCIA that corresponds with the literature reported composite rate of 0.13 kg/ha/yr (Table 14)
	Pervious	0.13	
Open Land (Open)	Directly connected impervious	1.7	Derived in part from Mattson Issac, HRU modeling, lawn runoff TP quality information from Chesapeake Bay and subsequent modeling to estimate PLER for DCIA (Table 14) to approximate literature reported composite rate 0.3 kg/ha/yr.
	Pervious	See* DevPERV	
Agriculture (Ag)	Directly connected impervious	1.7	Derived from Budd, L.F. and D.W. Meals and subsequent modeling to estimate PLER for DCIA to approximate reported composite PLER of 0.5 kg/ha/yr.
	Pervious	0.5	
*Developed Land Pervious (DevPERV)- Hydrologic Soil Group A	Pervious	0.03	Derived from SWMM and P8 - Curve Number continuous simulation HRU modeling with assumed TP concentration of 0.2 mg/L for pervious runoff from developed lands. TP of 0.2 mg/L is based on TB-9 (CSN, 2011), and other PLER literature and assumes unfertilized condition due to the upcoming MA phosphorus fertilizer control legislation.
*Developed Land Pervious (DevPERV)- Hydrologic Soil Group B	Pervious	0.13	
*Developed Land Pervious (DevPERV) - Hydrologic Soil Group C	Pervious	0.24	
*Developed Land Pervious (DevPERV) - Hydrologic Soil Group C/D	Pervious	0.33	
*Developed Land Pervious (DevPERV) - Hydrologic Soil Group D	Pervious	0.41	

Multi-family and High-density Residential Directly Connected Impervious Area: EPA chose a PLER of 2.6 kg/ha/yr for DCIA located within multi-family and high-density residential areas. This PLER was derived based on a weight of evidence approach, considering the following information listed in order of importance:

1. EPA calculated a PLER of 2.56 kg/ha/yr (Table 16) for WY 2000 using the results of the USGS studies (Table 15), combined with EPA continuous simulation SWMM modeling (Table 7), TP EMC data analyses of the NSQD, and reported TP concentrations for lawns (Table 10).
2. A comparison of stormwater quality TP EMC data collected by the USGS at multi-family station (median 0.25 mg/L and annual average flow-weighted concentration of 0.25 mg/L) with the results of the NSQD analyses for residential areas (median = 0.28 mg/L) indicated that the data

wereof similar magnitudes (12% difference). Given the small sample size number (8) collected at this station, EPA has put more weight on the calculated annual average flow-weighted concentration, which was based on a multivariate regression analysis performed by the USGS to estimate TP EMCs for un-monitored events during WY 2000; and

3. The literature reported “composite” PLER of 1.119 kg/ha/yr (Table 12) and the subsequent modeling analyses estimated an impervious PLER of 2.4 kg/ha/yr (Table 14) by considering average percent imperviousness, estimated DCIA and local climatic data. This estimate was similar to the calculated value of 2.6 kg/ha/yr using the USGS data (8% difference). EPA chose to select the slightly higher PLER of 2.6 kg/ha/yr after considering the slightly higher median TP EMC for the residential category in the NSQD.

Commercial and Industrial Directly Connected Impervious Area: EPA chose a PLER of 2.0 kg/ha/yr for DCIA located within commercial and industrial areas. This PLER was derived based on a weight of evidence approach, considering the following information listed in order of importance:

1. The NSQD provided a robust TP EMC data set that indicates a relationship exists in the TP EMC distributions between the commercial and industrial group data set and the residential data set. As indicated by the ratios of statistical measures in Table 4 (e.g., Com. & Ind. Median: Residential Median = 0.75), the average of the ratios 0.75 was applied to the PLER of 2.6 kg/ha/yr for impervious residential to calculate the PLER for commercial and industrial impervious surfaces: $0.75 \times 2.6 \text{ kg/ha/yr} = 2.0 \text{ kg/ha/yr}$;
2. A PLER of 2.06 kg/ha/yr was calculated using the results of EPA’s continuous simulation HRU modeling (Table 7) and a TP concentration of 0.21 mg/L, which was equal to the median and geometric mean values from the NSQD analysis for the commercial and industrial data set (Table 2, Condition No. 1). This value was very similar to the PLER of 2.0 kg/ha/yr for this source category;
3. The literature reported “composite” PLER of 1.455 kg/ha/yr for industrial land use (Table 12) and the subsequent modeling analyses estimated an impervious PLER of 2.0 kg/ha/yr (Table 14). This estimate was equal to the value of 2.0 kg/ha/yr. However, the literature reported “composite” PLER of 1.679 kg/ha/yr for the commercial land use and the subsequent modeling analyses estimated a higher impervious PLER of 2.6 kg/ha/yr (Table 14), which was more similar to the residential impervious PLER. To further evaluate a commercial PLER, EPA used the SWMM continuous simulation modeling results (Table 7) and applied the median TP concentration of 0.20 mg/L from the Region’s one useable commercial site, Tedeschi parking lot – Durham, NH (Table 5), and estimated a PLER of 1.96 kg/ha/yr. This estimate agreed well with the PLER. Overall, EPA considered these results to support the DCIA PLER for this category; and
4. As part of a recently completed USGS investigation into the performance of high-efficiency street sweeping in Cambridge MA, the street dust and dirt samples were collected from a high-density residential street and commercial street. Median concentrations of phosphorus in dust and dirt on the multi-family streets were found to be 29% greater than those found on commercial streets (Sorenson, 2011). If all factors were considered equal, then this would have suggested that the residential impervious phosphorus load would have been approximately 29% higher than the commercial street load for these locations ($2.0 \text{ kg/ha/yr} \times 1.29 = 2.58$ or $\sim 2.6 \text{ kg/ha/yr}$).

Medium-Density Residential Directly Connected Impervious Area: EPA chosen a PLER of 2.2 kg/ha/yr for DCIA located within medium-density residential areas. This PLER was derived based on a weight of evidence approach, considering the following information listed in order of importance:

1. EPA calculated a PLER of 2.27 kg/ha/yr (Table 16) for WY 2000 using the results of the USGS studies (Table 15), combined with EPA continuous simulation modeling (Table 7), and reported TP concentrations for lawns (Table 10);
2. A slightly lower PLER of 2.2 was proposed after considering the composite literature value of 0.56 kg/ha/yr and the associated estimated PLER for DCIA 2.2 kg/ha/yr. Also, the USGS monitoring work was conducted in WY 2000 which had slightly higher precipitation and runoff than the average for the five year period used in the TMDL analysis, 1998 through 2002 (Table 17).

Highway Directly Connected Impervious Area: EPA chose a PLER of 1.5 kg/ha/yr for highway DCIA. This PLER was derived based on a weight of evidence approach, considering the following information listed in order of importance:

1. The literature reported “composite” PLER for highways (identified as “freeways” in Tables 12 and 14) of 0.9 kg/ha/yr, and the subsequent EPA modeling analyses that estimated a PLER for DCIA of 1.5 kg/ha/yr (Table 14);
2. The Regional TP EMC data from MA highway stormwater monitoring (Table 5) was further summarized below in Table 19. As indicated, median TP EMCs were lower for locations with lower average daily traffic counts (ADT). Excluding sites with ADTs less than 39,000, the overall median of EMC data from all sites combined was 0.14 mg/L. EPA chose to represent highways as more highly travelled (i.e., higher ADTs) in order to avoid underestimating the magnitude of phosphorus loading from this source category and, in part, because MS4s are located in more populated areas. Using the median EMC concentration of 0.14 mg/L to approximate the annual mean TP concentration together with the SWMM modeling results in Table 7 resulted in a calculated PLER for DCIA of 1.33 kg/ha/yr. EPA considered this result to be reasonably close to the PLER of 1.5 kg/ha/yr (difference of 11%) estimated by EPA in the DCIA analysis (Table 14). Given the uncertainty of how well the median TP EMC approximates the annual mean TP concentration, EPA chose the slightly higher PLER of 1.5 kg/ha/yr, which was based on continuous simulation modeling that reflects build-up and wash-off of phosphorus with local precipitation conditions.

