

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
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BOSTON, MASSACHUSETTS 02109-3912**

FACT SHEET

**DRAFT GENERAL PERMITS FOR STORMWATER DISCHARGES FROM
SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS IN MASSACHUSETTS**

NPDES PERMIT NUMBERS:

- MAR041000 –Traditional cities and towns
- MAR042000 – Non-traditional state, federal, county and other publicly owned systems
- MAR043000 – Non-traditional transportation systems

PUBLIC COMMENT PERIOD: November 22, 2024 – February 20, 2025

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1.0 Introduction and Program Background

1.1 Proposed Action

The United States Environmental Protection Agency Region 1 (“EPA” or “the Region”) is proposing to reissue three National Pollutant Discharge Elimination System (NPDES) general permits for the discharge of stormwater from Small Municipal Separate Storm Sewer Systems (MS4s) to waters within the Commonwealth of Massachusetts. The General Permit will apply to traditional cities and towns; state and federal MS4s; and state transportation agencies (except for MassDOT-Highway Division).

EPA issued its first general permit to address stormwater discharges from small MS4s in Massachusetts on May 1, 2003 (2003 MA MS4 permit). The 2003 MA MS4 permit, which expired in 2008, required small MS4s to develop and implement stormwater management programs (SWMP) designed to control pollutants to the maximum extent practicable and protect water quality. EPA reissued the general permit for small MS4s in Massachusetts on April 4, 2016 (2016 MA MS4 permit). The 2016 MA MS4 permit became effective on July 1, 2018. EPA finalized modifications to the 2016 MA MS4 permit on December 7, 2020. The “2016 MA MS4 permit” in the Draft Permit and Fact Sheet refers to the Final 2016 Massachusetts Small MS4 Permit including 2020 Modifications.

This permit is three (3) separate general permits, referred to collectively as “the Permit” or “Draft Permit” in this document: one for systems owned by cities and towns; one for systems owned by a state, county or the United States; and one for systems owned by state transportation agencies (except MassDOT-Highway Division). Each general permit is applicable to particular entities within Massachusetts. Many of the Draft Permit’s provisions contain language and conditions that are applicable across all regulated entities, and therefore are presented just once in Parts 1 through 4 and Appendices A through J. The Draft General Permit consists of the following parts:

Part 1: Introduction

Part 2: Permit Conditions and Effluent Limitations

Part 3: Permit Conditions and Effluent Limitations Specific to Non-Traditional MS4s

Part 4: Program Evaluation, Record Keeping and Reporting

Appendix A – Definitions, Abbreviations, and Acronyms

Appendix B – Standard Permit Conditions Applicable to All Authorized Discharges

Appendix C – Endangered Species Act Eligibility Guidance

Appendix D – National Historic Preservation Act Eligibility Guidance

Appendix E – Information Required for the Notice of Intent (NOI)

Appendix F – Requirements for MA Small MS4s Subject to Approved TMDLs

Appendix G – Impaired Waters Monitoring Parameter Requirements

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

Appendix I – Required Illicit Discharge Detection and Elimination (IDDE) Program Components

Appendix J – New Permittee Requirements to Reduce Pollutants to the Maximum Extent Practicable

1.2 Program Background

The goal of the Clean Water Act is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” Clean Water Act (CWA) § 101(a), 33 U.S.C. § 1251(a); *see also id.* §§ 1251(a)(1) (“national goal that the discharge of pollutants into the navigable waters be eliminated by 1985”), (a)(2) (“national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983”).

In 1987, Congress amended the Clean Water Act to better regulate stormwater discharges. 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...and such other provisions as the Administrator ...determines appropriate for the control of such pollutants.” CWA §§ 402(p)(3)(B)(ii)-(iii).

On December 8, 1999, EPA promulgated “Phase II” stormwater regulations to address stormwater discharges from small municipal separate storm sewer systems (“small MS4s”) and construction sites that disturb one to five acres. See 64 Fed. Reg. 68722. Small MS4s are defined at 40 CFR § 122.26(b)(16):

Small municipal separate storm sewer system means all separate storm sewers that are:

- (i) Owned or operated by the United States, a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes including special districts under State law such as a sewer, flood control district or drainage district, or similar entity or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of United States.
- (ii) Not defined as “large” or “medium” municipal separate storm sewer systems pursuant to [40 CFR § 122.26(b)(4) or (b)(7)] or designated under [40 CFR § 122.26(a)(1)(v)].
- (iii) This term includes systems similar to separate storm sewer systems in municipalities such as military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

Additional examples of municipal systems that could be subject to regulation include regional school districts and state universities located within an urbanized area.

Section 402(p)(3)(B) of the CWA establishes NPDES permit standards for discharges from MS4s, including: (1) permits may be issued on a system or jurisdiction-wide basis; (2) permits must include a requirement to effectively prohibit non-stormwater discharges into the storm sewers; and (3) permits must require control to reduce pollutant discharges to the maximum extent practicable, including best management practices, and other provisions as the Administrator or the States determine to be appropriate for the control of such pollutants. Section 402(p)(3)(B)(iii) of the CWA also authorizes EPA to require “...such other provisions as the Administrator or the State determines appropriate for the control of such pollutants.” This provision forms a basis for imposing water quality-based effluent limitations (WQBELs). See *Defenders of Wildlife v. Browner*, 191 F.3d 1159 (9th Cir. 1999): see also EPA’s preamble to the Phase II regulations, 64 Fed. Reg. 68722, 68753, 68788 (Dec 8, 1999). Part 2.3 of the Draft Permit sets forth the requirements for the MS4 to reduce pollutants in discharges to the maximum extent practicable to protect water quality consistent with CWA § 402(p)(3)(B)(iii) and 40 CFR § 122.34(a), including the minimum control measures specified in 40 CFR § 122.34(b). EPA maintains that implementation of best management practices (BMPs)¹ is generally appropriate for reducing pollutants and controlling stormwater runoff from the MS4 to meet water quality standards. Pursuant to 40 CFR § 122.44(k), the Draft Permit requires permittees to control stormwater discharges through BMPs, including development and implementation of a comprehensive stormwater management program (SWMP) as the mechanism to achieve the required pollutant reductions.

Maximum extent practicable (MEP) is the statutory standard that describes the level of pollutant reduction that MS4 operators must achieve, but also includes a recognition that the effort may be increased under some circumstances. Neither the CWA nor the stormwater regulations provide a specific definition of MEP. See 64 Fed. Reg. 68754. EPA intentionally did not provide a precise definition to allow maximum flexibility in MS4 permitting, providing MS4s the necessary flexibility to optimize reductions in stormwater pollutants on a site-specific, case-by-case basis and allowing permittees to tailor appropriate BMPs to satisfy the requirements of the Draft Permit through an evaluative process. EPA views the MEP standard in the CWA as an iterative process. MEP should continually adapt to current conditions and BMP effectiveness. EPA believes that compliance with the requirements in Part 2.3 of this Draft Permit will meet the MEP standard of the CWA and the stormwater regulations. The iterative process enables permittees to develop a program consistent with specific permit requirements, implement the program, evaluate the effectiveness of BMPs included as part of the program, revise those parts of the program that are not effective at controlling pollutants, implement necessary revisions, and then repeating the process of evaluation and revisions until water quality standards are attained. The requirements in this Draft Permit reflect this iterative process in that there are both permit

¹ Best Management Practices (BMPs) are defined at 40 CFR § 122.2 to mean “schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of ‘waters of the United States.’ BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage, or leaks. Sludge or waste disposal, or drainage from raw material storage.” Throughout the Draft Permit and Fact Sheet, EPA generally uses “BMP” to refer to non-structural activities and “stormwater control measure” (“SCM”) to refer to structural stormwater treatment technologies.

conditions carried forward from the previous reissuance as well as new requirements that represent the next stage in management of stormwater runoff.

Stormwater runoff from land modified by human activity can harm surface water resources and, in turn, cause or contribute to an exceedance of water quality standards by changing natural hydrologic patterns, accelerating stream flow, impacting aquatic habitat, and elevating pollutant loading by mobilizing high levels of contaminants such as sediment, nutrients, heavy metals, pathogens, toxins, and floatables. See 64 Fed. Reg. 68724. Implementing MEP-level controls will make substantial progress towards reducing or eliminating exceedances of water quality standards. EPA expects that, in many cases, implementation of the six minimum measures as required by this permit will meet water quality standards without additional limitations or conditions. However, MEP-level controls alone are unlikely to sufficiently address stormwater-based exceedances of water quality standards in certain circumstances, such as discharges to a waterbody that is impaired for, or subject to a total maximum daily load (TMDL) for, a pollutant commonly associated with stormwater runoff. Consequently, EPA has determined that it is necessary and appropriate, in accordance with CWA § 402(p)(3)(B)(iii), to include additional, focused water quality-based requirements in the Draft Permit. Parts 2.1 and 2.2 of the Draft Permit establishes these water quality-based requirements, explained in detail in Part II.D of this Fact Sheet, which EPA has determined are necessary and appropriate under the CWA.

1.3 Comment Period, Hearing Requests, and Procedures for Final Decisions

All persons, including applicants, who believe any condition of the Draft Permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period. EPA will accept comments on all aspects of the new Draft Permit. A public hearing will also be held; information is provided in the Federal Register Notice of Availability of this Draft Permit and Fact Sheet.

Interested parties may send comments on the Draft Permit identified by **Docket ID No. EPA-R01-OW-2024-0493**, by the close of the public comment period. EPA recommends interested parties to submit comments using the Federal eRulemaking Portal at <https://www.regulations.gov/> using the Docket ID listed above in the search bar. Follow the online instructions for submitting comments.

Interested parties that cannot access the Federal eRulemaking Portal may also submit comments via email to gaito.danielle@epa.gov and include “Comments on the Draft MA Small MS4 Permit” in the subject line or by mail: U.S. EPA Region 1, Water Division, Attn: Danielle Gaito, 5 Post Office Square, Suite 100, Mail Code 06-4, Boston, Massachusetts 02109-3912. If comments are submitted in hard copy form, please also email a copy to gaito.danielle@epa.gov.

The new Draft Permit completely supersedes the previous Draft Permits covering Massachusetts, and EPA is providing an entirely new comment period under 40 CFR § 124.10. Consequently, all persons who believe any condition of the new Draft Permit is inappropriate must raise all

reasonably ascertainable issues and submit all reasonably available arguments supporting their position during this public comment period (including the public hearing). All comments must pertain to this new Draft Permit, and the Region will not consider in this proceeding comments that were submitted in response to the previous draft permits.

A virtual public meeting and public hearing on the Draft Permit will be held on:

DATE: Tuesday January 28, 2025

TIME: 6:30 pm

LOCATION: Virtual Meeting Information will be provided on EPA's website at:

<https://www.epa.gov/npdes-permits/massachusetts-draft-individual-npdes-permits>

In reaching a final decision on the Draft Permit, EPA will respond to all significant comments submitted during this comment period and make these responses available to the public at EPA's Boston office and on EPA's web site.

Following the close of the comment period, and after the public hearing, EPA will issue a final permit decision, publish a Notice of Availability of the Final Permit in the Federal Register, and notify each person who has submitted written comments or requested notice of the final permit decision. EPA will also provide as much notice as possible to the facilities to be covered by the General Permit.

1.4 EPA Contact

Additional information concerning the Draft Permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m. Monday through Friday excluding holidays from:

Danielle Gaito
U.S. Environmental Protection Agency
5 Post Office Square, Suite 100 (6-MO)
Boston, MA 02109
Telephone: (617) 918-1297
Email: gaito.danielle@epa.gov

2.0 Statutory Authority and Coverage

2.1 Statutory Authority

Section 301(a) of the CWA prohibits the discharge of pollutants into waters of the United States, except in compliance with certain sections of the Act including, among others, CWA § 402, 33 U.S.C. § 1342. See 33 U.S.C. § 1311(a). Section 402 of the Act provides that the Administrator of EPA may issue NPDES permits for discharges of any pollutant into waters of the United States according to such specific terms and conditions as the Administrator may require. See 33 U.S.C. §

1342. Section 402(p) of the CWA addresses sources of stormwater that require an NPDES permit as well as the conditions that must be included in permits issued to these discharges. See 33 U.S.C. § 1342(p). Section 402(p)(3)(B)(ii) and (iii) of the CWA, 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 including best management practices (BMPs), and other provisions as EPA determines to be appropriate for the control of such pollutants.

EPA's regulations authorize the issuance of "general permits" to cover one or more categories or subcategories of discharges, including stormwater point source discharges, within a geographic area. See 40 CFR §122.28(a)(1) and (2)(i). EPA issues general permits under the same CWA authority as individual permits. Violations of a general permit condition constitute a violation of the CWA and may subject the discharger to the enforcement remedies provided in Section 309 of the Act, including injunctive relief and penalties.

2.2 Authorization Under the Permit

The Draft Permit authorizes stormwater discharges from small municipal separate storm sewer systems meeting the definition of "small municipal separate storm sewer system" at 40 CFR § 122.26(b)(16) and described in 40 CFR § 122.32(a)(1) (applicable to small MS4s located in an urban area with a population of 50,000 or more people) or designated by EPA as needing a permit pursuant to 40 CFR § 122.32(a)(2) or 40 CFR § 122.26(a)(1)(v).

On June 12, 2023, EPA finalized clarifications for the designation of small MS4s in its NPDES Stormwater Phase II Regulations due to changes made by the Census Bureau to discontinue its practice of publishing the location of "urbanized areas" in the 2020 Census and future censuses. See 88 Fed. Reg. 37994. EPA replaced the term "urbanized area" in 40 CFR § 122.32(a)(1) with "urban area with a population of 50,000 or more people." Beginning with the 1950 Census and continuing until the 2020 Census, urban areas were delineated into two categories. Populations of 2,000 to 49,999 people were designated as urban clusters and populations of 50,000 or more people were designated as urbanized areas. When EPA promulgated the Phase II stormwater regulations, it adopted the Census Bureau's definition of "urbanized areas" as the designation criteria for small MS4s and provided a definition identical to the Census Bureau's. From the inception of the small MS4 permit program in 1999, EPA and state permitting authorities have relied on the 50,000-person population threshold to automatically designate and regulate small MS4s. On March 24, 2022, the Census Bureau announced that it would no longer separately identify "urbanized areas" and "urban clusters" and will only identify urban areas. See 87 Fed. Reg. 16706. As a result of the Census Bureau's decision, EPA took action to clarify that the scope of which small MS4s are regulated does not change, and EPA will rely on what the term has always meant rather than having the regulations reference an out-of-date term. EPA replaced existing references to "urbanized area" as a criterion for designating small MS4s in the regulations at 40 CFR Parts 122 and 123 with text that incorporates the underlying threshold

population: “urban areas with a population of 50,000 people or more.” See 88 Fed. Reg. 37997. Although the wording has changed, the designation criteria for small MS4s, which has been in use since promulgation of the regulations in 1999, remains the same.

Many small MS4s that will be authorized by this permit are located entirely within an urban area with a population of 50,000 or more people as determined by the latest Decennial Census by the Bureau of the Census. Urban areas represent densely developed territory, and encompass residential, commercial, and other nonresidential urban land uses. Urban areas are defined primarily based on housing unit density measured at the census block level.² Urban areas are not divided along political boundaries. Because of this non-political division, a municipality may be entirely in an urban area or partially in an urban area. The Phase II regulations require a small MS4 to implement its program in the urban area with a population of 50,000 or more people. If a small MS4 is only partially within the urban area with a population of 50,000 or more people, and EPA has not designated the entire municipal area as part of the MS4 area, the MS4 may decide to implement the SWMP within its entire jurisdiction, or just in the urban area. Both approaches are acceptable under EPA’s regulations. However, EPA encourages MS4s to implement the Storm Water Management Plan (SWMP) in the entire jurisdiction, especially for areas that discharge to waters that are subject to approved total maximum daily loads (TMDLs).

2.2.1 Authorization for Municipalities Located within the Charles River Watershed.

This Draft Permit is available for small MS4s located in urban areas with populations of 50,000 or more and those MS4s that EPA designates as needing a permit. In this Draft Permit, EPA is proposing to expand the MS4 jurisdictional area for municipalities located within the Charles River watershed to include the already-covered urban area of such municipality *and* any land area of such municipality that is not an urban area but is located within the Charles River watershed boundary. This proposed MS4 jurisdictional area expansion would apply only to municipalities that are located within the Charles River watershed.

As the NPDES permitting authority in Massachusetts, EPA has authority to designate small MS4s other than those small MS4s located in an urban area with a population of 50,000 or more where EPA has evaluated that “a storm water discharge results in or has the potential to result in exceedances of water quality standards, including impairment of designated uses, or other significant water quality impacts, including habitat and biological impacts.” See 40 CFR § 122.35(b)(1)(i). 40 CFR § 122.35(b)(1)(ii) goes on to advise (but not require) “a balanced consideration of the following designation criteria on a watershed or local basis: discharge to sensitive waters, high growth or growth potential, high population density, contiguity to an urban area with a population of 50,000 or more, significant contributor of pollutants to waters of the United States, and ineffective protection of water quality by other programs.” Municipalities’ existing MS4 urban area would expand to include any part of a municipality’s jurisdiction that is located within the Charles River watershed’s geographic boundary. In most

² https://www2.census.gov/geo/pdfs/reference/ua/Census_UA_2020FAQs_Feb2023.pdf. Census Bureau, 2023.

cases, the non-urban areas within Charles River watershed towns are contiguous to the urban areas within those towns.

Under this proposal, all land within the Charles River watershed's geographic boundary would become part of municipal permittees' regulated MS4 area. The Charles River, a sensitive water of the U.S., has two EPA-approved phosphorus TMDLs assigning waste load allocations (WLAs) to phosphorus sources within the watershed. On October 17, 2007, EPA approved the Final TMDL for Nutrients in the Lower Charles River Basin (Lower Charles TMDL) (Massachusetts Department of Environmental Protection, 2007b) and on June 10, 2011, EPA approved the TMDL for Nutrients in the Upper/Middle Charles River (Upper/Middle Charles TMDL) (Massachusetts Department of Environmental Protection, 2011). The two phosphorus TMDLs address severe water quality impairments resulting from the excessive algae growth caused by excessive amounts of phosphorus in discharges to the Charles River system. Both TMDLs set WLAs that specify reductions for discharges of phosphorus throughout the entire Charles River watershed from publicly owned treatment works, combined sewer overflows, and stormwater discharges. The Lower Charles TMDL and the Upper/Middle Charles TMDL calculated the baseline phosphorus load from stormwater sources as 87,432 pounds of total phosphorus per year.

To support EPA's reasoning that stormwater discharges from the non-urban areas in the Charles River watershed significantly contribute pollutants to waters of the U.S. and are not currently adequately controlled by existing programs, EPA considered the quantity and nature of the pollutants discharged to waters of the United States from the non-urban areas of the Charles River watershed. EPA estimates that expanding the MS4 jurisdiction geographic area to the Charles River watershed boundary would add approximately 24,778 acres of non-urban area into MS4 jurisdiction. This would represent an approximate 15% increase from the total land area regulated under the 2016 MS4 permit. EPA also estimates that the proposed MS4 expansion would account for an additional 6,719 pounds of phosphorus per year (i.e., the difference in baseline between watershed and urban area). While about 35% of this baseline load is contributed by municipalities that already implement their MS4 programs town-wide (i.e., including all urban and non-urban area within the watershed boundary) and so is already being addressed, expanding the regulated MS4 area would capture over 4,300 additional pounds of phosphorus from sources in non-urban areas within the watershed boundary that are not currently included in permittee's stormwater management plans. Expanding MS4 jurisdiction to the watershed boundary would result in an additional 1,140 pounds in required phosphorus reduction per year, of which 860 pounds (75% of the required phosphorus reduction) is contributed when municipalities that implement the MS4 program only in the urban area. This load would not be addressed without the expansion of the MS4 jurisdiction to the watershed boundary.

Municipalities in the Charles River watershed that are already implementing their MS4 programs town-wide, regardless of whether an area is urban or non-urban, benefit from the ability to get credit for BMPs and stormwater control measures (SCMs) anywhere within the watershed boundary. Towns that currently implement their MS4 program solely within their urban area

currently have fewer locations from which to choose when installing SCMs, conducting BMPs, and conducting other permit compliance activities to meet the town's required pollutant reductions under the applicable Charles River TMDLs. If all areas within the Charles River watershed boundary are considered part of municipal permittees' MS4s, permittees may install SCMs and conduct BMPs outside of the urban area and still receive credit towards their town's required pollutant reductions.

EPA seeks comment on the proposed MS4 jurisdictional expansion for municipalities located within the Charles River watershed.

2.2.2 Waivers

The regulations at 40 CFR § 122.32(a)(1) state that an MS4 is regulated by the program if the MS4 is located in an urban area with 50,000 or more people as determined by the latest Decennial Census by the Bureau of the Census unless granted a waiver by the permitting authority. The latest Decennial Census was conducted in 2020. MS4s located in an urban area with 50,000 or more people as determined by the 2010 Census will be subject to the stormwater requirements for small MS4s unless they receive a waiver in accordance with 40 CFR §122.32(c) or 40 CFR § 123.35(d). The 2020 Census does not identify any new permittees in Massachusetts, but some permittees' urban areas with a population of 50,000 or more people may have expanded. In addition, MS4s with an urban area with a population of 50,000 or more people as defined by the 2010 and/or 2000 Census will remain subject to the stormwater regulation even if the reach of urban area with a population of 50,000 or more has decreased due to a change in census data. This is consistent with the preamble to the Phase II rule that states "...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." 64 Fed. Reg. 68752 (December 8, 1999).

2.3 Ineligible Discharges

Part 1.3 of the Draft Permit lists discharges that are not eligible for coverage under this general permit. The following discharges are ineligible for coverage:

1. Stormwater discharges that are mixed with sources of non-stormwater unless the non-stormwater discharges are authorized under a separate individual or other general NPDES permit or are an allowable non-stormwater discharge listed in Part 1.4 of the Draft Permit. The Draft Permit requires illicit (non-stormwater) discharges to be prevented and eliminated except for the categories of non-stormwater discharges listed in 40 CFR §122.34(b)(3) and identified in Part 1.4 of the Draft Permit. These non-stormwater discharges do not need to be addressed unless, during the course of implementing the Illicit Discharge Detection and Elimination (IDDE) program, they are determined by the permittee, MassDEP, or EPA to be significant contributors of pollutants to the MS4 in accordance with Part 1.4 of the Permit.

2. Stormwater discharges that are subject to other permits including stormwater associated with industrial activity as defined in 40 CFR § 122.26(b)(14)(i)-(ix) and (xi); stormwater discharges associated with construction activity as defined in 40 CFR § 122.26(b)(14)(x) or 40 CFR § 122.26(b)(15); and stormwater discharges subject to an individual permit or other general permit.
3. Stormwater discharges, or discharge-related activities, that are likely to adversely affect any species that are listed as threatened or endangered under the Endangered Species Act (ESA) or result in the adverse modification or destruction of habitat that is designated as critical under the ESA. The MS4 must follow the procedures detailed in Appendix C of the Draft Permit to make a determination regarding permit eligibility. A more detailed discussion of EPA's obligation under the ESA is included in Section 2.6 of this Fact Sheet.
4. Stormwater discharges whose direct or indirect impacts do not prevent or minimize any adverse effects on any Essential Fish Habitat (EFH). This topic is addressed in Section 2.6 of this Fact Sheet.
5. Stormwater discharges, or implementation of a stormwater management program, that would adversely affect properties listed or eligible to be listed on the National Register of Historic Places. The MS4 must follow the procedures in Appendix D of the Draft Permit to make a determination regarding eligibility. This topic is addressed in Section 2.6 of this Fact Sheet.
6. Stormwater discharges to territorial seas, the contiguous zone and the oceans. Territorial seas are waters located between the mean low water line and a line approximately twelve nautical miles from the mean low water line. The contiguous zone is from the edge of the territorial sea up to 24 nautical miles from the mean low water line.
7. Discharges that are prohibited under 40 CFR § 122.4.
8. Under the Safe Drinking Water Act certain subsurface stormwater controls are subject to the State's Underground Injection Control (UIC) regulations. Authorization for such discharges shall be obtained from Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program, Underground Injection Control, 100 Cambridge Street, Suite 900, Boston, MA 02114. All stormwater discharge structures meeting the definition of a "well" in MassDEP's UIC regulations, 310 CMR 27.00, require the submittal of a UIC registration applications. Therefore, the following actions require UIC registration:
 - i. infiltration trenches or seepage pits (if stormwater is directed to any trench or pit that has been backfilled with greater than 18 inches of permeable fill material or that is deeper than its widest surface dimension)
 - ii. any subsurface infiltration structure receiving stormwater, regardless of depth vs. horizontal dimensions (e.g.; drywell, leaching chambers, perforated pipe drainfield, etc.)
9. Any Non-traditional MS4 facility that is a "new discharger" as defined at 40 CFR § 122.2 and discharges to a waterbody listed in category 5 or 4b on the Massachusetts Integrated Report of waters listed pursuant to Clean Water Act section 303(d) and 305(b) due to nutrients (nitrogen or phosphorus), metals, solids, bacteria/pathogens, chloride or oil and grease (hydrocarbons), or discharges to a waterbody with an approved TMDL for any of

those pollutants, is not eligible for coverage under this permit and shall apply for an individual permit.

2.4 Allowable Non-Stormwater Discharges

Part 1.4 of the Draft Permit includes the list of sources of allowable non-stormwater discharges into the MS4 contained in 40 CFR § 122.34(b)(3)(iii). However, if the permittee, MassDEP, or EPA finds, during the course of implementing the IDDE program, that these sources (either categorically or individually) are significant contributors of pollutants to the MS4, the permittee must control or prohibit these sources of non-stormwater as part of its illicit discharge detection and elimination (IDDE) program. The Draft Permit does not require any action by the permittee regarding these discharges if the permittee determines that these sources are not significant contributors of pollutants to the MS4. Other than language contained in the CWA regarding non-stormwater sources, the legislative history of the stormwater regulations is essentially silent on the issue of non-stormwater discharges, which makes determination of Congress' expectations regarding non-stormwater discharges subject to agency interpretation. EPA expects MS4s to examine the sources of non-stormwater discharges as categories and examine their potential to contribute pollutants to the MS4. For example, potable water may not contribute pollutants that affect the MS4 discharges because the source is associated with the water supply. However, foundation drains and crawl spaces may be within residential basements and the type of pollutants associated with the non-stormwater discharge may be unknown. In this situation, the MS4 may want to establish a registration program for such discharges and include education about proper storage of household chemicals, or the MS4 may choose to prohibit the discharge due to the unknown nature of the pollutants. The permittee must document its determinations on the categories of non-stormwater in its SWMP and must prohibit any sources identified as a significant contributor of pollutants. In accordance with 40 CFR § 122.34(b)(3)(iii), discharges or flows from firefighting activities are excluded from the effective prohibition against non-stormwater and need only be addressed where they are identified as significant sources of pollutants to waters of the United States.

2.5 Permit Compliance

Part 1.5 of the Draft Permit states that any failure to comply with the requirements of this permit constitutes a violation of the Permit and the CWA. For provisions specifying a time period to remedy non-compliance, the initial failure constitutes a violation of the Permit and the CWA, and subsequent failure to remedy such deficiencies within the specified time periods constitutes an independent and additional violation of the CWA.

EPA notes that the 2016 MA MS4 permit remains in effect (by administrative continuance) during the pendency of this permit renewal process, and that EPA retains its authority to take enforcement action for violations of the 2016 MA MS4 permit during and after the pendency of the present permit proceeding.

2.6 Continuation of the Permit

Part 1.6 of the Draft Permit describes the procedure that applies if EPA does not reissue the permit by its expiration date. If this permit is not reissued or replaced prior to its expiration date, existing discharges are authorized under an administrative continuance, in accordance with the Administrative Procedure Act and 40 CFR § 122.6, and the conditions of the Permit remain in force and in effect for discharges authorized prior to permit expiration. If authorization is provided to a permittee prior to the expiration of this permit, the permittee is automatically authorized by this permit until the earliest of: (1) the authorization under a reissuance or replacement of this permit, following timely and appropriate submittal of a complete NOI; (2) issuance or denial of an individual permit for the permittee's discharge; or (3) formal permit decision by EPA not to reissue this general permit, at which time the permittee must seek authorization under an alternative general permit or an individual permit.

2.7 Obtaining Authorization to Discharge

To obtain authorization to discharge, the operator of a small MS4 must submit a complete and accurate NOI containing the information in Appendix E of the Draft Permit. The NOI must be signed in accordance with the requirements of 40 CFR § 122.22 and Appendix E of the Draft Permit. See also Part 11 of Appendix B of the Draft Permit. The NOI must be submitted within 90 days of the effective date of the final permit. The effective date of the final permit will be specified in the Federal Register publication of the notice of availability of the final permit. Any small MS4 designated by EPA as needing a permit must submit an NOI for a permit within 180 days from the date of notification, unless otherwise specified. A small MS4 must meet the eligibility requirements of the Permit found in Part 1.2 and Part 1.9 prior to submission of the NOI. A small MS4 will be authorized to discharge under this permit upon the issuance of written authorization by EPA following a public notice of the NOI.

EPA has revised the suggested format for the submission of the NOI to a mandatory electronic format using EPA's NPDES eReporting Tool (NeT) which can be found at <https://cdx.epa.gov/cdx>. Appendix E contains a list of the information required in the electronic NOI form. Due to the expansion in Internet availability, greater efficiency in administrative processing, and reductions in cost to manage the system as compared to paper NOIs, it is required that NeT be the primary mechanism by which permittees obtain permit coverage.

The MS4 operators should complete the information required in the NOI to the best of their knowledge. Any BMPs identified in the NOI are not required to be in place at the time the NOI is submitted. The NOI does not require the development of technical or engineering reports for its submission. The Draft Permit does not incorporate the contents of the NOI into the permit as conditions. The permit conditions are those that are contained in the permit and those are the requirements the permittee is expected to meet.

All NOIs must be submitted to EPA-Region 1 90 days from the effective date of the Final Permit.

The Draft Permit provides continued authorization for permittees authorized by the 2016 MA MS4 permit if: 1) the permittee's 2016 MA MS4 permit authorization was effective upon the expiration of that permit (July 1, 2022) and 2) the permittee submits a complete and accurate NOI within 90 days of the effective date of this Final Permit. Permittees will remain authorized under the 2016 MA MS4 permit until authorization under the newly issued permit is either granted or denied.

EPA will be responsible for placing the NOIs on public notice. NOIs will be available for public comment for a minimum of 30 days. NOIs can be viewed at <https://permitsearch.epa.gov/epermit-search/ui/search>. Any comments on an NOI shall be submitted to EPA. EPA will work with the municipality to address public comments as appropriate. Following the close of the public comment period, EPA will authorize the discharge, request additional information from the MS4 operator, or deny authorization. An MS4 is not authorized to discharge until issuance of written authorization from EPA.

2.8 Individual and Alternative Permits

Any owner or operator of a small MS4 authorized by a general permit may request to be excluded from authorization under a general permit by applying for an individual permit. 40 CFR § 122.33(b)(2)(i) or (ii). This request shall be made by submitting a NPDES permit application together with reasons supporting the request. The Director may require any permittee authorized by a general permit to apply for and obtain an individual permit. Any interested person may petition the Director to take this action. 40 CFR § 122.28(b)(3).

However, individual permits will not be issued for sources authorized by the general permit unless it can be clearly demonstrated that inclusion under the general permit is inappropriate or an individual permit is more applicable to the applicants system.

The Director may consider requiring an individual permit when:

- a. The discharger is not in compliance with the terms and conditions of the general permit;
- b. A change has occurred in the availability of demonstrated technology or practices for the control or abatement of pollutants applicable to the point source;
- c. Effluent limitations guidelines are subsequently promulgated for the point sources covered by the general NPDES permit;
- d. A Water Quality Management Plan or Total Maximum Daily Load (TMDL) containing requirements applicable to such point sources is approved;
- e. Circumstances have changed since the time of the request to be covered so that the discharger is no longer appropriately controlled under the general permit, or either a temporary or permanent reduction or elimination of the authorized discharge is necessary; and
- f. The discharge(s) is a significant contributor of pollutant or in violation of state water

quality standards for the receiving water.

In accordance with 40 CFR § 122.28(b)(3)(iv), the applicability of the general permit is automatically terminated on the effective date of the individual permit.

Additionally, any interested person may petition the Director to require a NPDES permit for a discharge composed entirely of stormwater which contributes to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States pursuant to 40 CFR § 122.26(f).

2.9 Stormwater Management Program (SWMP)

The Stormwater Management Program (SWMP) is a written document required by the permit. The SWMP is the mechanism used to document the practices the permittee is implementing to meet the terms and conditions of the Permit. The SWMP is expected to accurately reflect the permittee's activities. The document should be updated during the permit term as the permittee's activities are modified or changed during the permit term or to incorporate additional BMPs to comply with permit conditions during the permit term.

The Draft Permit requires that the SWMP be a written document and signed in accordance with Appendix B Part 11. The SWMP must be available at the office or facility of the person identified on the NOI as the contact person for the SWMP. The SWMP must be immediately available to EPA, FWS, NMFS, and MassDEP. The permittee must also make the SWMP available to any member of the public who makes a request. EPA requires the permittee to post the SWMP online if a website is available for posting of documents under the control of the permittee. EPA expects that municipalities have websites they can maintain but understands that a nontraditional MS4 may not have a public website.

Existing permittees must update the SWMP within 1 year to contain the following:

- The name and title of people responsible for implementation of the SWMP. If a position is currently unfilled, list the title of the position and modify with the name once the position is filled.
- Documentation of permit eligibility regarding ESA, if applicable. Documentation must include information and any documents supporting the criteria used by the permittee to determine eligibility. The SWMP must also contain documentation of any correspondence between the permittee and USFWS if informal consultation was re-initiated during the permit term.
- Documentation of permit eligibility regarding NHPA, if applicable. Documentation must include information and any documents supporting the criteria used by the permittee to determine eligibility.
- Documentation of authorization of all new or increased discharges granted by MassDEP in compliance with Part 2.1.2
- Listing of all discharges identified pursuant to Part 2.1.1 and description of response;

- Listing of all receiving waters, their classification under the applicable state water quality standards, any impairments, associated pollutants of concern, applicable TMDLs and wasteload allocations (WLAs), and the number of outfalls that discharge to each water. In addition to the receiving water, the permittee is encouraged to document in the SWMP all public drinking water sources, including both surface water and groundwater that may be impacted by MS4 discharges.
- Listing of all interconnected MS4s and other separate storm sewer systems receiving a discharge from the MS4, the receiving waterbody and classification under the applicable state water quality standards, any impairments to designated uses, associated pollutants of concern, applicable TMDLs and WLAs, and the number of outfalls that discharge to each water. In this situation, the interconnected MS4 acts as the conveyance for the stormwater from the permitted MS4. Since the permitted MS4 is required to identify all water bodies that receive a stormwater discharge either directly or indirectly from its system, this information is necessary. The permitted MS4 should work with any interconnected MS4 to obtain this information.
- The map of the separate storm sewer system required by Part 2.3.4.g of the Draft Permit. The map may be a hard copy map or one that is available on a geographic information system. If available on a GIS system, the web address shall be included in the SWMP. The permittee should also update the map as new information becomes available.
- For each permit condition required by Part 2.2 of the Draft Permit, the permittee must identify a person responsible for ensuring implementation of the condition. The permittee must identify specific BMPs to address the permit condition and the measurable goals associated with the BMP. Other provisions related to the water quality requirements including a description of practices designed to achieve compliance with TMDL provisions (Part 2.2.1 and Appendix F), and any additional BMPs required by Part 2.2.2 and Appendix H.
- For each control measure listed in Part 2.3 of the Draft Permit, the permittee must identify a person responsible for ensuring its implementation. The permittee must identify specific actions or BMPs to address each control measure. The permittee must also identify measurable goals associated with the control measure.
- Description of measures to avoid or minimize impacts to public drinking surface water supplies. The permittee is encouraged to include provisions to notify public water suppliers in the event of an emergency. (For more information or assistance, contact: Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program at director-dwp@mass.gov).
- Documentation of compliance with Part 2.4.
- An annual evaluation of the SWMP that contains the information required by Part 4.1 of the Draft Permit. The annual evaluation must be updated annually and maintained as part of the SWMP.

EPA believes that a written program provides a central, accessible source for all information relating to the SWMP. The SWMP required by this Draft Permit builds on the requirements of the 2003 and 2016 MA MS4 permits. While updating the SWMP required by this Permit, the

permittee must continue to implement the SWMP that was required by the 2016 MA MS4 permit. This permit does not provide additional time for completing the requirements of the 2016 MA MS4 permit. Permittees covered by the 2016 MA MS4 permit must update their SWMP within 1 year of the effective date of the Permit.

The SWMP must document the actions the permittee has taken or will take to demonstrate compliance with the control measures and other conditions of the Permit. EPA has determined that implementation of the conditions required by Part 2.3 of this Draft Permit will meet the MEP standard of the CWA. EPA has determined that implementation of the conditions required by Parts 2.1 and 2.2 of the Draft Permit will be protective of water quality.

2.9.1 Funding

EPA recognizes that compliance with this permit and continuation of existing stormwater management programs may require substantial investment by permittees to reduce the discharge of pollutants from their systems and address water quality impacts of their discharges. This is in keeping with the national goal of the Clean Water Act “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” 33 U.S.C. § 1251(a). The small MS4 permit program, from its inception, was intended to be iterative in nature, with increasingly stringent requirements as permits are reissued. EPA recognizes that additional funding sources or mechanisms may be necessary to comply with the provisions in this Draft Permit, and we note that many communities within Massachusetts have made the necessary investments under the 2016 MA MS4 permit by funding a stormwater program through a utility or other means.

EPA encourages permittees to maintain adequate funding to implement the SWMP and ensure that monies will be available to the permittee for implementation of the Draft Permit conditions. EPA does not require or recommend a specific funding mechanism or funding alternative. These decisions rest with the operator of the MS4. There are several funding options available to permittees: these include service fees, formation of a stormwater utility, use of the general fund of the municipality, grants, and loans. Each mechanism has its own advantages and disadvantages, and a municipality should choose the option that is right for it.

EPA maintains, and will continue to update, a list of resources for stormwater funding at <https://www.epa.gov/npdes-permits/stormwater-tools-new-england#swfms4pc> and <https://www.epa.gov/waterdata/water-finance-clearinghouse>. Additional resources include the New England Environmental Finance Center (<https://neefc.org/>), MassDEP (<https://www.mass.gov/info-details/available-funding-for-stormwater-projects-in-massachusetts>) and EPA (<https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/FundingStormwater.pdf>) and (<https://www.epa.gov/water-infrastructure/water-technical-assistance-programs>).

2.9.2 Requirements for New Permittees

The 2016 MA MS4 Permit provided different deadlines for MS4s that were subject to the small MS4 permit program for the first time in 2016, recognizing that the MS4s authorized by the 2003 MA MS4 permit had been implementing stormwater controls for over ten years while new permittees as of 2016 needed additional time to understand and implement requirements. EPA expects that new permittees authorized under this reissuance of the MS4 permit will be limited only to new non-traditional permittees, and that all municipalities covered by this proposed permit have already been covered by the 2016 MA MS4 permit. Since this Draft Permit is a reissuance of the 2016 MS4 Permit, permit requirements are carried forward or advanced for existing permittees. Therefore, new permittees need to develop and catch up their SWMPs. Instead of the requirements in part 2.3 of the Draft Permit (Requirements to Reduce Pollutants to the Maximum Extent Practicable), new permittees must meet all permit requirements and deadlines as specified in Appendix J of the Draft Permit. All other permit requirements apply to new permittees. EPA is specifically looking for comments on the proposed deadlines for new permittees.

2.10 Federal Permitting Requirements

When EPA undertakes a federal action, such as the reissuance of an NPDES permit, that action must be consistent with other federal laws and regulations. Regulations at 40 CFR § 122.49 contain a listing of Federal laws that may apply to the issuance of NPDES permits, including four that apply to the reissuance of this general permit: the Endangered Species Act (ESA), the National Historic Preservation Act (NHPA), the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA which addresses Essential Fish Habitat (EFH)), and the Coastal Zone Management Act (CZMA). The requirements of these Acts and EPA's obligations with regard to them are discussed in the following paragraphs.

2.10.1 Endangered Species

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA), grants authority and imposes requirements on Federal agencies regarding endangered or threatened species of fish, wildlife, or plants (listed species) and habitat of such species that has been designated as critical (a "critical habitat"). 16 U.S.C 1536(a)(2). See also 50 CFR § 402 and 40 CFR § 122.49(c)).

Section 7(a)(2) of the ESA requires every Federal agency, in consultation with and with the assistance of the Secretary of the Interior and/or the Secretary of Commerce, as appropriate, to ensure that any action it authorizes, funds or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS), within the Department of the Interior, administers § 7 consultations for listed species of terrestrial and freshwater organisms. The National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries), within the Department of Commerce, administers Section 7 consultations for listed species of marine organisms (including marine mammals and reptiles) as well as for anadromous fish.

