

STORMWATER MANAGEMENT PLAN (SWMP)

Hanover, MA

September 2023



ENVIRONMENTAL
 **PARTNERS**

— An Apex Company —

Stormwater Management Plan (SWMP) Revision History

MS4 Materials that supplement the 2023 SWMP Document

Revision #	Date	Comments
0	6/2019	SWMP Published for Town Comment
1	9/2020	O&M Plan, IDDE Plan, SWPPPs, and Facility Inventory are included as Appendix K
2	6/2021	Year 3 Updates
3	9/2022	Year 4 Updates New Attachments: SWPPP Inspections, Retrofit Analysis, Green Infrastructure Memorandum, Impervious Surface Memorandum, Nutrient Source Identification Report
4	10/2023	Updated Attachments: Annual Reports, BMP Inventory, SWPPP Site Visit Memos

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Printed Name

Signature

Date



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SECTION 1 BACKGROUND

SECTION 1.1 STORMWATER REGULATION

The Stormwater Phase II Final Rule was promulgated in 1999 and was the next step after the 1987 Phase I Rule in an effort by the Environmental Protection Agency (EPA) to preserve, protect, and improve the Nation's water resources from polluted stormwater runoff. The Phase II Rule expands the Phase I program by requiring additional programs and practices to control polluted stormwater runoff from small Municipal Separate Storm Sewer Systems (MS4s) in urbanized areas and construction sites, through the use of National Pollution Discharge Elimination System (NPDES) permits. Phase II is intended to further reduce adverse impacts to water quality and aquatic habitat by instituting the use of controls on the unregulated sources of stormwater discharges that have the greatest likelihood of causing continued environmental degradation. Under the Phase II rule, all MS4s with stormwater discharges from U.S. Census-designated Urbanized Area are required to seek NPDES permit coverage for those stormwater discharges.

SECTION 1.2 PERMIT PROGRAM BACKGROUND

On May 1, 2003, EPA Region 1 issued its Final General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (2003 small MS4 Permit) consistent with the Phase II Rule. The 2003 small MS4 Permit covered "traditional" (e.g., cities and towns) and "non-traditional" (e.g., Federal and state agencies) MS4 operators located in the states of Massachusetts and New Hampshire. This permit expired on May 1, 2008, but remained in effect until operators were authorized under the 2016 small MS4 General Permit, which became effective on July 1, 2018.

SECTION 1.3 STORMWATER MANAGEMENT PLAN (SWMP)

The SWMP describes and details the activities and measures that will be implemented to meet the terms and conditions of the 2016 MS4 Permit. The SWMP accurately describes the permittees' plans and activities. The document should be updated and/or modified during the permit term as the permittee's activities are modified, changed or updated to meet permit conditions. Additionally, MS4 reports (Operations and Maintenance Plan, Illicit Discharge Detection and Elimination Plan, etc.), annual reports, and inspection reports should be attached to the SWMP as appendices. Thus, the SWMP should act as a living document that records the permittee's planned and completed progress toward meeting the MS4 Permit requirements.

The main elements, or minimum control measures (MCMs) of the stormwater management program are (1) a public education program in order to affect public behavior causing stormwater pollution, (2) an opportunity for the public to participate and provide comments on the stormwater program (3) a program to effectively find and eliminate illicit discharges within the MS4 (4) a program to effectively control construction site stormwater discharges to the MS4 (5) a program to ensure that stormwater from development projects entering the MS4 is adequately controlled by the construction of stormwater controls, and (6) a good housekeeping program to ensure that

stormwater pollution sources on municipal properties and from municipal operations are minimized. The hyperlinks provided in Appendix A offer additional information and supporting documents related to the MS4 Permit and the aforementioned minimum control measures.

SECTION 1.4 TOWN SPECIFIC MS4 BACKGROUND

The Town must give special consideration to and meet eligibility requirements for their discharges to be able to apply for coverage under the General Permit. Eligibility will be determined based on three categories: Endangered Species Act, National Historic Preservation Act, and Water Quality Impaired Waters. The Town must establish that discharges from its storm drain system do not adversely impact endangered species, critical habitats, and historic properties in order to be covered by the General Permit. Furthermore, the Town must identify all receiving waters that have been classified as Water Quality Impaired Waters by the Massachusetts Department of Environmental Protection. The Town of Hanover and its surrounding water bodies are shown on Figure 1: System Locus. The Notice of Intent (NOI) for coverage under the Small MS4 General Permit was submitted to EPA and MassDEP on September 27, 2018. A copy of the NOI is provided in Appendix B.