Highway and designation	USGS Station number	Monitoring period	Annual ADT	Median TP EMC, mg/L	n
Route 119 -P	424209071545201	9/15/2005 - 7/11/2007	3,000	0.05	17
Route 119 -S	424155071543201	9/29/2005 - 7/11/2007	3,000	0.05	10
Route 2 -S	423027071291302	8/20/2006 - 8/6/2007	39,693	0.14	10
Route 2 -P	423027071291301	9/15/2005 - 8/8/2007	39,700	0.12	18
Interstate 495 -P	422821071332001	9/15/2005 - 8/8/2007	81,900	0.14	17
Interstate 495 -S	422716071343901	9/15/2005 - 9/19/2006	81,900	0.06	11
Interstate 95 -P	422620071153301	9/15/2005 - 8/8/2007	154,500	0.13	18
Interstate 95 -S	422420071153302	9/15/2005 - 8/8/2007	180,600	0.18	10

ADT= average daily traffic count

From *Quality of Stormwater Runoff Discharged from Massachusetts Highways, 2005–07*, Scientific Investigations Report 2009–5269 (Kirk P. Smith and Gregory E. Granato, 2010)

Low-Density Residential and Open Land Directly Connected Impervious Area: EPA chose a PLER of 1.7 kg/ha/yr for DCIA located within the low-density residential and open land categories. This PLER was derived based on a weight of evidence approach considering the following information listed in order of importance:

1. The literature reported “composite” PLER for rural (Mattson & Isaac) 0.3 kg/ha/yr was used to represent LDR and Open Land in this analysis. In this case, EPA used the composite rate as a starting point and has placed considerable weight on the HRU modeling and PA PLER calculations to calculate a PLER for DCIA of 1.7 kg/ha/yr (Table 14). Also, EPA theorized that the DCIA PLER for LDR and Open would likely have been higher than the DCIA PLER for highway (1.5 kg/ha/yr) because of the greater amount of vegetative matter that can accumulate on impervious surfaces from trees and lawns in these land uses; and
2. The Regional TP EMC data for the two residential sites (Table 5) indicated that the magnitude of TP EMCs of these two sites were notably lower than TP EMCs, collected at the medium and high-density residential sites by the USGS, as well as lower than the residential TP EMCs in the NSQD data set.

Forested Directly Connected Impervious Area: EPA chose a PLER of 1.7 kg/ha/yr for DCIA located within areas designated as forested and adjacent to forested areas. This PLER was derived based primarily on the literature reported “composite” PLERs of 0.13 kg/ha/yr for forests (Tables 12 and 14) and the subsequent EPA DCIA modeling analyses, which estimated a PLER of 1.7 kg/ha/yr (Table 14). In this case, EPA has placed considerable weight on the composite PLER of 0.13 kg/ha/yr for deriving this PLER because it was derived based on an extensive model calibration effort for many Massachusetts lake watersheds (Mattson and Isaac, 1999) and was equal to the average PLER calculated from runoff data collected from 13 New Hampshire forested drainages (USEPA, 1974). Also, this value fell within the probable range of 0.12 to 0.18 kg/ha/yr for forested areas as determined in a literature review of phosphorus export rates (Artuso et. al., 1996).

Forested Pervious Surfaces: EPA chose a PLER of 0.13 kg/ha/yr for forested pervious surfaces. This PLER was derived based on a weight of evidence approach considering the following information listed in order of importance:

1. The literature reported “composite” PLER for forested areas of 0.13 kg/ha/yr and the subsequent EPA HRU modeling analyses, which estimated a PLER of 0.14 kg/ha/yr (Table 14) for PA in the Charles River watershed. In this case, EPA has placed considerable weight on the composite PLER of 0.13 kg/ha/yr for deriving this PLER because it was derived based on an extensive model calibration effort for many lakes in Massachusetts (Mattson and Isaac, 1999); and
2. EPA has decided to treat the pervious area differently from the more developed land uses (e.g., HDR, Com, Ind, MDR, LDR and HWY) by proposing only one pervious PLER. This decision was based on the likelihood that pervious areas in forested areas are less managed and have greater contiguous areas with significantly greater flow-path travel lengths than more developed pervious landscapes for runoff to reach down-gradient discharge points (greater opportunity for capture and attenuation). Developed landscapes have greater amounts of impervious surface in close proximity to the pervious areas.

Developed Land Pervious Areas: EPA chose pervious area PLERs for five HSG categories as shown in Table 20. These PLERs were derived based on a weight of evidence approach considering the following information listed in order of importance:

1. Continuous simulation HRU modeling results (Table 7 and 10) were used in combination with a TP concentration of 0.2 mg/l to estimate PLERs for HSG A, B, C, C/D and D. As indicated in

Table 10, this concentration was representative of turf grass areas without phosphorus fertilizer applications based on nutrient source characterization work done for the Chesapeake Bay region. The non-fertilized TP concentration was used for these PLERs because it was expected that over time, as a result of MA's adoption of turf grass fertilizer control regulations in Massachusetts, runoff from turf grass areas would reflect phosphorus free fertilized conditions. The Massachusetts fertilizer regulations are, in part, aimed at eliminating the use of phosphorus containing fertilizer on turf grasses when it is not needed for healthy growth. The runoff yields provided in Table 20 and used to calculate the PLERs were averages of three model estimates: 1) SWMM; 2) P8 - CN Method for grass in good condition; and 3) P8 – CN method for grass in fair condition; and

2. EPA determined that specific PLERs for pervious areas based on hydrologic soil conditions within developed landscapes was needed, considering the difference in PLERs among the soil groups and the importance for characterizing the relative magnitude of loadings from various sources in a watershed that would receive treatment and reduction credits. Furthermore, pervious areas in developed areas tended to be smaller with shorter runoff path lengths to down-gradient discharge points, and thus offered less opportunity to capture or attenuate runoff flows.

Table 20: Pervious Area PLERs for Developed Lands		
Cover and Hydrologic Soil Group	Average Annual Runoff Yield, MG/ha/yr	Annual Average TP Concentration for Lawn Runoff, mg/L
		"non-fertilized"
		0.2
		Annual Phosphorus Load Export Rate(PLER), kg/ha/yr
Grass HSG A	0.041	0.03
Grass HSG B	0.172	0.13
Grass HSG C	0.354	0.27
Grass HSG C/D	0.477	0.36
Grass HSG D	0.540	0.41

Agriculture Directly Connected Impervious Area: EPA chose a PLER of 1.7 kg/ha/yr for DCIA located within areas designated as agriculture and adjacent to agricultural areas. This PLER was derived based primarily on the literature reported "composite" PLER of 0.5 kg/ha/yr for agriculture (Tables 12 and 14) and the subsequent EPA DCIA modeling analyses which estimated a PLER of 1.7 kg/ha/yr (Table 14). Also, EPA theorized that the DCIA PLER for Ag would likely be higher than the DCIA PLER for highway (1.5 kg/ha/yr) because of the greater amount of vegetative matter and soil that could accumulate on impervious surfaces adjacent to agricultural lands.