The federal action being considered in this case is EPA’s proposed reissuance of an NPDES General Permit designed to regulate the discharge of stormwater from Small Municipal Separate Storm Sewer Systems (MS4s) to waters within the Commonwealth of Massachusetts, including sections of the Merrimack River, the Taunton River, the Connecticut River, coastal embayments and marine waters. The General Permit will apply to traditional cities and towns; state and federal MS4s; and state transportation agencies (except for MassDOT-Highway Division).³ As the federal agency charged with authorizing and regulating the discharge of stormwater from small MS4s in Massachusetts, EPA assesses potential impacts to federally listed species and critical habitat and initiates consultation to the extent required under Section 7(a)(2) of the ESA. EPA determined the presence of federal endangered or threatened species of fish, wildlife, and plants in the proposed action area. If there is documented overlap, EPA evaluated the potential impacts of stormwater discharges and discharge-related activities authorized under the proposed MS4 General Permit on ESA listed species in the identified MS4 area.

ESA Species and Critical Habitat Under the Jurisdiction of USFWS

EPA accessed the USFWS Information for Planning and Consultation (IPaC) System to generate an ESA Official Species List⁴ of protected species under the jurisdiction of the USFWS that may be present in the MS4 action area. Fourteen protected species under the jurisdiction of USFWS were identified, including two mammal species, three bird species, one reptile species, one clam species, two insect species and five flowering plant species. See Table 1. The monarch butterfly (*Danaus plexippus*) appeared on the list as a candidate species. USFWS does not require analysis of candidate species under ESA at this time. In addition, critical habitat designated by USFWS for the Plymouth redbelly turtle and proposed critical habitat for the rufa red knot overlap with the MS4 action area.

EPA used the USFWS IPaC System Northern Long-eared (“NLE”) Bat Determination Key and Northeast Species Determination Key to assess the degree to which proposed actions under the Draft MS4 Permit may affect listed species within the action area. EPA provided detailed information on the proposed action and the USFWS IPaC System used a standard analysis to evaluate the information. A USFWS Determination Key for the tricolored bat, which USFWS proposed for listing as endangered on September 13, 2022 (see 87 Fed. Reg. 56381), is not available as of the development of this Draft MS4 Permit. Because the habitat of the tricolored bat is generally similar to the NLE bat (e.g., overwintering - caves or mines; spring/summer/fall – deciduous live or dead hardwood trees), EPA elected to evaluate the potential impacts on this species using the same information as the NLE. Table 1 lists the IPaC Determination for each federally listed species under the jurisdiction of the USFWS in the action area.

³ The regulated area is identified in the map available at the following website:
<https://experience.arcgis.com/experience/61f1e09980604a3495f833cb02df5f3a>.

⁴ USFWS Official Species List, Project Code: 2024-0142128; September 10, 2024.

Table 1. ESA listed species under the jurisdiction of the USFWS that overlap with the Massachusetts MS4 Action Area, their status, and corresponding effects determination based on the IPaC System standard evaluation.

USFWS Species Present Within the MS4 Action Area	ESA Status	Determination
Dwarf wedgemussel (<i>Alasmidonta heterodon</i>)	Endangered	NLAA ¹
Northeastern bulrush (<i>Scirpus ancistrochaetus</i>)	Endangered	May affect ²
Sandplain gerardia (<i>Agalinis acuta</i>)	Endangered	Not evaluated ³
Small whorled pogonia (<i>Isotria medeoloides</i>)	Threatened	No effect
American chaffseed (<i>Schwalbea americana</i>)	Endangered	No effect
Seabeach amaranth (<i>Amaranthus pumilus</i>)	Threatened	No effect
Northern long-eared bat (<i>Myotis septentrionalis</i>)	Endangered	No effect ⁴
Tricolored bat (<i>Perimyotis subflavus</i>)	Proposed Endangered	No effect ⁵
Piping plover (<i>Charadrius melodus</i>)	Threatened	No effect
Rufa red knot (<i>Calidris canutus rufa</i>)	Threatened	No effect
Roseate tern (<i>Sterna dougallii dougallii</i>)	Endangered	No effect
Plymouth redbelly turtle (<i>Pseudemys rubriventris bangsi</i>)	Endangered	Not evaluated
Puritan tiger beetle (<i>Cicindela puritana</i>)	Threatened	No effect
Rusty patched bumble bee (<i>Bombus affinis</i>)	Endangered	NLAA

¹ This designation specifies that while the action may affect the species being analyzed, it is not likely to adversely affect (NLAA) the species. No further coordination with USFWS is required.

² Further consultation with USFWS is necessary for a “May affect” determination in IPaC.

³ The Northeast Species Determination Key does not cover this species. Further consultation with USFWS is required.

⁴ Northern Long-eared (“NLE”) Bat Determination Key result. Project Code: 2024-0142128; September 10, 2024.

⁵ Based on NLE Bat Determination Key result.

Based on the results of the IPaC System, EPA determined that the proposed action will have no effect or are not likely to adversely affect for eleven of the fourteen ESA listed species that may

be present within the action area regulated under the Draft MS4 Permit.⁵ No further coordination with USFWS is required for these species. In addition, EPA made the determination that activities proposed to be covered under the MS4 Permit will also have “no effect” on the proposed endangered tricolored bat based on similarity with the NLE. No further ESA coordination with USFWS is required for the tricolored bat.

The Plymouth redbelly turtle, the northeastern bulrush and the sandplain gerardia require further ESA coordination with USFWS. EPA is also required to coordinate with USFWS regarding the critical habitat for the Plymouth redbelly turtle and proposed critical habitat for the rufa red knot. EPA’s preliminary finding is that the discharge of stormwater and the continuation of the SWMPs by each permittee in accordance with the requirements and conditions of the Draft MS4 Permit may affect, but is not likely to adversely affect, the Plymouth redbelly turtle, the northeastern bulrush and the sandplain gerardia, critical habitat for the Plymouth redbelly turtle, and proposed critical habitat for the rufa red knot. EPA is seeking concurrence with this finding from the USFWS. EPA may also include conditions in the NPDES Draft General Permit that are recommended by USFWS to the extent needed to comply with the ESA and carry out the provisions of 40 CFR § 122.49(c). See 40 CFR § 124.59(b).

ESA Species and Critical Habitat Under the Jurisdiction of NOAA Fisheries

Federally-listed anadromous and marine species present in Massachusetts coastal waters and bays, along with the Merrimack River, the Taunton River, the Connecticut River fall under the jurisdiction of NOAA Fisheries. Various life stages of protected fish, sea turtles and whales have been documented in Massachusetts coastal and inland waters, both seasonally and year-round, including in receiving waters within the area of the proposed action. EPA used the NOAA Fisheries ESA Section 7 Mapper⁶ to identify the ESA protected species that overlap with the regulated area for the Draft MS4 Permit. See Table 2.

Table 2. ESA listed species under the jurisdiction of NOAA Fisheries that overlap with the Massachusetts MS4 Action Area, their status, lifestage and the time of year they are expected to be present in the action area.

NOAA Fisheries (NMFS) Species Present Within the MS4 Action Area	ESA Status	Lifestage(s)	Time of Year
Atlantic sturgeon (<i>Acipenser oxyrinchus oxyrinchus</i>)	Threatened and Endangered ¹	Adult and sub adult	Year-round
Atlantic sturgeon	NY Bight DPS	Juvenile	Year round

⁵ See records of determination using IPaC system dated September 10, 2024 (for Northern Long-eared Bat) and September 11, 2024 (for Northeast Species). Project Code 2024-0142128. See also EPA’s Supplemental Basis Information Memo for the Tricolored Bat dated September 12, 2024.

⁶ <https://www.fisheries.noaa.gov/resource/map/greater-atlantic-region-esa-section-7-mapper>

(<i>Acipenser oxyrinchus oxyrinchus</i>)	Endangered		
Atlantic sturgeon (<i>Acipenser oxyrinchus oxyrinchus</i>)	NY Bight DPS Endangered	Young of year	Year round
Atlantic sturgeon (<i>Acipenser oxyrinchus oxyrinchus</i>)	NY Bight DPS Endangered	Post yolk-sac larvae	April 15 through October 31
Atlantic sturgeon (<i>Acipenser oxyrinchus oxyrinchus</i>)	NY Bight DPS Endangered	Eggs and yolk-sac larvae	April 15 through September 30
Shortnose sturgeon (<i>Acipenser brevirostrum</i>)	Endangered	Adult	April 1 through November 30
Shortnose sturgeon (<i>Acipenser brevirostrum</i>)	Endangered	Juvenile, young of year ²	Year-round
Shortnose sturgeon (<i>Acipenser brevirostrum</i>)	Endangered	Post yolk-sac larvae	April 1 through July 15 ³
Shortnose sturgeon (<i>Acipenser brevirostrum</i>)	Endangered	Young of year	Year-round
Loggerhead Sea Turtle (<i>Caretta caretta</i>)	Threatened	Adult and juvenile	May 1 or June 1 through November 30 ⁴
Kemp's Ridley Sea Turtle (<i>Lepidochelys kempii</i>)	Endangered	Adult and juvenile	May 1 or June 1 through November 30
Leatherback Sea Turtle (<i>Dermochelys coriacea</i>)	Endangered	Adult and juvenile	May 1 or June 1 through November 30
Green Sea Turtle (<i>Chelonia mydas</i>)	Threatened	Adult and juvenile	May 1 or June 1 through November 30
North Atlantic Right Whale (<i>Eubalaena glacialis</i>)		Adult and juvenile	Year-round
Fin Whale (<i>Balaenoptera physalus</i>)		Adult and juvenile	Year-round

¹ Expected to be from all distinct population segments.

² Merrimack River

³ Time of year presence differs depending on river (Connecticut or Merrimack) and location in river.

⁴ The four protected sea turtle species are expected to be present from May 1 through November 30 south of Cape Cod and from June 1 through November 30 north of Cape Cod. See NOAA Fisheries ESA Mapper.

In addition, the MS4 action area is expected to overlap with Critical Habitat for Atlantic Sturgeon in the Merrimack River and the Connecticut River (below the Holyoke Dam), as well as Critical Habitat for the North Atlantic Right Whale off the coast of Cape Cod Bay.

Because these species and critical habitat may be affected by the stormwater discharges regulated by the proposed General Permit, EPA has thoroughly evaluated the potential impacts

of the permit action on these anadromous and marine species. On the basis of the evaluation, EPA's preliminary determination is that this action may affect, but is not likely to adversely affect, the life stages of Atlantic sturgeon, shortnose sturgeon, green, Kemp's ridley, leatherback and loggerhead sea turtles, and the North Atlantic right whale and fin whale, along with the two designated critical habits, that are expected in the vicinity of the coastal areas and riverine habitat of the action area's discharge. Therefore, EPA has judged that a formal consultation pursuant to Section 7 of the ESA is not required. EPA is seeking concurrence from NOAA Fisheries regarding this determination through the information in the Draft General Permit, this Fact Sheet, as well as a detailed biological assessment ("BA") that will be sent to NOAA Fisheries Protected Resources Division during the Draft Permit's public comment period.

Summary

For this reissuance of the MA Small MS4 general permit, EPA is initiating informal consultation under Section 7 of the ESA for species and critical habitat under jurisdiction of both NMFS and USFWS prior to issuance of the Final Permit. ESA consultation for all permittees was already completed under the 2016 MA MS4 permit and the conditions and requirements for the Draft Permit are substantially similar. In addition, EPA's completion of consultation for certain species under USFWS jurisdiction and specific general permit-authorized activities, described above, ensures that the impacts to listed species and critical habitat from the proposed action and in the action area are fully and properly considered and narrows the potential scope of consultation. EPA evaluated the potential impacts of from the discharge of stormwater and implementation of stormwater management under the Draft Permit, including that:

- This permit is a reissuance of a general permit for municipal stormwater discharges which was last issued in 2016 and included concurrence/informal consultation by USFWS and NMFS.
- The requirements of this permit are as or more stringent than the requirements of the 2016 MA MS4 permit.
- This general permit authorizes stormwater discharges from municipal separate storm sewer systems which consist of runoff from precipitation events that is collected from streets, parking lots, sidewalks and other impervious areas and discharged to a surface water.
- The requirements and conditions of the general permit are designed to improve water quality by reducing, through treatment and/or source controls, pollutants commonly associated with stormwater from small MS4s, including bacteria/pathogens, nutrients, sediment, chloride, oil and grease (hydrocarbons), and heavy metals.
- EPA's permit action requires the permittees to implement and enforce a SWMP designed to reduce pollutants discharged from their MS4s to the Maximum Extent Practicable and, for some permittees, to take additional steps beyond MEP to protect water quality. The required SWMP activities to be implemented by permittees under the Massachusetts' small MS4 permit will improve water quality in stormwater discharges from small MS4s in the state of Massachusetts.

EPA has submitted a supplemental ESA supporting document to both NMFS and USFWS to initiate informal consultation for the discharge and discharge-related activities authorized by the permit. EPA's preliminary finding is that the discharge of stormwater to waters of the United States authorized under the permit and continuation of the SWMPs by each permittee in accordance with the requirement and conditions of the Draft Permit are not likely to adversely affect threatened or endangered species or their habitat. EPA is seeking concurrence with this finding from the Services. EPA may also include conditions in the NPDES permit that are recommended by USFWS or NMFS to the extent needed to comply with the ESA and carry out the provisions of 40 CFR § 122.49(c). See 40 CFR § 124.59(b). If EPA completes ESA consultation with USFWS and NOAA Fisheries for issuance of the Final MS4 General Permit, as expected, Part 1.9.1 of the Draft Permit (Documentation Regarding Endangered Species) will not be required. However, the Services may require that the permittee submit further documentation to ensure that actions covered by the MS4 meet the ESA consultation responsibilities for their specific action area. Permittees would certify eligibility as described in Part 1.9.1 of the Draft Permit and document compliance in the SWMP (Part 1.10.c.ii.2). This eligibility determination would also be included as part of the NOI submission; these requirements are substantially similar to the requirements for ESA in the 2016 MA MS4 permit. EPA has provided an example of ESA eligibility requirements in Appendix C.

Authorization under this general permit does not allow any "take" of listed species.⁷ Section 1.3.e of the Draft Permit does not authorize stormwater discharges or discharge-related activities that are likely to adversely affect any species that are listed as endangered or threatened under the ESA, or that would result in the adverse modification or destruction of habitat that is designated as critical under the ESA. Many of the measures required in this general permit assist in ensuring that the MS4's activities will not result in a prohibited take of species in violation of section 9 of the ESA. If the permittee has plans or activities in an area where endangered and threatened species are located, it may wish to ensure that it is protected from potential takings liability under ESA section 9 by obtaining an ESA section 10 permit or by requesting formal consultation under ESA section 7. Small MS4s that are unsure whether to pursue a section 10 permit or a section 7 consultation for takings protection should confer with the appropriate USFWS office or the NMFS office.

At the beginning of the public comment period, EPA notified NOAA Fisheries and USFWS that the Draft General Permit and Fact Sheet were available for review and provided a link to the EPA NPDES Permit website to allow direct access to the documents. Reinitiation of consultation will not need to take place unless: (a) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the

⁷ Section 9 of the ESA prohibits any person from "taking" a listed species (e.g. harassing or harming it) unless: (1) the taking is authorized through an "incidental take statement" as part of completion of formal consultation according to ESA section 7; (2) where an incidental take permit is obtained under ESA section 10 (which requires the development of a habitat conversion plan; or (3) where otherwise authorized or exempted under the ESA. This prohibition applies to all entities including private individuals, businesses, and governments.

consultation; (b) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the consultation; (c) a new species is listed or critical habitat is designated that may be affected by the identified action; or d) there is any incidental taking of a listed species that is not covered by an incidental take statement.

2.10.2 Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. §§ 1801 *et seq.*, EPA is required to consult with NMFS if EPA's action or proposed actions that it funds, permits or undertakes, "may adversely impact any essential fish habitat." 16 U.S.C. § 1855(b). The Amendments broadly define "essential fish habitat" (EFH) as "waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." 16 U.S.C. § 1802(10). "Adverse impact" means any impact that reduces the quality and/or quantity of EFH. 50 CFR § 600.910(a). Adverse impacts may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative or synergistic consequences of actions.

An EFH is only designated for fish species for which federal Fisheries Management Plans exist. 16 U.S.C. § 1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999 and updated in 2017.⁸ To satisfy the requirements of an EFH assessment, the following section includes 1) a description of the proposed action, 2) list of EFH species and life history stages that may be affected by the proposed action, 3) an analysis of the effects, 4) mitigation measures, if applicable, and 5) the federal agency's determinations of effect.

(1) Proposed Action: EPA is proposing to reissue the NPDES general permit for the discharge of stormwater from Small Municipal Separate Storm Sewer Systems (MS4s) located in Massachusetts. Reissuance of the MS4 Permit carries forward or expands the requirements from the 2016 MA MS4 permit to reduce the discharge of the pollutants from the MS4, including continuing implementation of a stormwater management program, minimum control measures, and targeted water quality-based requirements for water quality limited waters and waters subject to total maximum daily loads. In addition, the MS4 permit requires operation and maintenance of existing systems, including catch basins and similar infrastructure, to ensure the system operates as designed.

(2) List of EFH species: The following is a list of the EFH species and applicable lifestage(s) for the action area that includes the coastal and inland waters of Massachusetts including the Connecticut River, the Taunton River, Boston Harbor and the Merrimack River. Table 3 is a summary of all EFH information in Massachusetts waters that are likely to be affected by

⁸ See New England Fishery Management Council's Omnibus Essential Fish Habitat Amendment in 2017 available on the NOAA Fisheries website at: <https://www.fisheries.noaa.gov/topic/habitat-conservation>.

proposed MS4 discharges. The specific location information is taken from the NOAA Fisheries EFH Mapper⁹, using the following coordinates:

Connecticut River near Springfield, MA	Latitude 42.115, Longitude -72.619
Taunton River near Somerset, MA	Latitude 41.780, Longitude -71.116
Buzzards Bay	Latitude 41.691, Longitude -70.687
Coastal Cape Cod near Chatham, MA	Latitude 41.638, Longitude -70.180
Coastal Cape Cod near Eastham/Orleans, MA	Latitude 41.820, Longitude -69.923
Southern Cape Cod Bay near Barnstable, MA	Latitude 41.755, Longitude -70.347
Northern Cape Cod Bay near Marshfield, MA	Latitude 42.084, Longitude -70.633
Plymouth Bay	Latitude 41.992, Longitude -70.656
Boston Harbor	Latitude 42.342, Longitude -71.008
Northern MA Coast near Gloucester, MA	Latitude 42.645, Longitude -70.556
The Merrimack River near Haverhill, MA	Latitude 42.773, Longitude -71.073
The Mouth of the Merrimack River	Latitude 42.856, Longitude -70.807

Table 3. Species with designated EFH in coastal Massachusetts.

Species	Eggs	Larvae	Juveniles	Adults
Acadian redfish (<i>Sebastes fasciatus</i>)		X		
American plaice (<i>Hippoglossoides platessoides</i>)	X	X	X	X
Atlantic butterfish (<i>Peprilus triacanthus</i>)	X	X	X	X
Atlantic cod (<i>Gadus morhua</i>)	X	X	X	X
Atlantic halibut (<i>Hippoglossus hippoglossus</i>)	X	X	X	X
Atlantic herring (<i>Clupea harengus</i>)	X	X	X	X
Atlantic mackerel (<i>Scomber scombrus</i>)	X	X	X	X
Atlantic sea scallop (<i>Placopecten magellanicus</i>)	X	X	X	X
Atlantic surfclam			X	X
Atlantic wolfish	X	X	X	X
Basking shark	X	X	X	X
black sea bass (<i>Centropristis striata</i>)	n/a			X
bluefin tuna (<i>Thunnus thynnus</i>)			X	X

⁹ <https://www.habitat.noaa.gov/apps/efhmapper/>

bluefish (<i>Pomatomus saltatrix</i>)			X	X
Haddock (<i>Melanogrammus aeglefinus</i>)	X	X	X	X
Little Skate	n/a	n/a	X	X
Longfin inshore squid (<i>Loligo pealeii</i>)	n/a	n/a	X	X
monkfish (<i>Lophius americanus</i>)	X	X	X	X
Northern shortfin squid (<i>Illex illecebrosus</i>)				X
ocean pout (<i>Macrozoarces americanus</i>)	X	X	X	X
pollock (<i>Pollachius virens</i>)	X	X	X	X
Porbeagle shark	X	X	X	X
red hake (<i>Urophycis chuss</i>)	X	X	X	X
sand tiger shark (<i>Carcharias taurus</i>)		X		
scup (<i>Stenotomus chrysops</i>)	n/a	n/a	X	X
shortfin mako shark (<i>Isurus oxyrinchus</i>)			X	
Silver hake	X	X		X
spiny dogfish (<i>Squalus acanthias</i>)	n/a	n/a	X	X
summer flounder (<i>Paralichthys dentatus</i>)	X	X	X	X
Thorny Skate	n/a	n/a	X	X
white hake (<i>Urophycis tenuis</i>)	X	X	X	X
White shark			X	X
windowpane flounder (<i>Scopthalmus aquosus</i>)	X	X	X	X
winter flounder (<i>Pseudopleuronectes americanus</i>)	X	X	X	X
Winter Skate	n/a	n/a	X	X
witch flounder (<i>Glyptocephalus cynoglossus</i>)	X	X	X	X
yellowtail flounder (<i>Limanda ferruginea</i>)	X	X	X	X

<http://www.nero.noaa.gov/hcd/efhtables.pdf> ; Source for Skates:

<http://www.nero.noaa.gov/hcd/skateefhmaps.htm>; Additional Source for Sharks: NMFS. 2009.

Amendment 1 to the Consolidated Highly Migratory Species Fish Management Plan (Chapter 5: Essential Fish Habitat). June 2009. Available for download at:
<http://www.nmfs.noaa.gov/sfa/hms/EFH/index.htm>

In addition to the EFH species identified in Table 1, certain coastal areas of Massachusetts is designated as a Habitat of Particular Concern (HAPC).¹⁰ HAPCs are discrete subsets of EFH that provide important ecological functions or are especially vulnerable to degradation. See 50 CFR § 600.815. Several HAPCs were identified in the Amendment 2 Omnibus, including the Inshore Juvenile Atlantic Cod HAPC, which encompasses nearly all inshore coastal waters in Massachusetts, and Great South Channel Juvenile Cod HAPC, which encompasses coastal waters along outer Cape Cod.¹¹ The Summer flounder Submerged Aquatic Vegetation HAPC includes all native species of macroalgae, seagrasses, and freshwater and tidal macrophytes within adult and juvenile summer flounder EFH. Plymouth Bay has been designated by NOAA Fisheries Highly Migratory Species Division as a HAPC for the sand tiger shark. See Table 4.

Table 4. Location and description of Habitat of Particular Concern in the area of the proposed action.

Location of HAPC	Description of HAPC
Mouth of the Taunton River Buzzards Bay Coastal Cape Cod (south) Coastal Cape Cod (north) Cape Cod Bay (south) Cape Cod Bay (north) Plymouth Bay Boston Harbor Mouth of the Merrimack River	Inshore 20m Juvenile Cod
Mouth of the Taunton River Buzzards Bay Coastal Cape Cod (south) Coastal Cape Cod (north) Cape Cod Bay (south) Cape Cod Bay (north) Boston Harbor	Summer Flounder SAV
Coastal Cape Cod (north)	Great South Channel Juvenile Cod
Plymouth Bay	Sand Tiger Shark

(3) Analysis of Effects and EPA’s Finding of Potential Impacts: EPA determined that the discharge of stormwater from small MS4s, as governed by this permit action, may affect the EFH of the species listed above or the Habitat Area of Particular Concern. As described below, the Draft MS4

¹⁰ More information about HAPCs is available at <https://www.habitat.noaa.gov/application/efhinventory/index.html>.

¹¹ Omnibus Essential Fish Habitat Amendment 2 is available at https://d23h0vhsm26o6d.cloudfront.net/OA2-FEIS_Vol_2_FINAL_171025.pdf

Permit includes permit conditions and requirements to minimize any impacts that reduce the quality and/or quantity of EFH and HAPC. The primary potential impacts from the authorization of stormwater discharges under the Draft Permit are related to water quality. Discharges from small MS4s contain stormwater runoff from urban environments including areas such as rooftops, driveways, sidewalks, and roads. Typical pollutants in urban stormwater runoff include sediments, nutrients, bacteria, metals, chloride and oil & grease. The requirements of the Draft Permit target improvements in the quality of stormwater runoff to waters of the United States, including in areas where EFH has been designated. This NPDES permit is a reissuance of a general permit for municipal stormwater discharges which was originally issued in 2003 and reissued in 2016 with informal consultation by NMFS. The Draft Permit carries forward or advances the requirements of the 2016 MA MS4 permit. EPA expects that EFH will be protected through the following permit conditions:

MS4s are required to implement and enforce SWMPs designed to reduce pollutants discharged from their MS4s to the maximum extent practicable and to protect water quality. Implementation of a program to these standards should ensure the protection of aquatic life and maintenance of the receiving water as an aquatic habitat. Implementation of the SWMP includes:

A) Illicit Discharge Detection and Elimination: The Draft Permit carries forward the requirement from the 2016 MA MS4 permit to implement a program to systematically find and eliminate sources of non-stormwater discharges to its system. The Illicit Discharge Detection and Elimination (IDDE) Program in Part 2.3.4 of the Draft Permit includes specific requirements and procedures for implementation of the IDDE program, including system mapping, prioritization of outfalls with potential for illicit discharges, dry weather screening, wet weather outfall monitoring, record keeping, and systematic investigation of the storm drain network including evaluation key junction manholes to determine the location of a suspected illicit connections or discharge to an isolated pipe segment, and elimination of illicit discharges in a timely manner. The IDDE program and enforcing local requirements prohibiting non-stormwater discharges will eliminate illicit connections, and associated pollutants, to the MS4 including bacteria/pathogens, nutrients, heavy metals, and oil and grease. The elimination of illicit discharges under the Draft Permit will improve water quality and result in beneficial effects for receiving waters, including where there is designated EFH and HAPC.

B) Construction Site Runoff Control: Part 2.3.5 of the Draft Permit carries forward the requirement from the 2016 MA MS4 permit to implement a construction site runoff control program, which includes enacting and enforcing requirements for control of pollutants from construction sites, pre-construction plan review and approval, site inspections, and education for construction site operators. The permittees' implementation of this requirement will directly reduce the discharge of sediment and other construction related pollutants to fresh and marine waters, which will improve water quality and result in beneficial effects on all receiving waters, including those with designated EFH and HAPC.

C) Storm Water Management for New Development and Redevelopment: Part 2.3.6 of the Draft Permit maintains the requirement that MS4s implement a program to manage stormwater runoff from new development and redevelopment disturbing 1 or more acres. Over the long-term, this control measure will improve the hydrology of new and redevelopment sites through onsite retention, infiltration, or treatment of stormwater. Permittees must review plans for new development and redevelopment projects; ensure proper operation and maintenance of permanent stormwater management controls; conduct site inspections; and enforce local requirements within their jurisdictional powers. Retention, infiltration, or treatment of stormwater runoff will control the addition of pollutants in stormwater runoff from new and redevelopment, thereby minimizing adverse water quality impacts to receiving waters from new and redevelopment projects. In addition, Part 2.3.6 of the Draft Permit proposes new requirements to promote the use of LID techniques in street design standards in all municipalities. The long-term goal of this control measure is to encourage installation of stormwater control measures during development or redevelopment of permittee-owned streets. The use of LID techniques will reduce the volume of stormwater runoff and reduce the loads of sediment, bacteria/pathogens, heavy metals, nutrients, and other pollutants found in stormwater. The reduction in pollutants from stormwater control measures installed in compliance with Part 2.3.6 of the Draft Permit will protect receiving waters, including those with designated EFH and HAPC.

D) Good Housekeeping/Operations and Maintenance Program for Municipal Operations: Part 2.3.7 of the Draft Permit carries forward and advances requirements to properly operate and maintain stormwater infrastructure to reduce discharges of pollutants. All permittees must ensure that catch basins do not become more than 50% full and sweep their streets a minimum of twice per year (in spring and fall). Part 2.3.6 establishes new requirements for permittees to begin replacing outdated catch basins and to develop an Asset Management System to help track and maintain critical assets to ensure proper operation of the MS4. Permittees must also create operation and maintenance programs for permittee-owned properties to reduce stormwater pollutants by minimizing, where feasible, application of pesticides, herbicides, and fertilizers, as well as enacting pollution prevention actions to minimize exposure at permittee-owned material storage facilities, maintenance yards, and salt storage sites. Additional measures are required at waste handling facilities to reduce pollutants associated with those facilities. Finally, the Draft Permit establishes requirements for permittees to begin installing structural control measures to remove pollutants from stormwater runoff on properties identified as potentially feasible for retrofits under the 2016 MA MS4 permit. SCMs will not be installed within the waterbodies themselves and their construction is not expected to affect any EFH species, their habitat or forage. Good housekeeping efforts, including catch basin cleaning, street sweeping, operation and maintenance programs, and pollution prevention planning, will reduce the discharge of pollutants from wash-off from impervious areas, including sediment, heavy metals, oil and grease, chloride, bacteria/pathogens and nutrients. These

control measures will protect receiving waters and improve water quality, which will result in beneficial effects, including in waters with designated EFH and HAPC.

E) A Public Education Program: Part 2.3.2 and 2.3.3 of the Draft Permit carries forward from the 2016 MA MS4 permit requirements that permittees implement a public education program to distribute educational materials to the populations within the MS4 or conduct other outreach activities about the impacts of stormwater discharges on water bodies within the MS4 jurisdiction and steps the public can take to reduce pollutants in stormwater runoff. Education and involvement in stormwater management activities ensures that local audiences are knowledgeable about how their day-to-day activities may impact water quality. Public education efforts will increase public understanding, which will lead to pollutant reductions and will result in increased water quality and beneficial effects on receiving waters, including in waters with designated EFH and HAPC.

F) Water Quality-based Permit Limits: Part 2.2 of the Draft Permit carries forward and advances the requirements for certain impaired waters, including waters subject to an EPA-approved TMDL (Part 2.2.1 and Appendix F) and additional requirements necessary to protect water quality for water quality-limited waters (Part 2.2.2 and Appendix H). These requirements include enhanced best management practices to address known sources of nutrients, bacteria/pathogens, chloride, total suspended solids, metals, and oil and grease in watersheds subject to TMDLs or where receiving waters are listed as impaired for these pollutants. In addition, the Draft Permit carries forward numeric, water quality-based phosphorus reduction requirements for permittees in the Charles River watershed and establishes phosphorus reduction targets for permittees in the Mystic River watershed. SCMs implemented in compliance with these numeric targets will not be installed within the waterbodies themselves and their construction is not expected to affect any EFH species, their habitat or forage. These additional water quality-based requirements, many of which target coastal watersheds that are subject to EPA-approved TMDLs or are listed as impaired for pollutants associated with stormwater runoff (e.g., nutrients and bacteria/pathogens) will protect receiving waters and improve water quality, resulting in beneficial effects for waters with designated EFH and HAPC.

(3) Proposed Mitigation: Mitigation for unavoidable impacts associated with issuance of the Draft Permit is not warranted at this time because it is EPA's opinion that impacts will be negligible if permit conditions are followed. The conditions of the Draft Permit aim to achieve and maintain water quality standards through the antidegradation provisions contained within the Clean Water Act (CWA). Authorization to discharge under the general permit can be revoked if any adverse impacts to federally managed or protected species or their habitats do occur either because of noncompliance or from unanticipated effects from this activity. Should new information become available that changes the basis for EPA's assessment, then consultation with NMFS under the Magnuson-Stevens Fishery Conservation and Management Act will be reinitiated.

(4) EPA's Determination of Effect on EFH: Implementation of the SWMP in accordance with the requirements of the Draft Permit for the discharge of stormwater from Small Municipal Separate Storm Sewer Systems in Massachusetts, which includes the minimum control measures (Part 2.3 of the Permit) and measures to protect water quality (Part 2.2, Appendix F, and Appendix H of the Permit) described above will result in a reduction of pollutants to waters designated as EFH and/or HAPC. Therefore, adherence to the terms and conditions of the Draft Permit will have a beneficial effect on the receiving waters, which includes fresh and marine waters that serve as EFH. Finally, Part 1.3.f of the Draft Permit excludes authorization of stormwater discharges whose direct or indirect impacts do not prevent or minimize adverse effects on Essential Fish Habitat. EPA has determined that the conditions and limitations contained in the Draft Permit adequately protect all aquatic life, as well as the essential fish habitat and HAPC that overlap with the treated stormwater discharge. Further mitigation is not warranted. EPA will seek written concurrence from the NOAA Fisheries Habitat and Ecosystem Services Division regarding this assessment. Should adverse impacts to EFH or HAPC be detected as a result of this permit action, or if new information is received that changes the basis for EPA's conclusions, NOAA Fisheries Habitat and Ecosystem Services Division will be contacted and an EFH consultation will be re-initiated.

2.10.3 National Historic Preservation

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to take into account the effects of federal "undertakings" on historic properties that are listed on, or eligible for listing on, the National Register of Historic Places. The term federal "undertaking" is defined in the NHPA regulations to include a project, activity, or program of a federal agency including those carried out by or on behalf of a federal agency, those carried out with federal financial assistance, and those requiring a federal permit, license, or approval. See 36 CFR § 800.16(y). Historic properties are defined in the NHPA regulations at 36 CFR § 800.16(1) to include prehistoric or historic districts, sites, buildings, structures, or objects that are included in, or are eligible for inclusion in, the National Register of Historic Places. This term includes artifacts, records, and remains that are related to and located within such properties.

EPA's reissuance of the Small MS4 General Permit is a federal undertaking within the meaning of the NHPA regulations. Applicants for the Small MS4 General Permit must avoid adverse effects to historic properties, which may occur when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. See 36 CFR 800.5(a)(1). Consistent with the procedures and screening process described in Appendix D of the Draft Permit, EPA, in collaboration with the Massachusetts State Historic Preservation Officer (SHPO) and, if applicable, a Tribal Historic Preservation Officer(s) (THPO), will assist and guide applicants on methods of conducting subsurface activities to avoid adverse effects to historic properties. A determination that a federal undertaking has no potential to cause adverse effects on historic properties fulfills EPA's obligations under Section 106 of the NHPA.

As explained in Appendix D, EPA finds that the authorization to discharge stormwater consistent with a stormwater management plan under the Draft Permit, including the typical operation and maintenance of stormwater infrastructure, will not impact the potential to cause effects on historic properties. The Draft Permit also directs permittees to engage in certain related activities that will require subsurface earth disturbance that could potentially impact historic properties, including certain maintenance activities (e.g., replacing infrastructure) and installing structural stormwater control measures (SCMs). To address any issues relating to historic properties in connection with maintenance activities or the installation of new SCMs, EPA has developed a screening process and eligibility criteria, described in Appendix D of the Draft Permit, for permittees to certify that potential impacts of their activities covered by this permit on historic properties have been appropriately considered and addressed. Although individual NOIs for authorization under the general permit do not constitute separate federal undertakings, the screening criteria and certifications provide an appropriate site-specific means of addressing historic property issues in connection with EPA's reissuance of the general permit. MS4s seeking authorization under this general permit are thus required to make certain certifications regarding the potential effects from installation of SCMs that cause subsurface earth disturbance on properties listed or eligible for listing on the National Register of Historic Places. The requirements and screening process are of an ongoing nature – if an applicant later decides to undertake subsurface earth disturbance work that was not planned at the time of the NOI, it must comply with the requirements and procedures in Appendix D prior to performing the activity.

An applicant must complete and document the screening process described in Appendix D in its NOI, including that it meets one of the following criteria to be eligible for authorization under this permit:

- Criterion A:** No activity or installation of SCMs will result in subsurface earth disturbance during the permit term (i.e., the applicant eliminated the potential for effects on historic properties in Step 1).
- Criterion B:** Activities and/or installation of SCMs will result in subsurface earth disturbance during the permit term but no historic properties exist on the sites and/or prior earth disturbances have eliminated the possibility that historic properties exist on the sites (i.e., the applicant eliminated the potential for effects on historic properties in Step 2).
- Criterion C:** Activities and/or installation of SCMs will result in subsurface earth disturbance during the permit term but will have no adverse effect historic properties (i.e., the applicant determined there will be no adverse effects on historic properties in Step 3).
- Criterion D:** Activities and/or installation of SCMs will result in subsurface earth disturbance during the permit term and the SHPO, THPO, or other Tribal representative has

determined there is no potential to adversely affect historic properties (i.e., the applicant provided the appropriate materials to the SHPO, THPO, or other Tribal representative, who has either indicated that there will be no adverse effect or did not respond to the request for information in Step 4).

Criterion E: Activities and/or installation of SCMs will result in subsurface earth disturbance during the permit term and EPA, together with the applicant, completed consultation with the SHPO, THPO, or other Tribal representative to determine if there is potential to adversely affect historic properties is complete (i.e., EPA initiated consultation with the SHPO, THPO, or other Tribal representative, which resulted in a written agreement regarding treatment and/or mitigation of impacts to historic properties in Step 5).

Criterion F: Activities and/or installation of SCMs will result in subsurface earth disturbance during the permit term and EPA, together with the applicant, are continuing consultation with the SHPO, THPO, or other Tribal representative to determine if there is potential to adversely affect historic properties (i.e., EPA initiated consultation with the SHPO, THPO, or other Tribal representative, but the parties have not reached agreement regarding treatment and/or mitigation of impacts to historic properties in Step 5). The applicant must attach copies of any written correspondence with the SHPO, THPO, Tribal representative, or other consulting party and a description of any significant remaining disagreements as to mitigation measures to the NOI.

Criterion F: Installation of SCMs will result in subsurface earth disturbance during the permit term and consultation with the SHPO, THPO, or other Tribal representative to determine if there is potential to affect historic properties is ongoing (i.e., the applicant initiated consultation with the SHPO, THPO, or other Tribal representative, but the parties have not reached agreement regarding treatment and/or mitigation of impacts to historic properties in Step 5). The applicant must attach copies of any written correspondence with the SHPO, THPO, Tribal representative, or other consulting party and a description of any significant remaining disagreements as to mitigation measures to the NOI.

Authorization under the general permit is available only if the applicant certifies and documents permit eligibility in its NOI and SWMP using one of the eligibility criteria listed above. Small MS4s that cannot meet any of the eligibility criteria in above must apply for an individual permit.

Electronic listings of National and State Registers of Historic Places are maintained by the National Park Service - <http://www.nps.gov/nr/> and Massachusetts Historical Commission - <http://www.sec.state.ma.us/mhc/>

2.10.4 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA), 16 U.S.C §§ 1451 *et seq.*, and its implementing regulations (15 CFR Part 930) require that any federally licensed activity affecting the coastal zone of a state with an approved Coastal Zone Management Program (CZMP) must provide a certification to the permitting agency (with a copy to the state coastal zone management agency) indicating that the permitted activity will be consistent with the enforceable policies of the state CZMP. See 16 U.S.C. § 1456(c)(3)(A). EPA may not issue the NPDES permit until the state agency that administers the state's CZMP concurs with the permit applicant's certification, state concurrence has been conclusively presumed or the Secretary of Commerce overrides the state nonconcurrence. See *id.* See also 40 CFR § 122.49(d); 15 CFR §§ 930.62(a) and (c), 930.63(a).

In the case of general permits, EPA is responsible for making the consistency determination and submitting it to the state for concurrence. See 40 CFR § 930.31(d). EPA must certify that the activities authorized by this permit comply with the enforceable policies of the state's approved program and that the activities authorized by the permit will be conducted in a manner consistent with the program. The Massachusetts Division of Coastal Zone Management (MassCZM) has established enforceable policies that address natural, cultural, social, and economic resources. MassCZM has nine categories of enforceable policies: coastal hazards, energy, growth management, habitat, ocean resources, ports and harbors, protected areas, public access, and Water Quality.¹² EPA finds that the conditions in the Draft General Permit are consistent with the enforceable policies because they require MS4s to develop and implement a program that controls pollutants to the maximum extent practicable and implements targeted limitations and conditions to protect water quality.

Authorization to discharge stormwater from MS4s to waters of the United States under this General Permit will be consistent with the applicable Mass CZM policies outlined below.

Habitat Policy #1 Summary Statement: Protect coastal, estuarine, and marine habitats—including salt marshes, shellfish beds, submerged aquatic vegetation, dunes, beaches, barrier beaches, banks, salt ponds, eelgrass beds, tidal flats, rocky shores, bays, sounds, and other ocean habitats—and coastal freshwater streams, ponds, and wetlands to preserve critical wildlife habitat and other important functions and services including nutrient and sediment attenuation, wave and storm damage protection, and landform movement and processes.

Water Quality Policy #1 Summary Statement: Ensure that point-source discharges and withdrawals in or affecting the coastal zone do not compromise water quality standards and protect designated uses and other interests.

¹² A complete description of the enforceable policies is available at <https://www.mass.gov/info-details/massachusetts-office-of-coastal-zone-management-czm-policy-guide>.

Water Quality Policy #2 Summary Statement: Ensure the implementation of nonpoint source pollution controls to promote the attainment of water quality standards and protect designated uses and other interests.