SECTION 2 SWMP COMPONENTS

SECTION 2.1 PARTIES INVOLVED IN IMPLEMENTATION

Stormwater programs in the Town of Hanover are currently a responsibility of the Director of Public Works, Victor Diniak. The Town had created a stormwater management position that is currently staffed by Art Ceurvels under the direction of the Department of Public Works. The members of the Hanover stormwater committee are listed in the table below. This committee has prioritized detailed goals and concerns regarding the implementation of a stormwater program.

Table 2-1: List of Parties Responsible for SWMP Implementation

Name	Title	Department
Victor Diniak	Director	Department of Public Works
Joseph Colangelo	Town Manager	Executive Office
Kurt Kelley	Deputy Superintendent	Department of Public Works
Art Ceurvels	Stormwater Manager	Department of Public Works
Ann Lee	Director	Community Development Municipal Inspections Department
Robert Murray	Facilities Engineering Manager	Facilities Department
Tom Nee	Director of Technology Operations	Information Technology Department
Steve Ryerson	Director	Communication, Information, & Media
Lori Wolfe	Director of Marketing & Communications	NSRWA

SECTION 2.2 DOCUMENTATION REGARDING ENDANGERED SPECIES

In order to comply with part 1.9.1 of the NPDES Permit, the Town has attached documentation in Appendix D supporting Hanover’s eligibility determination of Criterion C with regard to federal Endangered and Threatened Species and Critical Habitat Protection. Criterion C states that, “determination is made by EPA, or by the applicant and affirmed by EPA, that the stormwater discharges and discharge related activities will have “no affect” on any federally threatened or endangered listed species or designated critical habitat under the jurisdiction of the USFWS.” In this case, USFWS provided a letter in place of a concurrence letter for informal consultation.

The attachments in Appendix D include the aforementioned letter, as well as the results of the IPaC environmental review process. Using the IPaC environmental review process, one endangered species has been identified within Hanover's boundaries: the Northern Long-Eared Bat. This species does not have critical habitats designated within the Town, and the MS4 Permit will not adversely affect the listed species within the MS4 area.

SECTION 2.3 DOCUMENTATION REGARDING HISTORIC PROPERTIES

The Town has attached documentation in Appendix E supporting their eligibility determination regarding Historic Properties, in compliance with part 1.9.2 of the Permit. This document, Appendix D of the Massachusetts General MS4 Permit, includes information supporting Hanover's determination as Criterion A, stating that the discharges do not have the potential to cause effects on historic properties.

Historic site considerations will be evaluated further as part of the design/permitting of new/retrofit BMPs proposed for implementation as part of MS4 compliance. Regarding the National Historic Preservation Act, under 36 CFR 800, this facility is an existing facility authorized by the previous Permit and is not undertaking any activity involving subsurface land disturbance less than 1 acre. This MS4 Permit will have "no potential to cause effects," in accordance with 36 CFR 800.3(a)(1).

SECTION 2.4 DOCUMENTATION REGARDING DISCHARGES

Attached in Appendix F is the documentation for tracking any new or increased discharges granted by MassDEP in compliance with part 2.1.2 of the Permit. Increased discharges refer to increased pollutant loading(s) through the MS4 to waters of the US or to impaired waters listed in categories 5 or 4b on the Massachusetts Integrated Report of waters, pursuant to the Clean Water Act. The Permit states that "any authorization of an increased discharge by MassDEP shall be incorporated into the permittee's SWMP." At this time, the Town of Hanover has no new and/or increased discharges. The Town will document any new and/or increased discharges on the form provided in Appendix F and include project specific information regarding best management practices implemented for those discharges. A sample discharges form is provided in Appendix F.