Agriculture Pervious Surfaces: EPA chose a PLER of 0.5 kg/ha/yr for agricultural pervious surfaces. This PLER was based on the literature-reported value of 0.5 kg/ha/yr.

II. Methodology for Developing Composite Phosphorus Load Export Rates For Calculating Baseline Phosphorus Load

A. Summary

Table 21 presents the Composite Phosphorus Load Export Rates for use by those permittees subject to phosphorus reduction requirements based on EPA approved phosphorus TMDLs other than the Charles Rivers phosphorus TMDLs. The composite PLERs represent estimates of the average annual phosphorus load that would be delivered from the combination of impervious and pervious surfaces for nine (9) land use categories. The permittees are to use the composite PLERs to: 1) calculate baseline annual phosphorus loading from their MS4 drainage areas tributary to the applicable TMDL waterbodies; and 2) calculate the required reduction in annual phosphorus load to be achieved by the MS4.

The nine land use categories identified in Table 21 represent aggregated land use categories or groupings made up of land use categories identified by MassGIS, and are grouped according to similarities in terms of generating phosphorus loads. Appendix A provides the cross walk between the Mass GIS land use categories and the land use groupings used for calculating phosphorus loading shown in Table 21.

Table 21: Composite Average Annual Composite Phosphorus Load Export Rates for Calculating Base Line Phosphorus Load (excluding the Charles River watershed)

Land Cover	Composite PLERs for Calculating Base Line Phosphorus Load for MA MS4, kg/ha/yr	Basis of PLER
Commercial	1.27	Derived from representative % TIA for Land use, estimated DCIA, and use of distinct PLERs of 2.0 and 0.32 kg/ha/yr for DCIA and PA, respectively
Industrial	1.42	Derived from representative % TIA for Land use, estimated DCIA, and use of distinct PLERs of 2.0 and 0.27 kg/ha/yr for DCIA and PA, respectively
High Density Residential	1.16	Derived from representative % TIA for Land use, estimated DCIA, and use of distinct PLERs of 2.6 and 0.37 kg/ha/yr for DCIA and PA, respectively
Medium Density Residential	0.55	Derived from representative % TIA for Land use, estimated DCIA, and use of distinct PLERs of 2.2 and 0.24 kg/ha/yr for DCIA and PA, respectively
Low Density Residential	0.34	Derived from representative % TIA for Land use, estimated DCIA, and use of distinct PLERs of 1.7 and 0.17 kg/ha/yr for DCIA and PA, respectively
Freeway	0.82	Derived from representative % TIA for Land use, estimated DCIA, and use of distinct PLERs of 1.5 and 0.28 kg/ha/yr for DCIA and PA, respectively
Open Space	0.29	Derived from representative % TIA for Land use, estimated DCIA, and use of distinct PLERs of 1.7 and 0.16 kg/ha/yr for DCIA and PA, respectively
Agriculture	0.50	Budd, Lenore F. and Donald W. Meals. February 17, 1994. Draft Final Report. Lake Champlain Nonpoint Pollution Assessment.
Forest	0.13	Mattson, Mark D. and Russell A. Isaac. 1999. Calibration of phosphorus export coefficients for Total Maximum Daily Loads of Massachusetts's lakes. Lake Reservoir. Management, 15:209-219.

B. Methodology

The export rates presented in Table 21 have been developed using:

- 1) Distinct PLERs described in Section I of this document;
- 2) Estimates of average total impervious area (TIA) for each land use category; and
- 3) Estimates of directly connected impervious area (DCIA) based on the Sutherland equations.

Table 22 presents the values of TIA (column 2), DCIA (column 5), DCIA-PLER (column 6) and PA-PLER (column 7) used to estimate the composite PLER (column 8) for each land use category. Also shown are literature reported composite PLERs (column 9) and recommended PLERS (column 10) for use in the Massachusetts MS4 permitting process (excluding the Charles River watershed). Composite

PLERs are calculated using the following equation:

$$\text{Composite PLER} = ((\% \text{ DCIA}/100) \times \text{DCIA PLER}) + ((100 - \% \text{ DCIA})/100) \times \text{PA-PLER}$$

Table 22: Calculated and Recommended Composite PLERs based on TIA, DCIA, and Distinct PLERs

Land Cover	Representative Total Impervious Area Percentage, %	Sutherland Eqt. Used To Estimate Directly Connected Impervious Area (DCIA)	Sutherland DCIA eqt. description	Estimated DCIA, %	DCIA PLER, kg/ha/yr	Weighted Average Pervious Area PLER*, kg/ha/yr	Calculated composite PLER, kg/ha/yr $\text{PLER} = ((\% \text{DCIA}/100) \times \text{DCIA-PLER}) + ((100 - \% \text{DCIA})/100) \times \text{PA-PLER}$	Composite Literature reported Phosphorus Export Loading Rates (kg/ha/yr)	Composite PLERs for Calculating Base Line Phosphorus Load for MA MS4, kg/ha/yr
Commercial	62	$\text{DCIA} = 0.4(\text{TIA})^{1.2}$	Highly Connected	56.6	2.00	0.32	1.27	1.679 ⁽¹⁾	1.27
Industrial	71	$\text{DCIA} = 0.4(\text{TIA})^{1.2}$	Highly Connected	66.6	2.00	0.27	1.42	1.455 ⁽¹⁾	1.42
High Density Residential	42	$\text{DCIA} = 0.4(\text{TIA})^{1.2}$	Highly Connected	35.5	2.60	0.37	1.16	1.12 ⁽¹⁾	1.16
Medium Density Residential	29	$\text{DCIA} = 0.1(\text{TIA})^{1.5}$	Average	15.6	2.20	0.24	0.55	0.56 ⁽¹⁾	0.55
Low Density Residential	23	$\text{DCIA} = 0.1(\text{TIA})^{1.5}$	Average	11.0	1.70	0.17	0.34	0.30 ⁽²⁾	0.34
Freeway	58	$\text{DCIA} = 0.1(\text{TIA})^{1.5}$	Average	44.2	1.50	0.28	0.82	0.90 ⁽¹⁾	0.82
Open Space	19	$\text{DCIA} = 0.1(\text{TIA})^{1.5}$	Average	8.3	1.70	0.16	0.29	0.30 ⁽²⁾	0.29
Agriculture	6	$\text{DCIA} = 0.01(\text{TIA})^{2.0}$	Mostly Disconnected	0.4	1.70	0.43	0.43	0.5 ⁽³⁾	0.50
Forest	3	$\text{DCIA} = 0.01(\text{TIA})^{2.0}$	Mostly Disconnected	0.1	1.70	0.12	0.12	0.13 ⁽²⁾	0.13

1. Shaver, E., Homer R., Skupien J., May C., and Ridley G. 2007 Fundamentals of urban runoff management: technical and institutional issues. Prepared by the North American Lake Management Society, Madison, WI, in cooperation with the U.S. Environmental Protection Agency.

2. Mattson, Mark D. and Russell A. Isaac. 1999. Calibration of phosphorus export coefficients for Total Maximum Daily Loads of Massachusetts's lakes. Lake Reservoir. Management, 15:209-219.

3. Budd, Lenore F. and Donald W. Meals. February 17, 1994. Draft Final Report. Lake Champlain Nonpoint Pollution Assessment.

Notes: * Weighted average pervious area PLER is based on hydrologic soil distribution by land use in the upper Charles River Watershed (CRW) upstream of Watertown Dam, HRU modeling runoff yield results for HSG groups and annual mean TP concentrations of 0.3 mg/L for all LU categories except Ag and For where TP concentrations of 0.5 mg/L and 0.1 mg/l were used, respectively.