All permittees must manage discharges of stormwater from the regulated areas to receiving waters to meet conditions of the Draft Permit, including requirements implemented consistent with applicable TMDLs (Part 2.2.1), requirements to reduce pollutants of concern in water quality-limited waters (Part 2.2.2), and requirements to implement minimum control measures to improve quality of stormwater runoff (Part 2.3). The Draft Permit requires permittees to continue implementation of stormwater management plans developed under the 2003 or 2016 MA MS4 permits, including continuing implementation of a suite of BMPs which target controlling stormwater runoff to improve water quality. The Draft Permit establishes new requirements to advance control of pollutants in stormwater runoff from nutrient limited waters and in the Mystic River watershed, promote green infrastructure in street design standards, replace old MS4 infrastructure, and implement structural SCMs to reduce pollutant loads.

The requirements of the Draft Permit will continue to ensure that stormwater discharges from urban areas via regulated MS4s continue to meet the habitat and water quality policies described above. The BMPs targeting sources of pollutants associated with stormwater (solids, bacteria/pathogens, nutrients, chloride, oil & grease, and metals) and structural SCMs treating stormwater runoff will reduce the discharge of these pollutants to protect coastal habitats and meet water quality standards. Uncontrolled point source discharges can impact the physical, biological, and chemical integrity and function of coastal resources. Reductions in nutrient loads in stormwater will support submerged aquatic vegetation and improved water quality will protect intertidal habitat. Under Part 1.3 of the Draft Permit, discharges that would adversely affect federally threatened and endangered species or their critical habitat, or which do not minimize impacts to Essential Fish Habitat, are not eligible for coverage. Part 2.1 of the Draft Permit establishes requirements to meet water quality standards, including additional requirements necessary to meet TMDLs, and ensure that all increased discharges are subject to Massachusetts antidegradation regulations at 314 CMR 4.04. These permit provisions provide consistency with the MassCZM water quality policies and ensure protection and maintenance of existing designated uses.

EPA has requested that MassCZM review EPA's determination and confirm that the MA MS4 General Permit is consistent with the Massachusetts Coastal Zone Management Program.

3.0 Explanation of Permit Limitations and Conditions

The majority of the limits in this permit are in the form of non-numeric control measures, commonly referred to as best management practices (BMPs). In limited circumstances, BMPs take the place of numeric effluent limitations to control or abate the discharge of pollutants, including, but not limited to, control of stormwater discharges authorized under section 402(p) of the CWA and where reasonable to achieve effluent limitations and standards or to carry out the

purpose of the CWA. 40 CFR § 122.44(k)(3) and (4). Due to the variability associated with stormwater and in accordance with 40 CFR § 122.44(k)(3), BMPs are currently the most appropriate method to regulate discharges of stormwater from municipal systems under this MS4 General Permit. See 64 Fed. Reg. 68753 (December 8, 1999) (“...EPA considers narrative effluent limitations requiring implementation of BMPs to be the most appropriate form of effluent limitations for MS4s. CWA section 402(p)(3)(b)(iii) expresses a preference for narrative rather than numeric effluent limitations by reference to ‘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.’ 33 U.S.C. 1342(p)(3)(B)(iii). EPA determines that pollutants from wet weather discharges are most appropriately controlled through management measures rather than end-of-pipe numeric effluent limitations.”). At the same time, where necessary, EPA also includes clear, specific, and measurable permit requirements to meet water quality standards. See November 26, 2014 Memorandum from Sawyers and Best-Wong Revising the November 22, 2002 Memorandum “Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Requirements Based on Those WLAs.”¹³

3.1 Water Quality Standards

CWA Section 402(p)(3)(B)(iii) provides that stormwater permits for MS4 discharges “shall require controls to reduce the discharge of pollutants to the maximum extent practicable...and other such provisions as the Administrator or the State determines appropriate for the control of such pollutants.” 33 U.S.C. 1342(p)(3)(B)(iii). If an MS4 discharges into waters that are meeting water quality standards, and there is no specific evidence to suggest that a permittee’s MS4 discharges would cause or contribute to exceedances of water quality standards, then the permittee is subject to the minimum control measures in Part 2.3 of the Draft Permit and described in Section 3.5 of this Fact Sheet to protect water quality. “Absent evidence to the contrary, EPA presumes that a small MS4 program that implements the six minimum measures... does not require more stringent limitations to meet water quality standards.” 64 Fed. Reg. 68753. However, under CWA Section 402(p)(3)(B)(iii), the NPDES permitting authority has the discretion to include additional requirements for reducing pollutants in stormwater discharges as necessary for compliance with water quality standards. *Defenders of Wildlife v. Browner*, 101 F.3d 1159, 1166 (9th Circ. 1999). In certain circumstances, minimum control measures alone will not suffice to eliminate stormwater-based exceedances of water quality standards. See 64 Fed. Reg. 68753 (“If the program is inadequate to protect water quality, including water quality standards, then the permit will need to be modified to include any more stringent limitations necessary to protect water quality.”). See 64 Fed. Reg. 68753. Consequently, EPA determined additional water quality-based effluent limitations (WQBELs) are necessary for certain MS4s discharging to waters subject to an EPA-approved Total Maximum Daily Load (TMDL) or to water quality limited waters in order to meet water quality standards. Parts 2.1 and 2.2 of the Draft Permit establish WQBELs for those

¹³ Available at <https://www.epa.gov/tmdl/establishing-total-maximum-daily-load-tmdl-wasteload-allocations-wlas-storm-water-sources-and>

discharges requiring additional controls in order to achieve water quality standards. The WQBELs supplement the minimum control measures in Part 2.3 of the Draft Permit as discussed in Section 3.5 of this Fact Sheet.

The WQBELs in this Draft Permit are substantially similar to those included in the 2016 MA MS4 permit. The 2003 MA MS4 permit first established certain conditions to meet water quality standards, including not authorizing discharges that would cause or contribute to an instream exceedance of water quality standards (Part I.B.2.k), requiring that discharges into any water for which a Total Maximum Daily Load (TMDL) had been established were consistent with the TMDL (Part I.B.2.l), and requiring permittees that discharge to water quality impaired waters to document in their SWMP how the MS4 will control the discharge of pollutants of concern and ensure that the discharges do not cause an instream exceedance of water quality standards (Part I.C.2). In addition, the 2003 MA MS4 permit includes a MassDEP § 401 water quality certification requirement that discharges comply with the Massachusetts Surface Water Quality Standards and provides that if any violation of the Standards or the conditions of the certification occur, MassDEP will direct the permittee to correct the violation(s) (Part IX).

EPA has retained similar requirements in this Draft Permit, both in order to be consistent with the antibacksliding provisions in CWA § 402(o) and 40 CFR § 122.44(l), and because of EPA's determination that it is appropriate to require limits more stringent than MEP in the circumstances discussed below. The 2016 MA MS4 permit established several additional and strengthened permit conditions to advance water quality improvements, including additional requirements for discharges to certain waters (and in some cases, their tributaries) subject to EPA approved TMDLs. In addition, the 2016 MA MS4 permit established additional requirements to control the discharge of pollutants commonly found in stormwater (bacteria/pathogens, nutrients, chloride, sediment, heavy metals, and oil and grease (hydrocarbons) where the discharge is to a waterbody that is experiencing an excursion above water quality standards due to one of the aforementioned pollutants.

The 2016 MA MS4 permit set forth compliance schedules and required implementation of best management practices, including, in certain cases, non-structural and structural stormwater control measures (SCMs), for discharges to waters subject to an approved TMDL (Appendix F) or discharges to waterbodies that are impaired due to bacteria/pathogens, nutrients, chloride, sediment, heavy metals, and/or oil and grease (hydrocarbons) (Appendix H). The Draft Permit carries forward the schedules and water quality requirements from the 2016 MA MS4 permit for discharges subject to an approved TMDL and discharges to certain impaired waters.

A permittee's compliance with all applicable requirements and applicable implementation schedules in Appendix F and/or H constitutes compliance with the requirement that discharges shall not cause or contribute to an exceedance of water quality standards (Part 2.1.1. of the Permit). All other discharges that cause or contribute to an exceedance of water quality standards due to the presence of pollutants not mentioned above, or are not subject to an EPA

approved TMDL, must be rectified, removed, or eliminated within 60 days of becoming aware of the exceedance.

3.1.1 New Dischargers

The NPDES regulations at 40 CFR § 122.4 impose strict requirements on “new dischargers” if they would cause or contribute to a violation of water quality standards. The definition of “new discharger” and terms within that definition are found in “New Discharger” means “any building, structure, facility, or installation (a) from which there is or may be a ‘discharge of pollutant’; (b) that did not commence the ‘discharge of pollutants’ at a particular ‘site’ prior to August 13, 1979; (c) which is not a ‘new source’; and (d) which has never received a final effective NPDES permit for discharges at that ‘site.’” 40 CFR § 122.2. The term “site” is defined to mean “the land or water area where any ‘facility or activity’ is physically located or conducted including adjacent land used in connection with the facility or activity.” “Facility or activity” is defined to mean “any NPDES ‘point source’ or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under the NPDES program.”

EPA has considered the applicability of the term “new discharger” in the context of MS4 permitting. When impervious surfaces are added within the jurisdiction of an existing MS4, or through expansion of an existing MS4, EPA views it as appropriate to treat the discharge of runoff from the new impervious surfaces as an increased discharge rather than as a new discharger. In other words, the runoff from the new impervious surface is added to the existing stormwater runoff regulated by the permit. This reasoning is based on a broad reading of the terms “site” and “activity” to apply to an MS4’s entire system, including portions of the system constructed in the future. Such a reading is consistent with how traditional MS4s are currently permitted (i.e., authorization is not limited to discharges or outfalls in existence at the time of the filing of an NOI).

The same logic applies when a new outfall is constructed within the jurisdiction of an existing MS4. In this case, that additional outfall is an expansion of the existing MS4 system and does not constitute a “new discharger.”

However, a non-traditional MS4 could construct an entirely new separate storm sewer system that is not connected to the existing system. For example, a state may construct a new public college campus, the federal government may construct a new military base, or a state highway department may construct a new highway alignment, all with new separate storm sewer systems that are geographically separate from the owner’s existing system(s). In this case, the new system is considered a “new discharger” for purposes of 40 CFR § 122.4(i). EPA views the new separate storm sewer system as a new “facility” at a new “site” from which it has not previously discharged. A discharge is considered geographically separate and, thus, subject to the requirements for a “new discharger,” if it is not physically located on the same or contiguous land as an existing system. In other words, a new separate storm sewer system associated with a state college or highway expansion onto contiguous property would not be considered a new

discharger, while a new system associated with an expansion on land that is not contiguous to the owner's previously permitted facility would be considered a "new discharger." This approach relies on the common understanding of the word "adjacent" as used in the definition of "site" to share a common border.

"New dischargers" may be subject to more stringent water quality requirements than those contained in this Draft Permit when the discharge is to an impaired waterbody with or without an approved TMDL, and EPA believes these conditions would need to be developed on a case-by-case basis. EPA also expects that the circumstance of a "new discharger" associated with a non-traditional MS4 as described above would be infrequent. Therefore, consistent with the 2016 MA MS4 permit, Part 1.3 of the Draft Permit states that a non-traditional MS4 that is a "new discharger" and discharges stormwater to impaired waters with or without an approved TMDL is not eligible for authorization under this permit and must seek coverage under an individual permit consistent with 40 CFR § 122.33(b)(2)(i) or (ii).

3.1.2 Antidegradation

The Draft Permit carries forward from the 2016 MA MS4 Permit additional requirements for increased discharges from existing MS4s to satisfy state antidegradation requirements. Increased discharges from existing MS4s include: (i) any proposed new activity that would result in new discharges of pollutants, and (ii) any proposed increase in loadings to a waterbody when the proposal is associated with existing activities.

A permittee is required to obtain authorization from MassDEP prior to commencement of increased discharges from existing MS4s. Permittees must provide MassDEP with a description of the discharge and documentation demonstrating that the discharge will satisfy the anti-degradation provisions of the 314 CMR § 4.04. The permittee must take into account in its anti-degradation analysis that Massachusetts evaluates whether a water is a "high quality" water on a pollutant-by pollutant basis. Thus, for anti-degradation purposes, a water may be high quality for some pollutants and not high quality for others. Documentation of MassDEP's antidegradation review and increased discharge authorization shall be included as part of the SWMP. If MassDEP produces guidance related to obtaining authorization for increased stormwater discharges, the permittee shall adhere to that guidance for compliance with 314 CMR § 4.04.

Part 1.3 of the Draft Permit states that increased discharges to outstanding resource waters or special resource waters are not authorized under this general permit. A permittee must seek authorization under an individual permit after satisfying the Massachusetts anti-degradation requirements. In such an instance, a permittee is advised to review the Massachusetts anti-degradation provisions at 314 CMR § 4.04 and any related state policy.

3.2 Discharges to Waterbodies with an Approved TMDL

CWA Section 303(d) requires States to identify waters for which effluent limitations and other controls are not stringent enough to meet water quality standards and to establish total maximum daily loads (TMDLs) for such waters for the pollutants of concern¹⁴. See 40 CFR § 130.7. A TMDL specifies the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. The TMDL allocates pollutant loadings to the impaired waterbody from all point and non-point pollutant sources. Regulations at 40 CFR § 130.2 define the TMDL as “the sum of the individual wasteload allocations (WLA) for point sources and load allocations (LAs) for non-point sources.” Mathematically, a TMDL is expressed as:

$$\text{TMDL} = \sum \text{WLA} + \sum \text{LA} + \text{MOS}$$

The MOS (margin of safety) takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality in determining an acceptable load of pollutants to a water. In addition to the MOS, WLAs and LAs make up portions of a receiving water’s loading capacity. The TMDL may establish a specific waste load allocation (WLA) for a specific source, or, in the case of stormwater, may establish an aggregate WLA that applies to numerous sources. The TMDL forms the basis for an implementation plan to meet the loading capacity of the waterbody. Implementation of the plan should result in the achievement of water quality standards.

The 2016 MA MS4 permit established specific additional measures applicable to MS4 discharges into impaired waters (or in some cases their tributaries) to be consistent with the assumptions and requirements of specific, EPA-approved TMDLs at the time of permit issuance.¹⁵ The 2016 MA MS4 permit included requirements for both “in-State TMDLs” (i.e., those completed by MassDEP¹⁶) and “out of State TMDLs” (i.e., those completed by neighboring states but which identify Massachusetts MS4s as contributors to the impairment). The Draft Permit carries forward from the 2016 MA MS4 permit additional measures consistent with assumptions and requirements of EPA-approved TMDLs and establishes new requirements consistent with any TMDLs that have been approved by EPA since issuance of the 2016 MA MS4 permit. A list of EPA-approved TMDLs at the time of issuance of the Draft Permit is provided in Table 5. New TMDLs that have been added since the last MS4 issuance are noted in **Bold**.

¹⁴ Information on the 303(d) lists in Region 1 can be found at: <https://www.epa.gov/tmdl/region-1-impaired-waters-and-303d-lists-state>

¹⁵ Information on approved TMDLs in Region 1 can be found at: <https://www.epa.gov/tmdl/region-1-approved-tmdls-state>

¹⁶ Information on Massachusetts TMDLs can be found at: <https://www.mass.gov/total-maximum-daily-loads-tmdls>. MassDEP also offers a geospatial representation of EPA-approved TMDLs to assist permittees in identifying waterbody segments and their contributing drainage areas for which TMDLs have been developed. The MassDEP TMDL Viewer is available at <https://www.mass.gov/info-details/total-maximum-daily-load-tmdl-viewer>.

Table 5. List of EPA-approved TMDLs		
Pollutant of Concern	In-State TMDL	Out of State TMDL
Bacteria/Pathogens TMDLs	Boston Harbor Watershed	Kickemuit Reservoir
	Buzzards Bay Watershed	Upper Kikemuit River
	Cape Cod Watershed	Kickemuit River
	Charles River Watershed	Ten Mile River
	Narragansett Bay Watershed	Lower Ten Mile River
	Neponset River Basin	Omega Pond
	North Coastal Watershed	
	South Coastal Watershed	
	Taunton River Watershed	
	Shawsheen River Basin Watershed	
	Blackstone River Watershed	
	Concord River Watershed	
	Ipswich River Watershed	
	Merrimack River Watershed	
	Parker River Watershed	
	Weymouth-Weir and Mystic Watersheds	
	<i>Draft Massachusetts Statewide Pathogen TMDL¹</i>	
Phosphorus TMDLs	Lower Charles River Basin	Kickemuit Reservoir
	Upper Charles River Basin	Upper Kikemuit River
	Assabet River	Kickemuit River
		Ten Mile River
		Central Pond
		Turner Reservoir
		Lower Ten Mile River
		Omega Pond
Nitrogen TMDLs	Cape Cod Watershed	Connecticut River Watershed (Long Island Sound TMDL)
	Buzzards Bay Watershed	Housatonic River Watershed (Long Island Sound TMDL)
	Islands Watershed	Thames River Watershed (Long Island Sound TMDL)
	Chilmark Pond	
	Slocums and Little River Embayment	
Lakes and Ponds Phosphorus TMDLs	Northern Blackstone River Watershed	
	Chicopee River Basin	
	Connecticut River Basin	
	French River Basin	
	Millers River Basin	
	Bare Hill Pond	
	Flint Pond	

	Indian Lake	
	Lake Boon	
	Leesville Pond	
	Salisbury Pond	
	White Island Pond	
	Quaboag Pond	
	Quacumquasit Pond	
	East Monponsett Pond	
	Lake Quinsigamond	
	Stetson Pond	
	West Monponsett Pond	
	White Oak Reservoir	
Metals TMDLs		Upper Ten Mile River
		Lower Ten Mile River
		Central Pond
		Turner Reservoir
		Omega Pond

¹ MassDEP issued a Draft Statewide TMDL for Pathogen-Impaired Waterbodies for comment in March 2024. This TMDL applies to 210 freshwater river segments and 18 marine segments in 28 watersheds listed in the 2018/2020 List of Integrated Waters (303d List). If the Statewide Pathogen TMDL is approved by EPA prior to issuance of a Final MS4 Permit, permittees that discharge to the listed segments from MS4s will be subject to the requirements in Appendix F. Additional information on the Draft Statewide Pathogen TMDL, including a list of waterbody segments, is available at <https://www.mass.gov/doc/draft-massachusetts-statewide-tmdl-for-pathogen-impaired-waterbodies/download>.

Each TMDL report contains an individual waterbody description and problem assessment, identifies the receiving water's capacity for the pollutant at issue in order to meet water quality standards, and sets wasteload and load allocations and a margin of safety. TMDLs are typically supplemented with implementation plans which, while not a formal component of the TMDL, do serve as a road map to implementation. They often contain recommended BMPs and actions to reduce the specific pollutant such that the discharges are consistent with established WLAs and LAS. EPA considers the implementation plans in development of the conditions included in the 2016 MA MS4 permits and any new requirements in the Draft Permit. Requirements consistent with the pertinent TMDLs included in Part 2.1 of the Draft Permit and in Appendix F are explained in more detail below.

3.2.1 Requirements for Discharges to Impaired Waters with an Approved MassDEP In-State TMDL

3.2.1.1 Charles River Basin Nutrient (Phosphorus) TMDL

On October 17, 2007, EPA approved *Final TMDL for Nutrients in the Lower Charles River Basin* (Lower Charles TMDL) (Massachusetts Department of Environmental Protection, 2007) and on June 10, 2011 EPA approved *Total Maximum Daily Load for Nutrients in the Upper/Middle Charles River* (Upper/Middle Charles TMDL) (Massachusetts Department of Environmental Protection,

2011). The two nutrient TMDLs address severe water quality impairments resulting from the excessive growth of algae caused by excessive amounts of phosphorus in discharges to the Charles River system. In summary, the TMDLs set WLAs that specify reductions for discharges of phosphorus throughout the entire Charles River Watershed (CRW). Watershed-wide reductions are needed because of the severity and extent of phosphorus-related water quality impairments that exist in numerous impoundments throughout the Charles River system.

Part 2.2.1.a and Appendix F of the Draft Permit carries forward the requirements applicable to MS4s subject to the Charles River Nutrient TMDLs from the 2016 MS4 permit including the PCP schedules and milestones, alternative schedule requests, IDDE credit, and the performance evaluations.

PCP Schedules and Milestones

Part A.I. of Appendix F of the 2016 MA MS4 permit established a requirement for MS4s discharging to the CRW to develop and implement Phosphorus Control Plans (PCPs) to reduce phosphorus load to the Charles River and its tributaries. The PCP requirement set forth a 20-year schedule for implementation of non-structural and structural SCMs to achieve the stormwater phosphorus load reductions specified in Appendix F in three phases. Based on the effective date of the 2016 MA MS4 permit, the schedule for the 20-year PCP term began in 2018 and continues through the year 2038. MS4s were required to complete the requirements through the first five years under the 2016 MA MS4 permit culminating with the submission of Phase 1 of the PCP. Part I.A in Appendix F of the Draft Permit carries forward the permit conditions from the 2016 MA MS4 permit and requires MS4s subject to the CRW TMDL to complete requirements consistent with the schedule laid out in the 2016 MA MS4 permit, reproduced in the Draft Permit without the milestones that have already passed. No changes to the PCP implementation milestones are proposed in this Draft Permit and EPA has received no new information that would warrant a change in implementation schedule. During this permit term, MS4s will primarily be implementing Phase 1 of the PCP and developing Phase 2. For a detailed description of the requirements of each PCP Phase that have been carried forward here please refer to Attachment 1 to the 2014 Fact Sheet, the 2016 RTC, and Attachment 1 to RTC 2016.

Alternative Schedule Requests

On December 7, 2020, EPA modified the 2016 MA MS4 permit including changes to Part A.I. of Appendix F. Specifically, the 2020 Modification allowed for the submission of Alternative Schedule Requests (ASRs) during each phase of PCP implementation. For a complete discussion of the Appendix F Modification see the Statement of Basis for Proposed Permit Modification.¹⁷ This Draft Permit carries forward the ability for permittees to submit ASRs during each PCP implementation phase. While the schedules to meet phosphorus reductions in each phase of the PCP contained in the 2016 MA MS4 permit and carried forward in this Draft Permit are assumed

¹⁷ <https://www3.epa.gov/region1/npdes/stormwater/ma/ma-small-ms4-2020-mods-sob.pdf>. EPA, 2020.

to represent a schedule achievable by all permittees, there may be extenuating circumstances that make meeting the schedules in Appendix F Part I.A impracticable, even when the permittee is working to meet the original phosphorus reduction milestones. EPA expects that the need to request an alternative schedule would happen rarely, especially during Phase 1 of PCP implementation. Consistent with the modifications to the 2016 MA MS4 permit, the Draft Permit describes the process for a permittee to request a change to the schedules in Appendix F Part I.A. Each Charles River PCP phase in Appendix F Part I.A of the Draft Permit contains specific information that permittees seeking an alternative schedule must submit as part of the ASR package and the term “impracticable” would be interpreted based on the required information to be submitted with each ASR package.

During this permit term, when Phase 1 of the PCP is being implemented, permittees would only be able to submit an ASR when the milestones in Table F-1 are unaffordable, and the ASR may only include an alternative schedule to meet the milestones of Table F-1 numbers 1-11 through 1-14 for which the compliance date has not passed. The submittal must include information on PCP implementation to date, including information demonstrating the permittee’s efforts and extent of progress made to meet the applicable phosphorus reduction milestones, a narrative of the reasons why an alternative schedule is being sought, detailed cost information for planned structural controls to meet the Phase I milestones on the requested schedule, a detailed affordability analysis including information related to funding mechanisms, and a requested schedule to meet all phosphorus reduction milestones in Phase 1. To date, EPA has not received an ASR for Phase 1 milestones. Phase 2 and Phase 3 ASRs would need to contain all the information above, as well as information on any other conditions concerning capital improvement project scaling, permitting and land acquisition impediments, and other feasibility information supporting the need for an alternative schedule. An ASR would need to include an affordability assessment and planning document detailing the reasons an alternative schedule is warranted and must include a plan to meet the phosphorus reduction requirements of the phase from which relief is sought.

The Draft Permit carries forward specific review steps for each ASR submittal. Specifically, EPA would review the ASR package for completeness and may request more information from the permittee to determine that the request is complete. If EPA were to not act to determine that the ASR package is complete within 30 days of receipt or did not request additional information within 30 days of receipt, the ASR would be deemed complete. If EPA were to find the ASR to be complete (or automatically deemed complete), EPA would post the ASR package on its website for 30 days and take public comment on the ASR. Following the 30-day public comment period, EPA would take action in writing to approve or deny an ASR to meet the phosphorus reduction milestones for the phase in which relief is sought within 90 days of the close of the public comment period. EPA would address all relevant comments received during the comment period during the approval or denial process and may change the Alternative Schedule requested by the permittee prior to approval, with the permittee’s consent. If EPA were to fail to take action on the ASR within 90 days of the close of the public comment period, the request would be deemed approved automatically. EPA would retain discretion to deny a permittee’s request based on

permit non-compliance and use enforcement mechanisms where appropriate for those permittees. Any action by EPA approving or denying an ASR (or automatic approval after 90 days of inaction after the close of public comment period) would be a final agency action subject to judicial review in federal district court.

Upon approval of an Alternative Schedule, the permittee would be required to update its PCP to include the approved alternative schedule milestones and implement their PCP according to the approved schedule. Until ASR approval, permittees would remain subject to the original schedules and milestones contained in Appendix F Part I.A if necessary, permittees would submit separate ASRs for each PCP phase and EPA would treat each submittal as distinct from any previous request.

IDDE Credit

The Draft Permit also carries forward the removal of the presumptive IDDE credit that was removed from phosphorus reduction requirements as part of the 2020 Permit Modification. EPA will recalculate the watershed wide phosphorus reduction due to IDDE implementation by all permittees following completion of all permittees' IDDE programs (10 years after the permit effective date). The watershed wide phosphorus reduction realized through IDDE implementation will then be distributed among the permittees to reduce each permittee-specific required phosphorus reduction target following IDDE program completion in a future reissuance of the MS4 permit or a permit modification.

Performance Evaluation and Stormwater Phosphorus Increases due to Development since 2005 (baseline year)

For the purpose of demonstrating compliance with the phosphorus reduction requirements and milestones in Tables F-1, F-3, and F-4 of Appendix F, Part I.A, the Draft Permit carries forward from the 2016 MA MS4 permit the requirement that permittees evaluate the effectiveness of the PCP by tracking stormwater phosphorus load reductions achieved through implementation of structural SCMs and non-structural BMPs using credits developed for this permit by EPA and the phosphorus load increase due to development since 2005 (consistent with the data supporting the TMDL). The Draft Permit directs the permittee to calculate stormwater phosphorus load reductions consistent with methodologies provided in Attachment 2 to Appendix F (non-structural BMP performance) and Attachment 3 to Appendix F (structural SCM performance) for all stormwater controls implemented to date. The permit also requires permittees to calculate total phosphorus export increases due to development. The purpose of this requirement is for permittees to account for changes in their PCP stormwater phosphorus load reduction requirements due to increases in stormwater phosphorus load associated with new development projects since completion of the water quality analysis that forms the basis of the TMDL. Increases in impervious area associated with new development or re-development will result in increases in stormwater phosphorus load rates, while removal of impervious surfaces and restoration of permeable surfaces will result in reductions in stormwater phosphorus loading

rates. Attachment 1 to Appendix F of the Draft Permit provides a methodology to calculate the increase in stormwater phosphorus loads due to development. Attachment 3 to Appendix F provides the methodology to calculate phosphorus reduction credits for removing impervious area and from the installation of structural SCMs, and Attachment 2 to Appendix F provides the methodology for calculating credits for non-structural BMPs. Each new or redevelopment project will need to be accounted for in two places in the performance evaluation: 1) in the load increase as if no stormwater controls were installed on the property (consistent with Attachment 1 to Appendix F); and 2) in the phosphorus reductions from stormwater controls installed on the new or redeveloped site (calculated using Attachments 2 and 3 to Appendix F). This process is explained in detail in Attachment 1 to Appendix F. The Draft Permit also carries forward the requirement to calculate stormwater phosphorus load increases due to development since 2005 that were contained in the 2016 MA MS4 permit (Part A.I.2. of Appendix F). This requirement was intended to be backward looking to catch permit holders up to current phosphorus exports due to previous development whereafter phosphorus increases due to development can be calculated on a project-by-project basis as described above. The Draft Permit requires permittees subject to Part I.A in Appendix F to calculate their current phosphorus export (baseline plus increases due to development since 2005) as part of their NOI. Each permittee subject to the requirements of Part I.A of Appendix F is required to submit the increased phosphorus load due to development in their community since 2005 in order to be eligible for permit coverage. This calculation was expected to be completed with the Phase 1 PCP.

EPA is aware that this calculation may be time consuming to calculate for many communities, usually requiring sorting through paper records for development documentation. Some communities have chosen to calculate increased phosphorus load due to development since 2005 by relying on manually updating the 2005 land use layer with known land use change and applying up-to-date land cover information (impervious cover) for their community. Others may have capacity, data, and expertise to use GIS data to calculate the increase. In this Draft Permit, EPA has chosen not to prescribe a single method to calculate phosphorus export increases due to development and instead kept the language the same as the 2016 MA MS4 permit. A project by Charles River Watershed Association, funded by MassDEP, has helped many communities update their stormwater phosphorus export due to development since 2005. EPA finds the data and methodology of this project to be an acceptable, streamlined, and consistent way to update each permittees increased phosphorus load due to development for the NOI.¹⁸ However, the Draft Permit does not require the use of the CRWA tools and maps to complete this permit requirement. EPA is specifically seeking comments on an equitable way to streamline the calculation of stormwater phosphorus increases due to development for this permit and future permits.

Proposed Changes from the 2016 MA MS4 permit (as modified)

¹⁸ Helping Cities & Towns Reduce Phosphorus found at <https://www.crwa.org/stormwater-regulations>

While the majority of the PCP requirements remain unchanged in the Draft PCP, EPA is proposing four updates to Part I.A in Appendix F. First, the units throughout Appendix F have been converted from kilograms per year (kg/yr) to pounds per year (lb/yr) in the Draft Permit. This is a simple unit conversion for clarity and does not represent a change in any baseline phosphorus load, required phosphorus load reduction, or allowable phosphorus load for any permittee.

Second, Table F-3 from the 2016 MA MS4 Permit was removed in the Draft Permit consistent with the expansion of the MS4 regulated area to the entire Charles River Watershed as described in part 2.2.1 of this Fact Sheet. Of the 34 permittees subject to the phosphorus reduction requirement in Part I.A of this Draft Permit (listed in Table F-2), 20 have already elected to extend the scope of their PCP to encompass their entire jurisdiction according to submitted Phase 1 PCPs. The other 13 permittees will need to update their PCP area for Phase 2 PCP planning and implementation, consistent with the baseline phosphorus load, required phosphorus reduction, and allowable phosphorus load contained in Table F-2 and the milestones for Phase 2 of the PCP contained in Table F-3. The Draft Permit does not require permittees that did not elect to implement their PCPs jurisdiction wide within the Charles River watershed to modify their PCP for Phase 1. Instead, the Draft Permit is forward-looking and allows flexibility to implement their Phase 1 plan as designed while incorporating additional PCP requirements for jurisdiction-wide implementation during Phase 2 and Phase 3 of PCP implementation.

Third, the Draft Permit includes an update to the baseline phosphorus load in Appendix F Table F-2 in Appendix F for Cambridge, Massachusetts. The baseline phosphorus loads for all other permittees remain unchanged from the baseline values in the 2016 MA MS4 permit. The 2016 MA MS4 permit provided the baseline phosphorus loads based on land use and land cover (i.e., impervious area) as of 2005. EPA relies on the 2005 data as it is the dataset most representative of the period of analysis for the TMDL (1998-2002) and, as such, the phosphorus loads from land use present during TMDL development. See Attachment 1 to the 2014 Fact Sheet and Attachment 1 to the 2016 RTC. Under the 2016 MA MS4 permit, permittees were also able to submit land use or impervious area data that they believed more accurately represented land use and land cover conditions in 2005 than the data used by EPA. This data was to be submitted to EPA with year 4 Annual Reports. Cambridge, Needham, Westwood, Dedham, and the Department of Conservation and Recreation (DCR) all submitted data they believed more accurately represented land use and land cover as of 2005.

DCR submitted updated property ownership information, but the baseline loads from the properties aligned with the baseline loads in the 2016 MA MS4 permit and did not alter the baseline load assigned to DCR in the Draft Permit. Needham, Dedham and Westwood provided land use changes and land cover changes that were not representative of conditions in 2005 (the required baseline year) and therefore were not considered representative of the TMDL period. Much of the data submitted by Dedham, Westwood and Needham is consistent with the 2016 MA MS4 permit requirement to track the increase in phosphorus loading due to development that occurred after 2005 and should be used to calculate the current phosphorus export (baseline plus increases due to development since 2005) with their NOI submission as discussed above.

EPA notes that it is imperative to maintain a baseline calculation that is consistent with the TMDL monitoring period in the EPA-approved Charles River TMDLs to ensure the requirements of the 2016 MA MS4 permit, this Draft Permit, and any future permit accurately reflect the assumptions and requirements of the WLAs contained in the Lower Charles and Upper/Middle Charles TMDLs.

Cambridge submitted information detailing the extent of impervious area in 2005 that identified an issue with the land cover dataset used in assigning Cambridge's baseline load. Specifically, one raster tile was omitted from the land cover data for Cambridge. EPA conducted an analysis to verify the information submitted by Cambridge and recalculate the baseline load to be consistent with EPA's calculation of baseline loads for all permittees in the Charles River. The updated baseline phosphorus load for Cambridge in Table F-3 in Appendix F of the Draft Permit is 2,288 pounds per year (lbs/yr). The updated required reduction for Cambridge in the Draft Permit is 1,419 lbs/yr and the allowable phosphorus load is 869 lbs/yr. In addition, Cambridge submitted an updated sewer separation layer detailing additional separated areas that were not contemplated during TMDL development. In order to remain consistent with the TMDLs, this data was not used in recalculating Cambridge's baseline phosphorus load in the permit; this area must be tracked as an increase in phosphorus load for Cambridge for the purposes of reporting in Part I.A.2 of Appendix F.

Finally, EPA updated baseline phosphorus loads, phosphorus reduction requirements, and allowable phosphorus loads for communities that contain non-traditional MS4s and re-assigned baseline, reduction requirements, and allowable loads to 6 non-traditional MS4s in the Charles River Watershed. Part A.I. of Appendix F in the 2016 MA MS4 permit assigned baseline phosphorus loads, phosphorus reduction requirements, and allowable phosphorus loads to the Massachusetts DCR but the universe of other non-traditional MS4s within the Charles River Watershed was unknown at that time. The Draft Permit includes 6 additional, non-traditional MS4s within the Charles River Watershed that were authorized under the 2016 MA MS4 permit to Part I.A of Appendix F. The 6 non-traditional MS4s are each assigned a baseline phosphorus load (consistent with 2005 land use and impervious cover), a required reduction (based on location and land use consistent with the methodology used for the 2016 MA MS4 permit as described in Attachment 1 to the 2014 Fact Sheet, the 2016 RTC, and Attachment 1 to the 2016 RTC), and an allowable phosphorus load for each non-traditional MS4. EPA also revised the baseline phosphorus load, required reduction, and allowable phosphorus load for municipal permittees that correspond to the non-traditional MS4 loads. Phosphorus loads have been updated for the Town of Wellesley (removing loading from MassBay Community College), the Town of Walpole (removing loading from the portion of the Norfolk-Walpole Correctional Complex in Walpole), the Town of Norfolk (removing loading from the portion of the Norfolk-Walpole Correctional Complex in Norfolk), and the City of Boston (removing loading from two Department of Capital Asset Management properties and two Department of Veterans Affairs properties). It should be noted that the City of Boston is not subject to this permit and the inclusion of assign baseline phosphorus loads, phosphorus reduction requirements, and allowable phosphorus loads in Table F-3 is for reference only. Because the Norfolk-Walpole Correctional Complex is in two towns, the baseline phosphorus load, phosphorus reduction requirement, and

allowable phosphorus load was split into two loads according to the town boundaries. Baseline phosphorus loads, phosphorus reduction requirements, and allowable phosphorus loads contained on Table F-3 in Appendix F for all other communities remain unchanged from the values in the 2016 MA MS4 permit.

Residual Designation Authority Petition

On May 9, 2019, the Conservation Law Foundation (CLF) and the Charles River Watershed Association (CRWA) submitted to EPA a "Petition for a Determination that Certain Commercial, Industrial, Institutional, and Multi-Family Residential Property Dischargers Contribute to Water Quality Standards Violations in the Charles River watershed, Massachusetts, and that NPDES Permitting of Such Properties is Required." On September 14, 2022, EPA exercised its residual designation authority in response to the water quality impacts caused by stormwater discharges in the Charles River watershed and to the petition by preliminarily designating for NPDES permitting certain commercial, industrial, and institutional properties with one or more acres of impervious cover in the Charles River Watershed.

Part 1.3.d of the Draft Permit explains that stormwater discharges currently authorized under another NPDES permit, including discharges covered under other regionally issued general permits, are not authorized under this MS4 Permit. Currently, there is no effective NPDES permit for non-industrial stormwater discharges from private properties in this watershed. EPA released a Draft Permit for Commercial, Industrial, and Institutional (CII) Properties in the Charles River Watershed for Public Notice on October 31, 2024. As such, stormwater discharges from certain private properties that are currently authorized under the MS4 Permit may not be eligible for coverage in the future. As a result, the portion of the required phosphorus reduction and allowable phosphorus loads assigned to municipalities in the Charles River watershed generated from CII properties may need to be reassigned. In addition, the process for accounting for new and redevelopment on CII properties authorized under a Final CII Permit in the Charles River Watershed may be impacted by final permit conditions. However, changes to the TMDL-based requirements for the Charles River watershed at this time, prior to an effective NPDES permit for CII properties, would be premature and may predetermine the conditions of a Final CII Permit. EPA expects that it will adjust municipal phosphorus load reduction requirements in the MS4 Permit for municipalities in the Charles River Watershed after a Final CII Permit becomes effective. EPA may modify or reissue the MS4 permit as necessary to account for these changes at that time. EPA is seeking comment on equitable and effective methods to revise the required phosphorus reduction requirement and allowable phosphorus loads to account for potential future changes from an effective CII Permit for certain properties in the Charles River watershed.

3.2.1.2 Lake and Pond Phosphorus TMDLs

MS4s that discharge to waterbody segment covered by an EPA-approved Lake and Pond Phosphorus TMDL are subject to additional requirements in Part 2.2.1.b and Appendix F of the

Draft Permit.¹⁹ The Draft Permit carries forward requirements applicable to MS4s subject to Lake and Pond Phosphorus TMDLs from the 2016 MA MS4 Permit. Since issuance of the 2016 Permit, EPA has approved a Phosphorus TMDL for Stetson Pond, East and West Monponsett Ponds, and White Oak Reservoir, located in the MS4 towns of Halifax, Hanson, and Pembroke, respectively. The Draft Permit extends the Lake and Pond Phosphorus TMDL requirements of the 2016 MA MS4 permit to these MS4s based on the TMDL. A list of EPA-approved TMDLs is provided in Table 6.

Table 6. List of EPA-approved Lake and Pond Phosphorus TMDLs¹		
Approval Year	Waterbody	Town(s)
2000	Bare Hill Pond	Harvard
2002	Connecticut Lakes	Hadley, Granby, Leverett, Springfield, Shutesbury
2002	Chicopee Lakes	Ludlow, Oakham, Spencer, Springfield, Wilbraham, West Brookfield
2002	Northern Blackstone Lakes	Auburn, Leicester, Millbury, Shrewsbury, Worcester
2002	Leesville Pond	Auburn, Worcester
2002	Lake Quinsigamond	Shrewsbury, Worcester
2002	Lake Boon	Hudson, Stow
2002	Flint Pond	Grafton, Worcester, Shrewsbury
2002	French Basin Lakes	Charlton, Oxford, Leicester, Dudley, Spencer
2003	Millers Basin Lakes	Royalston, Gardner, Templeton, Petersham, Athol, Winchendon, Westminster, Ashburnham, Rindge, Philipston
2007	Quaboag Pond & Quacumquasit Pond	Spencer, Brookfield
2022	West Monponsett Pond, East Monponsett Pond, Stetson Pond, & White Oak Reservoir	Halifax, Hanson, Pembroke

¹ List of EPA-approved Lake and Pond Phosphorus TMDLs is not exhaustive. Any municipality that discharges stormwater from an MS4 to a lake or pond or its tributaries listed in Table F-6 is subject to the requirements at Part 2.2.1.b and Appendix F Part I.B. TMDLs for lakes and ponds not located in MS4 area or for towns subject to a separate stormwater permit (e.g., Worcester) are not included. Towns subject to a TMDL but which do not have MS4 area (e.g., Royalston) are not subject to the requirements of the MS4 Permit.