SECTION 2.5 SANITARY SEWER OVERFLOW (SSO) INVENTORY

In the event of an overflow or bypass, a notification must be reported within 24 hours by phone to MassDEP, EPA, and other relevant parties. The verbal notification should be followed up with a written report following MassDEP's Sanitary Sewer Overflow (SSO)/Bypass notification form within five calendar days of the time you become aware of the overflow, bypass, or backup.

The Town will maintain an inventory of all known locations where SSOs have discharged to the MS4, if any are found. This inventory shall include SSOs resulting from inadequate conveyance capacities, or where interconnectivity of the storm and sanitary sewer infrastructure allows for connection of flow between the systems. A SSO inventory form is provided in Appendix G and is updated annually. The inventory includes the following information:

1. Location (approximate street crossing/address and receiving water, if any);
2. A clear statement of whether the discharge entered a surface water directly or entered the MS4;
3. Date(s) and time(s) of each known SSO occurrence (i.e., beginning and end of any known discharge);
4. Estimated volume(s) of the occurrence;
5. Description of the occurrence indicating known or suspected cause(s);
6. Mitigation and corrective measures completed with dates implemented; and
7. Mitigation and corrective measures planned with implementation schedules.

SECTION 2.6 IDDE PROGRAM AND BYLAWS

The Town's IDDE plan was developed during the first year of the new MS4 Permit (June 2019). The IDDE program is detailed in section 3.3 of Minimum Control Measures. The Town's current Stormwater Management and Erosion Control and Illicit Discharge Bylaw is provided in Appendix H.

SECTION 2.7 SEDIMENT AND EROSION CONTROL PROCEDURES

Written procedures for the Town's site inspections and enforcement of sediment and erosion control procedures in accordance with part 2.3.5 of the MS4 Permit, Construction Site Stormwater Runoff Control, are detailed in the Sections 3.4 and 3.5, Minimum Control Measures. This information includes the party responsible for site inspections and implementation of procedures.

SECTION 2.8 PUBLIC DRINKING WATER SUPPLY SOURCES PROTECTION

The Town has developed practices in effort to avoid or minimize impacts to surface public drinking water supply sources. These efforts are detailed in Minimum Control Measures section 3.6, Good Housekeeping and Pollution Prevention. The Town plans to prioritize the enforcement of the existing stormwater pollution prevention plans.

SECTION 2.9 ACTIVITIES TO MONITOR DISCHARGES

The Town identified discharges within public drinking water supply source areas and gave priority to outfall inspections and screening required of the Minimum Control Measures in section 3.0.

SECTION 2.10 ANNUAL PROGRAM EVALUATION

To comply with part 4.1 of the MS4 Permit, the Town annually self-evaluates compliance with the terms and conditions of the MS4 Permit and submits each self-evaluation as part of the Fiscal Year annual report. The NPDES Phase II Small MS4 General Permit Annual Reports for Fiscal Year 2018 through the most recent Fiscal Year are attached in Appendix I.

SECTION 3 MINIMUM CONTROL MEASURES

In effort to reduce pollutants and comply with part 2.3 of the MS4 Permit, the Town focuses on the following six minimum control measures detailed in this section. These sections describe the Town’s practices to comply with each control measure, the responsible person(s) or party of each practice, and the goal(s) for each BMP of each control measure. The BMPs for each of the six minimum control measures are outlined in the forms provided in Appendix J.

SECTION 3.1 PUBLIC EDUCATION AND OUTREACH

The Town implemented an education program that includes educational goals based on stormwater issues of significance within the MS4 area. The ultimate objective of a public education program, MS4 Permit part 2.3.2, is to increase knowledge and change behavior of the public so that the pollutants in stormwater are reduced.

The Town implemented a public education program as required by the 2003 permit and continued that program with the necessary adjustments to meet the additional requirements of the 2016 MS4 Permit.

The program includes the education of the following four audiences: (1) residents, (2) businesses, institutions (churches, hospitals), and commercial facilities, (3) developers (construction), and (4) industrial facilities.