The distinct PLERS for DCIA and PA that were developed in the previous section were used to calculate composite PLERs. Pervious area PLERs varied by land use category, based on the distribution of HSGs within the land use category. These values were calculated using the HRU modeling runoff yield results, the HSG distribution by land use category observed in the Upper Charles River watershed (upstream of Watertown Dam), and annual mean phosphorus concentration of 0.3 mg/L for PA runoff for all land use categories except forested and agriculture, for which 0.1 mg/L and 0.5 mg/l were used, respectively.

The average % TIA and distribution of HSGs by land use category from the Upper Charles River watershed are being used to represent conditions in other watersheds with urban areas tributary to phosphorus TMDL waterbodies. Currently, the MS4 drainage areas are not available to estimate actual % TIA and HSG distribution by land use for each MS4. Since much of the Upper Charles River watershed is designated as an urban area it is assumed that average % TIA and HSG distribution for the land use categories are reasonable approximations for calculating composite PLERs to be used by the MS4 for their urban areas.

A comparison of the calculated composite PLERs (Table 22. above, column 8) and the literature-reported composite PLERs (Table 22, column 9) indicates that the corresponding values are of similar magnitude. As indicated in Table 22, the calculated composite PLERs for all land use categories, except for the forest and agriculture categories, are for use in the Massachusetts MS4 permitting process. The

recommended composite PLERs for the Forest and Agriculture categories are based on the reported literature rates.

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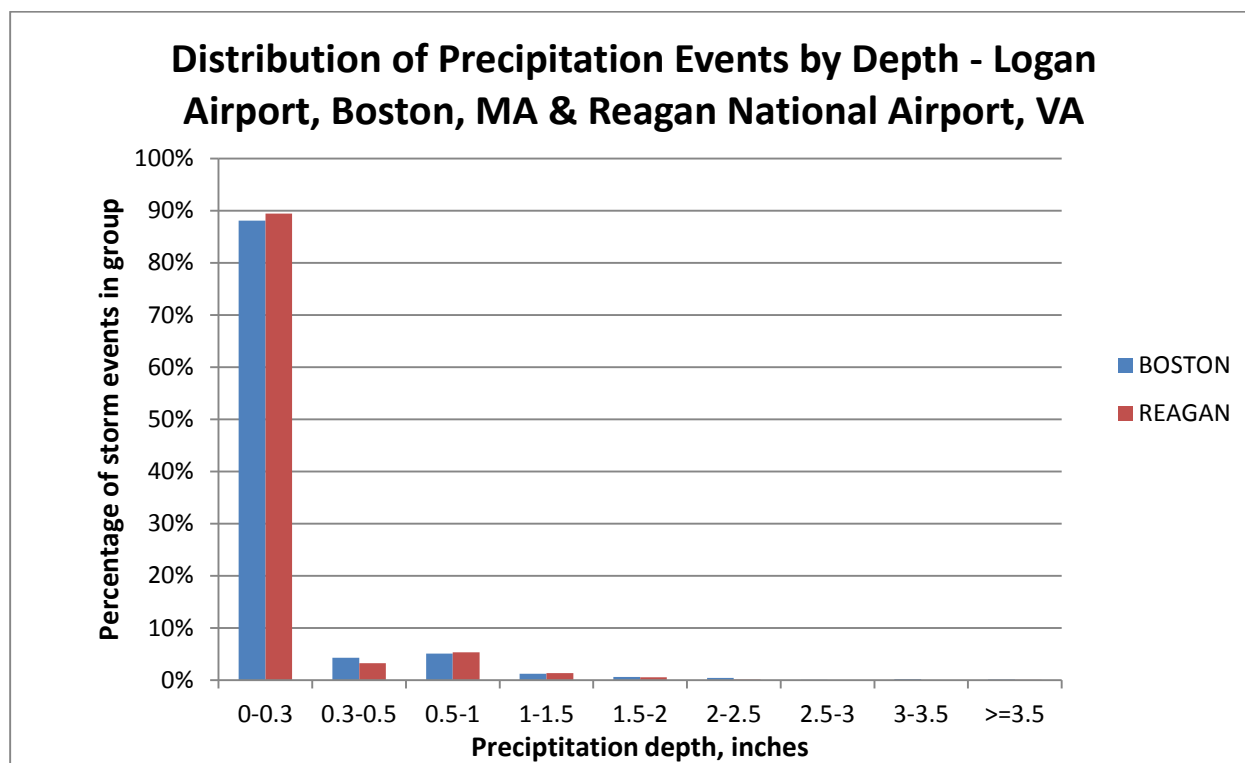
APPENDIX A**Cross-Walk between Mass GIS Land Use Categories and Land Use Groupings for Calculating Annual Phosphorus Loads for the MA MS4 Permit**

Table A1. Cross-Walk between Mass GIS Land Use Categories and Land Use Categories for Calculating Annual Phosphorus Loads for MA MS4 Permit		
Mass GIS Land Use LU_CODE	Description	Land Use Category for Calculating Annual Phosphorus Load 2013/14 MA MS4
1	Crop Land	Agriculture
2	Pasture (active)	Agriculture
3	Forest	Forest
4	Wetland	Forest
5	Mining	Industrial
6	Open Land includes inactive pasture	open land
7	Participation Recreation	open land
8	spectator recreation	open land
9	Water Based Recreation	open land
10	Multi-Family Residential	High Density Residential
11	High Density Residential	High Density Residential
12	Medium Density Residential	Medium Density Residential
13	Low Density Residential	Low Density Residential
14	Saltwater Wetland	Water
15	Commercial	Commercial
16	Industrial	Industrial
17	Urban Open	open land
18	Transportation	Highway
19	Waste Disposal	Industrial
20	Water	Water
23	cranberry bog	Agriculture
24	Powerline	open land
25	Saltwater Sandy Beach	open land

26	Golf Course	Agriculture
29	Marina	Commercial
31	Urban Public	Commercial
34	Cemetery	open land
35	Orchard	Forest
36	Nursery	Agriculture
37	Forested Wetland	Forest
38	Very Low Density residential	Low Density Residential
39	Junkyards	Industrial
40	Brushland/Successional	Forest

APPENDIX B

Comparison of Precipitation Patterns between Boston, MA and Reagan National Airport, VA



REAGAN NATIONAL AIRPORT (1998-2002)			
Precipitation depth, inches	count	Cumulative count	Percentage
0-0.3	1634	1634	89.44%
0.3-0.5	59	1693	3.23%
0.5-1	97	1790	5.31%
1-1.5	24	1814	1.31%
1.5-2	10	1824	0.55%
2-2.5	2	1826	0.11%
2.5-3	0	1826	0.00%
3-3.5	0	1826	0.00%

LOGAN AIRPORT - BOSTON, MA (1998-2002)			
Precipitation depth, inches	count	Cumulative count	Percentage
0-0.3	1609	1609	88.07%
0.3-0.5	78	1687	4.27%
0.5-1	93	1780	5.09%
1-1.5	22	1802	1.20%
1.5-2	11	1813	0.60%
2-2.5	8	1821	0.44%
2.5-3	1	1822	0.05%
3-3.5	3	1825	0.16%

>=3.5	1	1827	0.05%	>=3.5	2	1827	0.11%

Average annual rainfall, inches			Average intermittent dry period, days		
	BOSTON	Reagan		BOSTON	Reagan
1998	52.9	33.3	1998	4.0	5.1
1999	39.6	40.0	1999	4.0	4.2
2000	50.1	39.3	2000	3.3	4.0
2001	34.7	29.9	2001	3.9	4.5
2002	45.4	33.4	2002	3.3	4.6
Average	44.5	35.2	Average	3.7	4.5