The Lake and Pond Phosphorus TMDLs address water quality impairments resulting from the excessive growth of algae caused by an over-abundance of phosphorus in discharges to the lakes and ponds. The identified impairments in these waters include a variety of pollutants related to nutrient impairments including, but not limited to, noxious plants, low dissolved oxygen, turbidity, nutrients, over-abundance of nuisance aquatic plants, and nutrient enrichment, all of

¹⁹ TMDLs that fall outside of designated MS4 area or which are located in areas otherwise not subject to this permit (e.g., the City of Worcester) are not subject to the requirements of in this Part.

which are indicators of eutrophication. In freshwater systems, the primary nutrient known to accelerate eutrophication is phosphorus.

TMDL Stormwater Allocations and Draft Permit Requirements

The Draft Permit carries forward from the 2016 MA MS4 permit the relative percent reduction in annual phosphorus loading from regulated MS4 areas consistent with the applicable TMDLs. The relative percent reductions are listed in Part I.B of Appendix F of the Draft Permit. The 2016 MA MS4 permit methodology for deriving relative percent reductions in annual phosphorus reductions is explained in detail the 2014 Fact Sheet (p. 41-43). Briefly, EPA based the relative percent reductions on a combination of wasteload allocation (WLA) where the TMDL allocated phosphorus loads for urban stormwater, and load allocation (LA) where the TMDL included developed stormwater sources of phosphorus.

Most of the TMDLs approved at the time of the 2016 MA MS4 permit allocated phosphorus load based on land use. Some TMDLs categorized all land uses, including the phosphorus load from stormwater, into the LA (e.g., Northern Blackstone Lakes, Chicopee Basin Lakes, Connecticut Basin Lakes TMDLs). Others included some of the phosphorus load from stormwater in the LA but also allocated a portion of the WLA for high density and commercial land uses (e.g., French Basin Lakes, Millers Basin Lakes, Leesville Pond, Quabog Pond TMDLs). In both circumstances, EPA calculated the relative percent reduction required based on the sum of all current land use phosphorus loads and target load allocations, regardless of the allocation between LA and WLA. This method takes into consideration the differences in each TMDL allocation and best represents regulated stormwater from urbanized area, since regulated urbanized area could include all of the land use types across the watershed. In all cases, EPA subtracted point source loads (e.g., wastewater treatment plants), septic systems, and internal loading as these sources are not representative of urban stormwater. The remaining TMDLs from the 2016 MA MS4 permit (Lake Boon, Bare Hill Pond, and Lake Quinsigamond & Flint Pond) allocated phosphorus sources according to watershed specific WLAs and LAs that did not include land use categories. EPA calculated relative percent reductions for these three TMDLs based on the sources that best represented urbanized regulated stormwater (e.g., wet weather runoff).

Beyond the requirements carried forward from the 2016 MA MS4 permit, this Draft Permit establishes relative percent annual phosphorus reductions for stormwater discharges from MS4s in Halifax, Hanson, and Pembroke based on the 2022 West and East Monponsett Pond System TMDL.²⁰ For these waterbodies, MassDEP estimated annual stormwater phosphorus loads using land use classification, analysis of impervious cover, hydrologic soil group and phosphorus loading export rates for impervious and pervious areas consistent with Attachment 1 of Appendix F of the 2016 MA MS4 permit. For this reason, the stormwater WLA best represents the urban

²⁰ The TMDL and approval documents are available at <https://www.epa.gov/tmdl/tmdl-report-and-approval-documents-monponsett-pond-system-ma>.

stormwater load regulated by the MS4 Permit.²¹ EPA based the relative percent reduction in the Draft Permit for East Monponsett Pond, West Monponsett Pond, Stetson Pond, and While Oak Reservoir directly on the stormwater WLA contained in the TMDLs.

In 2018, Massachusetts updated regulations for use of fertilizer on agricultural land and non-agricultural turf and lawns. See 330 CMR 31.00. The statewide requirements limiting plant nutrient application are intended to prevent pollutants from entering surface and groundwater resources. Massachusetts regulations at 330 CMR Section 31.05 prohibit application of phosphorus-containing fertilizer on non-agricultural turf or lawns except when a soil test indicates that phosphorus is needed for growth or for newly established lawn or turf during the first growing season.²² In the 2014 Draft MA MS4 permit, EPA proposed a credit reduction for MS4 areas that effectively end use of fertilizers that contain phosphorus on managed and landscaped pervious areas which discharge runoff to waterbodies subject to a TMDL, including the lakes and ponds described above. See 2014 Draft Permit Attachment 2 to Appendix F. In 2016 Response to Comments and in accordance with statewide nutrient regulations for non-agricultural turf areas, EPA established a relative phosphorus load reduction for each community to account for the anticipated phosphorus load reduction associated with cessation of unnecessary fertilizer applications to turf grass. See 2016 RTC p. 457. For permittees subject to phosphorus load reductions based on Lake and Pond TMDLs, EPA reduced the relative percent reduction by 3% based on data from the Charles River watershed. See 2016 RTC Attachment 3. The Draft Permit carries forward the 3% reduction in relative percent reduction for each community subject to a Lake and Pond TMDL consistent with the 2016 MA MS4 permit. The Draft Permit also carries forward the reporting requirement from the 2016 MA MS4 permit that permittees certify that all municipally owned and maintained turf grass areas are being managed in accordance with Massachusetts Regulation 330 CMR 31.00 pertaining to proper use of fertilizers on turf grasses. In addition, Appendix F Part I.B.2 of the Draft Permit proposes a new requirement that permittees subject to the permit requirements for Lake and Pond Phosphorus TMDLs supplement the Public Education minimum control measure in Part 2.3.2 of the permit with an additional annual message for residential homeowners and lawn care professionals about the statewide standards for application of plant nutrients to non-agricultural turf and lawns at 330 CMR 31.00. This messaging is warranted to ensure that fertilizer use within the watershed is consistent with 330 CMR 31.00 and with the relative phosphorus load reduction described above. This public education requirement is also consistent with the enhanced public education requirements for fertilizer use in Appendix F Parts I.D, I.E, II.A, and II.B and Appendix H Parts I and II.

²¹ EPA used the same methodology to calculate baseline phosphorous load and target reductions for the Charles River watershed in the 2016 MA MS4 permit. See 2016 RTC p. 398.

²² Additional information on plant nutrient regulations, including a Turf and Lawns Fact Sheet and Retail Sign, is available at <https://www.mass.gov/info-details/plant-nutrient-management>. Additional information on nutrient management planning, including implementing appropriate best management practices, is available from the University of Massachusetts Extension at <https://ag.umass.edu/resources/agriculture-resources/umass-extension-nutrient-management>.

A permittee that operates an MS4 within the watershed boundaries of the respective impaired lake or pond is required to achieve the identified phosphorus reduction from the baseline phosphorus loading from any MS4 area discharging to the impaired waterbody or its tributaries. Appendix F, Table F-6 of the Draft Permit includes a list of primary municipalities subject to the Lake TMDLs and the required phosphorus load percent reduction for each MS4 within the lake watershed, which is largely carried forward from the 2016 MA MS4 permit with the addition of any new MS4s subject to a Lake and Pond TMDL approved since the last issuance. The list of municipalities on Table F-6 in Appendix F contains only the primary municipalities that operate MS4s within the respective lake watersheds; these are the municipalities in which the majority of the lake or pond was located, as identified in the Lake TMDLs. However, there may be certain cases where the lake or pond watershed reaches into other municipalities, or where a non-traditional or transportation MS4 discharges to the lake or pond or its tributaries. If any other non-traditional MS4 or other traditional MS4s not identified on Table F-6 in Appendix F discharges to the impaired lake or pond or its tributaries, that MS4 is also subject to the requirements of Appendix F Part I.B including the required percent load reduction applicable to regulated stormwater associated with the listed impaired lake or pond.

Lake Phosphorus Control Plan (LPCP) Compliance Schedule

Part 2.2.1.b and Appendix F of the Draft Permit carries forward from the 2016 MA MS4 permit the requirement that permittees develop a Lake Phosphorus Control Plan (LPCP) that, when implemented over time, will meet the applicable relative percent reduction target in Table F-6 of Appendix F. The LPCP is a multi-step process that includes the implementation of non-structural and structural BMPs to achieve the required phosphorus reductions consistent with the target loads in the applicable TMDL considering the load and wasteload allocation of phosphorus from stormwater sources as described above.

NPDES regulations at 40 CFR §122.47 allow EPA to establish schedules of compliance 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 considered the appropriate timeframe necessary to meet the phosphorus reductions requirements in Appendix F *“as soon as possible”* for the 2016 MA MS4 permit. Achieving the target reductions requires a shift in the current approach to managing stormwater, which focuses on new development and non-structural controls, and sufficient time for permittees to develop and implement an innovative and expansive combination of enhanced non-structural and structural BMPs for both new and existing development (i.e., retrofits). Developing a plan for meeting target reductions includes optimizing the design and implementation of BMPs and a local and sustainable stormwater funding mechanism, both of which add to the overall timeline for meeting the permit’s requirements. In consideration of these and other factors, described in detail in the 2014 Fact Sheet (p. 43-46), EPA determined that *“as soon as possible”* for most permittees is 15 years. However, permittees must complete the requirements of the LPCP as soon as possible if they are able to meet the required phosphorus load reductions sooner than 15 years, consistent with 40 CFR §122.47. As an example, permittees that have relatively small percent reductions (e.g., less

than 10%) may be able to meet their targets sooner than permittees with larger percent reduction requirements.

The 2016 MA MS4 permit required all permittees to complete the implementation of its LPCP as soon as possible but no later than 15 years after the effective date of the permit. Based on an effective date of July 1, 2018, existing permittees subject to the LPCP requirements of the 2016 permit must complete implementation of the LPCP by July 1, 2033. The 2016 MA MS4 permit set out a schedule for achieving implementation within this timeframe over three phases, beginning with submission of a complete LPCP in 2023 (5 years after the effective date of the permit). The Draft Permit carries forward the requirements in Appendix F Part I.B from the 2016 MA MS4 permit, including the milestones in Table F-7 of Appendix F. Permittees must implement the LPCP as soon as possible but no than 15 years after the effective date of the Permit. Existing permittees shall use an effective date of July 1, 2018 to establish dates for the milestones in Table F-7. In addition, there are at least three new MS4s subject to Part 2.2.1 and Appendix F for the first time based on EPA's approval of the East and West Monponsett Pond TMDL in 2022. These permittees shall use the effective date of this permit issuance to establish dates for the milestones in Table F-7.

Part I.B.1.a of Appendix F establishes the schedule for LPCP implementation, including phosphorus load reductions targets in Years 8, 10, 13, and 15 of LCPC implementation. The Draft Permit also carries forward the 10-year milestone includes a minimum phosphorus load reduction of 66 pounds (30 kg) per year unless the full Phosphorus Reduction Requirement has been fulfilled. The 15-year schedule of milestones in Table F-7 accommodates a wide range of load reductions from less than 20 pounds to nearly 1,000 pounds. EPA reasonably expects that permittees with phosphorus load reductions on the lower end of this range would be able to meet its requirements sooner than 15 years. The 10-year milestone ensures that those permittees with minimal Phosphorus Reduction Requirements fulfill their required reductions as soon as possible and not wait to take action until the end of the 15-year compliance period. Part I.B.3 of Appendix F establishes reporting requirements to track the progress made by each permittee in implementing the LPCP.

Lake Phosphorus Control Plan Components

Section I.B.1.b in Appendix F of the Draft Permit identifies the required components of the LPCP, which have been carried forward from the 2016 MA MS4 permit. The magnitude of stormwater phosphorus load reductions requirements for most permittees will require implementation of a combination of non-structural and structural SCMs throughout the developed portion of the watersheds, which requires planning, assessment of legal authority and funding mechanisms, consideration of operation and maintenance requirements, developing a schedule for implementation, and periodic performance evaluations. EPA considers the LPCP components described below to be essential elements for developing and implementing a successful LPCP. In Year 5 of the 2016 MA MS4 permit, 12 of 21 permittees subject to one or more Lake & Pond

TMDLs submitted a completed LPCP. Two additional permittees indicated that the LPCP is in development and would be submitted in Year 6.

Legal Analysis: The legal analysis identifies existing regulatory mechanisms, including local by-laws and ordinances, and describes any changes necessary to ensure the LPCP can be effectively implemented. Local by-laws and ordinances may present both opportunities and interferences to successfully carrying out the LPCP. For example, reducing impervious area (e.g., parking lots) is a cost-effective method of controlling stormwater phosphorus loading to impaired waterbodies. A town may need to modify existing by-laws to allow for fewer or smaller parking spaces associated with commercial and/or industrial zones to facilitate reductions in impervious area. In addition, there could be regulations or ordinances that require older technologies which no longer represent state-of-the-art performance to address stormwater phosphorus loading. A town may need to change its by-laws to facilitate use of low impact development (LID) practices or eliminate mandates that deter implementation of smaller-scale BMPs. The Parking Lot and Green Infrastructure Assessments that were completed in accordance with Parts 2.3.6.b and 2.3.6.c of the 2016 MA MS4 permit may inform some of the legal analysis for permittees subject to the requirements at Part 2.2.1.b and Appendix F.²³ Any changes to ordinances or by-laws identified in the legal analysis must be adopted by the end of the permit term. The legal analysis should be updated in each phase of the PCP as needed.

Funding Source Assessment: The funding source assessment describes known and anticipated funding mechanisms that may be used to implement the LPCP. Activities necessary to meet phosphorus reduction requirements in accordance with the LPCP will likely exceed the available resources of most permittees' current stormwater management programs. The assessment is necessary to ensure that permittees assess the overall long-term funding needs for completing the LPCP and evaluate options for generating sustainable funding sources.²⁴

Define LPCP Scope (LPCP Area): Permittees elect where in the watershed area to implement the LPCP. Only stormwater that discharges to the lake or pond or its tributaries classified as "Urbanized Area" within the jurisdiction of each permittee are subject to NPDES permit requirements. In most cases, the regulated area will be a portion of the watershed. However, permittees may find it more flexible and/or cost effective to implement the LPCP outside of the regulated MS4 area because permittees will receive credit for control measures outside of regulated MS4 area (but within the watershed of the lake or pond). Any structural and non-structural control implemented or installed within the permittee's jurisdiction that is within the lake or pond watershed may be used to calculate phosphorus reductions to demonstrate compliance with the phosphorus reduction milestones in Table F-7 of Appendix F Part I.B. If the

²³ Additional information and guidance on street and parking design standards and low impact development are available on EPA Region 1's Stormwater Tools in New England site available at <https://www.epa.gov/npdes-permits/stormwater-tools-new-england#pcsm>.

²⁴ Information and guidance on stormwater funding and program costs are available on EPA Region 1's Stormwater Tools in New England site available at <https://www.epa.gov/npdes-permits/stormwater-tools-new-england#pcsm>.

permittee elects to limit the scope of the LPCP to the MS4 regulated portion, then the permittee may only calculate phosphorus reductions for those BMPs implemented in the regulated area. Non-structural and structural controls implemented or installed within the permittee's jurisdiction but outside the regulated area may not be used to calculate phosphorus load reductions to comply with the milestones in Table F-7 of Appendix F Part I.B. In Year 4 of the 2016 MA MS4 permit, 13 of 21 current permittees defined the scope of the LPCP as the urbanized area and 5 permittees chose to implement the LPCP jurisdiction-wide. Three permittees did not report the scope of the LPCP.

Calculate Baseline Phosphorus Load (P_{base}), Phosphorus Reduction Requirement (P_{RR}) and Allowable Phosphorus Load (P_{allow}): Each permittee must calculate a Baseline Phosphorus Load (in lbs/yr) for the selected LPCP Area using the methodology in Attachment 1 to Appendix F. The rationale and methodology for calculating the composite phosphorus load export rates was explained in detail in Attachment 1 to the 2014 Fact Sheet and is summarized in Section 3.4 of this Fact Sheet. Each permittee must calculate the Allowable Phosphorus Load (in lbs/yr) by multiplying the Baseline Phosphorus Load (calculated above) by the percent reduction applicable to the lake or pond provided in Table F-6 in Appendix F. Finally, each permittee must calculate the Phosphorus Reduction Requirement (in lbs/yr) as the difference between the Baseline Phosphorus Load and the Allowable Phosphorus Load. The methodology for calculating the baseline load, allowable load, and phosphorus reduction is explained in detail in Attachment 1 to Appendix F. EPA believes that a consistent approach for all Lake and Pond TMDLs is appropriate throughout the regulated area in Massachusetts due to the uniformity of phosphorus export rates based on land use within the region. This approach also streamlines the process for each permittee regardless of TMDL approval date or methodology.

Description of Planned Non-Structural and Structural Controls: The LPCP must describe the planned non-structural and structural stormwater control measures (SCMs) that will be implemented and installed to meet each Phosphorus Reduction Requirement listed in Table F-7 of Appendix F. EPA developed a framework in the 2016 MA MS4 permit for quantifying phosphorus load reductions for a suite of non-structural and structural SCMs to assist EPA and MassDEP in tracking phosphorus load reductions and relating reductions to future ambient water quality monitoring data. The methodology and crediting for various SCMs is explained in Attachment 1 to the 2014 Fact Sheet. The framework, established in Attachment 2 (for non-structural SCMs) and Attachment 3 (for structural SCMs) of the Draft Permit, provides permittees with a consistent approach to calculate and receive credit towards stormwater phosphorus load reductions. The framework is based on reliable BMP performance information and is representative of long-term cumulative reduction rates.

Operation and Maintenance Program for Structural BMPs: The permit requires permittees to establish an Operation and Maintenance Program (O&M) for all structural SCMs to obtain phosphorus reduction credits as part of demonstrating compliance with the LPCP permit requirements. The O&M Program must document responsibility for maintaining any third-party SCMs if permittees claim credit for such SCMs. Structural SCMs require regular inspections and

maintenance to ensure that they continue to operate as designed in order to claim the phosphorus load reduction credit. The cumulative long-term phosphorus load reductions for each SCM in Appendix F Attachment 3 assumes that the SCM is properly maintained and operated. Structural SCMs are susceptible to fouling from debris and accumulated sediments that are delivered by incoming stormwater runoff. Accumulation of sediments and debris can result in clogging, short-circuiting, and other operational problems that will reduce pollutant removal efficiency and potentially create local hazards to the public. Regular inspections of all SCMs are needed to identify potential operational problems, trigger immediate corrective action to resolve operational problems, and maintain the optimal functional capacities and performances of the SCMs. Additionally, an established O&M program is essential for protecting the significant financial investment made in implementing the BMPs and maintaining their maximum beneficial return for the communities.

Phosphorus Control Plan Implementation Schedule: The permit requires the permittee to develop an implementation schedule as part of the LPCP to ensure that permittees undertake the necessary planning to successfully implement the planned structural and non-structural controls to meet the reduction requirements in Table F-6 of Appendix F. Permittees may update the implementation schedule as necessary to meet the phosphorus reduction milestones in years 8, 10, 13, and 15 of the LPCP. In year 10 of the LPCP, permittees are required to demonstrate progress through the implementation of non-structural and structural controls equivalent to a 40% reduction in the total phosphorus load *or* demonstrate that it has reduced the phosphorus export rate by 66 pounds (30 kg) per year (whichever is greater) unless the full Phosphorus Reduction Requirement has already been met in Year 10. This requirement ensures that permittees with relatively low phosphorus load reduction requirements fulfill their required reductions as soon as possible and do not unnecessarily delay implementation of the LPCP.

Estimated Cost and Funding Assessment: The Draft Permit requires the permittee to estimate the cost of implementing non-structural and structural controls and associated O&M programs for the LPCP. EPA expects that the estimated costs for implementing the LPCP for most permittees will likely be beyond budgets currently dedicated to stormwater management. Therefore, developing cost estimates for implementing the LPCP is needed to determine funding needs so that permittees can then take the necessary steps to obtain adequate funding to implement the LPCP and comply with permit requirements.

Performance Evaluation: To demonstrate compliance with the phosphorus reduction requirements in Appendix F Table F-6 and the milestones in Table F-7, the Draft Permit requires permittees to track phosphorus load reductions achieved through implementation of structural and non-structural SCMs. Tracking and accounting shall use the methodology developed for the 2016 MA MS4 permit by EPA described in Attachments 1, 2, and 3 to Appendix F. Attachment 1 to Appendix F explains how permittees shall calculate total phosphorus load increases or decreases from land use changes, including new development and redevelopment in the LPCP area. Each new or redevelopment project will need to be accounted for in 2 places in the performance evaluation. First, in the load increase as if no BMPs were installed on the property

(consistent with Attachment 1 to Appendix F) and phosphorus reductions from BMPs installed to control stormwater on the new or redeveloped site will be calculated using Attachment 3 to Appendix F. This process is explained in detail in Attachment 1 to Appendix F. EPA anticipates creating tools to help permittees with the annual evaluation process and to track the BMPs installed to date and the associated phosphorus removal and progress toward meeting milestones in Table F-7 in Appendix F. These tools will be available for use before the permit effective date. See Attachment 1 to this Fact Sheet for a detailed explanation of the rationale used to support non-structural and structural phosphorus reduction credits.

3.2.1.3 Bacteria and Pathogen TMDLs

Bacteria and pathogens indicate the presence of raw sewage and/or the presence of feces from warmed blooded mammals and represent a risk to human health and the environment. Information on pathogen related control measures and BMPs is discussed in the document: *Mitigation Measures to Address Pathogen Pollution in Surface Waters: A TMDL Implementation Guidance Manual for Massachusetts*²⁵. There are a total of 20, EPA-approved bacteria or pathogen TMDLs in Massachusetts as of the date of Draft Permit public notice, 19 of which are applicable to water segments that receive stormwater discharges from MS4 communities and are subject to the requirements in Part 2.2.1.c and Part I.C in Appendix F of the Draft Permit.²⁶ In addition, in March 2024 MassDEP issued a Draft Statewide TMDL for Pathogen-Impaired Waterbodies for comment.²⁷ This TMDL applies to 210 freshwater river segments and 18 marine segments in 28 watersheds listed in the 2018/2020 List of Integrated Waters (303d List). If the Statewide Pathogen TMDL is approved by EPA prior to issuance of a Final MS4 Permit, permittees that discharge to the listed segments from MS4s will be subject to the requirements in Part 2.2.1.c and Appendix F. The WLA for stormwater discharges to waters with applicable bacteria or pathogen TMDLs is set at the state water quality standard for the indicator organism for that waterbody at the time of TMDL development. Prior to 2006, Massachusetts state water quality standards used fecal coliform as the indicator organism of potential harmful pathogens in surface waters. The current Massachusetts surface water quality standards use *Escherichia coli* as the indicator organism for freshwater segment, *Enterococcus* as the indicator organism for marine segments, and fecal coliform as the indicator organism for shellfish growing areas (based on classification by Massachusetts Division of Marine Fisheries (DMF)). Therefore, TMDLs approved before 2006 include WLAs for fecal coliform as the indicator organism and TMDLs approved after 2006 include WLAs for *E. coli* or *Enterococcus* as the indicator organisms of potential harmful pathogens in fresh and marine waters, respectively.

²⁵ Available at: <https://www.mass.gov/doc/implementation-guidance-manual-for-watershed-specific-pathogen-tmdl-reports-0/download>. Retrieved 5/9/2024.

²⁶ EPA-approved TMDLs in Massachusetts are available at <https://www.epa.gov/tmdl/region-1-approved-tmdls-state#tmdl-ma>.

²⁷ Additional information on the Draft Statewide Pathogen TMDL, including a list of waterbody segments, is available at <https://www.mass.gov/doc/draft-massachusetts-statewide-tmdl-for-pathogen-impaired-waterbodies/download>.

The bacteria and pathogen TMDLs do not have MS4-specific reduction requirements for the particular indicator bacteria; however, the TMDLs set the WLA and LA for prohibited sources, such as illicit discharges, boat discharges, and failing septic systems, at zero. Any MS4 (traditional or non-traditional) that discharges to a waterbody, including their tributaries, covered by one or more of the TMDLs is subject to the requirements in Parts 2.2.1.c. and Appendix F Part I.C of the Draft Permit. A list of municipalities is provided in Part 2.2.1.c and a list of waterbody segments covered by the TMDL is provided in Table F-8. Appendix F Part I.C of the Draft Permit carries forward the enhanced BMPs established in the 2016 MA MS4 Permit to comply with the bacteria and pathogen TMDLs. These measures build upon the minimum control measures in Part 2.3 of the Draft Permit to specifically target bacteria sources that contribute to increased bacteria loads in stormwater. First, permittees discharging to waters with an EPA-approved TMDL for bacteria and pathogens must supplement the Public Education minimum control measure at Part 2.3.2 to include an additional public education message targeting proper pet waste management and provide information to septic system owners. These messages can be combined with additional public education requirements to address other EPA-approved TMDLs in Appendix F and/or water quality limited waters in Appendix H. The second enhanced BMP focuses on elimination of illicit discharges. These measures supplement, rather than replace, the requirements in Part 2.3 of the Draft Permit because additional effort is warranted to control bacteria loads in discharges to the impaired waters.

Enhanced BMPs, in addition to the minimum control measures in Part 2.3 of the Permit, are warranted to control bacteria/pathogens in stormwater discharges where the receiving waterbody is not meeting water quality standards. Illicit discharges to MS4s are a likely contributor of bacteria/pathogens to receiving waters. Requiring permittees to designate catchments that are discharging to receiving waters with an EPA-approved bacteria/pathogen TMDL as “Problem” or “High Priority” will ensure that investigation and elimination of illicit sources in these catchments are prioritized. In addition to illicit connections, pet waste is a significant potential source of bacteria to MS4s. Targeting messages to pet owners about the importance of proper pet waste disposal in controlling bacteria loads in impaired waters is the best way to address this source. Finally, permittees must also provide information to owners of septic systems about proper maintenance and the potential for contributing bacteria and pathogens to receiving waters. EPA believes that these provisions are consistent with the assumptions and requirements of each bacteria or pathogen TMDL.

3.2.1.4 South Coastal Watershed Nutrient/Nitrogen TMDLs

There are 25 EPA-approved TMDLs for nitrogen for various watersheds, ponds, and bays within the Cape Cod and Buzzards Bay watersheds. All of these TMDLs identify septic systems as the predominant source of nitrogen. In addition, EPA approved additional total nitrogen TMDLs for the New Bedford Inner Harbor Embayment System and Wareham River Estuary System in June 2024. The predominant sources of nitrogen identified in these TMDLs are wastewater treatment systems and septic systems. While stormwater runoff from impervious contributes nitrogen to the impaired waterways, stormwater sources comprise a relatively small proportion of the overall

load as compared to other nitrogen sources. Wastewater from on-site subsurface wastewater disposal systems (i.e., septic systems) is the primary source of nitrogen to the receiving waters in the Buzzards Bay, Cape Cod, and Wareham River systems. As such, the TMDLs target reductions from septic systems to meet water quality targets. Wastewater from wastewater treatment facilities (WWTF) is the primary source of nitrogen to the receiving waters in the Acushnet River and New Bedford Inner Harbor Embayment systems and the TMDL targets expanded sewerage, long-term CSO measures, and advanced wastewater treatment. At the same time, the goal of these TMDLs is to lower concentrations of N to the receiving waters and, as such, additional requirements are warranted to control nitrogen loading in stormwater discharges where the receiving waterbody is not meeting water quality standards. The TMDLs establish WLAs based on existing nitrogen loading from stormwater runoff, which means that existing stormwater nitrogen loads from MS4 sources may not increase even to accommodate future growth (and increase in impervious cover).

Any MS4 (traditional or non-traditional) that discharges to a waterbody, including their tributaries, covered by one or more of the TMDLs is subject to the requirements in Parts 2.2.1.d. and Appendix F Part I.D of the Draft Permit. A list of municipalities is provided in Part 2.2.1.d and a list of waterbody segments covered by the TMDL is provided in Table F-9. Appendix F Part I.D of the Draft Permit carries forward the enhanced BMPs established in the 2016 MA MS4 Permit to comply with the Buzzards Bay and Cape Cod Total Nitrogen TMDLs and extends these requirements to additional MS4s subject to newly approved TMDLs in the New Bedford Inner Harbor Embayment and the Wareham River Estuary system collectively. These measures build upon the minimum control measures in Part 2.3 of the Draft Permit to specifically target nitrogen reductions in stormwater. The Draft Permit requires enhanced BMPs relating to public education and outreach, good housekeeping, and post construction stormwater management to control existing loads and prevent increases in nitrogen inputs to impaired waterbodies or their tributaries from MS4 sources.

Enhanced BMPs, in addition to the minimum control measures in Part 2.3 of the Permit, are warranted to control nitrogen in stormwater discharges where the receiving waterbody is not meeting water quality standards. First, permittees discharging to waters with an EPA-approved TMDL for nitrogen must supplement the Public Education minimum control measure at Part 2.3.2 to include seasonal public education messages targeting proper use and disposal of grass clippings, informing homeowners and landscape professionals of statewide plant nutrient at 330 CMR 31.00, pet waste management, and proper disposal of leaf litter. These messages can be combined with additional public education requirements to address other EPA-approved TMDLs in Appendix F and/or water quality limited waters in Appendix H.

The second enhanced BMP focuses on controlling nitrogen loads from new and redevelopment. The assessment of nitrogen load in the TMDLs does not account for increases in nitrogen from stormwater runoff on new and redeveloped land. The Draft Permit requires that ordinances or other regulatory mechanisms in compliance with Part 2.3.6 of the Permit include a requirement that stormwater management systems on new and redevelopment be optimized for nitrogen

removal. For example, stormwater management systems should consider SCMs designed with an anaerobic zone to promote denitrification that target nitrogen load reductions, such as a gravel wetland or similarly constructed system, and SCMs that remove higher percentages of total nitrogen based on the performance curves in Attachment 3 of Appendix F (e.g., infiltration). Alternatively, permittees could prioritize disconnection of impervious cover at new and redevelopment. The supplemental new and redevelopment requirement is intended to ensure that the stormwater nutrient load to any nutrient impaired water does not increase due to land use changes.

Finally, the Draft Permit includes additional requirements to supplement the Good Housekeeping minimum control measures for permittee-owned properties in Part 2.3.6 of the Permit in order to reduce the amount of nitrogen contributed to receiving waters. Permittees must consider SCMs that optimize nitrogen removal when evaluating retrofits, establish requirements for slow-release fertilizers on permittee-owned properties that use fertilizers, and establish procedures for properly managing grass cuttings and leaf litter (including prohibiting blowing organic waste onto adjacent impervious surfaces). In addition, the Draft Permit requires increased street sweeping, beyond the spring and fall sweeping required in the 2016 MA MS4 Permit. Specifically, the Draft Permit proposes that permittees subject to the requirements in Appendix F Part I.D target nitrogen reductions by increasing street sweeping on permittee-owned streets and parking lots to target areas with potential for high pollutant loads. In summary, the measures in Appendix F Part I.D supplement, rather than replace, the requirements in Part 2.3 of the Draft Permit because additional effort is warranted to control nitrogen sources in discharges to the impaired waters.

3.2.1.5 Assabet River Phosphorus TMDL

The Assabet River is a highly effluent dominated river, receiving wastewater flow from four publicly owned treatment facilities located in Westborough, Marlborough, Hudson, and Maynard. Since the majority of the water being discharged through the treatment facilities is withdrawn from the watershed, the river has experienced severe alterations of the natural hydrology with significant depletion of flows in the tributary streams. The river also has multiple dams and impoundments, which compound nutrient-related water quality violations by creating sinks of phosphorus that accumulate in the sediments. The Assabet River Phosphorus TMDL was approved by EPA on September 23, 2004 to address water quality impairments due to excess phosphorus with an emphasis on reducing nuisance growth of aquatic vegetation and addressing low dissolved oxygen concentrations. The TMDL requires more stringent phosphorus controls from wastewater treatment plant (WWTP) point sources and a reduction of sediment phosphorus loads to reduce eutrophication and restore designated uses of the Assabet River. The United States Army Corps of Engineers (USACE) conducted a study to consider methods for achieving the necessary sediment reductions, including dredging and dam removal.²⁸ The study

²⁸ CDM. 2008. Assabet River Sediment and Dam Removal Study. Prepared for U.S. Army Corps of Engineers New England District. <https://www.nae.usace.army.mil/Missions/Projects-Topics/Assabet-River-Study/>

concluded that WWTP improvements combined with removal of several dams would achieve phosphorus reductions near the TMDL target, which supports the adaptive approach recommended in the TMDL. Following approval of the TMDL, upgrades at WWTPs implemented through NPDES permits have substantially reduced phosphorus concentrations in wastewater discharges.²⁹ The most recent NPDES permits issued to WWTPs on the Assabet River include a more stringent winter total phosphorus limit to further reduce loads to the river.³⁰ There has been no further advancement of dam removal or sediment remediation in the Assabet River to date.

OARS conducts annual water quality monitoring in the Sudbury, Assabet, and Concord rivers. Based on recent water quality monitoring reports, instream phosphorus concentrations in the Assabet River following WWTP upgrades have remained stable since 2012.³¹ Higher total phosphorus loads observed during wet weather events suggests that, while stormwater was not identified as a primary contributor in the TMDL, stormwater flows to the Assabet River do contribute phosphorus. Enhanced BMPs, in addition to the minimum control measures in Part 2.3 of the Permit, are warranted to control phosphorus in stormwater discharges where the receiving waterbody is not meeting water quality standards.

Any MS4 (traditional or non-traditional) that discharges to a waterbody, including their tributaries, covered by the Assabet River TMDL is subject to the requirements in Parts 2.2.1.e. and Appendix F Part I.E of the Draft Permit. A list of municipalities is provided in Part 2.2.1.e and a list of waterbody segments covered by the TMDL is provided in Table F-10. Appendix F Part I.E of the Draft Permit carries forward the enhanced BMPs established in the 2016 MA MS4 Permit to comply with the Assabet River Total Phosphorus TMDL. These measures build upon the minimum control measures in Part 2.3 of the Draft Permit to specifically target phosphorus reductions in stormwater. The Draft Permit requires enhanced BMPs relating to public education and outreach, good housekeeping, and post construction stormwater management to control existing loads and prevent increases in phosphorus inputs to impaired waterbodies or their tributaries from MS4 sources.

Part I.E of Appendix F requires additional measures to specifically target the reduction of accumulated organics on impervious surfaces through enhanced good housekeeping requirements and public education messages. Removal of organics from contact with stormwater through targeted street sweeping in high pollutant load areas will reduce the amount of phosphorus contributed to receiving waters. Part I.E of Appendix F also contains additional requirements to target the reduction of fertilizer application to turf that will in turn reduce the

²⁹ See Savoie, J.G., L.A. Desimone, J.R. Mullaney, M.J. Zimmerman, M.C. Waldron. 2018. Changes in Phosphorus Concentrations and Loads in the Assabet River, Massachusetts, October 2008 through April 2014: U.S. Geological Survey Scientific Investigations Report 2016-5063. <https://pubs.usgs.gov/sir/2016/5063/sir20165063.pdf>

³⁰ See, for example, 2022 Final NPDES Permit MA0100412 (Westborough WWTP) and 2021 Final NPDES Permit MA0100480 (Marlborough Westerly WWTP).

³¹ OARS 2022 Water Quality Monitoring Program Final Report https://www.oars3rivers.org/sites/default/files/OARS-WQ-Report_2023.pdf

amount of phosphorus discharged via stormwater from fertilizer application activities. Lastly, Part I.E of Appendix F contains requirements that target structural controls that optimize phosphorus treatment for new development or redevelopment activities. Examples include systems designed to infiltrate stormwater where appropriate or employ BMPs on site that are known to reduce phosphorus concentrations such as filtration BMPs. The measures in Appendix F Part I.E supplement, rather than replace, the requirements in Part 2.3 of the Draft Permit because additional effort is warranted to control phosphorus sources in discharges to the Assabet River.

3.2.2 Requirements for Discharges to Impaired Waters with an Approved Out Of State TMDL

3.2.2.1 Long Island Sound Nitrogen TMDL

The Connecticut River, the Housatonic River and the Thames River are tributary to Long Island Sound (LIS), which has an approved TMDL to achieve water quality standards for dissolved oxygen by controlling sources of nitrogen in the watershed.³² The drainage area of LIS includes the states of Connecticut, Massachusetts, Vermont, and New Hampshire as well as Quebec, Canada. The TMDL establishes both in-basin reductions and out-of-basin reductions. Out-of-basin areas are considered those areas north of Connecticut. Runoff from land use, including stormwater from urban areas, is a significant source of nitrogen that contributes to low dissolved oxygen levels in Long Island Sound. See Long Island Sound TMDL. The TMDL identifies an out-of-basin target of achieving a 10 percent reduction in the total nonpoint source load of nitrogen from urban and agricultural land covers. The 2020-2024 Long Island Sound Comprehensive Conservation and Management Plan Update identifies a target to decrease the effective impervious cover in the Connecticut and New York portions of the watershed by 10 percent by 2035 through green infrastructure, low impact development, and stormwater disconnection.³³

The Draft Permit's MEP requirements alone are not sufficient to adequately control nitrogen in discharges where the receiving waterbody requires nitrogen reductions to meet water quality standards. Any MS4 (traditional or non-traditional) that discharges to a waterbody, including their tributaries, within the Long Island Sound watershed is subject to the requirements in Parts 2.2.1.f.i and Appendix F Part II.A of the Draft Permit. A list of municipalities is provided in Part 2.2.1.f.i and Appendix F Table F-11. Appendix F Part II.A of the Draft Permit carries forward the enhanced BMPs established in the 2016 MA MS4 Permit to comply with the Long Island Sound TMDL. These measures build upon the minimum control measures in Part 2.3 of the Draft Permit to specifically target nitrogen reductions in stormwater. 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 action is needed to address nitrogen. The Draft Permit carries forward requirements to implement enhanced BMPs relating to public education and outreach, illicit detection and elimination, good housekeeping, and post construction stormwater management. The 2016 MA

³² The 2000 TMDL Analysis for Long Island Sound is available at <https://longislandsoundstudy.net/wp-content/uploads/2010/03/Tmdl.pdf>.

³³ The Long Island Sound Study partnership implements the Comprehensive Conservation and Management Plan. More information is available at <https://longislandsoundstudy.net/our-vision-and-plan/>

MS4 permit also required permittees to develop a nitrogen source identification report to identify sources and locations within the contributing catchments that are potential “hot spots” for nitrogen in stormwater. Existing permittees under the 2016 MA MS4 permit were required to complete these reports by July 1, 2023 (five years from the effective date of the 2016 permit). The Draft Permit also establishes requirements for the next phase of the nitrogen source identification reports.

Appendix F Part II.A.1 of the Draft Permit contains measures to target the reduction of accumulated organics on impervious surfaces through enhanced good housekeeping requirements and public education messages. Removal of organics from contact with stormwater through targeted street sweeping will reduce the amount of nitrogen contributed to receiving waters. Appendix F Part II.A.1 also contains additional requirements to target fertilizer application to turf consistent with statewide regulations at 330 CMR 31.00 that will in turn reduce the amount of nitrogen discharged in stormwater from fertilizer application activities. In addition, Appendix F Part II.A.1 contains requirements that target the removal of nitrogen in stormwater following development or redevelopment activities. Permittees must require stormwater management systems associated with new and redevelopment in the Long Island Sound watershed be optimized for nitrogen removal. For example, stormwater management systems should consider SCMs designed with an anaerobic zone to promote denitrification that target nitrogen load reductions, such as a gravel wetland or similarly constructed system, and SCMs that remove higher percentages of total nitrogen based on the performance curves in Attachment 3 of Appendix F (e.g., infiltration). Alternatively, permittees could prioritize disconnection of impervious cover at new and redevelopment. The supplemental new and redevelopment requirement is intended to ensure that the stormwater nitrogen load to any nitrogen impaired water does not increase due to land use changes.

The 2016 MA MS4 permit required permittees to develop a source identification report that identified urbanized area that discharges to the Connecticut, Housatonic, or Thames River watersheds, quantified impervious area in the catchments, identified catchments with high potential nitrogen loading, incorporated information from mapping and monitoring required under the MCMs, and evaluated opportunities to retrofit areas in the high load catchments with structural SCMs to reduce nitrogen loads. The report was intended to guide the permittee in making decisions to maximize environmental benefit with respect to areas of the MS4 to retrofit or target for SCMs to reduce nitrogen in stormwater discharges. In Year 5 of the 2016 MA MS4 permit, 26 of 47 permittees (55%) submitted the required report and an additional 6 permittees (13%) indicated that the report was in progress. In addition, the 2016 MA MS4 permit required permittees in the Long Island Sound watersheds to install one structural SCM as a demonstration project by July 1, 2024 (within 6 years of the effective date of the permit). Permittees reported on compliance with this requirement in the Year 6 annual report due September 30, 2024.