Section 3.1.1 Background

Responsible parties for public education and outreach efforts include the Department of Public Works, IT Department, Community Development and Municipal Inspections Department, and NSRWA. The Town of Hanover has implemented several actions in efforts to reach public education and outreach goals. Town DPW Director and Conservation Commission Agent meet routinely with members of the North and South River Watershed Association for stakeholder input on projects within the Town. The Town continues to support the NSRWA Greenscapes Program. Educational outreach through the Greenscapes Program continues in addition to developing materials to meet requirements of the stormwater permit with NSRWA. The Town of Hanover’s web site continues to be updated with additional stormwater information.

Section 3.1.2 Best Management Practices

- I. Distribution of a minimum of two (2) educational messages over the permit term to the required audiences within the permit term (5 years), as listed below.
 - a. Residents
 - i. Publish outreach materials; distribute new resident packets to residents within Wetland Protection Areas.
 - ii. Establish stormwater web site with pollution reporting capability.
 - iii. “Water All Around You” school educational program.

- b. Businesses, Institutions, and Commercial Facilities
 - i. Include stormwater information in permit materials.
 - ii. Establish section on stormwater web site directed towards businesses, institution, and commercial facilities.
- c. Developers (Construction)
 - i. Include stormwater information in permit materials; review and update application forms to meet the new requirements.
 - ii. Establish section on stormwater website directed towards developers.
- d. Industrial Facilities
 - i. Distribute stormwater information to industrial groups based on zoning and property use.
 - ii. Establish section on web site directed towards industrial facilities.

SECTION 3.2 PUBLIC INVOLVEMENT AND PARTICIPATION

The objective of the public involvement and participation control measure, permit part 2.3.3., is for the Town to provide the public with opportunities to engage in activities that promote good stormwater practices. The public has also been given the chance to review the Stormwater Management Plan (SWMP) and its implementation.

Section 3.2.1 Background

Responsible parties for public involvement and participation efforts include the Department of Public Works, NSRWA, and the IT Department. The Town obtained funding through a Town Meeting for stormwater work and began required testing under the new General Permit. The Town continues to conduct community cleanup days and support NSRWA stream bank cleaning days.

Section 3.2.2 Best Management Practices

- I. Public Review
 - a. Allow annual review of stormwater management plan and posting of stormwater management plan on website.
- II. Public Participation
 - a. Allow public to comment on stormwater management plan annually.
 - b. Continue annual community cleanup days and stream bank cleaning events with NSRWA.
 - c. Continue to sponsor paint and hazardous waste collections two times per year.

SECTION 3.3 ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PROGRAM

The Town has implemented an IDDE program, per MS4 Permit part 2.3.4, in order to find and eliminate non-stormwater discharge sources. Procedures have been implemented to fix any prevalent issues in the Town’s storm sewer system. The Town’s current MS4 outfall inventory indicates that 151 outfall structures discharge to the Town of Hanover’s MS4 area. Town’s inventory of outfall structures is shown in Figure 4: Stormwater System Map. Below, Table 3-1 lists the Town’s impaired waters, the impairments per water body, and any associated final Total Maximum Daily Load (TMDL) report numbers. Impairments will be discussed further in Section 4.

Table 3-1: Impaired Waters, TMDLs and Impairments

Water Body Name	Segment ID	Category	Impairment(s)	Associated Approved TMDL
Cushing Brook	MA94-40	5	<ul style="list-style-type: none"> Escherichia Coli 	
Drinkwater River	MA94-21	5	<ul style="list-style-type: none"> Curly-leaf Pondweed Debris Fanwort Algae Chlorophyll-a Dissolved Oxygen Supersaturation Escherichia Coli Fecal Coliform Mercury in Fish Tissue Nutrient/Eutrophication Biological Indicators Phosphorus, Total Transparency/Clarity Trash 	61724 61724
Factory Pond	MA94175	5	<ul style="list-style-type: none"> Fish Passage Barrier Mercury in Fish Tissue 	
French Stream	MA94-03	5	<ul style="list-style-type: none"> Dissolved Oxygen Escherichia Coli Fecal Coliform Fish Bioassessments Phosphorus, Total 	61718 61718
Indian Head River	MA94-22	5	<ul style="list-style-type: none"> Mercury in Fish Tissue 	
Indian Head River	MA94-04	5	<ul style="list-style-type: none"> Fish Passage Barrier Escherichia Coli Mercury in Fish Tissue 	
Longwater Brook	MA94-39	5	<ul style="list-style-type: none"> Escherichia Coli 	
North River	MA94-05	5	<ul style="list-style-type: none"> Fecal Coliform Mercury in Fish Tissue 	61725

Section 3.3.1 Background

Responsible parties for IDDE efforts include the Department of Public Works, Planning Board, Board of Health, Conservation Committee, and the Community Development Municipal Inspections Department.