APPENDIX C

Simple Method Results for Boston, MA Rainfall and Varying Annual Mean TP Concentrations

Typical land use associated with percent impervious values (1)	Percent Impervious (%)	Annual Phosphorus export rate developed from the Simple Method (Schueler 1987) (kg/ha/yr)					
		Annual Mean TP Concentration, mg/L					
		0.15	0.2	0.22	0.26	0.3	0.5
Rural residential	0	0.07	0.10	0.11	0.13	0.15	0.25
	5	0.14	0.19	0.21	0.25	0.28	0.47
	10	0.21	0.28	0.31	0.36	0.42	0.70
Large lot single family	15	0.28	0.37	0.40	0.48	0.55	0.92
	20	0.34	0.46	0.50	0.59	0.69	1.14
Medium to high density residential	25	0.41	0.55	0.60	0.71	0.82	1.37
	30	0.48	0.64	0.70	0.83	0.96	1.59
	35	0.54	0.73	0.80	0.94	1.09	1.82
Multi-family residential	40	0.61	0.82	0.90	1.06	1.22	2.04
	45	0.68	0.91	1.00	1.18	1.36	2.26
	50	0.75	0.99	1.09	1.29	1.49	2.49
	55	0.81	1.08	1.19	1.41	1.63	2.71
	60	0.88	1.17	1.29	1.53	1.76	2.93
Light commercial/industrial	65	0.95	1.26	1.39	1.64	1.90	3.16
	70	1.01	1.35	1.49	1.76	2.03	3.38
	75	1.08	1.44	1.59	1.88	2.16	3.61
	80	1.15	1.53	1.69	1.99	2.30	3.83
Heavy commercial	85	1.22	1.62	1.78	2.11	2.43	4.05
	90	1.28	1.71	1.88	2.22	2.57	4.28
	95	1.35	1.80	1.98	2.34	2.70	4.50
	100	1.42	1.89	2.08	2.46	2.84	4.73
Annual rainfall for Boston 43.5 inches used to calculate export rates							

Attachment 3 to MA Small MS4 Response to Comments

Date: March 31, 2016

Subject: Calculation of Phosphorus Load Reductions for Proper Phosphorus Fertilizer Management of Turf Grass in the Charles River Watershed and Lake TMDL Watersheds

EPA has calculated phosphorus load reductions for proper phosphorus fertilizer management of turf grass areas that drain to waters with a phosphorus TMDL. The methodology for calculating the reductions is described herein and is based on an assessment of stormwater quality data, results of continuous simulation hydrologic modeling using regional climate data, and results of studies that investigated phosphorus load reductions associated with phosphorus fertilizer bans.

This memorandum is an update to a similar memorandum developed for the draft Small Massachusetts MS4 permit and dated April 25, 2014, documenting the methodology used by EPA Region 1 to calculate phosphorus load reduction credits for proper phosphorus fertilizer management of turf grass in Charles River watershed and other lake phosphorus TMDL watersheds. The revisions incorporated in this memorandum are in response to public comments received by EPA Region 1 on the draft MS4 permit and reflect the finalization of Massachusetts Regulation 331 CMR 31, and result in minor changes to the magnitude of phosphorus load reductions associated with proper phosphorus fertilizer management to turf grasses in the Charles River watershed. In the context of this memorandum, proper phosphorus fertilizer management of turf grasses is considered to be in accordance with Massachusetts Regulation 331 CMR 31 (see <http://www.mass.gov/courts/docs/lawlib/300-399cmr/330cmr31.pdf>) and includes cessation of phosphorus fertilizer applications to turf grasses on soils that have phosphorus levels in excess of levels that are needed to support and maintain healthy turf grass growth.

To minimize administrative burden on permittees and to clarify the phosphorus load reduction requirements in the final permit, EPA has reduced the stormwater phosphorus load reduction amount for each MS4 in the final permit by the amount of reduction calculated for proper phosphorus fertilizer management of turf grasses in watersheds subject to phosphorus TMDLs. In other words, permittees will not have to perform calculations in order to get credit for proper phosphorus fertilizer management as was proposed in the draft permit; it is assumed that all applicators will comply with Massachusetts Regulation 331 CMR 31 and permittees should be given credit for this fertilizer reduction at the outset of the permit. Specific phosphorus load reductions (kg/yr) have been calculated for small MS4s in the Charles River watershed, and percent reductions (%) have been estimated to be applied to watersheds subject to lake and pond phosphorus TMDLs. Only % reductions could be estimated for the lake and pond TMDL watersheds at this time because the actual area and land use distribution of the subject lake TMDL watersheds have not yet been determined. Characterization of lake TMDL watersheds is required as part of the final permit process.

Lastly, the phosphorus load reduction estimates presented in the draft permit have been revised as a result of a change to the overall methodology to calculate baseline phosphorus loads from pervious vegetated areas. For the final permit, Hydrologic Soil Group (HSG) C is used as the default soil type for calculating average annual phosphorus loads from areas with undefined HSG soils instead of using HSG C/D, as was done for the draft permit. This change has resulted in minimal changes to estimated phosphorus load reductions associated with proper fertilizer management.

REDUCTION CALCULATIONS:

EPA estimates that the total load reduction from all turf grass areas in phosphorus TMDL watersheds associated with proper fertilizer management is approximately one third (1/3) of the average annual phosphorus load export from turf grass areas. The total turf grass area used in the calculations includes both areas that have regularly received applications of phosphorus containing fertilizers, as well as areas not regularly fertilized. Due to the lack of site- specific data for the Charles River watershed, for the final permit, EPA elects to not specifically estimate the portion of turf grass area previously receiving regular applications of phosphorus-containing fertilizers. Consequently, EPA's calculations estimate the total phosphorus load export from all turf grass areas for the Charles River TMDL period, and the likely reduction that will occur as MA's fertilizer regulation is implemented.

The phosphorus load reduction estimates are based on: 1) Estimates of total turf grass area in land use categories that are likely to have the potential to receive fertilizer applications; 2) Calculated phosphorus load export rates (PLERs) for turf grass on soils with HSGs A, B, C, C/D, and D within the Charles River watershed for the TMDL analysis period (1998-2002). The derivation of the PLERs are described in a separate attachment to the RTC (2) *Updated Average Annual Phosphorus Load Export Rates (PLERs) for Use in Fulfilling Phosphorus Load Reduction Requirements in EPA Region 1 Stormwater Permits*; and 3) Estimates of phosphorus annual mean concentrations (P AMCs) of runoff from turf grasses before and after implementation of the MA regulations for proper fertilizer management.

DERIVATION OF PHOSPHORUS LOAD REDUCTION ESTIMATES FOLLOWING P FERTILIZED BAN:

Estimates of phosphorus load reductions were derived by estimating the eventual change in phosphorus annual mean concentration (P AMC) in runoff from turf grass areas that is expected to result from proper fertilizer management, and more specifically, the cessation of applying phosphorus fertilizers to turf grass areas that do not need additional phosphorus to support and maintain healthy turf grass growth. For this analysis, EPA assumed that the average annual runoff volumes from turf grass areas pre and post implementation of MA's regulations would be equivalent because it was hypothesized

that adequate phosphorus levels would be maintained to support healthy growth of turf grasses and therefore, runoff characteristics would be the same. Therefore, the estimated load reductions associated with proper fertilizer management would be directly proportional to the change in P AMCs expected to occur from cessation of excessive phosphorus fertilization to turf grass areas.

Overall, the P AMC for runoff from turf grasses is estimated to be reduced from 0.3 mg/L to 0.2 mg/L, assuming climatic conditions consistent with the five year period of the Charles River TMDL analysis (1998-2002). The anticipated reduction in P AMCs is approximately 1/3 of the total average annual phosphorus load from turf grass areas.