Part II.A.2 of the Draft Permit establishes requirements to advance progress addressing nitrogen loads from stormwater in the Connecticut, Housatonic, and Thames River watersheds. While the Draft Permit does not require a target reduction requirement for these permittees, the Draft

Permit does require permittees to take action to reduce nitrogen loads by implementing structural SCMs and to track and report the resulting reductions in nitrogen loads. The 2016 MA MS4 permit required permittees to provide a list of planned structural SCMs and a schedule for implementation by July 1, 2023 (within 5 years of the effective date of the permit) and begin to track the installation and nitrogen reductions achieved with structural SCMs. For the next phase of the Long Island Sound watershed water quality-based requirements, the Draft Permit establishes requirements to implement planned structural SCMs identified under the last permit term. Permittees must install structural SCMs in target catchments identified in the Nitrogen Source Identification Report as having high nitrogen loads on a schedule of one per year beginning in the second year from the effective date of this permit (i.e., a minimum of four SCMs during the next permit term). Permittees should evaluate the list of SCMs and the schedules developed under the last term to determine an implementation plan that maximizes planned infrastructure, resurfacing, and redevelopment activities, cost, and feasibility. Permittees shall update and maintain a list of four structural SCMs to be implemented in each alternating annual report starting in Year 3 unless all permittee-owned property has been retrofitted with structural SCMs or the permittee demonstrates that additional SCMs are infeasible.

The permittee shall document in the SWMP and in each annual report actions the permittee is taking to reduce nitrogen in discharges. The Draft Permit requires the permittee to track nitrogen reductions from control measures beginning with the first annual report, which should include, at a minimum, the nitrogen SCM demonstration project and any non-structural control measures implemented consistent with Part 2.3.7 of the Draft Permit (i.e., Good Housekeeping minimum control measures including street sweeping, catch basin cleaning, and organic waste and leaf litter collection programs). Permittees must quantify nitrogen load reductions from non-structural BMPs using the methodology in Attachment 2 of Appendix F. Permittees must quantify nitrogen load reductions from structural SCMs using the methodology and nitrogen removal performance data in Attachment 3 of Appendix F. These methodologies were explained in detail in the 2014 Fact Sheet and 2016 RTC. The information on pollutant load reductions achieved with non-structural BMPs and structural SCMs will be used to assess progress in meeting the nonpoint source reduction targets in the TMDL and achieving water quality standards in the Long Island Sound watersheds. In addition, the pollutant removal information may be used in future WLAs or nitrogen reduction requirements if the EPA and the state agency find reductions are necessary to meet water quality standards.

3.2.2.2 Phosphorus TMDLs

There are currently eight approved phosphorus TMDLs for certain waterbody segments in Rhode Island that identify urban stormwater discharges in Massachusetts as sources that are contributing phosphorus to the impaired segments: the Kickemuit Reservoir, Upper Kickemuit River, Kickemuit River, Ten Mile River, Central Pond, Turner Reservoir, Lower Ten Mile River, and

Omega Pond TMDLs.³⁴ EPA has not approved any new phosphorus TMDLs that would be applicable to stormwater discharges in Massachusetts since issuance of the 2016 MA MS4 Permit. The TMDLs require a reduction of phosphorus concentrations in impaired waterbodies or their tributaries at the State line. No TMDL contains specific reductions required by specific Massachusetts sources; however, the TMDLs do identify urban stormwater as causing or contributing to the phosphorus impairment in the waterbody.

Any MS4 (traditional or non-traditional) that discharges to a waterbody, including their tributaries, covered by one of the TMDLs is subject to the requirements in Parts 2.2.1.f.ii. and Appendix F Part II.B of the Draft Permit. A list of municipalities is provided in Part 2.2.1.f.ii and a list of waterbody segments covered by the TMDL is provided in Table F-12. Appendix F Part II.B of the Draft Permit carries forward the enhanced BMPs established in the 2016 MA MS4 Permit to comply with Rhode Island Total Phosphorus TMDLs. These measures build upon the minimum control measures in Part 2.3 of the Draft Permit to specifically target phosphorus reductions in stormwater. The Draft Permit requires enhanced BMPs relating to public education and outreach, good housekeeping, and stormwater management for new development and redevelopment to control existing loads and prevent increases in phosphorus inputs to impaired waterbodies or their tributaries from MS4 sources.

Enhanced BMPs, in addition to the minimum control measures in Part 2.3 of the Permit, are warranted to control phosphorus in stormwater discharges where the receiving waterbody is not meeting water quality standards. Appendix F Part II.B of the Draft Permit requires additional non-structural and structural controls to control phosphorus in stormwater discharges. First, permittees discharging to waters with an EPA-approved TMDL for phosphorus in Rhode Island must supplement the Public Education minimum control measure at Part 2.3.2 to include seasonal public education messages targeting proper use and disposal of grass clippings and encouraging use of slow-release and phosphorus-free fertilizers, pet waste management, and proper disposal of leaf litter. These messages can be combined with additional public education requirements to address other EPA-approved TMDLs in Appendix F and/or water quality limited waters in Appendix H. The second enhanced BMP focuses on controlling phosphorus loads from new and redevelopment. The target phosphorus loads in the TMDLs do not account for increases from stormwater runoff on new and redeveloped land. The ordinances or other regulatory mechanisms in compliance with Part 2.3.6 of the Permit must also require stormwater management systems associated with new and redevelopment discharging to waterbodies with an EPA-approved, out-of-state Phosphorus TMDL be optimized for phosphorus removal by requiring infiltration where feasible because infiltration has been shown to cause the adsorption of phosphorus onto soil particles. Other SCMs with known phosphorus removal include designs with a sand/organic filtration component. Alternatively, permittees could prioritize disconnection of impervious cover at new and redevelopment. The supplemental new and redevelopment requirement is intended to ensure that the stormwater nutrient load to any nutrient impaired

³⁴ EPA-approved TMDLs in Rhode Island are available at <https://www.epa.gov/tmdl/region-1-approved-tmdls-state#tmdl-ri>.

water does not increase due to land use changes. Finally, the Draft Permit includes additional requirements to supplement the Good Housekeeping minimum control measures for permittee-owned properties in Part 2.3.6 of the Permit to reduce the amount of phosphorus contributed to receiving waters. Permittees must consider SCMs that optimize phosphorus removal by infiltrating stormwater when evaluating retrofits, establish requirements for slow-release or phosphorus-free fertilizers on permittee-owned properties that use fertilizers, establish procedures for properly managing grass cuttings and leaf litter (including prohibiting blowing organic waste onto adjacent impervious surfaces), and increased street sweeping for permittee-owned streets and parking lots. The measures in Appendix F Part II.B supplement, rather than replace, the requirements in Part 2.3 of the Draft Permit because additional effort is warranted to control phosphorus sources in discharges to the impaired waters.

The 2016 MA MS4 permit required permittees to develop a source identification report that identified urbanized area that discharges to an impaired waterbody, including their tributaries, covered by one of the TMDLs, quantified impervious area in the catchments, identified catchments with high potential phosphorus loading, incorporated information from mapping and monitoring required under the MCMs, and evaluated opportunities to retrofit areas in the high load catchments with structural SCMs to reduce phosphorus loads. The report was intended to guide the permittee in making decisions to maximize environmental benefit with respect to areas of the MS4 to retrofit or target for SCMs to reduce phosphorus in stormwater discharges. By Year 5 of the 2016 MA MS4 permit, two of six permittees (33%) submitted the required report, two permittees (33%) indicated that the report was in progress, one permittee (17%) indicated that there are no discharges to the TMDL waters from the urbanized area, and one permittee didn't submit any information. In addition, the 2016 MA MS4 permit required permittees with out of state phosphorus TMDLs to install one structural SCM as a demonstration project by July 1, 2024 (within 6 years of the effective date of the permit). Permittees reported on compliance with this requirement in the Year 6 annual report due September 30, 2024.

Part B.II of Appendix F contains additional measures to reduce current phosphorus loads in MS4 discharges to these waterbodies. While the Draft Permit does not require a target reduction requirement for these permittees, the Draft Permit does require permittees to take action to reduce phosphorus loads by implementing structural SCMs and to track and report the resulting reductions in phosphorus loads. The 2016 MA MS4 permit required permittees to provide a list of planned structural SCMs and a schedule for implementation by July 1, 2023 (within 5 years of the effective date of the permit) and begin to track the installation and phosphorus reductions achieved with structural SCMs. For the next phase of these water quality-based requirements, the Draft Permit establishes requirements to implement planned structural SCMs identified under the last permit term. Permittees must install structural SCMs in target catchments identified in the Phosphorus Source Identification Report as having high phosphorus loads on a schedule of one per year beginning in the second year from the effective date of this permit (i.e., a minimum of four SCMs during the next permit term). Permittees should evaluate the list of SCMs and the schedules developed under the last term to determine an implementation plan that maximizes planned infrastructure, resurfacing, and redevelopment activities, cost, and

feasibility. Permittees shall report on the next four structural SCMs to be implemented in each alternating annual report starting in Year 3 until all structural SCMs have been installed.

The permittee shall document in the SWMP and in each annual report actions the permittee is taking to reduce phosphorus in discharges. The Draft Permit requires the permittee to track phosphorus reductions from SCMs beginning with the first annual report, which should include, at a minimum, the phosphorus SCM demonstration project and any non-structural BMPs implemented consistent with Part 2.3.7 of the Draft Permit (i.e., Good Housekeeping minimum control measures including street sweeping, catch basin cleaning, and organic waste and leaf litter collection programs). Permittees must quantify phosphorus load reductions from non-structural BMPs using the methodology in Attachment 2 of Appendix F. Permittees must quantify phosphorus load reductions from structural SCMs using the methodology and phosphorus removal performance data in Attachment 3 of Appendix F. These methodologies were explained in detail in the 2014 Fact Sheet and 2016 RTC. The information on pollutant load reductions achieved with non-structural BMPs and structural SCMs will be used to assess progress in meeting the nonpoint source reduction targets in the TMDL and achieving water quality standards in the impaired waterbodies. In addition, the pollutant removal information may be used in future WLAs or phosphorus reduction requirements if the EPA and the state agency find reductions are necessary to meet water quality standards.

3.2.2.3 Bacteria and Pathogen TMDLs

Bacteria and pathogens indicate the presence of raw sewage and/or the presence of feces from warmed blooded mammals and represent a risk to human health and the environment. Information on pathogen related control measures and BMPs is discussed in the document: *Mitigation Measures to Address Pathogen Pollution in Surface Waters: A TMDL Implementation Guidance Manual for Massachusetts*.³⁵ There are currently six approved bacteria (fecal coliform bacteria) or pathogen (fecal coliform and/or enterococcus bacteria) TMDLs for certain waterbody segments in Rhode Island that identify urban stormwater discharges in Massachusetts as sources that are contributing bacteria or pathogens to the impaired segments. The TMDLs include the Kickemuit Reservoir, Upper Kickemuit River and Kickemuit River TMDL, Ten Mile River, Lower Ten Mile River and Omega Pond. EPA has not approved any new bacteria/pathogen TMDLs that would be applicable to stormwater discharges in Massachusetts since issuance of the 2016 MA MS4 Permit.

Any MS4 (traditional or non-traditional) that discharges to a waterbody, including their tributaries, covered by one of the TMDLs is subject to the requirements in Parts 2.2.1.f.iii. and Appendix F Part II.C of the Draft Permit. A list of municipalities is provided in Part 2.2.1.f.iii and a list of waterbody segments covered by the TMDL is provided in Table F-13. Appendix F Part II.C of the Draft Permit carries forward the enhanced BMPs established in the 2016 MA MS4 Permit to

³⁵ Available at: <https://www.mass.gov/doc/implementation-guidance-manual-for-watershed-specific-pathogen-tmdl-reports-0/download>. Retrieved 5/9/2024.

comply with Rhode Island Bacteria TMDLs. These measures build upon the minimum control measures in Part 2.3 of the Draft Permit to specifically target reductions in bacteria/pathogens in stormwater. The Draft Permit requires enhanced BMPs relating to public education and outreach and good housekeeping to control existing loads and prevent increases in bacteria/pathogens to impaired waterbodies or their tributaries from MS4 sources.

The TMDLs do not include specific reductions required by specific Massachusetts sources; however, the TMDLs do identify urban stormwater as causing or contributing to the bacteria or pathogen impairment in the waterbody. Enhanced BMPs, in addition to the minimum control measures in Part 2.3 of the Permit, are warranted to control bacteria/pathogens in stormwater discharges where the receiving waterbody is not meeting water quality standards. These measures build upon the minimum control measures in Part 2.3 of the Draft Permit to specifically target bacteria sources that contribute to increased bacteria loads in stormwater. First, permittees discharging to waters with an EPA-approved TMDL for bacteria and pathogens must supplement the Public Education minimum control measure at Part 2.3.2 to include an additional public education message targeting proper pet waste management and provide information to septic system owners. These messages can be combined with additional public education requirements to address other EPA-approved TMDLs in Appendix F and/or water quality limited waters in Appendix H. The second enhanced BMP focuses on elimination of illicit discharges as these are a likely contributor of bacteria/pathogens to receiving waters. Requiring permittees to designate catchments that are discharging to receiving waters with an EPA-approved bacteria/pathogen TMDL as “Problem” or “High Priority” will ensure that investigation and elimination of illicit sources in these catchments are prioritized. The measures in Appendix F.B.III supplement, rather than replace, the requirements in Part 2.3 of the Draft Permit because additional effort is warranted to control bacteria loads in discharges to the impaired waters.

3.2.2.4 Metals TMDLs

There are currently five approved metals TMDLs for waterbody segments in Rhode Island that identify urban stormwater discharges in Massachusetts as sources that are contributing metals (Cadmium, Lead, Aluminum, Iron) to the impaired segments. The TMDLs include the Upper Ten Mile River, Lower Ten Mile River, Central Pond, Turner Reservoir and Omega Pond TMDLs. EPA has not approved any new metals TMDLs that would be applicable to stormwater discharges in Massachusetts since issuance of the 2016 MA MS4 Permit.

Any MS4 (traditional or non-traditional) that discharges to a waterbody (including their tributaries) covered by one of the TMDLs, is subject to the requirements in Parts 2.2.1.f.iv. and Appendix F Part II.D of the Draft Permit. A list of municipalities is provided in Part 2.2.1.f.iv and a list of waterbody segments covered by the TMDL is provided in Table F-14. Appendix F Part II.D of the Draft Permit carries forward the enhanced BMPs established in the 2016 MA MS4 Permit to comply with Rhode Island Metals TMDLs. These measures build upon the minimum control measures in Part 2.3 of the Draft Permit to specifically target reductions in metals in stormwater. The Draft Permit requires enhanced BMPs relating to stormwater management in new and

redevelopment and good housekeeping to control discharges of metals to impaired waterbodies or their tributaries from MS4 sources.

The TMDLs do not include specific reductions required by specific Massachusetts sources; however, the TMDLs do identify urban stormwater as causing or contributing to the metals impairments in the waterbody. Enhanced BMPs, in addition to the minimum control measures in Part 2.3 of the Permit, are warranted to control metals in stormwater discharges where the receiving waterbody is not meeting water quality standards. These measures build upon the minimum control measures in Part 2.3 of the Draft Permit to specifically target sources of cadmium, lead, aluminum, and iron in stormwater. Metals concentration in urban stormwater are found in greatest quantities in discharges from impervious areas, with industrial or commercial land use metals concentrations increasing with increased sediment load. Therefore, the requirements of Part II.D of Appendix F include additional BMPs to specifically target the control of sediment (which is associated with increased metals concentrations) from areas with known higher pollutant loadings of sediment and metals. The measures in Appendix F supplement, rather than replace, the requirements in Part 2.3 of the Draft Permit because additional effort is warranted to control metals in discharges to the impaired waters.

The Draft Permit includes additional requirements to supplement the Good Housekeeping minimum control measures for permittee-owned properties in Part 2.3.6 of the Permit. Permittees must establish a schedule for street sweeping on areas with potential for high pollutant loads, documented in their SWMP and included in the Annual Reports, that will reduce sediment loads and the addition of associated metals. The Draft Permit also includes additional requirements to supplement the Stormwater Management in New and Redevelopment minimum control measures in Part 2.3.5 of the Permit. Permittees must establish procedures to ensure that stormwater management systems associated with the development or redevelopment and designed to infiltrate stormwater on commercial or industrial land uses that drain to waterbodies subject to an out-of-state TMDL for metals provide sufficient pre-treatment to ensure that proper operation of the infiltration system and to minimize the potential for break-through of metals following treatment. Together these requirements are intended to protect water quality degradation from areas with the highest potential to discharge high concentrations of metals to the MS4 system.

3.3 Discharges to Certain Waters Without a TMDL

3.3.1 Water Quality Limited Waters

The objective of the CWA is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. To meet this goal, the CWA requires states to develop information on the quality of their water resources and report this information to EPA, the U.S. Congress, and the public every two years. To this end, EPA released guidance on November 19, 2001, for the preparation of an integrated "List of Waters" that could combine reporting elements of both § 305(b) and § 303(d) of the CWA. The integrated list format allows states to provide the status of

all their assessed waters in one list. States list each water body or segment in one of the following five categories: 1) unimpaired and not threatened for all designated uses; 2) unimpaired waters for some uses and not assessed for others; 3) insufficient information to make assessments for any uses; 4) impaired or threatened for one or more uses but not requiring the calculation of a Total Maximum Daily Load (TMDL); and 5) impaired or threatened for one or more uses and requiring a TMDL. Massachusetts chooses to list each waterbody segment in only one category listed above; therefore, waters that have an approved TMDL for some pollutants but not others would remain in Category 5 until TMDLs are approved for all of the pollutants impairing those waters. There are also unassessed waters in each state, including Massachusetts, that are not given a category designation but still may be experiencing excursions above water quality standards.

Pollution from urban stormwater runoff is well documented as one of the leading causes of impairment of freshwater lakes, rivers, and estuaries. Urban stormwater runoff contains a number of potentially harmful pollutants, including, but not limited to: Nutrients (nitrogen and phosphorus), Bacteria/Pathogens, Chloride, Solids, Oil & Grease (Hydrocarbons), and Metals. The 2014 Fact Sheet and 2016 RTC provided a detailed review of stormwater quality, occurrence of major pollutants in stormwater runoff, and need for additional measures to control certain pollutants associated with stormwater runoff to impaired waterbodies.

CWA §402(p)(3)(B)(iii) provides that MS4 permits may include “such other provisions as the Administrator determines appropriate.” In accordance with CWA §402(p)(3)(B)(iii), EPA included more stringent permit requirements than those established as MEP in the 2016 MA MS4 Permit to meet water quality standards. Part 2.2.2 of the 2016 MA MS4 Permit established additional requirements for MS4 discharges to water quality limited waters that are not meeting water quality standards due to one or more of the pollutants typically found in urban stormwater runoff: nutrients (nitrogen and phosphorus and associated impairments), bacteria/pathogens, chloride, total suspended solids, oil and grease, and metals. The 2016 MA MS4 Permit defined “water quality limited water(s)” to include any waterbody 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). The MS4 Permit uses the term “water quality limited waters” to encompass both waters listed as impaired under Categories 5 and 4b pursuant to Section 303(d) for particular pollutants, and waters not listed as impaired for particular pollutants but that are experiencing excursions above water quality standards.³⁶

³⁶ 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. (Such a determination does not automatically add the waterbody to the list of impaired waters under Section 303(d).) “Water quality limited” for the purposes of Part 2.2.2 of this Draft Permit does not include any waterbody segment for which the discharge of a particular pollutant is subject to an EPA approved TMDL. Those discharges are subject to Part 2.2.1 of the Permit.

Part 2.2.2 and Appendix H of the Draft Permit carry forward certain additional measures and advance certain requirements applicable to permittees discharging to water quality limited waterbodies that are impaired due to the presence of bacteria/pathogens, nutrients, chloride, metals, sediment, and oil and grease (hydrocarbons). The justification for the additional requirements for water quality limited waterbodies is discussed in detail in the 2014 Fact Sheet and 2016 RTC. Part 2.2.2 of the Draft Permit identifies permittees subject to the additional water quality-based provisions of the Draft Permit and Appendix H contains the requirements broken down by pollutant type. EPA has determined that these additional BMPs are necessary and appropriate under the CWA because they specifically target the reduction of the pollutant causing the in-stream impairment.

3.3.2 Requirements for Discharges to Water Quality Limited Waterbodies: Nutrients

In both marine and freshwater systems, an excess of nutrients results in degraded water quality, adverse impacts to ecosystems and limits on the use of water resources.³⁷ Eutrophic waters often exhibit dense growths of algae or other nuisance aquatic plants, depressed levels of dissolved oxygen, loss of fish and submerged aquatic vegetation and foul odors. According to the 2022 Massachusetts List of Integrated Waters, excess nutrients are the cause of impairment of aquatic life designated use for 382 miles of rivers and streams, 7,410 acres of lakes and ponds, and 74 square miles of coastal waters. Excess nutrients are also the cause of impairment of primary contact recreation designated use for 144 miles of rivers and streams and 2,873 acres of lakes and ponds.³⁸

Nitrogen

Nitrogen is a critical element in coastal and marine ecosystems and a driver of coastal eutrophication. The primary sources of nitrogen in urban stormwater are atmospheric deposition including mobile source deposition (deposition from combustion engines), wash-off of fertilizers, erosion of soils and stream banks, organic matter (such as pollen and leaves) and pet wastes that are deposited on impervious surfaces, and leaching of nitrate from septic systems. In addition, runoff from residential lawns and turf areas (e.g., sports fields, golf courses, and parks) have been shown to be a source for nutrient input into urban runoff with nitrogen concentrations as much as four times greater than those from other urban sources.

³⁷ See, for example, Center for Watershed Protection Impacts of Impervious Cover on Aquatic Systems (2003) available at https://longislandsoundstudy.net/wp-content/uploads/2012/11/Impacts_IC_Aq_Systems.pdf; Shaver et al. Fundamentals of Urban Runoff Management (2007) available at <https://lake.wateratlas.usf.edu/upload/documents/Fundamentals%20of%20Urban%20Runoff%20Management%20Technical%20and%20Institutional%20Issues.pdf>; and Moore et al. (2011) Source and delivery of nutrients to receiving waters in the Northeastern and Mid-Atlantic Regions of the United States available at <https://pubs.usgs.gov/publication/70037781>.

³⁸ <https://mywaterway.epa.gov/state/MA/water-quality-overview>

Estuaries, embayments and coastal waters are generally nitrogen limited with respect to eutrophication. MS4s that discharge to coastal waterbodies that are impaired due to excess nitrogen or to their tributaries must manage stormwater discharges to reduce nitrogen loads. Part 2.2.2.a of the Draft Permit explains that permittees discharging to water quality-limited waters and their tributaries where nitrogen is the cause of the impairment are subject to the water quality-based requirements in Appendix H Part I. These requirements include additional BMPs above what is required in Part 2.3 of the Draft Permit to specifically target the control of nitrogen and protect water quality.

Phosphorus

Phosphorus is often the limiting nutrient and leading cause of eutrophication and algal blooms in freshwater bodies. Orthophosphate is the form of phosphorus most readily available to aquatic life and is the most common form occurring in stormwater. The primary sources of phosphorus in urban stormwater are wash-off of phosphorus-based lawn fertilizers used in residential areas, parks, cemeteries, and golf courses and agricultural land uses, wash-off of organic matter (such as pollen and leaves) and pet wastes that are deposited on impervious surfaces, atmospheric deposition, soil erosion, and leaching from septic systems.

Excess phosphorus loading to inland waterbodies is of primary concern because high levels of phosphorus is the most common cause of eutrophication in freshwater lakes, reservoirs, streams and headwaters of estuarine systems. Moreover, studies have demonstrated the water quality impact of phosphorus additions to downstream stream reaches, some as distant as 10 km (Correll, 1998).³⁹ MS4s that discharge to waterbodies that are impaired due to excess phosphorus or to their tributaries must manage stormwater discharges to reduce phosphorus loads. Permittees discharging to water quality-limited waters and their tributaries where phosphorus is the cause of the impairment are subject to the water quality-based requirements found in Appendix H Part II. These requirements include additional BMPs above what is required in Part 2.3 of the Draft Permit to specifically target the control of phosphorus and protect water quality.

Nitrogen and Phosphorus Water Quality-Limited Permit Requirements

The Draft Permit's MEP requirements alone are not sufficient to adequately control nutrients in discharges where the receiving waterbody requires nitrogen or phosphorus reductions to meet water quality standards. Any MS4 (traditional or non-traditional) that discharges to a waterbody, including their tributaries, that is impaired for nitrogen is subject to the requirements in Parts 2.2.2.a and Appendix H Part I of the Draft Permit. Any MS4 (traditional or non-traditional) that discharges to a waterbody, including their tributaries, that is impaired for phosphorus is subject to the requirements in Parts 2.2.2.b and Appendix H Part II of the Draft Permit. These measures build upon the minimum control measures in Part 2.3 of the Draft Permit to specifically target

³⁹ See, for example, Correll (1998) The role of phosphorus in eutrophication of receiving waters: a review available at <https://acsess.onlinelibrary.wiley.com/doi/10.2134/jeq1998.00472425002700020004x>.

nutrient reductions in stormwater. 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 action is needed to address nutrients. The Draft Permit carries forward requirements to implement enhanced BMPs relating to public education and outreach, illicit detection and elimination, good housekeeping, and post construction stormwater management. The 2016 MA MS4 permit also required permittees to develop a Source Identification Report for nitrogen or phosphorus, depending on the cause of the impairment, to identify sources and locations within the contributing catchments that are potential “hot spots” for nutrients in stormwater. Existing permittees under the 2016 MA MS4 permit were required to complete these reports by July 1, 2023 (five years from the effective date of the 2016 permit). The Draft Permit establishes requirements for the next phase of stormwater management to address nutrients in stormwater discharges to impaired waters.

Appendix H Parts I and II of the Draft Permit contain measures to target the reduction of accumulated organics on impervious surfaces through enhanced good housekeeping requirements and public education messages. Removal of organics from contact with stormwater through targeted street sweeping will reduce the amount of nitrogen and phosphorus contributed to receiving waters. Appendix H Parts I.A and II.A also contain additional requirements to target fertilizer application to turf consistent with statewide regulations at 330 CMR 31.00 that will in turn reduce the amount of nitrogen and phosphorus discharged in stormwater from fertilizer application activities. In addition, Appendix H Parts I.A and II.A contain requirements that target the removal of nutrients in stormwater following development or redevelopment activities. Permittees must require stormwater management systems associated with new and redevelopment discharging to waterbodies where nitrogen is the cause of impairment be optimized for nitrogen removal. For example, stormwater management systems should consider SCMs designed with an anaerobic zone to promote denitrification that target nitrogen load reductions, such as a gravel wetland or similarly constructed system, and SCMs that remove higher percentages of total nitrogen based on the performance curves in Attachment 3 of Appendix F (e.g., infiltration). Permittees must require stormwater management systems associated with new and redevelopment discharging to waterbodies where phosphorus is the cause of impairment be optimized for phosphorus removal by requiring infiltration where feasible because infiltration has been shown to cause the adsorption of phosphorus onto soil particles. Other SCMs with known phosphorus removal include designs with a sand/organic filtration component. Alternatively, permittees could prioritize disconnection of impervious cover at new and redevelopment. The supplemental new and redevelopment requirement is intended to ensure that the stormwater nutrient load to any nutrient impaired water does not increase due to land use changes.

The 2016 MA MS4 permit required permittees to develop a source identification report that identified urbanized area that discharges to a waterbody, or its tributaries, that is impaired for nitrogen or phosphorus, quantified impervious area in the catchments, identified catchments with high potential nitrogen or phosphorus loading, incorporated information from mapping and monitoring required under the MCMs, and evaluated opportunities to retrofit areas in the high

load catchments with structural SCMs to reduce nitrogen or phosphorus loads. The report was intended to guide the permittee in making decisions to maximize environmental benefit with respect to areas of the MS4 to retrofit or target for SCMs to reduce nutrients in stormwater discharges. In Year 5 of the 2016 MA MS4 permit, 26 of 47 permittees (55%) submitted the required report and an additional 6 permittees (13%) indicated that the report was in progress. In addition, the 2016 MA MS4 permit required permittees discharging to nutrient-limited waters to install one structural SCM as a demonstration project by July 1, 2024 (within 6 years of the effective date of the permit). Permittees reported on compliance with this requirement in the Year 6 annual report due September 30, 2024. The Draft Permit carries forward the requirements related to the Nutrient Source Identification Reporting for new permittees and permittees that are subject to the nutrient limited waters requirements for the first time (e.g., a waterbody to which a permittee discharges is listed as impaired for nutrients for the first time in the most recent 303d List).

Appendix H Part I of the Draft Permit establishes requirements for existing permittees to advance progress addressing nitrogen loads from stormwater in discharges to a waterbody, or its tributaries, that is impaired for nitrogen. Appendix H Part II of the Draft Permit establishes requirements for existing permittees to advance progress addressing phosphorus loads from stormwater in discharges to a waterbody, or its tributaries, that is impaired for phosphorus. While the Draft Permit does not require target reduction requirements for these permittees, the Draft Permit does require permittees to take action to reduce nutrient loads by implementing structural SCMs and to track and report the resulting reductions in nutrient loads. The 2016 MA MS4 permit required permittees to provide a list of planned structural SCMs and a schedule for implementation by July 1, 2023 (within 5 years of the effective date of the permit) and begin to track the installation and nutrient reductions achieved with structural SCMs. For the next phase of the water quality-based requirements for water-quality limited waters where nutrients are the cause of the impairment, the Draft Permit establishes requirements to implement planned structural SCMs identified under the last permit term. Permittees must install structural SCMs in target catchments identified in the Nitrogen or Phosphorus Source Identification Report as having high loads on a schedule of one per year beginning in the second year from the effective date of this permit (i.e., a minimum of four SCMs during the next permit term). Permittees should evaluate the list of SCMs and the schedules developed under the last term to determine an implementation plan that maximizes planned infrastructure, resurfacing, and redevelopment activities, cost, and feasibility. Permittees shall update and maintain a list of four structural SCMs to be implemented in each alternating annual report starting in Year 3 unless all permittee-owned property has been retrofitted with structural SCMs or the permittee demonstrates that additional SCMs are infeasible.

The permittee shall document in the SWMP and in each annual report actions the permittee is taking to reduce nutrients in stormwater discharges. The Draft Permit requires the permittee to track nutrient reductions from SCMs implemented in compliance with Part I or Part II of Appendix H beginning the with the first annual report. The first annual report must include, at a minimum, an update on the SCM demonstration project and any non-structural control measures

implemented consistent with Part 2.3.7 of the Draft Permit (i.e., Good Housekeeping minimum control measures including street sweeping, catch basin cleaning, and organic waste and leaf litter collection programs). Permittees must quantify nitrogen or phosphorus load reductions from non-structural BMPs using the methodology in Attachment 2 of Appendix F. Permittees must quantify nitrogen or phosphorus load reductions from structural SCMs using the methodology and performance data in Attachment 3 of Appendix F. These methodologies were explained in detail in the 2014 Fact Sheet and 2016 RTC. The information on pollutant load reductions achieved with non-structural and structural SCMs will be used to assess progress in addressing nutrient loads from stormwater discharges to impaired waters and achieving water quality standards. In addition, the pollutant removal information may be used in future WLAs or nutrient reduction requirements if the EPA and the state agency find reductions are necessary to meet water quality standards.

3.3.3 Requirements for Discharges to Water Quality Limited Waters: Bacteria/Pathogens

Fecal bacteria have been used as an indicator of the possible presence of pathogens in surface waters and the risk of disease, based on epidemiological evidence of gastrointestinal disorders from ingestion of contaminated surface water or raw shellfish. Contact with contaminated water can lead to ear or skin infections, and inhalation of contaminated water can cause respiratory diseases. The pathogens responsible for these diseases can be bacteria, viruses, protozoans, fungi, or parasites that live in the gastrointestinal tract and are shed in the feces of warm-blooded animals... concentrations of fecal bacteria, including fecal coliforms, enterococci, and *Escherichia coli*, are used as the primary indicators of fecal contamination.⁴⁰ Massachusetts water quality standards use the bacteria indicators *Escherichia coli* in freshwater and *Enterococci* in marine waters. Shellfishing designated uses are assessed using fecal coliform as the indicator bacteria.⁴¹ Where stormwater runoff is discharged to recreational waters such as beaches and lakes, or comes into contact with shellfish beds, there is a potential public health risk associated with pathogen contamination. Primary sources of pathogens in urban stormwater runoff include leaky sanitary sewer lines, sanitary sewer cross-connections, wash-off of wildlife and pet excrement, and failing septic systems. According to the 2022 Massachusetts List of Integrated Waters, bacteria and other microbes are the leading cause of impairments for primary contact and secondary contact designated uses in rivers and coastal waters.⁴² Bacteria is the cause of impairment of primary contact recreation in 1,512 miles of rivers and streams and 62 square miles of coastal waters; bacteria is the cause of impairment of secondary contact recreation in 370 miles of rivers and streams and 37 square miles of coastal waters. Elevated bacteria levels accounted for 77% of swim advisory days for poor water quality during the 2023 season.⁴³

⁴⁰ EPA 2012 Recreational Water Quality Criteria for Bacterial Indicators of Fecal Contamination available at <https://www.epa.gov/wqc/recreational-water-quality-criteria-and-methods#rec1>.

⁴¹ Massachusetts Consolidated Assessment and Listing Methodology (CALM) Guidance Manual for the 2022 Reporting Cycle available at <https://www.mass.gov/info-details/water-quality-assessments>.

⁴² <https://mywaterway.epa.gov/state/MA/water-quality-overview>

⁴³ Massachusetts Department of Public Health Beach Testing Results 2023 Annual Report available at <https://www.mass.gov/lists/water-quality-at-massachusetts-swimming-beaches#2023->

Bacteria standards were exceeded at least once during the 2023 season at 43% of marine sampling locations and 31% of freshwater sampling locations and beaches located in municipalities with more than 50% of the population living in areas with environmental justice concerns had a higher water quality exceedance rate than other beaches.

The Draft Permit carries forward the requirements in Part 2.2.2.c and Appendix H of the 2016 MA MS4 Permit targeting water quality limited waterbodies where bacteria or pathogens is the source of the impairment. These measures build upon the minimum control measures in Part 2.3 of the Draft Permit to specifically target bacteria sources that contribute to increased bacteria loads in stormwater. Permittees discharging directly to a waterbody identified as impaired due to bacteria or pathogens in categories 5 and 4b on the most recent Massachusetts Integrated Report of waters listed pursuant to Clean Water Act sections 303(d) and 305(b), are subject to the additional requirements found in Appendix H Part III. As in the 2016 MA MS4 Permit, only permittees discharging directly to a waterbody impaired for bacteria or pathogens are subject to the additional requirements found in Appendix H Part III.

Enhanced BMPs, in addition to the minimum control measures in Part 2.3 of the Permit, are warranted to control bacteria/pathogens in stormwater discharges where the receiving waterbody is not meeting water quality standards. First, permittees discharging to water quality limited waterbodies where bacteria or pathogens is the source of the impairment must supplement the Public Education minimum control measure at Part 2.3.2 to include an additional public education message targeting proper pet waste management and provide information to septic system owners. Pet waste is a significant potential source of bacteria to MS4s. Targeting messages to pet owners about the importance of proper pet waste disposal in controlling bacteria loads in impaired waters is the best way to address this source. In addition, permittees must also provide information to owners of septic systems about proper maintenance and the potential for contributing bacteria and pathogens to receiving waters. These messages can be combined with additional public education requirements to address other water quality requirements in Appendix F and/or Appendix H.

Illicit discharges to MS4s are a likely contributor of bacteria/pathogens to receiving waters. Therefore, the second enhanced BMP focuses on elimination of illicit discharges. These measures supplement, rather than replace, the requirements in Part 2.3 of the Draft Permit because additional effort is warranted to control bacteria loads in discharges to the impaired waters. Permittees must designate catchments that discharge to water quality limited waterbodies where bacteria or pathogens is the source of the impairment as “Problem” or “High Priority” to ensure that investigation and elimination of illicit sources is prioritized in these catchments.

EPA believes that, once fully implemented, the provisions of Appendix H Part III will substantially reduce bacteria and pathogens 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 believes these provisions are appropriate and protective of water quality.

3.3.4 Requirements for Discharges to Water Quality Limited Waters: Chloride

Chlorides are salt components found in runoff that result primarily from road deicer applications during winter months. The primary sources of chloride in urban stormwater are chloride-based road deicing chemical application on roadways, parking lots and other impervious surfaces, chloride-based road deicing stockpile runoff, and atmospheric deposition. Chloride concentrations in urban runoff during the deicing season can cause urban streams to violate acute water quality criteria.⁴⁴ The 2022 Massachusetts Integrated Report lists chloride as the cause of impairment for segments in the Charles, Blackstone, Ipswich, Merrimack, Nashua, Mystic, SuAsCo, Shawsheen, and Westfield watersheds.

The Draft Permit carries forward the requirements in Part 2.2.2.d and Appendix H of the 2016 MA MS4 Permit targeting water quality limited waterbodies where chloride is the source of the impairment. These measures build upon the minimum control measures in Part 2.3 of the Draft Permit to specifically target chloride sources that contribute to increased loads in stormwater. Permittees discharging directly to a waterbody identified as impaired due to chloride in categories 5 and 4b on the most recent Massachusetts Integrated Report of waters listed pursuant to Clean Water Act sections 303(d) and 305(b), are subject to the additional requirements found in Appendix H Part IV. As in the 2016 MA MS4 Permit, only permittees discharging directly to a waterbody impaired for chloride are subject to the additional requirements found in Appendix H Part IV.

EPA recognizes the use of deicing chemicals during the winter season is often necessary for public safety. For this reason, the additional requirements in Appendix H Part IV do not prohibit the use of salts as the preferred deicing agent but focus instead 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 control the amount of road salt applied without compromising public safety. Permittees discharging to waterbodies that are impaired due to chloride must develop a Salt Reduction Plan aimed at reducing the total amount of chloride applied in the catchment area that drains to the impaired water. The Salt Reduction Plan can be optimized to meet the needs of the permittee as long as the total amount of chloride applied is reduced in the catchment discharging to the water quality limited waterbody. The New Hampshire Department of Environmental Services (NHDES) maintains a robust list of resource for its Road Salt Reduction Program, including a compendium of best management practices and strategies for reducing road salt and a link to more resources via the University of New Hampshire Technology Transfer Center.⁴⁵ Permittees must track and report the total amount of salt used per season and the application rate (in pounds per mile) in

⁴⁴ EPA Ambient Water Quality Criteria for Chloride – 1988 available at <https://www.epa.gov/sites/default/files/2018-08/documents/chloride-aquatic-life-criteria-1988.pdf>. See also Corsi et al. 2015. River chloride trends in snow-affected urban watersheds: increasing concentrations outpace urban growth rate and are common among all seasons. *Science of the Total Environment* 508: 488-497.

⁴⁵ <https://www.des.nh.gov/land/roads/road-salt-reduction>

the annual report. Appendix H Part IV also contains conditions for permittees to ensure the ability to control salt storage and application on privately owned commercial and industrial properties, including a requirement to prevent exposure of salt stockpiles to precipitation and runoff, additional public education messages for these property owners, and minimizing salt use associated with new and redevelopment. EPA believes that, once fully implemented, the provisions of Appendix H Part IV will substantially reduce chloride in stormwater discharges.

Appendix H Part IV of the Draft Permit also carries forward requirements to update a Salt Reduction Plan to include an additional waterbody that is impaired due to chloride within 60 days of becoming aware of the impairment. In this case, the permittee must extend the procedures and conditions in the Salt Reduction Plan to the new catchment draining to the water quality limited waterbody. To the extent possible, EPA encourages permittees to institute the Salt Reduction Plan town-wide due to potential cost savings of reducing the amount of salt applied to impervious surfaces and the benefits of reducing chloride in stormwater runoff to freshwater organisms. Permittees subject to Appendix H Part IV for the first time upon issuance of this MS4 Permit (i.e., new permittees or permittees discharging to a waterbody newly listed as impaired for chloride) must develop a Salt Reduction Plan within 3 years of the effective date and fully implement the plan within 5 years.

3.3.5 Requirements for Discharges to Water Quality Limited Waters: Solids, Metals and Oil and Grease (Hydrocarbons)

Sediment, measured as total suspended solids (TSS) and/or turbidity, is one of the most common and potentially damaging pollutants found in urban runoff. Sediment provides a pathway for the accumulation, transport, and storage of other pollutants, such as nutrients and metals.⁴⁶ Solids contribute to many water quality, habitat and aesthetic problems in urban waterways. Elevated levels of solids increase turbidity, reduce the penetration of light at depth within the water column, and limit the growth of desirable aquatic plants. Solids that settle out as bottom deposits contribute to sedimentation and can alter and eventually destroy habitat for fish and bottom-dwelling organisms. Turbidity can exert impacts on aquatic biota, such as the ability of submerged aquatic vegetation to receive light and the ability of fish and aquatic insects to use their gills. TSS is a measure of the total mass suspended sediment particles in water and provides an estimate of sediment load transported to local and downstream receiving waters. Turbidity is a measure of how suspended solids present in water reduce the ability of light to penetrate the water column. The primary sources of sediment in stormwater runoff include wash-off of particulate material from impervious surfaces (including streets, parking lots, and rooftops), wash-off from lawns and landscaped areas, wash-off from construction activities, and stream bank erosion.