The Town has developed and implemented an IDDE program. The IDDE program is outlined in the IDDE Plan, finalized in June 2019. The Town has verified drainage connectivity mapping and continues to update outfall and catchment information and screening results.

The Town continues to comply with local bylaws, state and federal requirements. The IDDE bylaws are continuing to be enforced and there have not been any violations within the past year. Continued local bylaw enforcement has been performed and no violations have been found within the last year.

Section 3.3.2 Best Management Practices

I. Legal Authority

- a. The IDDE program shall include adequate legal authority to prohibit illicit discharges; investigate suspected illicit discharges; eliminate illicit discharges, including discharges from properties not owned by or controlled by the MS4 that discharge into the MS4 system; and implement appropriate enforcement procedures and actions. Adequate legal authority consists of a currently effective ordinance, by-law, or other regulatory mechanism. This ordinance, by-law, or other regulatory mechanism was a requirement of the MS4-2003 permit and was required to be effective by May 1, 2008.

II. SSO Inventory

- a. Develop SSO Inventory Database within one year of effective permit date that logs historical SSOs that have occurred in the last 5 years, as discussed in further detail in section 2.5.
 - i. Coordinate with Department of Public Works for tracking of any future septic or SSOs.

III. Storm Sewer System Map

- a. Update map within 2 years of effective date of permit and complete full system map 10 years after effective date of permit.
 - i. Make an electronic and physical copy of the map available to the public via the stormwater website and Hanover Town Hall.
 - ii. Map/verify 10% of system per year during permit years 1-10.
 1. Phase I will be focused on during Years 1 and 2, while Phase II will be focused on during Years 3 thru 10.
 - iii. Integrate system map updates with planned sewer expansion projects.

- IV. Written IDDE Program Development
 - a. Develop and complete written IDDE program within 1 year of effective permit date. The IDDE program and permit attachments will be available at Hanover Town Hall.
- V. Implement IDDE Program
 - a. Implement catchment investigations according to program and permit conditions within 18 months of the effective date of the Permit. Catchment investigations procedures have been written and included in the Town’s IDDE Plan.
 - i. Continue to enforce bylaw.
 - ii. Draft and implement stormwater management regulations.
 - iii. Coordinate water quality monitoring with dry weather screening
 - 1. New monitoring system should include surveying for illicit discharge detection.
- VI. Employee Training
 - a. Coordinate annual stormwater training and incorporate with training required in Section 6.2.IV.B.
- VII. Dry Weather Screening
 - a. Conduct screening in accordance with outfall screening procedure and permit conditions.
- VIII. Conduct screening in accordance with outfall screening procedure and permit conditions, and as determined by dry weather screening results, within ten years of effective permit date.
 - a. Conduct screening in accordance with outfall screening procedure and
 - b. permit conditions, and as determined by dry weather screening results.
- IX. Conduct ongoing screening as necessary, and upon completion of the IDDE program.
- X. IDDE Regulations
 - a. Continue to eliminate illicit discharge violations.

SECTION 3.4 CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

The Town must implement a program focused on controlling stormwater runoff from construction sites. The program shall minimize or eliminate erosion on site and maintain the site so that the sediment is not transported in stormwater or allowed to discharge to a water of the U.S. through the Town’s MS4, as stated in part 2.3.5 of the Permit.

Section 3.4.1 Background

The Town of Hanover has adopted construction site stormwater runoff measures and has continued to enforce local, state, and federal bylaws. As-built drawings are generally submitted to the Town in paper format, except for street plans. The Community Development Municipal Inspections Department and the Building Commissioner are all responsible for construction site stormwater runoff control BMPs.