EPA's selection of these P AMCs is based on weight of evidence approach described below and includes consideration of extensive information that is representative of the New England Region, as well as the considerable work done within the Chesapeake Bay program to estimate load reductions associated with proper fertilizer management.

During the development of these reduction estimates for the MA MS4 permit, the work being done in the Chesapeake Bay region is of particular interest to EPA Region 1 because it is one of the few watershed-wide analyses that has estimated long-term cumulative load reductions associated with cessation of **unnecessary** phosphorus fertilizer applications on turf grasses in the watershed. This work is summarized in the report entitled *Recommendations of the Expert Panel to Define Removal Rates for Urban Nutrient Management CBP APPROVED FINAL REPORT* by Schuler and Lane (2013).

EPA Region 1 used the information presented in Table 1 below as a starting point for calculating reductions. These values were taken from the document *Chesapeake Stormwater Network (CSN) TECHNICAL BULLETIN No. 9-Nutrient Accounting Methods to Document Local Stormwater Load Reductions in the Chesapeake Bay Watershed, Version 1.0- REVIEW DRAFT*, 2011. These values reflected analysis and evaluation of considerable amounts of information and data from numerous sources that were considered during development of a nutrient load accounting model being developed for the Chesapeake Bay watershed.

Table 1: Estimates of phosphorus concentrations for runoff from turf grass

<i>(Excerpted from Table 8: Suggested EMCs to Characterize Lawn Management in WTM Model*)</i>	
Nutrient	TP (mg/L)
Residential (general)	0.3
Excess phosphorus fertilization	0.4
No excess phosphorus fertilization	0.2

(* Table 8 Excerpted from Chesapeake Stormwater Network (CSN) TECHNICAL BULLETIN No. 9-Nutrient Accounting Methods to Document Local Stormwater Load Reductions in the Chesapeake Bay Watershed, Version 1.0- REVIEW DRAFT)

EPA Region 1 evaluated the representativeness of these values by conducting an analysis of stormwater quality data focusing on stormwater (SW) total phosphorus (TP) EMC data considered to be representative of pervious runoff from developed lands with rainfall patterns similar to Massachusetts (EPA, 2014). Additionally, EPA used watershed

modelling and loading analyses for the Charles River watershed to assess how well using fertilized and residential TP values would align with total watershed loading analyses done for the Charles River watershed and TMDL analyses. Lastly, EPA reviewed other evaluations of the benefits of phosphorus fertilizer control regulations to cross-check the Region's approach and results.

As a result of these analyses and for reasons discussed below, EPA concluded that a starting P AMC of 0.3 mg/L provided a reasonable representation of phosphorus loading in runoff from turf grasses for the Charles River TMDL analysis period and pre-implementation conditions to MA's new fertilizer regulations. Using a P AMC of 0.3 mg/L instead of 0.4 mg/L (from Table 1 "excess phosphorus fertilization") reflects the likelihood that not all turf grass area has been regularly receiving phosphorus-containing fertilizers in the Charles watershed.

The selection of 0.3 mg/l and the resulting close agreement of estimated overall phosphorus loads using this P AMC in the Charles River watershed loading analysis could be interpreted to indicate that approximately 50% of the turf grass area in the watershed has been regularly receiving phosphorus containing fertilizer applications. This value is of similar magnitude to an average turf grass fertilization rate of 61% estimated among urban, suburban, and rural households in the Boston area reported in a nation-wide study (Polsky et al. 2014). Also of interest is that research conducted in the areas of the Chesapeake Bay watershed has found that approximately 50% of turf grass area investigated was receiving regular fertilizer applications.

For post-implementation conditions of the MA fertilizer regulations, EPA chose to use a P AMC of 0.2 mg/l for turf grass runoff conditions when there is adequate but not excessive phosphorus to support healthy turf growth. Selection of this P AMC is largely based on the combination of the information presented in Table 1 and the results of continuous simulation of the Chesapeake Bay watershed model. EPA Region 1 estimates that the concentrations reported in Table 1 (and Table 8 of the CSN document (2011)) are generally in agreement with Chesapeake Bay's watershed model's results when translated into annual mean flow-weighted total phosphorus concentrations for urban pervious areas, with and without phosphorus fertilizer applications, 0.36 mg/L and 0.21 mg/L, respectively.

Furthermore, results of the Chesapeake Bay Watershed Model indicate that cessation of unnecessary phosphorus fertilizer applications to turf grass area in the watershed would result in an overall average annual phosphorus load reduction from watershed turf grass area of approximately 37 percent. EPA Region 1's load reduction estimate for all turf grass area in the Charles River watershed is of similar magnitude at 33 percent (i.e., 1/3).

EPA's stormwater EMC data analysis involved compiling EMC data collected for various land use categories from locations with similar precipitation patterns to Massachusetts (EPA Memorandum, 2016). The analysis found that median SW TP EMCs for large storms (e.g., > 1.0 inches) from residential areas were of similar magnitude to the values in Table 1. Large storm events were specifically analyzed

because high precipitation depths increase pervious area soil saturation that results in pervious area surface runoff becoming a notable contributor to measured EMCs. SW TP EMC data from residential sites was specifically reviewed because of the relevance of residential lawns to the phosphorus reduction credits in Massachusetts.

To calculate phosphorus load reductions, EPA employed the use of continuous simulation hydrologic models to estimate annual runoff yields for pervious turf grass areas specifically with HSGs A, B, C, C/D and D. Hourly and daily temperature records for Boston were used as inputs to the Stormwater Management Model (SWMM) and the P8 model to reflect Massachusetts climatic conditions for the Charles River TMDL simulation period (1998-2002).

The SWMM and P8 models are both continuous simulation models capable of generating long-term estimates of runoff from pervious areas using long-term climatic records (e.g., hourly precipitation and daily temperature data). SWMM is a process driven mechanistic model that explicitly represents key hydrologic processes such as precipitation, infiltration, and evapotranspiration. In contrast, the P8 model simulates runoff from pervious areas using the widely used empirical Curve Number Method (CN Method) developed by the Soil Conservation Service (now the Natural Resource Conservation Service, NRCS).

Both models are used for developing average annual runoff yields for turf grass areas because each offers strengths in representing varying conditions that exist in the real world. For example, SWMM includes infiltration sub-models that simulate the dynamics of infiltration based on soil conditions and constantly changing percent saturation related to climatic conditions. The CN method is an empirical model developed using extensive observations of runoff from varying surface types (including lawns) and in varying conditions. For this analysis, the simulation results of average annual runoff yields from the two models are provided in Table 2. SWMM is used to generate results for pervious areas with model input infiltration parameters that are representative of HSG A, B, C and D. P8 issued to generate results specifically for pervious lawn areas in “good” and “fair” conditions for HSGs A, B, C and D. Also, averages of the three simulated annual runoff yields for each HSG, including the average for C/D as an individual group, are included in Table 2.

Table 2: Average Annual Runoff yields for Pervious Areas by SWMM and Curve Number Method				
Hydrologic Soil Condition (HSG)	Average Annual Runoff Yield, MG/ha/yr			
	SWMM Pervious	CN Method - P8, Grass - Good Condition	CN Method - P8, Grass - Fair Condition	Overall Average
A	0.067	0.015	0.042	0.041
B	0.210	0.113	0.195	0.172
C	0.407	0.278	0.378	0.354
C/D	0.547	0.333	0.467	0.447

D	0.686	0.387	0.546	0.540
MG= Million Gallons, ha = hectare				

Consistent with the overall weight of evidence approach taken to estimate phosphorus load reductions associated with proper fertilizer management of turf grasses, EPA used the average of the annual runoff yield results from the three model simulations to calculate the PLERs for each HSG. The PLERs were calculated by multiplying the annual runoff yield by the P AMC of 0.3 mg/L (“pre MA regulation”).