Metals are among the most common stormwater pollutant components. While some metals are essential nutrients at low levels for humans, animals, plants and microorganisms, but toxic at

⁴⁶ See, for example, Center for Watershed Protection Impacts of Impervious Cover on Aquatic Systems (2003) available at https://longislandsoundstudy.net/wp-content/uploads/2012/11/Impacts_IC_Aq_Systems.pdf.

higher levels that may be present in urban stormwater runoff. Metals like lead, zinc, copper, and cadmium are associated with vehicle wear, tire wear, motor oil, grease and rust, which are washed off impervious areas like roadways, driveways and parking lots and enter waterbodies in stormwater runoff. The environmental chemistry of metals strongly influences their fate and transport in the environment and their effects on human and ecological receptors. In aquatic systems, metal bioavailability refers to the concentration of soluble metal that adsorb onto, or absorb into and across, membranes of living organisms. Dissolved metals in waterbodies are readily assimilated by plants and animals. The greater the bioavailability, the greater the potential for bioaccumulation, leading to increased toxicological effects.⁴⁷ Toxicity results when metals are biologically available at toxic concentrations affecting the survival, reproduction and behavior of an organism. The primary sources of metals in stormwater include wash-off of material deposited on impervious surfaces from corrosion of automobiles and bridges, atmospheric deposition, wash off from industrial areas, and soil erosion.

Oil and Grease is not a single chemical constituent but includes a large range of organic compounds that can be both petroleum-related (e.g., hydrocarbons) and non-petroleum (e.g., vegetable and animal oils and greases, fats, and waxes). These compounds have varying physical, chemical, and toxicological properties. Generally, oils and greases in surface waters either float on the surface, are solubilized or emulsified in the water column, adsorb onto floating or suspended solids and debris, or settle on the bottom or banks. Oil and grease, or certain compounds within an oil and grease mixture, can be lethal to fish, benthic organisms and water-dwelling wildlife. Oil and grease is used as a surrogate for all hydrocarbons because it is the most often measured hydrocarbon parameter. Sources of high concentrations of oil and grease in stormwater runoff are similar to those that contribute high metals concentrations, including wash-off of particulate material from impervious surfaces, wash-off from vehicle maintenance areas and gas stations, and illicit dumping to storm drains. According to the 2022 Massachusetts List of Integrated Waters, sediments, metals, and oil and grease/hydrocarbons are the cause of impairments to designated uses in 27 watersheds throughout the state.

The Draft Permit carries forward the requirements in Part 2.2.2.e and Appendix H of the 2016 MA MS4 Permit targeting water quality limited waterbodies where sediments, metals, or oil and grease is listed as the source of the impairment. These measures build upon the minimum control measures in Part 2.3 of the Draft Permit to specifically target sources that contribute to increases in TSS, metals, or oil and grease in stormwater. Permittees discharging directly to a waterbody identified as impaired due to one of these pollutants in categories 5 and 4b on the most recent Massachusetts Integrated Report of waters listed pursuant to Clean Water Act sections 303(d) and 305(b), are subject to the additional requirements found in Appendix H Part V. As in the 2016 MA MS4 Permit, only permittees discharging directly to a waterbody impaired for sediment, metals, and oil and grease/hydrocarbons are subject to the additional requirements found in Appendix H Part V.

⁴⁷ de Magalhães, D., M.R. da Costa Marques, D.F. Baptista, D.F. Buss. 2015. Metal bioavailability and toxicity in freshwaters. *Environmental Chemistry Letters*. DOI 10.1007/s10311-015-0491-9.

Enhanced BMPs, in addition to the minimum control measures in Part 2.3 of the Permit, are warranted to control TSS, metals, and oil and grease in stormwater discharges where the receiving waterbody is not meeting water quality standards. These pollutants are found in greatest quantities in stormwater discharges from impervious areas with industrial or commercial land uses. Therefore, the enhanced BMPs target activities associated with these land uses as well as illicit connections. Permittees discharging to water quality limited waterbodies where sediment, metals, or oil and grease/hydrocarbon is the source of the impairment must update the regulatory mechanism developed in accordance with Part 2.3.6 of the Permit to ensure that new development or redevelopment of commercial or industrial projects in the catchment areas draining to a water quality limited waterbody where oil and grease is listed as the cause of impairment incorporate stormwater management designs that allow for shutdown and containment where appropriate to isolate the system in the event of a spill. In addition, commercial or industrial areas are potentially sources of high pollutant loads. Higher concentrations of sediments, metals, and oil and grease in runoff could interfere with operation and maintenance of infiltration systems and allow for breakthrough of pollutants to impaired waterbodies. New development or redevelopment of commercial and industrial sites that drain to water quality limited waters which use infiltration systems for stormwater treatment must ensure that inflow pretreated to appropriate levels to ensure that these systems are properly maintained and operated. The Draft Permit proposes that infiltration systems on new and redeveloped commercial and industrial sites be designed in compliance with the Massachusetts stormwater standard for land uses with higher potential pollutant loads at 310 CMR 10.05(k)(5) as described in the Stormwater Handbook.⁴⁸ Finally, permittees must establish procedures for increased street sweeping within catchments that drain to impaired waters to target areas with high potential for pollutant loads. The optimal frequency may be determined on a case-by-case basis by each permittee but must be documented in the SWMP. The number of miles swept or mass of material removed in accordance with this requirement shall be combined with the reporting metrics for street sweeping in Part 2.3.7.g.i of the Permit. EPA believes that, once fully implemented, the provisions of Appendix H Part V will substantially reduce sediment, metals and/or oil and grease (hydrocarbons) in stormwater discharge.

3.3.6 Mystic River Watershed Alternative Restoration Plan for Phosphorus Management

The Mystic River Watershed is a 76 square mile watershed that spans all or portions of 22 MS4 municipalities and drains to Boston Harbor. The watershed is separated into three segments: the Upper Watershed (including the Aberjona River basin), the Central Watershed (including the

⁴⁸ As of the date of public notice, the 2008 Massachusetts Stormwater Handbook and Wetlands Protection Act Regulations at 310 CMR 10.00 promulgated in 2014 are currently effective. On December 22, 2023, MassDEP proposed revisions to the Wetlands Regulations and corresponding revisions to 401 water quality certifications, as well as an update to the Stormwater Handbook. See <https://www.mass.gov/regulations/310-CMR-1000-wetlands-protection-act-regulations>. EPA anticipates that MassDEP may finalize these regulations and the Stormwater Handbook revisions prior to issuance of a Final MS4 permit. If so, EPA will update references in the Permit to reflect the current version of the Stormwater Handbook.

Upper and Lower Mystic Lakes and Mill Brook), and the Lower Watershed (including the Mystic, Alewife, Malden River basins). The 2022 Final Massachusetts Integrated List of Waters indicates numerous impairments of the rivers and tributaries in the watershed, including, but not limited to, dissolved oxygen, pathogens, phosphorus, water clarity, nutrient/eutrophication biological indicators, chlorophyll-a, and harmful algal blooms.⁴⁹ Stormwater runoff is a primary source of pollutant loading to the watershed. On May 14, 2020, EPA accepted the “Mystic River Watershed Alternative TMDL Development for Phosphorus Management – Final Report” as an alternative restoration plan for the Mystic River.⁵⁰ The alternative restoration plan addresses severe water quality impairments resulting from the growth of algae caused by excessive nutrient loading to the Mystic River system, including phosphorus, chlorophyll, dissolved oxygen, and water clarity.

In 2013, EPA announced a new Vision, or framework, and associated goals for the Clean Water Act Section 303(d) Program to help EPA and States better manage activities to achieve water quality goals.⁵¹ Among other goals, the 2013 Vision set an Alternatives Goal for States to use alternative approaches, in addition to TMDLs, that incorporate adaptive management and may be more immediately beneficial or practicable to achieving applicable water quality standards under specific circumstances than a traditional TMDL. The Restoration Goal of the 2022-2032 Vision encourages the identification, development, and implementation of the most effective approaches for restoring water quality and emphasizes that restoration plans that adjust to changing circumstances and new data, and which involve enhanced engagement, stakeholder coordination, and program integration, can facilitate successful implementation.

In the Mystic River Watershed, EPA supported MassDEP in piloting an Alternative Restoration Plan designed to address impairments to water quality and nonattainment of designated uses over a period of time. The Alternative Restoration Plan integrated technical water quality analysis led by a Technical Steering Committee with a robust communication effort during the development of the plan and continuing through implementation. EPA and MassDEP will continue to work with stakeholders and communities to develop and implement strategies for stormwater management and control measures using an adaptive management framework. The adaptive management approach provides EPA, MassDEP, and MS4s with significant flexibility to monitor progress, incorporate new information, and adjust and refine strategies over time. This Draft Permit establishes the first iteration of stormwater management and control measures under the Mystic River Watershed Alternative Restoration Plan.

⁴⁹ Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle Appendix 6 Boston Harbor: Mystic River Basin and Coastal Drainage Area Assessment and Listing Decision Summary available at <https://www.mass.gov/doc/2022-integrated-list-of-waters-appendix-6-boston-harbor-mystic-river-basin-and-coastal-drainage-area-assessment-and-listing-decision-summary/download>.

⁵⁰ The January 2020 Alternative Restoration Plan Report and EPA’s Approval Document are available at <https://www.epa.gov/tmdl/tmdl-report-and-approval-documents-mystic-river-watershed-ma>.

⁵¹ Information about EPA’s Long-Term Vision for the Clean Water Act Section 303(d) Program, including the 2013 Vision and 2022-2032 Vision, is available at <https://www.epa.gov/tmdl/Vision>.

The Alternative Restoration Plan provides a detailed analysis of the sources of phosphorus and necessary reductions to improve water quality, including a watershed model based on in-stream water quality monitoring data, land use and land cover geospatial data, and local rainfall data, which is similar to the analysis conducted for the Charles River Watershed TMDLs. The watershed analyses and water quality modeling developed to support the Mystic River Alternative Restoration Plan suggest that a significant reduction in the phosphorus load from stormwater runoff from developed lands will be required to meet water quality targets for total phosphorus and chlorophyll-a in the Mystic River. In one scenario, which modeled future conditions accounting for baseline stormwater management, controls for combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs), and associated reductions in internal loads, indicates that a phosphorus load reduction as high as 62 percent for stormwater runoff would be necessary to meet water quality targets in the Lower Watershed.

The permitting authority may include more stringent effluent limitations, including permit requirements in addition to the minimum control measures, based on a TMDL or *equivalent analysis*, or where the permitting authority determines that such limitations are needed to protect water quality. See 40 CFR § 122.34(c)(1). See also 64 Fed. Reg. 68753; 68788 (“there must be adequate information on the watershed or a specific site as a basis for requiring tailored storm water controls beyond the minimum control measures”). In this case, EPA believes that the watershed study in the Alternative Restoration Plan is an equivalent analysis that definitively demonstrates that significant reductions in phosphorus loading from stormwater runoff are needed to address water quality impairments in the watershed, even with considerable reductions in CSOs, SSOs, and internal loading. At the same time, unlike the Charles River TMDLs, the Mystic River Alternative Restoration Plan is not a TMDL and does not set a wasteload allocation for stormwater runoff from urban and suburban land uses in the Mystic River Watershed. The Alternative Restoration Plan offers EPA an opportunity to establish permit conditions using an adaptive approach that builds on lessons learned from implementing phosphorus reduction requirements in the Charles River Watershed, enables EPA and MS4s in the Mystic River Watershed to adjust management strategies over subsequent permit terms based on successes and challenges, evaluate the extent to which permit conditions provide for attainment of water quality standards, and determine the appropriate permit requirements for subsequent permits.

EPA concludes that the site-specific water quality analysis in the Alternative Restoration Plan for the Mystic River Watershed indicates that there is a need and basis for additional phosphorus requirements for MS4s that discharge to the Mystic River and its tributaries. Part 2.2.2.f of the Draft Permit requires permittees within the Mystic River watershed to address water quality impairments due to phosphorus. Part VI of Appendix H establishes a requirement to achieve a 20% reduction in annual average phosphorus load from impervious surfaces in the watershed within 6 years of the effective date of the permit and requires permittees to develop and implement a Phosphorus Control Plan for the purpose of achieving this reduction. The targeted 20% reduction requirement in the Draft Permit is the first of multiple, iterative steps to address phosphorus loads in stormwater runoff and meet water quality standards in the Mystic River

Watershed. This approach provides sufficient flexibility to implement stormwater management strategies that will be most efficient and cost-effective for each individual MS4. As explained below, the Draft Permit establishes requirements to plan and execute stormwater control measures in each MS4 to achieve the required reduction in Year 6 and establishes baseline requirements that extend until the next permit issuance. Subsequent MS4 permits will establish the next iteration of permit requirements and targeted load reductions to build on the achievements made and continue to advance stormwater management to address phosphorus loads in the Mystic River Watershed. This iterative approach affords EPA flexibility to adapt permit requirements in future permits based on experience and changing conditions. Consistent with EPA's 2013 Vision, the approach proposed in the Draft Permit is an effort to establish requirements that may be more immediately beneficial or practicable to achieving applicable water quality standards under specific circumstances than compliance schedule that extends many years (and permit terms) into the future. At the same time, the Draft Permit's proposed phosphorus reduction target and requirements to implement a Phosphorus Control Plan (PCP) are generally consistent with the first phase of phosphorus control plans and milestones set for the Charles River Watershed in the 2016 MA MS4 Permit.

The Alternative Restoration Plan for the Mystic River modeled land-based phosphorus loads, including stormwater, baseflow, and CSOs/SSOs, for each sub-basin. As summarized above and explained in detail in the Plan, the water quality analysis definitively demonstrates that significant reductions in stormwater loads will be necessary to achieve water quality standards in the Mystic River, although no WLA was assigned to this source. The Draft Permit proposes that MS4s in the Mystic River watershed begin implementing and tracking control measures with a target of achieving a 20% reduction in the annual average total phosphorus load from impervious surfaces within 6 years of the effective date of the permit. The Alternative Restoration Plan evaluated stormwater loading by sub-basin across all categories of land use. For the Draft Permit, EPA calculated baseline stormwater phosphorus loads from impervious area within the portion of the Mystic River watershed in each MS4 community. EPA multiplied the estimated baseline phosphorus load from impervious area for each municipality by 0.2 to calculate a target load reduction milestone for this permit term. The required annual average phosphorus load reduction requirement for each municipality is presented in Appendix H Table H-1 of the Draft Permit.

EPA estimated the baseline phosphorus loads from hydrologic response unit (HRU) data (2007-2016) compiled for EPA.⁵² The baseline impervious phosphorus load was calculated as the product of the annual average phosphorus loading rate and the acres of impervious land use category (MassGIS 2016 land use-land cover attributes) for the portion of each municipality within the Mystic River watershed. For this first iteration of requirements in the Mystic River watershed, EPA elected to focus on impervious cover because impervious cover contributes the

⁵² Data was compiled from the Watershed Analysis of the Mystic River and Neponset River Watersheds Task 3A-B Technical Memo; November 13, 2023 available at <https://www.epa.gov/system/files/documents/2024-01/20231211-draft-mystic-task-3c-parcel-analysis-report.pdf>.

highest phosphorus loads and because the Phosphorus Source Identification Reports, which permittees were required to complete in compliance with Part II.1.b of the 2016 MA MS4 Permit, also focused on impervious area. EPA's spatial analysis, which was consistent with the methodology of the Mystic River Alternative Restoration Plan, evaluated phosphorus load based on HRUs. This method is widely used to estimate stormwater pollutant loads. At the same time, this method does not account for site-specific factors at the catchment scale that may impact the flow of water in a watershed. For example, a municipality may have site-specific data to demonstrate that the stormwater drainage in a particular catchment does not drain to the Mystic River watershed, even though the impervious area is within that watershed. EPA will consider site-specific information provided during the comment period and may refine the baseline and target phosphorus loads for the Final Permit based on such information.

Similar to the requirements in the Charles River watershed, non-traditional MS4s must also comply with the requirements in Part 2.2.2.f and Appendix H. At this time, the Massachusetts Department of Conservation and Recreation (DCR) is the only non-traditional MS4 permittee in the Mystic River watershed. EPA was unable to allocate the phosphorus load for impervious areas under the jurisdiction of DCR in the Draft Permit but is re-evaluating the data and expects to establish a baseline phosphorus load from impervious area and a phosphorus load reduction target for DCR in the Final Permit. Once EPA completes this analysis, EPA will reallocate the baseline load from impervious area to DCR and remove the corresponding baseline load from the municipality, which will likely result lower targets for those municipalities that have land owned by DCR. At the same time, focusing on impervious loads in this first iteration limits the contributing phosphorus load to only the impervious area within DCR land. In its 2022 Phosphorus Source Identification Report for the Mystic River watershed, DCR estimated 249 acres of impervious cover. Based on this estimate, a 20% reduction from the impervious area baseline load would be 50 lbs/year.

The Alternative Restoration Plan modeled the stormwater reductions to achieve water quality standards in the Mystic River based on the water quality and land use/land cover conditions during the period of the analysis. The phosphorus loading analysis for this Draft Permit was based on the 2016 MassGIS Land Use/Land Cover dataset. New impervious cover added as a result of development that occurred after 2016, or which occurs during the permit term, will increase the baseline phosphorus load from impervious cover in Table H-1 and, correspondingly, the phosphorus reduction required to meet a reduction target of 20%. In other words, increases in impervious cover not accounted for in the baseline phosphorus load in Table H-1 must be tracked and addressed to meet the reduction target. The minimum control measure for new development in Part 2.3.6.b.iii requires a 60% reduction in phosphorus load from new impervious cover, which may still result in a net increase in phosphorus load from new impervious cover in the watershed. Even as permittees implement SCMs and management strategies to control phosphorus loads in compliance with this and future permits, the target load will always be out of reach if the increase in load from new development is not addressed. Therefore, the Draft Permit proposes that permittees track and report the increase in phosphorus load from new development and account for the increase when evaluating cumulative progress towards the 20%

reduction target over the permit term. Permittees may use various data sources to track new impervious cover including, but not limited to, as-built development plans, local spatial or geographic data, and orthoimagery.⁵³ EPA is seeking comment on efficient methods to track the increase in impervious cover over time.

Appendix H Part VI of the Draft Permit establishes requirements for permittees discharging to the Mystic River Watershed, including a requirement to achieve an annual average phosphorus load reduction of 20% (from the baseline load in Appendix H) within 6 years of the effective date of the permit and to develop a Phosphorus Control Plan (PCP) with dates for the milestones in Table H-1. Part VI.A.1 of Appendix H establishes the schedule for PCP implementation to achieve the phosphorus load reduction targets in Year 6 and an interim milestone for permittees to install a minimum of two SCMs in the catchments identified as having the highest potential phosphorus load in the Phosphorus Source Identification Report by Year 3. EPA reasonably expects that permittees with relatively low phosphorus load reductions (e.g., less than 60 lbs/year) may be able to meet its requirements sooner than 6 years.

Phosphorus Control Plan Components:

Part VI.A.1 in Appendix H of the Draft Permit identifies the required components of the PCP, which are related, but not identical, to components of phosphorus control plans for the Charles River Watershed and certain impaired lakes and ponds in the 2016 MA MS4 permit. Most permittees will require implementation of a combination of non-structural and structural SCMs, which requires planning, the assessment of legal authority and funding mechanisms, consideration of operation and maintenance requirements, developing a schedule for implementation, and performance evaluation to demonstrate compliance with the target phosphorus load reduction and inform future permit requirements. EPA considers the PCP components described below to be essential elements for developing and implementing a successful PCP.

Phosphorus Source Identification Report Update: The permittee must first provide an update on all structural SCMs on permittee-owned property within its jurisdiction in the Mystic River Watershed, including all SCMs installed and operated under the 2016 MA MS4 Permit. This list must identify which structural SCM was installed in compliance with the demonstration project requirement in Appendix H Part II.1.c.ii of the 2016 MA MS4 Permit. For each SCM, the permittee must include the type, location, impervious area treated, design storage volume, and estimated phosphorus load removed (in lbs/year) calculated consistent with the Method to Calculate Phosphorus Load Reductions for Structural Stormwater Control Measures in Attachment 3 to Appendix F. The update must also include an estimate of the phosphorus load removed (in lbs/year) resulting from the existing implementation of non-structural SCMs within the permittee's jurisdiction in the Mystic River Watershed. The estimate must be calculated

⁵³ Aerial imagery, most recently from 2023, is available through MassGIS at <https://www.mass.gov/info-details/massgis-data-layers#image-data->.

consistent with the method for calculating Phosphorus Reduction Credits for Non-Structural SCMs in Attachment 2 to Appendix F.

Interim Milestone – Because permittees have 6 years after the effective date of the permit to achieve the target phosphorus reduction, the Draft Permit establishes an interim milestone requirement. Part VI.A.1.b in Appendix H of the Draft Permit requires the permittee to implement a minimum of two structural SCMs within 3 years of the effective date of the permit. The SCMs must be located in the two catchments ranked as having the highest potential phosphorus load in the permittee’s Phosphorus Source Identification Report. Permittees may install one SCM in each of the top two ranked catchments or install both SCMs in the same catchment provided the catchment was one of the top two ranked catchments for highest potential phosphorus load.

Written Phosphorus Control Plan – The permittee shall submit a written PCP within 3 years of the effective date of the permit which includes all components described above. The PCP must be made available for public comment; EPA recommends that permittee’s post the PCP on the MS4’s Stormwater Management website to facilitate public involvement. The PCP shall document implementation of all existing non-structural controls used to achieve the phosphorus load reduction requirement, including: the type, area where the SCM is implemented, and annual phosphorus reductions achieved through implementation. The PCP must include a Legal Analysis and Funding Source Assessment, Implementation Schedule for the planned structural and non-structural controls to meet the phosphorus load reduction requirement in Table H-1 of Appendix H, and O&M Program to ensure SCMs are maintained. Each of these components are described below:

- Legal Analysis and Funding Source Assessment: The legal analysis identifies existing regulatory mechanisms, including local by-laws and ordinances, and describes any changes necessary to ensure the PCP can be effectively implemented. Local by-laws and ordinances may present both opportunities and interferences to successfully carrying out the PCP. Some of this analysis may already be complete; for example, MS4s were required to evaluate if changes to existing design standards for streets and parking lots were needed to support low impact design options under Part 2.3.6 of the 2016 MA MS4 Permit. Still, there could be regulations or ordinances that require older technologies which no longer represent state-of-the-art performance to address stormwater phosphorus loading. A town may need to update its by-laws to facilitate use of low impact development (LID) practices or eliminate mandates that deter implementation of smaller-scale BMPs. Any changes to ordinances or by-laws identified in the legal analysis must be adopted by the end of the permit term.

The funding source assessment describes known and anticipated funding mechanisms that may be used to implement the PCP. Activities necessary to achieve the required phosphorus reduction could potentially require additional sources of funding beyond permittees’ current stormwater management programs. The funding assessment will ensure that permittees assess the overall long-term funding needs for achieving the

required phosphorus reductions and evaluate options for generating sustainable funding sources for additional phosphorus reductions in the future if necessary.⁵⁴

- Phosphorus Control Plan Implementation Schedule: The permit requires development of an implementation schedule to ensure that permittees undertake the necessary planning to successfully implement the structural and non-structural controls to meet the phosphorus load reduction requirement in Table H-1 of Appendix H. The schedule should evaluate the cost, procurement, construction, inspection, and O&M of non-structural BMPs and structural SCMs that will be used to achieve the phosphorus load reduction requirement in Table H-1 within 6 years of the effective date of the permit. The Implementation Schedule must be updated as necessary to reflect any changes in the anticipated schedule.
- Operation and Maintenance Program for Structural SCMs: The permit requires permittees to establish an Operation and Maintenance Program (O&M) for all structural SCMs to obtain phosphorus reduction credits as part of demonstrating compliance with permit requirements. The O&M Program must document responsibility for maintaining any third-party SCMs if permittees claim credit for such SCMs. Structural SCMs require regular inspections and maintenance to ensure that they continue to operate as designed in order to claim the phosphorus load reduction credit. The cumulative long-term phosphorus load reductions for each SCM in Attachment 3 of Appendix F assumes that the SCM is properly maintained and operated. Structural SCMs are susceptible to fouling from debris and accumulated sediments that are delivered by incoming stormwater runoff. Accumulation of sediments and debris can result in clogging, short-circuiting, and other operational problems that will reduce pollutant removal efficiency and potentially create local hazards to the public. Regular inspections of all SCMs are needed to identify potential operational problems, trigger immediate corrective action to resolve operational problems, and maintain the optimal functional capacities and performances of the SCMs. Additionally, an established O&M program is essential for protecting the significant financial investment made in implementing the SCMs and maintaining their maximum beneficial return for the communities.

Performance Evaluations: The Draft Permit requires permittees to track phosphorus load reductions achieved through implementation of structural SCMs and non-structural BMPs to demonstrate compliance with the phosphorus reduction requirements in Appendix H Table H-1. The permittee must include an evaluation of the implementation of its PCP within 6 years after the effective date of the permit, including a demonstration that the permittee has met the applicable phosphorus load reduction requirement in Table H-1. In addition, the permittee must track progress towards meeting this requirement each annual report. The annual reporting requirements are described in Part H.IV.A.3 of the Draft Permit. In addition to the PCP, and

⁵⁴ Information and guidance on stormwater funding and program costs are available on EPA Region 1's Stormwater Tools in New England site available at <https://www.epa.gov/npdes-permits/stormwater-tools-new-england#pcsm>.

consistent with the requirements for MS4s discharging to waterbodies subject to a nutrient TMDL and nutrient limited waters without a TMDL, Part VI.A.2 in Appendix H of the Draft Permit includes an additional requirement that permittees distribute a targeted education message about fertilizer use in accordance with Massachusetts Regulation 330 CMR 31.00 and an annual requirement that permittees certify that all municipally owned and maintained turf grass areas are being managed for proper use of fertilizers on turf grasses.⁵⁵ For the Mystic River watershed, Appendix H of the Draft Permit includes a requirement that permittees supplement the Public Education minimum control measure in Part 2.3.2 of the permit with an additional annual message for residential homeowners and lawn care professionals about the statewide standards for application of plant nutrients to non-agricultural turf and lawns. This messaging is warranted to ensure that fertilizer use within the watershed is consistent with 330 CMR 31.00 and is consistent with the enhanced public education requirements for fertilizer use in Appendix F Parts I.D, I.E, II.A, and II.B and Appendix H Parts I and II. The permittee must also certify that all municipally owned and maintained turf grass areas are being managed for proper use of fertilizers on turf grasses. Upon certification, permittees may include a non-structural BMP load reduction equivalent to 3% of the applicable baseline load in Table H-1 in its calculation of the current phosphorus export rate using Equation 2 in Part VI.A.3.d of Appendix H.⁵⁶

Part VI.A.3 of Appendix H of the Draft Permit establishes reporting requirements for permittees in the Mystic River watershed, including requirements to track implementation of and phosphorus reductions achieved with non-structural BMPs and structural SCMs and to calculate the cumulative phosphorus reduction, minus the net increase from new impervious cover, to evaluate progress towards meeting the target reduction. EPA will evaluate the effectiveness of the PCP and implementation of BMPs and SCMs to achieve the required phosphorus reduction for purposes of compliance with this MS4 permit. This initial PCP and progress towards meeting a 20% reduction, in combination with any new information on water quality and stormwater management efforts in the watershed, will inform future permit limits requiring additional stormwater phosphorus loading reductions from MS4s in subsequent issuances of the permit. EPA is seeking comment on the proposed iterative approach for the Mystic River watershed, including comments on effective approaches for tracking phosphorus reductions and increases.

On August 24, 2020 the Conservation Law Foundation (CLF) and the Charles River Watershed Association (CRWA) submitted to EPA a “Petition for a Determination that Certain Commercial, Industrial, Institutional, and Multi-Family Residential Property Dischargers Contribute to Water

⁵⁵ Additional information on plant nutrient regulations, including a Turf and Lawns Fact Sheet and Retail Sign, is available at <https://www.mass.gov/info-details/plant-nutrient-management>. Additional information on nutrient management planning, including implementing appropriate best management practices, is available from the University of Massachusetts Extension at <https://ag.umass.edu/resources/agriculture-resources/umass-extension-nutrient-management>.

⁵⁶ In the 2016 MA MS4 permit, EPA established a relative phosphorus load reduction for permittees subject to Lake and Pond TMDLs that included a relative 3% reduction based on data from the Charles River watershed. See 2016 Response to Comments Attachment 3. EPA has applied the same methodology for crediting phosphorus reductions achieved through limitations on fertilizer use for the Mystic River watershed.

Quality Standards Violations in the Mystic River Watershed, Massachusetts, and that NPDES Permitting of Such Properties is Required." On September 14, 2022, EPA exercised its residual designation authority in response to the water quality impacts caused by stormwater discharges in the Mystic River watershed and to the petition by preliminarily designating for NPDES permitting certain commercial, industrial, and institutional properties with one or more acres of impervious cover in the Mystic River Watershed.⁵⁷

Part 1.3.d of the Draft Permit explains that stormwater discharges currently authorized under another NPDES permit, including discharges covered under other regionally issued general permits, are not authorized under this MS4 Permit. Currently, there is no effective NPDES permit for non-industrial stormwater discharges from private properties in this watershed. EPA released a Draft Permit for Commercial, Industrial, and Institutional (CII) Properties in the Mystic River Watershed for Public Notice on October 31, 2024. As such, stormwater discharges from certain private properties that are currently authorized under the MS4 Permit may not be eligible for coverage in the future. As a result, EPA anticipates that target phosphorus load reduction requirements in future issuances of the MS4 Permit will need to account for this change in the regulated area covered by this permit. However, the Alternative Restoration Plan indicates that phosphorus load reductions far greater than 20% will likely be needed to meet water quality standards in the watershed. EPA set a reasonable, first-iteration target that it expects can be met primarily with BMPs and SCMs on municipally-owned property. Future phosphorus reduction targets for each municipality may be impacted by a Final CII Permit that includes the Mystic River watershed. The potential for a change to regulated property as a result of RDA is one reason EPA is proposing an iterative, phased approach for MS4 reductions in the Mystic River watershed rather than mirroring the extensive, long-term compliance schedule that EPA set for the Charles River watershed. EPA believes that anticipating permit requirements at this time, prior to an effective NPDES permit for CII properties, would be premature and may predetermine the conditions of a Final CII Permit. EPA expects that evaluation of future target reductions will account for requirements for private properties covered under a separate permit after a Final CII Permit becomes effective. EPA is seeking comment on equitable and effective methods to evaluate future phosphorus reduction requirements and allowable phosphorus loads to account for potential future changes from an effective CII Permit for certain properties in the Mystic River watershed.

In the event that this MS4 permit is administratively continued, the permittee must continue to submit annual evaluations of the performance of SCMs as described in Part VI.A.3 of Appendix H. EPA anticipates that future issuances of the MS4 permit will establish new, more stringent targeted phosphorus reductions based on the analysis in the Alternative Restoration Plan, which suggests that stormwater runoff reductions upwards of 60% would be necessary to achieve water quality standards in the Lower watershed. For this reason, EPA recommends that permittees

⁵⁷ Additional information about EPA's RDA activities in the Mystic River Watershed is available at <https://www.epa.gov/npdes-permits/watershed-based-residual-designation-actions-new-england#Petitions>.

continue to evaluate and install SCMs in the watershed following completion of its initial PCP to prepare for the next phase of permit requirements.

3.4 Attachments to Appendix F: Calculating Nutrient Loads and Credits

3.4.1 Attachment 1: Method to Calculate Baseline Phosphorus, Phosphorus Reduction, and Phosphorus Load Increases Due to Development

The 2016 MA MS4 permit established methodology to calculate baseline phosphorus load, phosphorus reduction, and phosphorus load increases due to development. Permittees subject to numeric, water quality-based phosphorus load reduction requirements in Appendix F Part I.A (Charles River TMDL), Appendix F Part I.B (Lakes and Ponds TMDLs), and Part IV of Appendix H (Mystic River Alternative Restoration Plan) must calculate and report phosphorus loads and load reductions in annual reports. Lists of municipalities subject to these requirements are included in Parts 2.2.1.a, 2.2.1.b, and 2.2.2.f of the Permit, as well as Appendix F Parts I.A and I.B. The methodology in Attachment 1, which explains how these permittees calculate baseline phosphorus load, phosphorus reduction requirement (in lbs/year), and phosphorus load increase due to development, has been carried forward from the 2016 MA MS4 permit.

3.4.2 Attachment 2: Phosphorus Reduction Credits for Selected Enhanced Non-Structural BMPs

The 2016 MA MS4 permit set reduction credits for three enhanced non-structural control practices: 1) enhanced street sweeping, 2) catch basin cleaning, and 3) organic waste and leaf litter collection programs. EPA is not aware of additional information that would increase the phosphorus or nutrient reduction credits of leaf litter pickup programs beyond enhanced sweeping programs that remove organic debris from impervious surface and has chosen to update street sweeping credits instead of leaf litter pickup credits, as discussed in detail below. The permit carries forward the credits for catch basin cleaning and organic waste and leaf litter collection programs without any updates. The enhanced street sweeping credits have been updated to provide additional pollution reduction credit based on updated information as discussed below.

Street Sweeping Credit Update

In 2022, the University of New Hampshire Stormwater Center (UNHSC) and the Piscataqua Region Estuaries Partnership (PREP) completed a Technical Memorandum⁵⁸ that summarizes a panel process completed to develop consensus-based recommendations to modify currently used pollutant load reductions for street cleaning BMPs in ways supported by existing science and

⁵⁸ Clean Sweep: Recommendations for New and Updated Credits for Street Cleaning in New Hampshire. Technical Memorandum. September 1, 2022. Piscataqua Region Estuaries Partnership and UNH Stormwater Center. <https://scholars.unh.edu/cgi/viewcontent.cgi?article=1459&context=prep>

data. The Technical Memorandum summarizes the scientific data used and the panel recommended potential methods for updating street sweeping credits consistent with the current scientific understanding of pollutant removal from street sweeping practices, namely a modeled approach and a measured approach. Both approaches result in increased nutrient (total phosphorus (TP) and total nitrogen (TN)) removal credits for a variety of street sweeping practices that focus on removing organic debris, primarily leaf litter, from impervious surfaces in a community. The panel chose not to focus on specific leaf litter pickup practices a community may be undertaking due to the fact that nutrient removal credit should only be available for removal of organic debris that contribute nutrients to waterways (i.e., those that collect on impervious surfaces, instead of those that collect on lawns).

The first potential approach for updating street sweeping credits is the modeled approach. This approach identifies three sweeping efforts: minimum, medium, and maximum effort. The minimum effort is sweeping at least two times annually, with two credits available based on the sweeper technology used since vacuum sweepers are more efficient at sweeping than mechanical broom sweepers. The medium effort is sweeping every other week in the fall from September to December with the same reduction credit given for any sweeper used. The high effort sweeping is sweeping monthly year-round with weekly sweeping in the fall from September to December with the use of a vacuum sweeper. If a Permittee doesn't know the land use associated with the sweeping area, the Permittee shall apply the pollutant load associated with medium density residential impervious cover since it is likely reflective of the majority of the area eligible for sweeping in municipalities. This updated credit reflects recent literature, and therefore, EPA has integrated the updated modeled based sweeping credit into this draft MS4 permit.

The other potential approach to updating street sweeping credits is the measured approach. Contrary to the modeled approach, this approach does not provide a presumptive credit for actions taken but instead would require permittees to weigh the street sweepings to receive credit for the amount of material removed from impervious surfaces. Inputs required for the measured approach include the wet mass and the percent moisture content to calculate the dry mass of the sweeping matter. If the percent moisture content isn't known, the panel recommended using a seasonally averaged percent moisture content developed by the University of Minnesota. From there, the TN and TP credit is calculated using seasonal TN and TP concentrations from the reported mass. EPA acknowledges that some communities are testing the measured approach to determine if additional or altered calibration is necessary to apply the Minnesota data to New England. Overall, the measured approach would receive additional credit over the modeled approach for communities.

However, a measured approach in the permitting context would introduce a number of complications. First, the permit would need to set out and require specific weighing methodologies and calibrations of machinery capable of conducting the weighing of street sweeping spoils. Second, the permit would need to specify required methods for measuring or estimating the moisture content of each measured load of street sweeping spoils. Third,

approving credits based on a measured approach may unfairly favor permittees that have access to specialty equipment and may divert funding from other control measures such as retrofits. Moreover, the approach would not allow permittees to plan for credits they would receive each year based on actions and instead permittees would not know the street sweeping credit they would achieve year to year until the street sweeping material was measured; this could potentially put a permittee out of compliance with pollution reduction requirements if they did not collect as much material as expected. Finally, this approach is at odds with the modeling approach used for all other non-structural and structural credits from the 2016 MA MS4 permit and continued in this Draft Permit. Specifically, all structural credits are based on modeled stormwater quality and removal efficiencies calibrated to this region. If the crediting methodology were to move to a measuring approach, the same approach would need to be done for all controls receiving pollution reduction credits in order to remain consistent. EPA does not find it practical to require each structural and non-structural practice being claimed for credit to be based on measuring the performance of each stormwater control through weight or stormwater monitoring. A measured approach would move the permit requirements from implementation to effectively studying each control individually in each community, costing permittees valuable resources that could be spent implementing additional stormwater controls.

EPA is aware that the modeled approach may undervalue some practices at certain times of year or in certain sections of town while overvaluing other practices for the same reasons. However, this approach provides consistency in crediting methodology based on how EPA credits other non-structural BMPs and structural SCMs, not on a per-practice basis. The modeled approach also allows for future planning by permittees with a level of certainty that their actions will result in pollutant reductions and permit compliance, allowing permittees to continue to focus on implementation including, installation, maintenance, and tracking of practices that result in known nutrient reduction credits. For the Draft Permit, EPA adopted the Clean Sweep Panel's modeled approach. However, EPA has not proposed to move to a measured-based approach and the measured approach outlined in the Technical Memorandum cannot be applied for credit in the MS4 Permit.

3.4.3 Attachment 3: Methods to Calculate Phosphorus and Nitrogen Load Reductions for Structural Stormwater Best Management Practices

Attachment 3 to Appendix F of the Draft Permit describes the types of structural stormwater controls for which EPA currently has quantifiable pollutant removal information and how to determine the resulting load reductions for pollutants. For a detailed discussion of the structural controls and performance calculations see Attachment 1 to the 2014 Fact Sheet, the 2016 RTC, and Attachment 1 to the 2016 RTC. Permittees could choose, but are not required, to install the specific stormwater controls described in Appendix F, Attachment 3. EPA is not proposing any major changes to Appendix F Attachment 3 beyond a units change from kilograms (kg) to pounds (lb) when calculating pollution removal credits for structural stormwater controls. All structural control credits found in Attachment 3 to Appendix F of the 2016 MA MS4 permit have been carried over including the updated performance calculations for the biofilter, sand filter, and dry

extended detention from the 2020 permit modification. Currently, the pollutant reduction estimates contained in Attachment 3 to Appendix F represent the most up-to-date information available on structural stormwater control pollutant removal performance.

EPA believes providing and refining phosphorus and nitrogen reduction credits from structural controls to be an on-going process and plans to update reduction credits as scientifically valid long-term studies of stormwater control efficiencies or performance are completed. For example, in 2023-2024 EPA, in conjunction with contractors, developed new performance curves for partial sewer separation through sewer deflection applicable to combined sewer communities based on modeling and data from installed sewer deflection devices in Cambridge, MA. Detailed information on the generation of the curves is found in the Technical Memorandum available on the EPA R1 Stormwater Tools website.⁵⁹ “Sewer deflection,” or partial sewer separation, involves diverting a portion of stormwater back to an existing combined sewer for discharge to a wastewater treatment plant. Stormwater not diverted to the treatment plant is discharged to the receiving water from the MS4 without additional treatment. The diversion of stormwater to the treatment plant reduces the pollutant load to the receiving water and may qualify for a phosphorus credit towards achieving an applicable numeric phosphorus reduction requirement in Appendix F or H of the Draft Permit. The performance curves represent weir-based and in-line deflection device configurations and can also be created using orifice management rules for diverting the first flush only. EPA is considering including the sewer deflection performance curves in Attachment 3 to Appendix F for the Final Permit and is seeking comment. EPA has provided the 44 performance curves in Attachment 1 to this Fact Sheet. EPA will assess if the curves should be added to the Final Permit with any modifications.

EPA remains committed to expanding and refining the available credits for stormwater pollution reduction gained through the implementation of structural stormwater controls and will continue to update available credits in future permit iterations or future permit modifications.

3.5 Minimum Control Measures

Any permit issued to a regulated small MS4 must include requirements to ensure the permittee implements, or continues to implement, the minimum control measures listed in 40 CFR § 122.34(b)(1) through (6) during the permit term. The permit must also require a written plan that documents the stormwater management program (SWMP) including, at a minimum, a description of how the permittee intends to comply with the permit’s requirements for each minimum control measure. Implementation of the SWMP involves the identification of BMPs to address the control measures consistent with the requirements of the permit. This Draft Permit contains specific, measurable terms for every permittee in each minimum control measure and sets the standard for Maximum Extent Practicable for every permittee. The permittee must

⁵⁹ Development of Performance Curves for Partial Sewer Separation, Subtask 3B Technical Memorandum: Development of, and Modeling Approach for Conceptual Generic Representation of City of Cambridge, MA Sewer Deflection Devices, June 30, 2024 found on the EPA Region 1 Stormwater Tools website at <https://www.epa.gov/npdes-permits/stormwater-tools-new-england#swbmp>

implement the control measures described in the Draft Permit and document actions in the SWMP demonstrating progress towards achievement of the objective of the control measure including measurable terms for each minimum control measure.