The calculated PLERs are shown in Table 3. Also shown, are the calculated PLERs for the “no excess phosphorus fertilization” turf grass conditions (P AMC of 0.2 mg/L) for each HSG and the difference or estimated reduction in annual phosphorus load export rate from turf grasses due to proper fertilizer management.

Table 3: Average Annual Phosphorus Load Export Rates for Turf Grasses with Excess Phosphorus Fertilization and No Excess Phosphorus Fertilization				
Cover and Hydrologic Soil Group	Average Annual Runoff Yield, MG/ha/yr	Annual Mean TP Concentration for Lawn Runoff, mg/L		Phosphorus Load Reduction due to Proper Fertilizer Management kg/ha/yr
		"No Excess Phosphorus Fertilization"	"Excess Phosphorus Fertilization"	
		0.2	0.3	
		Annual Phosphorus Load Export Rate (PLER), kg/ha/yr		
Turf Grass HSG A	0.041	0.03	0.05	0.02
Turf Grass HSG B	0.172	0.13	0.20	0.07
Turf Grass HSG C	0.354	0.27	0.40	0.13
Turf Grass HSG C/D	0.447	0.34	0.51	0.17
Turf Grass HSG D	0.540	0.41	0.61	0.20

As indicated in Table 3, reducing the P AMC from 0.3 to 0.2 mg/L results in estimated unit area phosphorus load reduction credits of 0.02 to 0.20 kg/ha/yr for turf grass areas, depending on HSG.

It is problematic and of limited informational value to directly compare the phosphorus load reduction estimates with literature reported reduction estimates pertaining to the implementation of phosphorus-free fertilizer programs primarily because of the difference in site characteristics of the studied areas (e.g., HSG distribution, etc.), and the Charles River watershed conditions for which the load reductions are being estimated. As indicated from the discussion above, the magnitude of the reduction is dependent on the area of turf grass that previously received phosphorus containing fertilizers, the underlying hydrologic soil conditions and climatic conditions. Additionally, it is expected that the decline in soil phosphorus levels following cessation of unneeded phosphorus fertilizer applications is not instantaneous, but occurs over time. It is unknown to what extent the results of the two studies reviewed below reflect “no excess phosphorus” conditions.

In order to assess how the foundational information used for estimating load reductions in the MS4 permit aligns with literature reported information, load reductions are calculated for a hypothetical residential area to compare calculated reductions to literature reported estimates. However, for the sake of making meaningful comparisons to the reported literature, all turf grass in the hypothetical residential area has excess phosphorus levels and therefore a P AMC of 0.4 mg/L is used as the starting condition. Table 4 presents estimates of the phosphorus load reduction per unit area (1 hectare, (ha)) for a hypothetical single family residential area for varying hydrologic soil conditions. The hypothetical residential area is based on average imperviousness and percent turf grass area for the medium density residential land use category for the Upper Charles River watershed and has the following characteristics: 28.6 % percent total impervious area; 20% lawn area; and 51.4% cover of trees, shrubs and gardens. Runoff from the disconnected impervious area is assumed to be divided equally among the turf grass area and the remaining pervious area.

The results in Table 4 include the contribution of phosphorus from impervious surfaces and non-lawn pervious areas so that an overall percent reduction in phosphorus load attributable to this reduction estimate could be calculated for a single family “residential” area. Again, for this example, it is assumed that the hypothetical residential area previously applied phosphorus containing fertilizers to the lawn areas. The unit area load reduction for the specified residential area ranges from 0.01 kg/ha/yr (HSG A) to 0.11 kg/ha/yr (HSG D), while the overall percent reduction for the residential land uses ranges from 2% (HSG A) to 17% (HSG D).

Table 4. Estimated Phosphorus Load Reductions from Proper Fertilizer Management of Turf Grass in Residential Area										
Description: Single Family Residential - 28.6% Total impervious (DCIA % = 15.3%), 20% Lawn, 51.4% trees, shrubs and gardens	Area, ha	Impervious Surface PLER, kg/ha/yr***	Turf Grass Excess P Fertilization PLER kg/ha/yr*	Trees Shrub and Garden PLER, kg/ha/yr**	Total Phosphorus Load, kg/yr	Excess Phosphorus Turf Grass Area Phosphorus load, kg/yr	Turf Grass No Excess P Fertilization PLER kg/ha/yr**	Turf Grass No Excess P Fertilization Phosphorus Load, kg/yr	Estimated phosphorus Load Reduction kg/yr	Net Percent Reduction for Land Use
Hydrologic Soil Group A	1.0	2.2	0.06	0.001	0.35	0.02	0.03	0.01	0.01	2%
Hydrologic Soil Group B	1.0	2.2	0.26	0.035	0.43	0.07	0.13	0.03	0.03	8%
Hydrologic Soil Group C	1.0	2.2	0.54	0.086	0.53	0.14	0.27	0.07	0.07	14%
Hydrologic Soil Group D	1.0	2.2	0.82	0.132	0.63	0.22	0.41	0.11	0.11	17%
Hydrologic Soil Group A/B/C/D	1.0	2.2	0.42	0.063	0.49	0.11	0.21	0.06	0.06	12%
*Derived from modeling with assumed TP concentration of 0.4 mg/L for pervious runoff from turf grass with excess phosphorus fertilization. TP of 0.4 mg/L is based on NSWQ dataset, TB-9 (CSN, 2011), and other PLER literature.										
**Derived from modeling with assumed TP concentration of 0.2 mg/L for pervious runoff from turf grass with no excess phosphorus fertilization. TP of 0.2 mg/L is based on NSWQ dataset, TB-9 (CSN, 2011), Chesapeake Bay watershed modeling, and other PLER literature.										
***Derived from USGS Lower Charles studies, SWMM HRU modeling, NSWQ dataset, and other PLER literature (see EPA Region 1 PLER Methodology, 2016).										

These estimated reduction credits are of similar magnitude compared with the results presented by the Minnesota studies. If the hypothetical residential area were comprised of equal distributions of HSG A, B, C, and D soils, the overall estimated reduction would be 0.06 kg/ha/yr or 12% of the total starting load. Researchers in Minnesota estimate that phosphorus-free fertilizer use could reduce phosphorus load export rates from

residential areas (including the contribution from impervious surfaces) by 12-15% (Vlach et al, 2008). This range is on the higher end of the estimated range of load reductions for the various HSGs, but is of a similar magnitude. Overall, EPA's estimated load reductions for proper fertilizer management of turf grass appear to be in line with the limited amount of reported information. More importantly, the results of these studies confirm the potential benefit of limiting the use of phosphorus-containing fertilizers where not needed, and supports EPA's accounting of phosphorus load reductions that will likely result from MA's new fertilizer regulations.

METHOD FOR CALCULATING PHOSPHORUS LOAD REDUCTIONS FOR MS4 COMMUNITIES

EPA has adjusted the required phosphorus load reductions for 34 municipalities Charles River Watershed (CRW) to account for MA's new fertilizer regulation. The methodology used to calculate the reductions is described below.

1. Lawn Area Spatial analysis: In order to estimate phosphorus load reductions for proper fertilizer management of turf grasses within a municipality, EPA determined the average percentages of lawn cover for certain land uses in the CRW. Areas of turf grass were estimated and averaged for different land uses in the CRW by measuring turf areas in a random sampling of land use spatial data from throughout the watershed (using aerial photography and land use maps provided by Mass GIS). Land use categories were based on 2005 Mass GIS land use data. Areas within the CRW designated as combined sewer areas and DCR/DOT lands were not included in the analysis. The results of the analysis can be found in Table 5, below. From 40 land use categorizations available from Mass GIS maps, 8 land uses in Table 5 were selected to calculate phosphorus load reductions for proper fertilizer management based on (1) the relatively high percentage of turf grass area expected for these land uses and (2) the relatively high likelihood of turf grass fertilizer applications on these land uses. Additionally, industrial and commercial lands within each municipality were included in credit calculations because they make up a significant percentage of land use in many towns within the CRW; a total of 10 relevant land uses were included in load reduction calculations. Within ArcGIS, the land use category areas were further subdivided based on hydrologic soil groups (HSGs) to calculate PLERs from the land areas.

Table 5: Average lawn area percentages for relevant land use categories

Land Use Category	% Turf Grass Area
Low Density Residential (LDR)	25
Medium Density Residential (MDR)	20
Participation Recreation (Rec.)	42
Very Low Density Residential (VLDR)	16
Golf course (GC)	62
Urban Public/Institutional (Pub/inst.)	19
Multi-Family Residential (MFR)	19
High Density Residential (HDR)	5
Industrial (Ind.)	1

Commercial (Comm.)	1

2. Phosphorus Load Reduction Calculations: Proper fertilizer management phosphorus load reductions for turf grasses were calculated by summing the expected turf grass average annual phosphorus loading for all relevant land use categories within a municipality for the two conditions: 1) excess phosphorus fertilization and 2) no excess phosphorus fertilization. Average annual phosphorus loads for grass turf areas were calculated using PLERs from Table 3 for P AMCs of 0.3 mg/L (excess phosphorus fertilization) and 0.2 mg/L (no excess phosphorus fertilization), estimated area of turf grass, and the distribution of HSG for the 10 selected land use categories for each community. Estimated phosphorus load reductions were equal to the difference between the calculated loads for the two P AMCs.

The turf grass areas within each municipality were estimated by finding the total area (hectares) of each relevant land use category within the municipality and multiplying it by the average percent of turf grass area listed in Table 5. Turf grass areas within all of the selected land use categories were summed to obtain a total turf grass area within the municipality.

Table 6 below presents the results of the calculations for each community within the Charles River watershed.

3. Required Phosphorus Load Reduction Adjustments for Proper Fertilizer Management in Watershed subject to Lake/Pond Phosphorus TMDLs

EPA has calculated the change in required percent reduction that would likely result from proper fertilizer management of turf grass in watersheds subject to lake phosphorus TMDLs and for which phosphorus load reductions requirements have been included in the final permit. The results from the Charles River watershed fertilizer management analysis have been used to calculate the percent reduction change in required percent reduction requirements for MS4s subject to wasteload allocations from the phosphorus lake TMDLs. Unlike the Charles River watershed, insufficient information on the lake TMDL watersheds made it necessary to calculate relative reductions (i.e., % change) instead of absolute reductions as was done for the Charles.

The percent reduction change was determined by calculating the percentage of the total developed land phosphorus load (the load from all land use categories except agriculture, freeways, and forested) that would be reduced as a result of proper fertilizer management of turf grasses in the upper Charles River watershed. Percent reductions of developed land loads were calculated for the upper Charles communities and are presented in Table 7, below. EPA estimated that proper fertilizer management of turf grasses would reduce developed land loads by approximately 3%. Consequently, the percent phosphorus load reduction requirements for MS4 areas within lake TMDL watersheds has been reduced by 3% in the final permit.

The upper Charles watershed was selected for this analysis because it includes a wide range of development conditions that are likely to be similar to developed land conditions in lake TMDL watersheds. Calculating the percent change in developed land was used because the percent reduction phosphorus load requirement only applies to designated urban areas that are regulated under the MS4 permit.

Table 6. Estimates of Phosphorus Load Reductions for Proper Fertilizer Management of Turf Grasses for Small MS4 Municipalities in the Charles River Watershed				
Charles River watershed Community	Pervious Area of Selected Land Uses in CRW excluding Mass DOT and DCR, ha	Turf Grass Area in Charles River Watershed, ha	Percent Turf Grass, %	Ave. Annual P load reduction kg/yr
Arlington	84	6	7%	0.7
Ashland	59	11	19%	1.2
Bellingham	493	95	19%	7.3
Belmont	189	48	25%	5.0
Brookline	1294	278	22%	32.9
Cambridge	232	41	18%	5.1
Dedham	665	147	22%	14.2
Dover	699	161	23%	12.7
Foxborough	1	0	24%	0.0
Franklin	2020	480	24%	40.6
Holliston	1218	275	23%	23.6
Hopedale	89	20	23%	1.6
Hopkinton	258	62	24%	7.1
Lexington	418	92	22%	10.3
Lincoln	398	90	23%	7.7
Medfield	839	183	22%	14.8
Medway	1073	246	23%	21.4
Mendon	13	3	23%	0.2
Milford	1116	221	20%	22.9
Millis	689	166	24%	11.6
Natick	1004	210	21%	23.9
Needham	1623	272	17%	26.7
Newton	3385	602	18%	63.9
Norfolk	931	221	24%	12.2
Sherborn	490	111	23%	9.9
Somerville	187	37	20%	4.7
Walpole	134	32	24%	2.8
Waltham	1629	235	14%	26.4
Watertown	580	98	17%	12.1
Wayland	43	9	21%	0.9
Wellesley	1618	346	21%	33.5
Weston	1322	346	26%	29.8
Westwood	395	102	26%	12.2
Wrentham	436	107	24%	4.7
TOTAL	25626	5354	21%	505

Table 7. Percent Change in Developed Land P Load from Proper Fertilizer Management -Upper Charles MS4s for Use in MA Lake TMDLs.			
Charles River watershed Community	Developed Land Annual P Load, kg/yr	Proper Fertilizer Management Annual P load Reduction kg/yr	% of Developed Land (i.e., urban/suburban) P Load, %
Arlington	106	0.7	0.7%
Ashland	42	1.2	2.9%
Bellingham	619	7.3	1.2%
Belmont	147	5.0	3.4%
Brookline	233	11.3	4.9%
Dedham	638	14.2	2.2%
Dover	304	12.7	4.2%
Foxborough	0.8	0.04	5.1%
Franklin	1611	40.6	2.5%
Holliston	813	23.6	2.9%
Hopedale	77	1.6	2.1%
Hopkinton	177	7.1	4.0%
Lexington	382	10.3	2.7%
Lincoln	200	7.7	3.8%
Medfield	555	14.8	2.7%
Medway	699	21.4	3.1%
Mendon	18	0.2	1.2%
Milford	1299	22.9	1.8%
Millis	435	11.6	2.7%
Natick	775	23.9	3.1%
Needham	1541	26.7	1.7%
Newton	2257	40.6	1.8%
Norfolk	468	12.2	2.6%
Sherborn	222	9.9	4.5%
Walpole	70	2.8	4.0%
Waltham	2716	26.4	1.0%
Watertown	291	2.3	0.8%
Wayland	31	0.9	2.9%
Wellesley	1260	33.5	2.7%
Weston	671	29.8	4.4%
Westwood	256	12.2	4.7%
Wrentham	354	4.7	1.3%
TOTAL	19269	440.1	2.3%
average			2.8%
median			2.7%

REFERENCES:

EPA Region 1. 2014. Memorandum to File: *Annual Average Phosphorus Load Export Rates (PLERs) for Use in Fulfilling Phosphorus Load Reduction Requirements in EPA Region 1 Stormwater Permits.*

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