The 2003 MA MS4 permit required that all elements of the storm water management program, including minimum control measures, must be implemented by the expiration of that permit. This Draft Permit does not extend the compliance deadlines set forth in Parts II.A.2 and V.A.2 of the 2003 MA MS4 permit. In addition, this Draft Permit does not extend the compliance deadlines in the 2016 MA MS4 permit, including the deadline extensions for permittees that were considered “new” MS4 permittees under the 2016 MA MS4 permit. See Part 1.10.3 of the 2016 MA MS4 permit.

In accordance with 40 CFR § 122.35, Part 2.3.1 of the Draft Permit allows an MS4 to rely on another entity for implementation of all or part of a permit condition or control measure. The permittee may rely on the other entity if the other entity is actually implementing the control measure or permit condition. The other entity must agree to implement the measure or condition for the MS4. This agreement must be included as part of the SWMP. If the other party fails to implement the measure or permit condition, the permittee is ultimately legally responsible for its implementation.

3.5.1 Requirements to Reduce Pollutants to the Maximum Extent Practicable

Maximum Extent Practicable (MEP) is the statutory standard that established the level of pollutant reduction required by permits for operators of all MS4s. See 33 U.S.C. § 1342(p)(3)(B)(iii). There is not a precise regulatory definition of MEP. Rather, as EPA explained in the preamble to the Phase II regulations, “MS4s need the flexibility to optimize reductions in storm water pollutants on a location-by-location basis.... The pollutant reductions that represent MEP may be different for each small MS4, given the unique local hydrologic and geologic concerns that may exist and the differing possible pollutant control strategies.” 64 FR 68722, 68754, December 8, 1999. Accordingly, the Draft Permit requires each permittee to determine how to best implement the appropriate BMPs to satisfy each of the six minimum control measures through an evaluative process.

MEP is expected to continue to adapt based on changing conditions, improving BMP effectiveness, and increasing operator capabilities. Practices that were considered MEP under the 2003 and 2016 Massachusetts MS4 General Permits (2003 MA MS4 permit and 2016 MA MS4 permit, respectively) may no longer meet that standard and must be improved or expanded based on changed conditions. EPA developed the MEP provisions in this Draft Permit (discussed in detail below) after reviewing annual reports and stormwater management plans to consider measures being employed by MS4s to implement the 2016 MA MS4 permit in Massachusetts. EPA also reviewed other MS4 general permits in New England and throughout the country to better understand what other MS4s are being required to do to control stormwater pollutants in order to determine practicable enhancements to the 2016 MA MS4 permit’s MEP requirements.

The MEP provisions in this Draft Permit reflect the approach of building on the existing programs of the 2016 MA MS4 permit with additional requirements that EPA believes are practicable and satisfy the MEP statutory requirement.

3.5.2 Public Education and Outreach

The permittee must implement a public education program to distribute educational materials to the populations within the MS4 or conduct other outreach activities about the impacts of stormwater discharges on waterbodies within the MS4 jurisdiction. These public education programs must contain steps the public can take to reduce pollutants in stormwater runoff. The education program must be specific to the MS4 and build upon what was conducted by the 2016 MA MS4 permit. The Draft Permit increases the requirements for a permittee's public education program, building upon what was conducted and reported as completed by permittees in the previous permit term.

Ideally, an MS4's public education program should include goals and objectives that are based on specific stormwater issues in the municipality or pollutants of concern within a waterbody. 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 Draft Permit requires four of the educational messages to be targeted to specific audiences (at least one message each). The audiences are (1) residents, (2) businesses, institutions (churches, hospitals) and commercial facilities, (3) developers (construction), and (4) industrial facilities. If the audience is not present in the MS4 area, the permittee does not have to disseminate a message targeting that audience. The additional 5 messages (at least one each year) can be to any relevant audience(s) in the MS4. The overall long-term goal of an effective education program is to change an identified behavior and increase the knowledge of the community. EPA recognizes that the goal may take more than one permit term to achieve. The 2016 MA MS4 permit required a total of eight messages over the five-year permit term: two to each of the audiences listed above. 91% of permittees had disseminated at least 8 educational messages by the end of permit year four. Therefore, permittees should be able to successfully take on nine messages over the five-year permit term to increase the impact of their education program.

The four targeted messages to specific audiences can be of any delivery form. EPA provides examples of message formats in Table 1 of the permit. It is up to the permittee to pick a message and mode of delivery that is best and most practical to reach the audience. The remainder of the messages to any audience must be active and interactive, and EPA provides examples of such message formats in the "Active and Interactive" column of Table 1 of the permit. The permit defines active and interactive messages as messages that allow for a two-way flow of information, are engaging, inspire immediate calls to action, and/or encourage audience participation. Active education, where people are engaged in an activity or conversation, results

in more learning than passive education.⁶⁰ Therefore, EPA expects that active messages will result in a more effective public education program. The permittee should pick a type of message that will best reach the intended audience and effectively increase knowledge about stormwater issues in the municipality or pollutants of concern within a waterbody. Events and/or presentations should involve populations that exist within the permit boundary. Spacing the additional five messages to one each year will allow the municipality to evaluate the effectiveness of the message and determine if adjustments are needed if the municipality is to use a similar message or method in the future. Overall, the flexibility of these messages to any audience(s) in the MS4 allows the permittee to tailor their public education program in a way that the permittee thinks will be most for effective their community.

EPA endeavored to provide a comprehensive list of possible messaging in Table 1 but acknowledges that permittees may find other innovative and creative formats for public education. Therefore, permittees can explain in the Annual Report any other similar ideas that were executed as part of the program including a description of the message, the intended audience, the measurable goal, and the effectiveness of the message.

Any method the permittee uses to measure the effectiveness of the education should be linked to the established measurable goals. Example measurable goals for programs such as the Adopt-a-Street, Adopt-a-Waterway, or Adopt-a-Storm Drain, and rain barrel distribution could be how many people participated in the programs. Other quantifiable metrics that can be tracked include: the number of brochures distributed, the number of hits on a website, or the number of public attendees at events. The permittee may identify a specific behavior the program is targeting and track metrics which show the adaptation of that behavior. Evaluations can focus on the process, impact, or the content. Indicators such as administrative, social, or environmental can also factor into the evaluation of program effectiveness. For example, a measurable goal may be to decrease the amount of trash in a local park by a certain percentage. The municipality would install more trash barrels and signs, hold a clean-up day, and then monitor the results for a period of time. If the amount of trash decreases based on the efforts of the municipality, then the municipality could conclude that both the message and delivery of the message were effective. The educational messages should reflect the needs and characteristics of the area served by the MS4. This may include the distribution of materials in a language other than English, as appropriate. Permittees can use resources such as the Executive Office of Energy and Environmental Affairs Environmental Justice Populations in Massachusetts: Languages Spoken in Massachusetts Map found here: <https://mass->

⁶⁰ Deslauriers, L., McCarty, L. S., Miller, K., Callaghan, K., & Kestin, G. (2019). Measuring actual learning versus feeling of learning in response to being actively engaged in the classroom. *Proceedings of the National Academy of Sciences of the United States of America*, 116(39), 19251–19257. <https://doi.org/10.1073/pnas.1821936116>. Michael, J. (2006). Where's the evidence that active learning works? *Advances in Physiology Education*, 30(4), 159–167. <https://doi.org/10.1152/advan.00053.2006>

eoea.maps.arcgis.com/apps/MapSeries/index.html?appid=535e4419dc0545be980545a0eeaf9b53 or data the permittee has collected on their community. Translating messages into relevant languages within the community will help the effectiveness of the public education program. Permittees are also encouraged to consider messages that could lead to environmental improvement in areas of environmental justice concern within the municipality, if applicable. EPA defines environmental justice as the just treatment and meaningful involvement of all people, regardless of race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other Federal activities that affect human health in the environment so that people are fully protected from disproportionate and adverse human health and environmental effects (including risks) and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens, and the legacy of racism or other structural barriers; and have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices. Resources available to determine areas of environmental justice concerns within permittee communities include but are not limited to:

- EPA's Climate and Economic Justice Screening Tool (CEJST) <https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5>)
- MassDEP Environmental Justice Populations Mapper <https://mass-eoea.maps.arcgis.com/apps/MapSeries/index.html?appid=535e4419dc0545be980545a0eeaf9b53>
- EPA Environmental Justice in Your Community <https://www.epa.gov/environmentaljustice/environmental-justice-your-community#region1>

Watershed and other environmental organizations, regional stormwater coalitions, regional planning commissions, and other municipalities may collaborate with permittees and may have materials for use in conducting outreach. During the 2016 permit term, many communities worked together through stormwater coalitions in sharing public education messages, which is an effective use of resources. Examples include, but are not limited to:

- Soak Up the Rain: <https://www.epa.gov/soakuptherain>
- Stormwater Tools in New England: <https://www.epa.gov/npdes-permits/stormwater-tools-new-england>
- Think Blue Massachusetts: <https://www.thinkbluemassachusetts.org/>
- Green Infrastructure: <https://www.epa.gov/green-infrastructure>
- Neponset River Watershed Association: <https://neponset.org/education/>
- Pioneer Valley Planning Commission: <https://www.pvpc.org/projects/connecticut-river>

Permittees have already been completing both active and interactive public education messaging and passive public education messaging under the 2016 MA MS4 permit. Examples of active messages that permittees have completed over the last permit term include Enviroscape demonstrations at town events such as Earth Day and presentations at schools such as with

science clubs; storm drain stenciling with local Girl Scout Troops; stormwater presentations in 5th grade classrooms; rain barrel programs; and adopt-a-catch basin programs.

Examples of passive public education messaging that have been completed under the 2016 permit include distributing dog waste pamphlets with dog licenses; social media messages through the ThinkBlue MA group; mailers on fertilizer use; and educational letters to any property owner within 100 feet of a Town-owned detention basin, including information about not dumping.

The following are examples of topics for educational messages for each audience:

- Residential: effects of outdoor activities, such as lawn care (use of pesticides, herbicides, and fertilizers) on water quality; benefits of appropriate on-site infiltration of stormwater; effects of automotive work and car washing on water quality; proper disposal of swimming pool water (discharges must be dechlorinated and otherwise free from pollutants); proper management of pet waste; and maintenance of septic systems (if applicable to town)
- Businesses/commercial/institutional: proper lawn care maintenance (use of pesticides, herbicides, and fertilizers) on water quality; benefits of appropriate on-site infiltration of stormwater; building maintenance (use of detergents); minimization of salt or other de-icing/anti-icing materials (cover/prevent runoff to storm system and groundwater contamination); proper storage of materials (emphasize pollution prevention); proper management of parking lot surfaces (sweeping); proper vehicle care activities (washing of vehicles and maintenance); and proper disposal of swimming pool water by entities such as motels, hotels, and health and country clubs (discharges must be dechlorinated and otherwise free from pollutants)
- Developers and construction: proper sediment and erosion control management practices; information about Low Impact Design (LID) principles and technologies; benefits of appropriate on-site infiltration and retention of stormwater runoff; and information about EPA's Construction General Permit (CGP)
- Industrial: equipment inspection and maintenance; proper storage of industrial materials (emphasize pollution prevention); proper management and disposal of wastes; proper management of dumpsters; minimization of use of salt or other de-icing materials (cover/prevent runoff to storm system and groundwater contamination) ; benefits of appropriate on-site infiltration of stormwater runoff from areas with low exposure to industrial materials such as roofs or employee parking; proper maintenance of parking lot surfaces (sweeping); and requirements for coverage under EPA's Multi-Sector General Permit (MSGP).

3.5.3 Public Involvement and Participation

This control measure is closely related to the public education and outreach control measure. In EPA's view, when the public is given an opportunity to understand and participate in a stormwater protection program, the public generally will become supportive of the program. This control measure continues what was established in the 2016 MA MS4 Permit. The objective of this measure is to provide and engage the public with opportunities to participate in the review and implementation of the SWMP. See 40 CFR § 122.34(b)(2).

Participation efforts should attempt to engage all groups serviced by the MS4. To EPA, meaningful engagement means:

- providing timely opportunities for members of the public to share information or concerns and participate in decision-making processes;
- fully considering public input provided as part of decision-making processes;
- providing technical assistance, tools, and resources to assist in facilitating meaningful and informed public participation, whenever practicable and appropriate;
- seeking out and encouraging the involvement of persons and communities potentially affected by activities by:
 - ensuring that agencies offer or provide information on an activity in a manner that provides meaningful access to individuals with limited English proficiency and is accessible to individuals with disabilities;
 - providing notice of and engaging in outreach to communities or groups of people who are potentially affected and who are not regular participants in decision-making; and
 - addressing, to the extent practicable and appropriate, other barriers to participation that individuals may face.

This effort may include creative public information messages such as announcements in neighborhood newsletters, use of television spots on the local cable channel, social media, , or announcements or displays at civic meetings. One goal of public participation is to involve a diverse cross-section of people and businesses in the community to assist in the development of a stormwater management program that meets the needs of the permittee and the community serviced by the MS4. EPA encourages permittees to engage with local groups as much as possible to help implement the SWMP, such as environmental justice-focused groups, community groups, and local nonprofits. Engaging with these groups could include organizing events together, developing clean-up teams, developing monitoring teams, or developing an advisory committee for the SWMP. It is a way to pool resources and work together for a more effective stormwater management program. One way to engage communities with environmental justice concerns is to work with local community groups to determine if it would be beneficial to translate the SWMP into additional languages for posting. Traditional permittees need to have their SWMPs posted online to solicit feedback and encourage engagement with the municipality's SWMP.

3.5.4 Illicit discharge detection and elimination

This control measure requires the MS4 to detect and eliminate illicit discharges from its municipal separate storm sewer system. The regulations at 40 CFR §122.26(b)(2) define an illicit discharge as “...any discharge to a municipal separate storm sewer system that is not composed entirely of stormwater except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from fire fighting activities.” Some illicit discharges enter the storm system directly, such as incorrectly connected wastewater discharge lines, while others may enter indirectly, such as through infiltration from cracked sanitary lines or spills collected by drain outlets. Both types of discharges can contribute pollutants to the system that in turn affect water quality. An illicit discharge is, with limited exceptions, any discharge to a municipal separate storm sewer system that is not stormwater.

Consistent with 40 CFR § 122.34(b)(3)(iii), the Draft Permit contains a list of specific types of non-stormwater discharges that the permittee must address only if the permittee identifies such discharges as significant contributors of pollutants. MS4s should examine the potential sources as categories or individual discharges and examine the potential of those categories or individual discharges to contribute pollutants to the MS4. For example, potable water may not contribute pollutants that affect the MS4 discharges because the source is associated with the water supply. However, foundation drains and crawl spaces may be associated with residential basements and the type of pollutants may be unknown. In this situation, the MS4 may want to establish a registration program and incorporate an educational message about proper storage of household chemicals, or the permittee may prohibit this source of non-stormwater due to the unknown nature of the pollutants. The permittee must document its determinations on the categories of non-stormwater in its SWMP and must prohibit any sources identified as significant contributors of pollutants.

For all other non-stormwater discharges, the Draft Permit carries forward the requirements of the 2016 MA MS4 permit, including all scheduled milestones. The continuation of IDDE requirements contained in the 2016 MA MS4 permit is necessary and appropriate to ensure discharges from the MS4 are limited to the stormwater discharges authorized by this NPDES permit.

Sanitary Sewer Overflows – SSOs

Sanitary Sewer Overflows (SSOs) are illegal. They are unpermitted discharges of raw sewage and are often caused by blockages or breaks in sewer lines. There are a variety of situations which can cause an SSO to occur. These include:

- Infiltration and Inflow (I/I) – too much rainfall or snowmelt infiltrating through the ground into leaky sanitary sewers which are not designed to accommodate all the rainfall;
- Excess water inflowing through roof drains connected to the sewers, broken pipes and badly connected sewer service lines;

- Undersized systems;
- Pipe failures;
- Equipment failures;
- Sewer Service connections; and
- Deteriorating sewer systems.

Due to the significant water quality impacts which can be caused by SSOs, they must be removed from the storm sewers and be properly directed to the treatment plants. The approach to address SSOs involves not just operators of the storm sewer systems, but also operators of the sanitary system. A total of 836 SSOs were removed under the 2016 MA MS4 permit, which indicates that the MS4 Permit's IDDE program has been successful at eliminating SSOs from entering MS4s.

The Draft Permit retains the 2016 MA MS4 permit's SSO prohibition. The permittee must identify any SSOs that have not been eliminated or for which an underlying cause has not been identified or corrected. In addition, permittees must provide notice to EPA upon becoming aware of an SSO to the MS4. These reporting requirements may be combined with common notification requirements for other federal NPDES permits (e.g., an individual NPDES permit for a wastewater treatment facility).⁶¹ The Draft Permit requires the permittee to have an inventory of all SSOs including the suspected causes and planned corrective measures. This information must be included as part of the SWMP and the annual report.

Outfall Inventory

The Draft Permit continues to require an outfall inventory for completing the IDDE program as required in the 2016 MA MS4 permit and outlined in Appendix I of this Draft Permit. The Draft Permit requires that permittees continue to maintain an outfall inventory and update that inventory as necessary. An up-to-date outfall inventory and ranking is essential to prioritize IDDE catchment investigations. This inventory may be integrated into the stormwater asset management system discussed in Section 3.5.7 of this Fact Sheet.

System Mapping

The IDDE program in the Draft Permit continues the requirements for system mapping from the 2016 MA MS4 permit. Full system maps for existing permittees must be completed by June 30, 2028 for permittees that were first covered under the 2003 MA MS4 permit, and June 30, 2031 for permittees that were first covered under the 2016 MA MS4 permit. See Parts 1.10.2 and 1.10.3 of the 2016 MA MS4 permit. Permittees covered under one of these permits must initiate Phase II of system mapping. See Part 2.3.4.5.b of the 2016 MA MS4 permit. The map must

⁶¹ EPA recognizes that SSO notification procedures may mirror MassDEP reporting requirements in accordance with 314 CMR 12.00 and/or 314 CMR 16.00. The SSO reporting requirements required under this MS4 Permit are specific for EPA's compliance purposes and cannot be satisfied through MassDEP's notification requirements.

contain outfalls, receiving waters, locations of catch basins, manholes, pipes, treatment facilities associated with the stormwater system, and water resource areas (beaches, drinking water sources, critical habitats). The permittee may choose to include additional useful information on the map such as land use data (zoning information) and the amount of impervious area on a parcel or in a catchment. The Draft Permit does not require a specific tool for the mapping, however, a map generated using a Geography Information System (GIS) is EPA's preferred method. The Draft Permit defines an outfall as a point source (as defined in 40 CFR § 122.2) at the location where the municipal separate storm sewer system discharges to waters of the United States. An outfall does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels, or other conveyances that connect segments of the same stream or other waters of the U.S. and that are used to convey waters of the U.S. As with the outfall inventory described above, system mapping may be integrated into the stormwater asset management system discussed in Section 3.5.7 of this Fact Sheet.

Written Illicit Discharge Detection and Elimination Program

Permittees must have adequate legal authority to implement the following activities as part of the IDDE program: prohibit illicit discharges; investigate suspected illicit discharges; eliminate illicit discharges; and enforce the IDDE program. The 2003 MA MS4 permit and the 2016 MA MS4 permit required development of an ordinance or other regulatory mechanism to address the required program components. The Draft Permit does not supersede or extend the prior permits' deadlines for establishing adequate legal authority to implement the IDDE program. Schedules for IDDE requirements for new permittees under this MS4 permit are included in Appendix J.

The Draft Permit continues the requirements of the 2016 MA MS4 permit for an IDDE program. The required components of an IDDE program are now detailed and contained in Appendix I of the Draft Permit. All IDDE program components remain the same in this Draft Permit, specifically requiring a written protocol that clearly identifies responsibilities with regard to eliminating illicit connections, an assessment and ranking of the catchments within the MS4 for their potential to have illicit discharges, and a written systematic protocol for locating and removing illicit connections.

Monitoring

All monitoring in the Draft Permit is tied directly to implementation of the IDDE program. Screening and sampling protocols used by the permittee must be consistent with Appendix I to the Draft Permit. It should be noted that it is not necessary to adopt the protocol in Appendix I, just a procedure that is consistent with the methodology in Appendix I. Consistent with the 2016 MA MS4 permit, the Draft Permit contains three different categories of screening/monitoring: (1) baseline dry weather screening/monitoring, (2) confirmatory screening/monitoring in dry weather and potentially wet weather, and (3) follow up screening in dry and potentially wet weather.

Dry and wet weather discharges must be analyzed for the following pollutants: conductivity, salinity, chlorine, temperature, surfactants (as MBAS), ammonia and *E. Coli* (for a discharge to a fresh water) or *Enterococcus* (for a discharge to a marine water). If an outfall discharges directly to a water that is water quality limited⁶², (see the most recent Massachusetts 303(d) list at <https://www.epa.gov/tmdl/region-1-impaired-waters-and-303d-lists-state#iw-ma>) the permittee must also sample for the pollutant identified as the cause of impairment provided a test method for the pollutant is included in 40 CFR part 136. Appendix G of the Draft Permit provides a list of monitoring parameters associated with each pollutant causing impairment of the waterbody.

IDDE Progress

Under the 2016 MA MS4 permit, 252 municipalities found illicit discharges over the 4-year time. A total number of 444 illicit discharges were identified and 279 of those illicit discharges were removed. Under the 2016 MA MS4 permit the program has resulted in the removal of over 340,000 gallons of sewage per day from Massachusetts waterbodies, indicating a hugely successful program throughout the Commonwealth. Under the 2016 MA MS4 Permit, 18 new permittees started the IDDE program and began identifying and removing illicit connections as well.

Building on these results, which indicate that the majority of MS4s are successfully implementing an IDDE program, EPA is carrying forward the IDDE requirements of the MA MS4 2016 Permit. For existing permittees, the IDDE catchment investigations must be complete within 10 years from the effective date of the permit. Schedules for IDDE requirements for new permittees under this MS4 permit issuance are included in Appendix J.

Ongoing Screening

Once the IDDE program milestones have been completed for the entire MS4 area, each permittee must continue ongoing screening requirements contained in the Draft Permit to ensure no new illicit discharges occur. Ongoing screening must occur every 5 years and entails dry weather screening and sampling, wet weather screening and sampling where wet weather screening was required due to System Vulnerability Factors (SVFs), catchment investigations, and reprioritization. Appendix I includes details on these requirements that are being carried forward from the 2016 MA MS4 permit.

3.5.5 Construction Site Stormwater Runoff Control

Stormwater runoff from construction sites is a primary source of pollutants in urban waterbodies, impairing designated uses and severely compromising water quality. See 64 Fed. Reg. 68728-68731. The 2016 MA MS4 permit required that the “permittee ... implement and enforce a program to reduce pollutants in any stormwater runoff discharged to the MS4 from construction

⁶² Water quality limited waters are discussed in Part 2.2.2 of the Draft Permit and Section 3.3 of this Fact Sheet.

activities that result in land disturbance equal to or greater than one acre within the regulated area... [and] less than one acre if that disturbance is part of a larger common plan.” See Part 2.3.5 of the 2016 MA MS4 permit. While this Draft Permit builds upon the requirements set forth by the 2016 MA MS4 permit, it does not extend the deadlines applicable to the construction site stormwater runoff control minimum measure imposed by the 2016 MA MS4 permit. The permittee must have an ordinance or other regulatory mechanism requiring the use of proper sediment and erosion control practices at construction sites and include controls for other construction wastes such as demolition debris, litter, and sanitary wastes. The requirement to develop the ordinance was part of the 2003 MA MS4 permit. New permittees under the 2016 MA MS4 permit were required to have the ordinance in place by the third year of permit coverage.

MS4s are required to continue to review and enforce a pollutant control program to reduce pollutants in stormwater runoff from construction activities that result in a land disturbance equal to or greater than one acre that discharge to the MS4 or which disturb less than acre as part of a larger common plan that would disturb one acre or more. As explained in more detail below, the Draft Permit generally maintains the requirements of the 2016 MA MS4 permit, which includes a regulatory mechanism for requiring sediment and erosion control practices and procedures for site plan review, inspections, and enforcement. The objective of the construction runoff management program is to ensure that proper controls are implemented to minimize or eliminate erosion and maintain sediment at construction sites discharging to an MS4.

The construction program required by the Draft Permit is separate from permit conditions in compliance with the Construction General Permit (CGP) or Dewatering and Remediation General Permit (DRGP), although there may be some overlap. EPA’s CGP applies to construction projects that have one or more acres of disturbed land (or less than one acre as part of a larger common plan) and discharge directly to a waterbody or indirectly to a waterbody through an MS4. EPA Region 1’s DRGP applies to, among other potential discharges, site dewatering and remediation activities associated with construction sites (including sites less than 1 acre in size). Both general permits are issued to, and the effluent limits and permit conditions must be met by, the owner or operator of the site. In contrast, the municipality is responsible for implementing the MS4 construction stormwater runoff control program to ensure that stormwater discharges from construction projects within its jurisdiction that discharge directly to the MS4 are controlled consistent with the MS4’s applicable requirements. 40 CFR § 122.34(b)(4). A project may require a CGP or DRGP authorization from EPA (issued to the site owner or operator) as well as be regulated under the MS4 construction stormwater runoff control program. A permittee is not required to regulate any construction project that receives a waiver from EPA in accordance with 40 CFR § 122.26(b)(15)(i).

Under the 2016 MA MS4 permit, 80% of permittees had a construction site ordinance in place within the first year of permit coverage. Requirements and compliance schedules for new permittees under this MS4 permit reissuance are included in Appendix J. EPA encourages permittees to include design standards in local regulations for sediment and erosion control BMPs, such as those developed for the Massachusetts Stormwater Handbook. The Draft Permit

at Part 2.3.5.c.iii includes examples of appropriate sediment and erosion control measures that could be incorporated as local requirements.

The 2016 MA MS4 permit also required the program to include written procedures for pre-construction review of site plans, site inspections, and enforcement of the construction stormwater runoff program. In EPA's view, the site plan review, inspection, and enforcement requirements will ensure that construction site operators have taken the necessary steps to control stormwater generated on site before it is discharged to the permittee's MS4 system. These requirements have been carried forward in the Draft Permit. Under the 2016 MA MS4 permit, more than 80% of permittees reported reviewing site plans annually. Few permittees (less than 3%) reported reviewing zero site plans under the 2016 MA MS4 permit. In addition to site plan reviews, at least 75% of permittees reported making site inspections in every reporting year and the number of permittees that took at least one enforcement action in a given reporting year ranged from 27-35%. For this next iteration of the MS4 permit, EPA is taking steps to incorporate metrics that better assess a permittee's compliance with the construction stormwater runoff program requirements. Under the 2016 MA MS4 permit, permittees reported the number of site reviews, inspections, and enforcement actions. However, the count values exhibit a high degree of variability (e.g., permittees report between 1 and 1,827 site plan reviews) that provide little understanding of whether the requirements are fulfilling the objective of the program, which is to minimize or eliminate erosion and maintain sediment on site so that it is not discharged through the MS4 system. A permittee that reports "0" site plan reviews may not be properly implementing the requirements of the permit or may not have had any construction projects of sufficient size to trigger the requirements. New metrics to track site plan reviews, inspections, and enforcement actions focus on the percentage of site plans reviewed and sites inspected in a reporting year, rather than count values, in order to better inform EPA on the success of the program across MS4s with varying levels of construction activity.

The Draft Permit also requires permittees to review and update existing construction stormwater runoff program procedures. MS4 systems are responsible for the discharges from their systems and therefore need to minimize the discharge of pollutants they accept into their system. To accomplish this, a thorough understanding and control of development projects that discharge to the permittee's MS4 is necessary to protect water quality. Permittees should continue to make every effort to ensure that site plan reviews include consideration of water quality impacts, and that the program includes procedures for receiving and considering information from the public during the site plan review. In particular, permittees should ensure that, regardless of which municipal board or office leads this program, site plans are reviewed by qualified staff with the appropriate technical expertise. Generally, individuals are considered to have appropriate technical expertise if they are knowledgeable in the principles and practices of municipal stormwater controls and pollution prevention and possess the education and experience to assess whether stormwater controls described in site plans will meet the requirements of the permit. An MS4 should look at the various components of the local government, and whenever possible, optimize coordination between municipal offices as appropriate to ensure adequate review of plans and other documents associated with a construction project. In addition,

permittees must incorporate evaluation of low impact development (LID) planning and design strategies during site plan reviews, where feasible. There are many resources available to help permittees incorporate LID into their site plan reviews, including, but not limited to:

- EPA's Green Infrastructure website at <https://www.epa.gov/green-infrastructure>
- SNEP Retrofit Manual at <https://snepnetwork.org/stormwater-retrofit-manual/>
- EPA's Incorporating Low Impact Development into Municipal Stormwater Programs at <https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/IncorporatingLID.pdf>
- Metropolitan Area Planning Commission's Low Impact Development Toolkit at <https://www.mapc.org/resource-library/low-impact-development-toolkit/>

Permittees should also continue to make every effort to ensure that inspections are conducted by personnel that possess the knowledge and skills to assess conditions and activities that could impact stormwater quality and who can evaluate the effectiveness of stormwater control measures. For example, to assist implementation of its CGP. EPA offers a no-cost, inspector training course, including modules on erosion and sediment controls, pollution prevention controls, and conducting site inspections.⁶³ Procedures must have a requirement that inspections occur during and after construction to ensure that BMPs are installed and operating as described in approved plans. The permittee must have authority to impose sanctions if construction projects are observed to be in non-compliance with the local ordinance. Sanctions can include monetary penalties, stop work orders, or other remedies authorized by law.

3.5.6 Stormwater Management in New Development and Redevelopment

The 2016 MA MS4 permit required that the "permittee must 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 and discharge to the MS4 system [and] less than one acre if the project is part of a larger common plan of development which disturbs greater than one acre." The permit also set forth required elements of the post construction program. See Part 2.3.6 of the 2016 MA MS4 permit. This control measure is intended to prevent or minimize water quality impacts of stormwater runoff from new development and redevelopment projects. See 40 CFR § 122.34(b)(5). This Draft Permit builds upon the requirements set forth in the 2016 MA MS4 permit but does not extend the deadlines applicable to the post construction stormwater management in new development and redevelopment minimum measures imposed by the 2003 MA MS4 and 2016 MA MS4 permits. Existing MS4s should have implemented a program to address post-construction stormwater runoff and should be positioned to meet the Draft Permit requirements. There are abundant national and local resources on stormwater standards for new and redevelopment available to permittees that have not complied with these requirements, including, but not limited to:

⁶³ EPA's Construction Inspection Training Course is available at <https://www.epa.gov/npdes/construction-inspection-training-course>

- EPA Region 1 Post-Construction Stormwater Management at <https://www.epa.gov/npdes-permits/stormwater-tools-new-england>
- EPA's Compendium of MS4 Permitting Approaches (June 2022) at https://www.epa.gov/system/files/documents/2022-06/Green%20Infrastructure%20MS4%20Compendium%202022_3.pdf
- EPA's Compendium of MS4 Permitting Approaches Part 2: Post Construction Standards at https://www.epa.gov/sites/default/files/2017-01/documents/part2-revised_sw_compendium_post_construction_508.pdf.

Additional resources will be maintained on EPA Region 1's Stormwater Tools website at <https://www.epa.gov/npdes-permits/stormwater-tools-new-england>. Increased human activity associated with development often results in increased pollutant loading in storm water discharges. See 64 Fed. Reg. 68759. In particular, stormwater runoff associated with new and redevelopment may increase the type and the quantity of pollutants in runoff, including oil and grease (hydrocarbons), heavy metals, solids and nutrients. The transformation of land cover from pervious to impervious area decreases opportunities for infiltration of rainwater into the ground, which in turn eliminates the potential for natural filtration of many pollutants found in stormwater. The loss of natural infiltration increases the volume of stormwater runoff into waterbodies, causing increased flows and sediment loadings, which can result in stream bank scouring, impacts to aquatic habitat, and flooding. The increased pollutant loading associated with increased impervious area will further degrade the receiving waterbodies if new and redevelopment is allowed to continue unmitigated.⁶⁴ Planning and designing stormwater management controls to minimize pollutants at the source (i.e., during new or redevelopment activity) is the most cost-effective approach to mitigate post-construction stormwater impacts. 64 Fed. Reg. 68759.

The Draft Permit requires permittees to continue to implement and enforce a program to address post construction stormwater runoff from areas of new development and redevelopment that disturb one or more acres, or that disturb less than one acre if the site is part of a larger common plan of development or redevelopment that disturbs more than one acre. The Draft Permit largely preserves the stormwater control measures and builds upon the assessments required in the last permit. The 2016 MA MS4 permit implemented a consistent, state-wide approach to address post-construction stormwater discharges from urbanized areas, which provided a common set of requirements for development and redevelopment in every regulated community. Such standards proactively protect receiving waters and ensure progress is made in protecting waterbodies from stormwater discharges over time. As of Year 5 of the 2016 MA MS4

⁶⁴ In the Preamble to the NPDES Permit Application Regulations for Storm Water Discharges, 55 FR 48054 (November 16, 1990), EPA describes that of equal importance to the pollutants washed into receiving waters from residential and commercial areas is "...the volume of storm water runoff leaving urban areas during storm events. Large intermittent volumes of runoff can destroy aquatic habitat. As the percentage of paved surfaces increases, the volume and rate of runoff and the corresponding pollutant loads also increase. Thus, the amount of storm water runoff from commercial and residential areas and the pollutant loadings associated with storm water runoff increases as development progresses; and they remain at an elevated level for the lifetime of the development."

Permit, 162 regulated traditional MS4s in Massachusetts (76%) had adopted post-construction ordinances (or similar regulatory mechanisms) and an additional 20 regulated MS4s (9%) have draft ordinances in review or scheduled for adoption.

Elements of a New Development and Redevelopment Stormwater Management Program

The New Development and Redevelopment Stormwater Management Program must include standards for newly developed and redeveloped sites to develop and implement strategies, including structural and non-structural SCMs, which prevent an increase in stormwater discharges and pollutant loadings from activities that disturb one or more acres of land (solely or part of a common plan) and that discharge to the permittee's MS4. The ordinance or regulatory mechanism shall apply to all new and re-development that meets this threshold. This sizing requirement is consistent with the construction site stormwater control requirements in the Draft Permit and with EPA's Construction General Permit, although permittees can elect to adopt more stringent ordinances (e.g., lower area thresholds). Permittees may want to consider examining whether thresholds for new and redevelopment standards should be lowered to ensure that enough projects are reviewed to protect water quality in accordance with the minimum control measure, especially those MS4s for which few projects under the 2016 MA MS4 permit were large enough to trigger reviews and/or MS4s subject to more stringent nutrient reductions in compliance with watershed-specific TMDL requirements. In addition, the Draft Permit allows permittees flexibility to implement the standards jurisdiction-wide or only within the regulated area of the MS4. EPA encourages permittees to implement the New Development and Redevelopment Stormwater Management Program jurisdiction-wide for consistency and to protect water quality from development impacts outside of the MS4 area.

The Draft Permit requires permittees to review the new development and redevelopment stormwater management ordinance or other regulatory mechanism that was required in Year 3 of the 2016 MA MS4 permit to ensure that it includes the applicable design elements. EPA is not extending the deadline to develop an ordinance or other regulatory mechanism. More than two-thirds of permittees were able to develop and adopt the regulatory mechanisms for the New and Redevelopment Stormwater Management Program under the 2016 MA MS4 permit, which confirms that the schedule in the last permit was sufficient to complete the permit requirement.⁶⁵ The ordinances must include a requirement that developers implement Low Impact Development (LID) site planning and design strategies unless infeasible and that stormwater management systems are, at a minimum, consistent with the requirements of the Massachusetts Stormwater Handbook.⁶⁶ In addition, stormwater management systems associated with new development must meet an average annual pollutant removal of 90% for

⁶⁵ There are many examples of model language and resources for permittees that have yet to satisfy this permit requirement, including at <https://www.epa.gov/npdes-permits/stormwater-tools-new-england#swbmp>.

⁶⁶ It is beyond the scope of this Fact Sheet to adequately summarize the expansive and rapidly developing landscape of LID and stormwater controls. A brief list of resources is provided above and will be maintained on EPA Region 1's website for stormwater tools at <https://www.epa.gov/npdes-permits/stormwater-tools-new-england>.

total suspended solids (TSS) and 60% for total phosphorus (TP).⁶⁷ The percent removal must be calculated for the total post-construction impervious surface on the site (rather than the total site area). Stormwater management systems associated with redevelopment must meet an average annual pollutant removal of 80% for total suspended solids (TSS) and 50% for total phosphorus (TP). The Draft Permit, like the 2016 MA MS4 permit, provides permittees with substantial flexibility for prescribing how to achieve these average annual pollutant removal requirements. Pollutant loads can be reduced by installing stormwater control measures (SCMs) (e.g., structural and non-structural controls) that satisfy removal requirements based on calculations developed consistent with EPA's methodology in Attachment 3 to Appendix F.⁶⁸ Pollutant loads can also be reduced by retaining stormwater runoff volume equivalent to or greater than 1-inch (for new development) or 0.8-inch (for redevelopment) multiplied by the total post-construction impervious surface at the site. The Draft Permit retains additional flexibility to allow pollutant removal requirements to be met using a combination of SCMs and retention, by utilizing offsite mitigation provided the alternative site is in the same USGS HUC12 watershed as the developed site. Finally, the Draft Permit retains the limited exemption for redevelopment activities exclusively limited to maintenance and improvement of existing roadways, including widening less than a single land, adding shoulders, correcting substandard intersections, improving existing drainage systems, and repaving projects). Permittees must report on measures taken to review or adopt the New Development and Redevelopment Stormwater Management Program in the annual report.

The Draft Permit also retains the requirement for submission of as-built drawings. The New Development and Redevelopment Stormwater Management Program must implement procedures requiring developers to submit as-built drawings to permittees within 2 years of completion of construction projects and to ensure long-term operation and maintenance of stormwater SCMs. Permittees are required to document these procedures in the SWMP. As of Year 4 of the 2016 MA MS4, 146 regulated MS4s (58%) reported receiving post-construction as-built drawings. The drawings must depict stormwater SCMs, including both structural and non-structural, designed to manage stormwater runoff at the developed site. The Program must also define procedures for the operation and maintenance of stormwater SCMs after construction is complete, including identifying parties responsible for long-term operation of SCMs. Long-term planning procedures could include use of dedicated funds for developed sites, transfer the responsibility for SCM maintenance to the permittee, or the development of maintenance contracts between the owner/operator of the site and the permittee. EPA recommends any long-term contracts consider responsibility in the event of a change in ownership or operator. EPA also recommends that Permittees consider incorporating vulnerability assessments and climate

⁶⁷ EPA notes that these reduction standards may not be sufficiently stringent in MS4s subject to pollutant reduction targets based on a Total Maximum Daily Load (TMDL) or Impaired Water (Part 2.2). MS4s subject to watershed-specific TMDL or Impaired Waters targets may wish to consider more stringent requirements for new and redevelopment.

⁶⁸ Additional information, including EPA's Best Management Practice Accounting and Tracking Tool (BATT) is available under "Stormwater BMP Pollutant Removal Tools and Information" at <https://www.epa.gov/npdes-permits/stormwater-tools-new-england#swbmp>.

resiliency into reviews of as-built drawings to determine whether SCMs at new and redevelopment sites can adapt to future increases in storm intensity and frequency. Permittees must report on measures taken to implement procedures for receiving as-built drawings and development of long-term operation and maintenance plans in the annual report. EPA encourages permittees to develop procedures for reviewing as-built plans to ensure that stormwater controls at new or redeveloped sites meet the design elements in Part 1.1.3.a.i of the Draft Permit, including the average annual pollutant removal requirements for TSS and TP. The Draft Permit requires permittees to report on the number of as-built drawings reviewed in the annual report.

The remainder of the requirements of Part 2.3.6.a. are modeled after the Massachusetts Stormwater Standards to provide SCM design standards and treatment requirements that protect water quality and are familiar to permittees and engineers in Massachusetts. The requirements also allow flexibility to permittees to establish additional controls where they see fit or in accordance with their priorities. EPA is aware that retention of stormwater on site through infiltration is not always preferable. This is especially true in areas with high pollutant load potential (industrial sites) and sites with documented soil contamination where infiltration could contaminate groundwater and potentially harm public water supplies. At these sites, Part 2.3.6.a. requires that only “treatment” SCMs be used for pollutant removal and infiltration be avoided. In addition, stormwater management systems designed to infiltrate near drinking water sources or that discharge directly to drinking water sources need to be designed to treat stormwater prior to infiltration or discharge and to allow for shutdown and containment of the stormwater to prevent discharge in the event of an emergency spill or other unexpected event. This provision not only protects high quality water sources but protects public health.

While these standards for new and re-development are similar to the Massachusetts Stormwater Standards, they are not identical, and those projects that are subject to the Wetlands Protection Act or which require a § 401 certification for a CWA § 404 permit from the Corps of Engineers must also meet the requirements of the Massachusetts Stormwater Standards and any other requirements imposed by the MassDEP.

Green Street Design Standards

Stormwater runoff from impervious roadways, driveways, sidewalks, and parking lots can produce significant volumes of runoff and carry pollutant loads that negatively impact water quality and reduce groundwater recharge. “Green Streets” is a stormwater management approach that incorporates vegetation and engineered systems to slow and treat stormwater runoff instead of directing runoff to a storm sewer system that discharges directly to a surface water. There are abundant national and local resources on Green Streets available to permittees, including, but not limited to:

- EPA Green Streets <https://www.epa.gov/G3/learn-about-green-streets>.
- EPA’s Green Street Design Handbook https://www.epa.gov/sites/default/files/2021-04/documents/green_streets_design_manual_feb_2021_web_res_small_508.pdf

- Boston Green Infrastructure Planning and Design Handbook
[https://www.bwsc.org/sites/default/files/2022-08/8.5x11-Green Infrastructure Handbook-02-07-2022.pdf](https://www.bwsc.org/sites/default/files/2022-08/8.5x11-Green%20Infrastructure%20Handbook-02-07-2022.pdf)
- Complete Street design guidelines for the City of Boston
[https://www.boston.gov/sites/default/files/file/2019/12/BCS Guidelines.pdf](https://www.boston.gov/sites/default/files/file/2019/12/BCS_Guidelines.pdf).

Beyond improving water quality and groundwater recharge, Green Streets can also enhance wildlife habitat; improve air quality; reduce urban heat island effects; improve pedestrian safety and traffic calming; enhance resilience; and provide economic benefits by increasing property values, reducing costs for wastewater treatment and combined sewer overflows, and reduce property damage due to flooding. Green Street design standards can help municipalities implement a systematic process to reduce the impervious surface footprint in public rights-of-way and off-street parking lots through use of green site design strategies and complements “Complete Street” strategies to improve traffic and accommodate sidewalk and bike lanes.

The 2016 MA MS4 Permit required permittees to assess current street and parking lot design guidelines and other local requirements that affect the creation of impervious cover. As of Year 4 of the 2016 MA MS4 Permit, 173 municipalities (67%) had completed the assessment with an additional 8 municipalities scheduled to complete the assessment. Among those that completed the assessment, 146 municipalities (86%) indicated that updates to local requirements would be required. The 2016 MA MS4 Permit also required permittees to assess existing local regulations and identify potential roadblocks to the implementation of green infrastructure. The assessment determined if existing regulations impede or preclude the use of green infrastructure or LID practices within the permittees’ jurisdiction, identified what changes are necessary to allow use of these practices, and provided a schedule for the implementation of recommendations.

The goal of these assessments was to remove barriers for reducing the creation of impervious cover and implementing green infrastructure and LID. Building off of these assessments, the next step for new and redevelopment stormwater management is to assess existing local standards and implement green street design standards to the maximum extent practicable. The Draft Permit requires permittees to implement the changes to design standards recommended in the assessments in accordance with the schedules proposed in the assessments. Permittees must report on the status of planned and completed changes in the annual report.

Coincident with the implementation of changes recommended in the Street and Green Infrastructure assessments, permittees must develop and implement a street design ordinance, standard, or policy to promote use of green infrastructure. The green street design standards must be completed within three years of the effective date of the permit. At a minimum, the ordinance must require project planners to evaluate the use of green infrastructure during the design phase of projects in rights-of-way and parking areas, including the potential to mitigate localized flooding. The development and implementation of the green streets design standard must involve, at a minimum, municipal staff from planning, transportation, and stormwater programs. Permittees should consider creating a “green streets task force” that includes staff

from applicable municipal programs for the development of the standard and review of project designs. To the extent practicable, permittees may want to align the green streets design standards with the requirements of the MassDOT Complete Streets Program to capitalize on the potential for technical assistance and construction funding available to eligible municipalities.⁶⁹ Updated design standards must be incorporated into relevant documents and procedures applicable to transportation projects, parking lots, and rights-of-way within four years of the effective date of the permit. Design standards in highly developed impervious areas (e.g., urban downtown and commercial zoning districts) should consider incorporating green infrastructure on sidewalks, medians, traffic islands, and rights-of-way. Examples include rain gardens and stormwater planters, curb extensions, and tree pits and trenches. Design standards for on-street parking and alleys should consider use of permeable pavement. New and redevelopment of parking lots should consider requirements to incorporate infiltration whenever possible. Design standards for redevelopment on arterial streets with linear stretches of uncurbed roadway should include use of infiltration trenches and bioswales whenever possible. Where street design standards are implemented on new or redevelopment, Permittees must consider long-term maintenance for new stormwater controls. EPA recommends private development plan reviews include an agreement that the developer will maintain green infrastructure at the site.

3.5.7 Pollution Prevention/Good Housekeeping

Parts II.B.6 and V.B.6 of the 2003 MA MS4 permit required that the “permittee must develop and implement a program with a goal of preventing and/or reducing pollutant runoff from municipal operations” and set forth required elements of the pollution prevention and good housekeeping program consistent with 40 CFR § 122.34(b)(6). Under the 2016 MA MS4 permit, permittees were required to develop inventories for municipal activities in parks and open spaces, buildings and facilities, and vehicles and equipment maintenance. The Pollution Prevention/Good Housekeeping for Municipal Operations minimum control measure includes requirements for operators to examine and subsequently alter their own actions to help ensure a reduction in the amount and type of pollution that: (1) collects on streets, parking lots, open spaces, and storage and vehicle maintenance areas and is discharged into local waterways; and (2) results from actions such as environmentally damaging land development and flood management practices or poor maintenance of storm sewer systems.

The 2016 MA MS4 permit required Permittees to create a written plan to provide clarity and identify staff responsibilities for dealing with stormwater runoff from permittee owned properties. The 2016 MA MS4 permit also prescribed operation and maintenance schedules for catch basin inspection and cleaning, street sweeping, and procedures related to winter road maintenance and catch basin cleanings. The Draft Permit carries forward operation and maintenance requirements from the 2016 MA MS4 permit that address maintenance activities,

⁶⁹ More information about MassDOT’s Complete Streets program, which provides tools and funding to advance Complete Streets in Massachusetts, is available at <https://madothway.my.site.com/GrantCentral/s/complete-streets-public-overview>.

schedules, long-term inspection procedures for structural SCMs and non-structural BMPs, controls for reducing or eliminating pollutants in runoff from permittee-owned properties and rights-of-way, and procedures for properly disposing of waste removed from MS4 infrastructure and permittee-owned properties. While this Draft Permit builds upon the requirements of the 2003 and 2016 MA MS4 permits, it does not extend the deadlines applicable to this minimum measure imposed by these permits for existing permittees. The Draft Permit also requires permittees to update and include written Operation and Maintenance Procedures for MS4 assets as part of the SWMP within one year of the effective date of the permit. Since permittees developed and implemented infrastructure operations and maintenance procedures, including procedures for catch basin cleaning and street sweeping, under the last MS4 permit, EPA expects that one year is sufficient time for all permittees to review and update the procedures and add to the SWMP. This Draft Permit also advances several of the requirements from the 2016 MA MS4 permit, including developing a formal asset management system to track and manage operation and maintenance of the MS4 and progressing from an inventory of permittee-owned properties that are suitable for retrofitting with SCMs to installation of SCMs on these properties.

The operation and maintenance of an MS4 is related to the intensity and frequency of precipitation. Among other impacts, climate change is projected to alter rainfall amounts, storm intensity and frequency, sea level, and storm surge in New England. Changes in the amount, timing, and frequency of storm events, in combination with changes in impervious cover due to development, can significantly affect the amount of stormwater that must be managed and can impact MS4 infrastructure, operations, and maintenance.⁷⁰ Changes in storm events can also impact the design and performance of BMPs and SCMs that treat stormwater runoff.⁷¹ Changes in the frequency and intensity of rainfall has the potential to impact minimum control measures implemented under Good Housekeeping/Pollution Prevention and EPA encourages permittees to consider climate impacts and build resiliency when implementing the requirements of this Part.

Stormwater Asset Management System

The 2016 MA MS4 permit established requirements for system mapping, property inventory, and routine inspections, as well as cleaning and maintenance of catch basins, streets, and permittee-owned SCMs. The Draft Permit builds upon past permit conditions by establishing a requirement for permittees to develop a stormwater asset management system within 2 years of the effective date of the permit. Over the past permit term, permittees have raised concerns about the ability of municipal staff to operate and maintain MS4 assets with limited resources. Developing formal management systems will enable permittees to effectively track, operate, maintain, finance, and improve stormwater assets, including new SCMs, in a comprehensive and strategic way. Asset management offers municipalities a systematic approach to manage maintenance activities, identify components and locations vulnerable to flooding and flood damage, and prioritize assets

⁷⁰ See, for example, EPA's 2016 report on stormwater management in response to climate change impacts available at <https://cfpub.epa.gov/ncea/global/recordisplay.cfm?deid=310045>.

⁷¹ See, for example, Massachusetts Coastal Zone Management's assessment of vulnerabilities in best management practices in coastal communities available at <https://www.mass.gov/info-details/report-on-climate-change-impacts-to-coastal-stormwater-treatment-systems>.

with critical maintenance or upgrade needs. Better management of stormwater assets will ultimately help permittees meet water quality objectives, minimize stormwater pollution, and ensure compliance with the MS4 permit. See 40 CFR § 122.41(e). In addition, permittees could use the stormwater asset management to track staff hours and resources devoted to MS4 program implementation, which may assist permittees to better define staffing and funding needs.

EPA recognizes that permittees authorized by the MS4 permit have a range of asset management needs and resources and that a one-size fits all approach is not appropriate. For this reason, EPA proposes requirements that allow each permittee significant flexibility to design and implement a management system that best suits their specific needs and level of service while establishing a minimum set of criteria that will enable permittees to effectively manage their systems. At a minimum, the stormwater asset management system should allow key municipal staff to identify assets, track maintenance activities, estimate pollutant reductions, and prioritize locations for infrastructure upgrades and stormwater control installations. The stormwater asset management system must include the following elements:

Inventory of Critical Assets: The inventory should include critical structures (e.g., pipes, catch basins, outfalls) from the system mapping completed under the 2016 MA MS4 permit and be updated on an annual basis. At a minimum, critical assets must include the key infrastructure components included in the Phase I and Phase II system mapping (to the extent the information is available) and catch basin inventory completed under the 2016 MA MS4 permit.

Permittees should consider the desired scope of asset management when defining “critical” assets for the purpose of asset management, including the relationship of each asset to overall performance of the system, value of the asset, asset lifespan, and level of service of the system. The Permittee shall document the basis and assumptions used to define critical assets (e.g., relative to the overall performance of the system) in the SWMP. The scope of the inventory should balance the need to capture and track valuable information with the potential to overwhelm municipal staff. Permittees may choose to phase this inventory to include more assets over time as municipal staff become familiar with the system and the level of service goals increase. For example, an MS4 entering asset management for the first time may choose a level of service that meets a goal of delivering reliable storm sewer system service at lowest cost consistent with applicable regulations and permit conditions. The inventory may also include information necessary to evaluate and prioritize critical assets, for example, by “scoring” the condition of assets to understand whether it is delivering the desired level of service and how much attention it may require to continue to do so (e.g., remaining useful life, probability of failure, consequence of failure).

Permittees must record basic information for each critical asset, including location, age, condition, and date of last maintenance. In addition, EPA encourages permittees to consider how to best track, plan, and design asset management, MS4 maintenance, and SCM retrofits

considering site-specific future and current conditions and qualitative and quantitative information on impacts of heavy precipitation and extreme storm events in each community. There is a wide range of tools and resources for climate vulnerability and resiliency available to permittees, including, but not limited to:

- EPA Creating Resilient Water Utilities available at <https://www.epa.gov/crwu>
- ResilientMass <https://resilient.mass.gov/home.html>
- Massachusetts Climate Resilience Design Standards & Guidance available at https://resilient.mass.gov/rmat_home/designstandards/
- EPA Climate Change Adaptation Resource Center available at <https://www.epa.gov/arc-x>
- EPA Flood Resilience Guide available at https://www.epa.gov/sites/default/files/2015-08/documents/flood_resilience_guide.pdf

EPA Region 1 will maintain a list of resources and case studies on stormwater management and climate change on its stormwater tools website at <https://www.epa.gov/npdes-permits/stormwater-tools-new-england>. At a minimum, the Draft MS4 Permit proposes that permittees identify critical assets located within existing and projected flood zones. The Draft MS4 Permit identifies several ways to assess current flood zones relative to the location of an MS4's assets:

- 1) Whether an asset intersects with a Federal Emergency Management Agency (FEMA) Special Flood Hazard Area (SFHA). Generally, SFHAs are areas having special flood, mudflow, or flood-related erosion hazards that will be inundated by the flood event having a 1% chance of being equaled or exceeded in any given year (also referred to as the base flood or 100-year flood). Current FEMA flood maps depicting SFHAs and searchable by address are available through the Flood Map Service Center at <https://msc.fema.gov/portal/home>. Additional FEMA mapping tools and GIS data are available in the National Flood Hazard Layer Viewer available at <https://www.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd>.
- 2) Whether an asset intersects with the 1% chance storm (which corresponds with the 100-year storm) in the 2030 Massachusetts Coast Flood Risk Model (MC-FRM) available at <https://experience.arcgis.com/experience/23d861b79aed450eb8972013dd28579b/page/MA-Coast-Flood-Risk-Model/>. Applicability of the MC-FRM is limited to coastal communities as the model identifies annual coastal flood exceedance probabilities.

In addition, EPA recommends that MS4s consider future conditions when making capital investments in infrastructure. The Draft MS4 Permit identifies several ways to assess future flood zones relative to the location of an MS4's assets:

- 1) Whether an asset intersects with a FEMA X (shaded) or B zones. Generally, Zones X (shaded) and B are areas that will be inundated by the flood event having a 0.2% chance of being equaled or exceeded in any given year (corresponding to the 500-year

flood) These SFHA zones can also be viewed on the FEMA flood maps and Hazard Layer at the links provided above.

- 2) Whether an asset intersects with the 0.2% chance storm (which corresponds with the 500-year storm) in the 2030 MC-FRM available at the link provided above.

Inventory of Existing Stormwater Treatment Structures: The inventory should include existing SCMs such as swales, infiltration basins, storage/harvesting devices, and filtration devices. Basic information for each SCM should be recorded, including location, age, condition, and date of last maintenance. In addition, the inventory should identify whether the location of existing SCMs intersect with current and future flood zones based on the criteria and resources provided above. Permittees must record the estimated pollutant reduction (pounds per year of total suspended solids, total phosphorus, total nitrogen) achieved by each SCM based on the methodology described in Attachment 3 to Appendix F of the Permit, if applicable.⁷² Permittees will report estimated pollutant reductions for existing SCMs in annual reports.

Inventory of New Stormwater Treatment Structures: Permittees must track all new stormwater assets and SCMs installed and operated by the permittee as well as SCMs installed and operated in accordance with the requirements of Part 2.3.6 of this Permit (Post-Construction Requirements). Basic information for each SCM should be recorded, including date of installation, location, type of SCM, acres of impervious cover treated, land use of the drainage area treated, design storage volume of the SCM, estimated pounds per year of total suspended solids, total phosphorus, total nitrogen removed by the SCM consistent with the methodology described in Attachment 3 to Appendix F of the Permit, and date of last maintenance activity. In addition, the inventory should identify whether the location of new SCMs intersect with current and future flood zones based on the criteria and resources provided above. Permittees will report estimated pollutant reductions for new SCMs in annual reports.

Inspection and Maintenance Schedules: Permittees must track inspection and maintenance frequencies and procedures for stormwater assets and SCMs. Inspection frequencies should be consistent with the requirements of this MS4 permit. Where no schedule is provided, permittees should develop appropriate schedules.

Additional elements of a stormwater asset management system can include life cycle costing, forecasting (e.g., identifying assets most vulnerable to changes in storm intensity, duration, and

⁷² UNHSC offers a spreadsheet-based Stormwater Control Measure Performance Calculator that can be used to quantify water quality performance of select SCMs for the purposes of Asset Management using the performance curves and methodology in Attachment 3 to Appendix F. The SCM Performance Calculator is available for download at <https://extension.unh.edu/stormwater-center/ms4-resources>.

frequency over time using flood models)⁷³, mapping capability, and funding strategies. Management systems can be simple, spreadsheet-based platforms or include specialized software with built in operational modules for storing asset catalogs, maintenance schedules, tracking pollutant reductions, and provide a platform for identifying, requesting, and scheduling assets with critical maintenance needs. At a minimum, permittees should consider systems and software with the ability to integrate with existing Geographic Information System (GIS) mapping data. There is a wide range of tools and resources for asset management available to permittees, including, but not limited to:

- EPA Asset Management <https://www.epa.gov/sites/default/files/2018-01/documents/overcoming-barriers-to-development-and-implementation-of-asset-management-plans.pdf>
- EPA 2020 Reference Guide for Asset Management Tools https://www.epa.gov/sites/default/files/2020-06/documents/reference_guide_for_asset_management_tools_2020.pdf
- Southwest Environmental Finance Center Asset Management Switchboard <https://swefcamswitchboard.unm.edu/am/>
- Massachusetts Asset Management Planning Grant Program to assist eligible entities with completing asset management plans for wastewater, drinking water, and stormwater systems. <https://www.mass.gov/info-details/asset-management-planning-grant-program>
- NHDES Asset Management Handbook <https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/wd-21-04.pdf>

EPA Region 1 will maintain a list of resources on its stormwater tools website at <https://www.epa.gov/npdes-permits/stormwater-tools-new-england>.

Retrofit Inventory

The 2016 MA MS4 permit required permittees to identify a minimum of five permittee-owned properties that could potentially be modified or retrofitted with SCMs designed to reduce the frequency, volume, and pollutant loads of stormwater discharges to and from its MS4. The Draft Permit builds on this requirement to establish conditions to update and maintain this inventory and, beginning 2 years after the effective date of the permit, begin implementing retrofits on permittee-owned properties on a schedule of at least one per year. Permittees are required to report on any new SCMs installed and the reduction in pollutant load achieved beginning in the Year 3 annual report. Properties and infrastructure suitable for retrofit include, but are not limited to, parking lots, buildings, maintenance yards, rights-of-way, outfalls, and conventional or unmaintained stormwater conveyances and controls. SCM retrofits on permittee-owned property

⁷³ Resources available to assess vulnerability of assets include EPA's Flood Resilience Guide at https://www.epa.gov/sites/default/files/2015-08/documents/flood_resilience_guide.pdf and Massachusetts Coastal Zone Management Coastal Resilience Program at <https://www.mass.gov/info-details/coastal-resilience-grant-program>. Additional resources will be maintained on EPA Region 1's website for stormwater tools at <https://www.epa.gov/npdes-permits/stormwater-tools-new-england>.

in compliance with other requirements of this permit, including Green Street Designs (Part 2.3.6.d), Catch Basin Replacement and Upgrade Program (Part 2.3.7.f.ii), or applicable TMDL or impaired waters requirements (Part 2.2.1 and 2.2.2) can be used to satisfy this retrofit requirement. Pollutant and runoff volume reduction credits must be calculated according to the methodology in Appendix F, Attachment 1 and the performance curves in Appendix F, Attachment 3.

The design and performance of a SCM is driven in part by its location, and is a particularly important consideration for planning, siting, and designing SCM retrofits, which may be subject to more constraints than new or redevelopment projects.⁷⁴ There is a wide range of SCMs suitable for retrofits from control measures that disconnect impervious areas (storage, vegetated buffers and filter strips), to infiltration measures (basins, swales, trenches, rain gardens), to filtration systems. There are many comprehensive guides on green infrastructure controls for stormwater quality and quantity available, including resources posted on the Region's Stormwater Tools in New England website.⁷⁵ EPA expects to post additional resources and case studies as they become available to assist municipalities in planning and siting retrofit SCMs.

The 2016 MA MS4 permit listed a suite of factors that municipalities may consider when identifying properties that could potentially be retrofit with SCMs, such as amount of impervious cover, maintenance access, subsurface geology, slope, depth to water table, proximity to aquifers and subsurface infrastructure (e.g., sanitary sewer, septic systems, utilities), and opportunities for public use and education. EPA also recommended municipalities consider schedules for planned capital improvements and paving projects, current storm sewer level of service, and discharges to water quality limited waters, first or second order streams, public swimming beaches, drinking water supply sources, and shellfish growing areas. EPA recommends that municipalities beginning to retrofit properties with SCMs prioritize projects that maximize water quality and quantity benefits. Municipalities selecting a project for a stormwater retrofit should consider additional factors such as potential for flood mitigation, land use with high pollutant loads (e.g., high intensity development or commercial uses), and benefits for areas with environmental justice concerns. In the 2016 MA MS4, EPA proposed a schedule of one retrofit property per year starting in Year 2 but did not establish specific criteria for prioritizing retrofits, recognizing the benefits of providing municipalities with the flexibility to work with the properties, available resources, and budgets for each MS4. EPA recommends that municipal staff from departments involved in MS4 compliance, economic development, planning, transportation, and sustainability collaborate to prioritize properties considering the factors listed above. EPA expects that it will make available examples of how a municipality might prioritize retrofits based on consideration of the above factors as case studies during the permit term and post them on the Region's Stormwater Tools in New England website.

⁷⁴ Additional information on planning, siting, and designing BMP retrofits is found in the New England Stormwater Retrofit Manual at https://snepnetwork.org/wp-content/uploads/2022/07/SNEP_Stormwater-Retrofit-Manual_July-2022-508c.pdf.

⁷⁵ <https://www.epa.gov/npdes-permits/stormwater-tools-new-england#swbmp>

U.S. Global Change Research Program's Fifth National Climate Assessment (2023) demonstrates that the Northeast is experiencing increased extreme precipitation.⁷⁶ Changes in the intensity, duration, and frequency of rain events can significantly impact the amount of stormwater runoff that needs to be managed, increasing stressors on an aging infrastructure. EPA seeks to balance the effort required to assess water quality impacts associated with current and future flood risk with flexibility to account for the wide range of resources available to permittees covered by this MS4 permit. In addition, EPA recognizes there is risk in establishing overly prescriptive criteria for assessing current and future conditions when resources available for adaptation and resiliency planning are rapidly evolving. However, flood and precipitation standards are already included in several types of regulations outside the context of this permit and can serve as references for permittees in their decision-making for this permit.⁷⁷ The Draft MS4 Permit seeks to set a minimum level for evaluating flood risks based on widely referenced and publicly available resources to simplify compliance with the permit. As explained above, the Draft MS4 Permit identifies several ways to assess current and future flood zones when considering retrofitting municipally-owned property with an SCM, including FEMA SFHA maps or the MC-FRM.

Many municipalities in Massachusetts have also engaged in resiliency planning with support from the Municipal Vulnerability Preparedness (MVP) Program.⁷⁸ Municipalities can also consider how to use information gained through MVP planning about local hazard mitigation and vulnerabilities to assist in prioritizing SCMs to alleviate flooding on permittee-owned properties. Municipalities may be able to use information such as citizen complaints, routine inspections, and local knowledge of which properties are likely to flood during major storm events to prioritize properties for retrofit. EPA expects to provide available resources to evaluate impacts from major storm and flood events during the permit term on the Region's Stormwater Tools in New England website.

All small MS4s must comply with minimum control measures under "Pollution Prevention/good housekeeping for municipal operations" (MCM 6). See 40 CFR § 122.34(b)(6) and Draft Permit part 2.3.7. EPA recommends that permittees integrate flood management activities into their MS4 planning processes as one option for complying with MCM 6. EPA's recommendations for small MS4 pollution prevention and good housekeeping practices, including flood management, are found at 40 CFR § 122.34 (b)(6)(ii). Instead of collecting new data for the purposes of this permit, permittees can use available local flood data or publicly available flood and precipitation

⁷⁶ Crimmins, A.R., et. al, 2023: Fifth National Climate Assessment. U.S. Global Change Research Program, Washington, DC, USA. <https://nca2023.globalchange.gov/downloads/>.

⁷⁷ Many cities and towns in Massachusetts participate in the National Flood Insurance Program and have already implemented non-structural methods of flood management (e.g., building and zoning regulations, flood insurance mapping, stakeholder engagement). Additional examples of regulations and practices that address floodplain management in Massachusetts can be found on the Department of Conservation and Recreation (DCR) Flood Hazard Management Program (FHMP): <https://www.mass.gov/guides/floodplain-management> and the Massachusetts Executive Office of Energy and Environmental Affairs Resilient Mass initiative, which provides access to free and publicly available climate data and tools at <https://resilientma-mapcenter-mass-eoea.hub.arcgis.com/#Featured>.

⁷⁸ Information about the Municipal Vulnerability Preparedness program is available at <https://www.mass.gov/municipal-vulnerability-preparedness-mvp-program>.

tools, including the FEMA maps and MC-FRM and flood zones reference above, to investigate whether sites identified on the retrofit inventory may also be vulnerable to impacts from major storm events and prioritize retrofits on these properties.⁷⁹ Depending on design and location, SCMs for pollutant load reductions can also reduce the volume of stormwater runoff entering the MS4 system, which can mitigate flooding, reduce stress on stormwater infrastructure, and prevent property damage in flood prone areas. Similarly, flood management projects can generate co-benefits, such as reducing pollutant loading in flood prone areas or during major storm events, or serve as structural retrofits and non-structural management practices. When designing flood management projects, permittees should ensure that such projects do not increase pollutant discharges. Permittees should account for pollutant reductions achieved through any measures permittees implement to comply with 40 C.F.R. § 122.34(b)(6) and permit part 2.3.7, including flood management projects.

Catch Basin Replacement Program

Aging infrastructure is a problem across New England. Old and improperly sized catch basins require more maintenance that can be difficult to keep up with, and allow more sediment and additional pollutants into waterbodies. Undersized systems can also contribute to localized flooding. These catch basins do not comply with the catch basin design standard included in the Massachusetts Stormwater Handbook, which has, at least since 2008, recommended the deep sump catch basin due to its greater capture of solids, and with it, metals, nutrients, and oil and grease. The deep sump design provides greater retention of sediment, oil and grease, and associated pollutants, resulting in improved water quality in stormwater discharging to the system. The deep sump catch basin is also designed with a hood that captures floatables such as trash.⁸⁰ Based on the greater water quality benefits of this design and consistent with best practices, the Draft Permit proposes requirements for permittees to implement a systematic program to upgrade catch basins to a deep sump design, or comparable treatment.

During the first year of the permit term, the Draft Permit requires permittees to develop a catch basin upgrade and replacement program in which each permittee prioritizes the order in which their catch basin upgrades will occur. The requirement for this permit term is to update at least 20% of all catch basins that are not equipped with a deep sump design, or comparable treatment, by the end of year 5. EPA expects that many, but not all, catch basins need upgrades or replacement, so this program will carry into additional permit terms. EPA is specifically seeking comment on a reasonable and equitable target for this permit term, understanding that there is a

⁷⁹ The Federal Flood Risk Management Standard specifies approaches for establishing the flood elevation (“how high”) and corresponding flood hazard area (“how wide”) used for project siting, design and construction in floodplains. <https://www.fema.gov/floodplain-management/intergovernmental/federal-flood-risk-management-standard>.

⁸⁰ See, for example, 2008 Massachusetts Stormwater Handbook (Volume 2) available at <https://www.mass.gov/guides/massachusetts-stormwater-handbook-and-stormwater-standards#-stormwater-handbook-volume-2-> and 2024 Connecticut Stormwater Quality Manual (Chapter 13) available at <https://portal.ct.gov/deep/water-regulating-and-discharges/stormwater/stormwater-manual>.

wide range in the number and design of catch basins between permittees. During this permit term, EPA establishes requirements for permittees to prioritize catch basin upgrades in four areas:

- 1) Incorporate catch basin upgrades into planned capital improvement plans, such as repaving roads and updating sewer lines, as a standard practice since resources are already being dedicated to these projects. Leveraging existing planning and construction resources should reduce installation costs and prevent duplicative work from happening in the future. Many towns may already be taking this approach to updating their stormwater infrastructure;
- 2) Prioritize outdated catch basins observed to be more than 50% full during two consecutive routine inspections/cleaning events during the previous permit term. Many of these catch basins will likely be drop inlets or catch basins without a sump. These are likely in areas known to deliver high pollutant loads, such as industrial, commercial, and highly developed areas, which have higher build-up rates, including sediment wash-off. A high sediment load will cause catch basins to fill quicker, which affects proper function. Catch basins that do not function properly require more frequent maintenance and lead to greater water quality impacts by increasing pollutant loads to the waterbodies and causing localized flooding; and
- 3) Prioritize catch basins that are in areas prone to localized flooding or located in areas that intersect with a flood zone under current and future conditions based on the flood mapping resources described above. Deep sump catch basins have more capacity than traditional catch basin designs and therefore will assist in reducing flooding. The Massachusetts Municipal Vulnerability Preparedness (MVP) provides additional resources and technical assistance to municipalities that want to identify potential impacts of precipitation or flood events.
- 4) Catch basins located in areas with high pollutant loads, such as industrial, commercial, or high density residential areas or located in areas with a high proportion of impervious cover relative to the total MS4 area.

Based on the year 4 annual report, there is a wide range in number of catch basins permittees operate. The median number of catch basins reported was 1,902, with nontraditional permittees on the lower end. Based on the number of catch basins and water quality improvements realized from installing deep sump catch basins with hoods, catch basin upgrades have the potential to make a large environmental impact, specifically reducing trash, floatables, and sediment in stormwater discharges throughout the Commonwealth. Certain catch basins may require minor upgrades to incorporate a solids and sediment removal component (e.g. hood, oil/water separator, settling component), which can also help reduce flooding and flow to overwhelmed catch basins in a catchment area. While updating catch basins can improve stormwater quality (primarily through reductions in sediment and oil and grease), certain structural stormwater

control measures (SCMs) can achieve equal or greater pollutant reduction with many more co-benefits and which permittees may be implementing to comply with other requirements in the Draft Permit or the 2016 MA MS4 Permit. SCMs that offer equal or greater pollutant reductions than deep sump catch basins include, but are not limited to, an infiltration trench, infiltration basin, biofiltration, gravel wetland, enhanced biofiltration with internal storage reservoir (ISR), sand filter, porous pavement, wet pond, or water quality grass swale with detention. These SCMs not only have the ability to address trash and sediment removal, but also reduce metals, nutrients, and bacteria found in stormwater discharge. They also have the potential to reduce flood vulnerability, reduce urban heat islands, and increase groundwater recharge. EPA and others have developed tools and resources to help permittees select site-specific SCMs to meet water quality goals. EPA's Stormwater Tools in New England website includes a list of existing tools and resources and EPA will update this website as more tools and resources are developed.⁸¹

Therefore, the Draft Permit allows a permittee to install an SCM, or series of SCMs, in lieu of replacing a catch basin. SCMs can achieve water quality improvements and result in additional benefits (e.g., reduction in peak flow, alleviates flooding, provides co-benefits to a community with environmental justice concerns) such that the performance of the SCM, accounting for additional benefits, may exceed that of a deep sump catch basin. Permittees may install any of the infiltration-based SCMs listed in Attachment 3 to Appendix F in lieu of replacing a catch basin and may receive credit for nutrient reductions achieved by the SCM. In all scenarios, a SCM or detention structure must be installed in the same catchment area. Depending on the design of the SCM, the outdated catch basin may remain in place for pretreatment. One SCM may be linked to multiple catch basin improvements if the permittee can demonstrate in the SWMP that treatment exceeds that of multiple deep sump catch basins. In addition, SCMs installed to satisfy the requirements of the Catch Basin Upgrade and Replacement Program can also be used for compliance with the minimum retrofit requirement in Part 2.3.7.e of the Draft Permit.

EPA recognizes that there are situations in which a deep sump catch basin is infeasible and cannot be installed. Appendix A defines infeasible as "not technologically possible, or not economically practicable and achievable in light of best industry practices." A deep sump catch basin may be infeasible due site constraints such as the depth to bedrock, high groundwater, or the presence of utilities. Therefore, the permittee shall determine if an additional SCM can be installed instead of a catch basin upgrade or replacement. However, there is a chance a SCM may also be infeasible in the area. In such a case, the permittee must document in the SWMP and annual report the justification why both a catch basin replacement and an additional SCM installation is infeasible.

⁸¹ <https://www.epa.gov/npdes-permits/stormwater-tools-new-england#swbmp>, where tools such as the Opti-Tool and UNH's Performance Curve Calculator are available.

3.5.8 Additional Requirements for Discharges to Surface Drinking Water Supplies and Their Tributaries

The Draft Permit contains specific requirements for discharges to surface drinking water supply sources (Class A and Class B surface waters used for drinking water) or their tributaries. These requirements are meant to be incorporated into the SWMP in order to protect surface drinking water supply sources and ensure that permittees give appropriate consideration of sources that could impact surface water supplies when carrying out stormwater pollution prevention or mitigation activities as required by the Draft Permit. For example, during IDDE priority the permittees could rank catchments draining to a public water supply or its tributaries as High Priority for the purposes of IDDE investigation, could prioritize catchments draining to a public water supply when planning SCM retrofits or street sweeping schedules, or could target public education messages for audiences in public water supply areas.

4.0 Non-Traditional and Transportation MS4s

Non-traditional MS4s are those properties owned and operated by the Commonwealth of Massachusetts or the United States that have stormwater infrastructure and discharge to a Water of the United States. Another class of non-traditional MS4s is Transportation MS4s, which consist of state funded agencies responsible for the operation and maintenance of state-owned roadways, except MassDOT-Highway Division which is covered currently under the 2003 MS4 Permit until an individual permit is issued to MassDOT-Highway Division. Due to the nature of operations at non-traditional MS4s, some MEP permit provisions must be modified to be applicable. For example, public education requirements for non-traditional MS4s are adapted to accommodate the different audiences for the particular operation of these permittees. Similarly, not all non-traditional MS4s have regulatory mechanisms to pass an ordinance or bylaw to deal with Illicit Discharges, Construction Site Stormwater Control, or Post Construction Stormwater Management MCMs. The Draft Permit requires that non-traditional MS4s create policies or procedures that meet the same goal that the ordinance or bylaw is intended to meet as required for traditional MS4s but eliminating requirements for regulatory mechanisms. Non-traditional MS4s are subject to all Parts of the Draft Permit not specifically addressed in Part 3.1.

Changes from the 2016 MA MS4 Permit

1. Parts 5 and 6 of the 2016 MA MS4 permit have been combined for simplicity into one part (part 5) for all non-traditional MS4s (including transportation MS4s).
2. Provisions for compliance with Appendix F Part I.A for non-traditional MS4s have been updated to reflect the fact that the Draft Permit identifies non-traditional MS4s subject to the terms and conditions of Appendix F Part I.A. in Table F-1 in Appendix F. When drafting the 2016 MA MS4 permit, EPA did not know the universe of non-traditional MS4s within the Charles River Watershed that may be subject to the permit and opted to have separate Charles River TMDL requirements for non-traditional MS4s until such a time when EPA could define that universe. With this Draft Permit, EPA has identified those

non-traditional MS4s covered under the 2016 MA MS4 permit within the Charles River Watershed as:

- i. Department of Capital Asset Management
 - a. Charles F. Hurley Building, 19 Staniford St. Boston
 - b. State House, 24 Beacon Street, Boston, MA
- ii. Department of Corrections
 - a. Boston Pre Release Center, Boston, MA
- iii. MassBay Community College
 - a. 50 Oakland Street, Wellesley, MA
- iv. U.S. Army Soldier Systems Center
 - a. General Greene Avenue, Natick, MA
- v. Veterans Affairs Boston Healthcare System Jamaica Plain Campus
 - a. 150 South Huntington Avenue, Jamaica Plain, Boston, MA
- vi. Veterans Affairs Boston Healthcare System West Roxbury Campus
 - a. 1400 VFW Parkway West Roxbury, Boston, MA

The non-traditional MS4s above are each assigned a baseline phosphorus load (consistent with 2005 land use and impervious cover), a required reduction (based on location and land use consistent with the methodology used for the 2016 MA MS4 permit, see Attachment 1 to the 2014 Fact Sheet, the 2016 RTC, and Attachment 1 to RTC 2016 for a detailed description of the methodology), and an allowable phosphorus load for each non-traditional MS4. The corresponding baseline phosphorus load, required reduction, and allowable phosphorus load have been updated for the communities in which the non-traditional MS4s are located, removing the load and required reduction now placed on the non-traditional MS4 within the community's jurisdiction. Non-traditional MS4s identified in Table F-3 of Appendix F will need to update the information submitted with their year 4 Annual Report to create a Phase 1 Phosphorus Control plan that incorporates the milestones contained in Table F-1 of Appendix F Part I.A. No additional time is given to non-traditional MS4s to meet any milestone contained in Appendix F part I.A. The requirements specific to non-traditional MS4s in the Charles River Watershed found in the 2016 MA MS4 permit greatly mimicked the requirements of the first five years of Phosphorus Control Plan creation and implementation and therefore the non-traditional MS4s do not need to "catch up" to the traditional MS4s subject to Appendix F part I.A. in the 2016 MA MS4 permit. EPA notes, however, that non-traditional MS4s can submit an Alternative Schedule Request in accordance with Part I.A.1.b of Appendix F if the schedule in Appendix F part I.A are found infeasible (see Section 3.2.1.1 of this Fact Sheet for a description of Alternative Schedule Requests).

5.0 Evaluation, Record Keeping and Reporting

5.1 Program Evaluation

The permittee must periodically evaluate its SWMP for the following: compliance with the terms of the Permit, the appropriateness of the identified BMPs, and progress towards achieving the objective of the control measure and the permittee's measurable goals. The permittee may need to change its selected BMPs identified in the SWMP based on this evaluation process in order to ensure compliance with the terms of the Permit, including water quality-based requirements. Any change to BMPs must be documented in the annual report consistent with the requirements in Part 4.1.

5.2 Record Keeping

The permittee must keep all records required by this permit for a period of five years from the date the record is generated. The permittee must submit records only when requested by EPA or MassDEP. The SWMP must be available to members of the public who request a copy.

5.3 Reporting

The permittee must submit an annual report. The annual report is due ninety days from the close of each reporting period. EPA is considering aligning the new permit's reporting period with the reporting period for the 2016 MA MS4 permit (July – June) and is seeking comment on the benefits and potential conflicts of preserving this reporting period regardless of the effective date of the permit. The report must include a self-assessment regarding compliance with the terms of the Permit, the appropriateness of selected BMPs, and the progress towards achieving the permittee identified measurable goals. The report shall include all of the required information indicated in Parts 2.1 and 2.2 if applicable, as well as Part 2.3 and 4.0. The report must also contain a summary of any information that has been collected and analyzed. This includes all data. The report must indicate if any control measure or measurable goal is the responsibility of another entity. Reports must contain sufficient information to enable EPA to assess the permittee's compliance with the permit.

The Annual Reports must be submitted through EPA's NPDES eReporting Tool (NeT) which can be found at <https://cdx.epa.gov/cdx>. This is the same system that Permittees will use to fill out the NOIs. Due to the expansion in Internet availability, greater efficiency in administrative processing, and reductions in cost to manage the system as compared to paper NOIs, it is required that NeT be the primary mechanism by which permittees submit annual reports. NeT ensures that the public can view all annual reports and associate documents via <https://permitsearch.epa.gov/epermit-search/ui/search> and there's potential for EPA to better aggregate compliance data for the public to see through a dashboard. Using the same system for NOIs and Annual Reports increases the possibility of pulling in relevant information (such as TMDL or impaired waters applicability) to better customize and automate Annual Reports to

ensure the proper information is being reported on.

5.3.1 Monitoring Reporting

All monitoring requirements for the Draft Permit are located in the IDDE section of the Draft Permit and are specifically tied to the successful completion of the IDDE program. The requirements of this part are to capture both the monitoring required as part of the IDDE program and any other monitoring the permittee conducts to assess the effectiveness of its programs. Each annual report shall include the results of monitoring either conducted in compliance with the Draft Permit or any other monitoring of receiving waters or outfalls conducted by the permittee or on behalf of the Draft Permittee.

6.0 Standard Permit Conditions

40 CFR §§ 122.41 and 122.42 establish requirements that must be in all NPDES permits. Appendix B of the draft general permit includes these requirements.

7.0 401 Water Quality Certification

Section 401 of the CWA provides that no Federal license or permit (including EPA-issued NPDES permits) to conduct any activity that may result in any discharge into navigable waters shall be granted until the State in which the discharge originates waives or grants certification that the discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the CWA. Regulations governing state certification are set forth in 40 CFR §§ 121, 124.53, and 124.55. The 401 certification may include additional conditions more stringent than those in the Draft Permit which the Commonwealth finds necessary to meet the requirements of state law, including water quality standards. Concurrent with the public notice of this general permit, EPA will request Section 401 Water Quality Certification from MassDEP.