Section 3.4.2 Best Management Practices

- I. Site Inspection and Enforcement of Erosion and Sediment Control (ESC) Measures.
 - a. Complete written procedures of site inspections and enforcement procedures within 1 year of effective date of the Permit.
 - i. Recommend standards and practices for town inspection procedures. Seek input from relevant town groups (e.g. Building, Health, Conservation, etc.)
 - ii. Develop inspection form that includes ESC measures and integrate them with existing Town forms.
- II. Site Plan Review
 - a. Complete written procedures of site plan review and begin implementation within 1 year of the effective date of the Permit.
 - i. Include site plan review workflow chart with permit applications.
 - ii. Review current Town procedure regarding when a Construction General Permit (CGP) is needed.
 1. CGP required for disturbance of 1 acre or greater
- III. Erosion and Sediment Control Ordinance
 - a. Adoption of requirements for construction operators to implement a sediment and erosion control program within 1 year of the effective date of the Permit.
 - i. Set limit of 1 acre before project requires inspection by Town official.
 1. Coordinate limits and requirements with fill/extraction permits.
 - b. Update all Town forms with erosion and sediment control checklist.
- IV. Waste Control
 - a. Adoption of requirements to control wastes, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes within 1 year of the effective date of the Permit.
 - i. Incorporate into Town's general conditions for building permit and/or site plan review.
 - ii. Review and modify Town bylaw to meet new requirements.
- V. Pre-Construction/Coordination Meetings
 - a. Continue GIS mapping and develop protocol for submitting as-built street plans electronically.

SECTION 3.5 POST-CONSTRUCTION STORMWATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT

The objective of an effective post construction stormwater management program, part 2.3.6 of the Permit, is to reduce the discharge of pollutants found in stormwater to the MS4 through the retention or treatment of stormwater after construction on new or redeveloped sites and to ensure proper maintenance of installed stormwater controls.

Section 3.5.1 Background

The Town of Hanover has adopted post-construction stormwater management regulations based on IDDE bylaws. Ongoing enforcement of bylaws continues. The Department of Public Works, Planning Board, Conservation Committee, Town Manager, and Facility Department are all responsible for stormwater management in new and redevelopment.

In Year 4, the Town assessed local bylaws to determine the feasibility of constructing green infrastructure practices as well as the creation of impervious cover. These two assessments are included in Appendix P. The Town has reviewed this assessment and is reviewing what follow-up steps need to be taken, including revising existing bylaws. Additionally, the Town maintains a list of five (5) permittee-owned properties to prioritize for BMP retrofits. Details on the prioritization of municipal properties for BMP retrofits are included in Appendix P.

Section 3.5.2 Best Management Practices

- I. Post-Construction Ordinance
 - a. The Town shall develop or modify, as appropriate, an ordinance or other regulatory mechanism within two (2) years of the effective date of the permit.
- II. As-Built Plans For On-Site Stormwater Control
 - a. Require submission of electronic data for as-built drawings (e.g. PDF, AutoCAD, GIS) within 2 years of completed construction. As-built plans are required as part of the regulations.
 - i. O&M certification should include contact and contract information for contractors that perform O&M on the private BMPs.
- III. Inventory and Priority Ranking of MS4-Owned Properties That May Be Retrofitted with BMPs
 - a. Conduct detailed inventory of MS4 owned properties and rank for retrofit potential within 4 years of permit effective date. Priority ranking is included in Appendix P.
 - i. Inventory Town parcels for existing stormwater BMPs and identify opportunities for GI/LID retrofits.
 1. Include schools, parks, recreation facilities, police/fire/EMS, libraries, public works, and town administrative offices.
- IV. Allow Green Infrastructure
 - a. Within 4 years of permit effective date, develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist. The assessment is included in Appendix P.
 - i. Review bylaws and applications in order to incorporate green infrastructure and low impact development language as needed.
 - ii. Educate the public on green infrastructure through existing BMP retrofits/demonstration projects.
- V. Street Design and Parking Lot Guidelines
 - a. Within 4 years of permit effective date, develop a report assessing requirements that affect the creation of impervious cover. The assessment will help determine if

changes to design standards for streets and parking lots can be modified to support low impact design options. The assessment included in Appendix P.

- i. Publish street design and parking lot guidelines on stormwater website.
- VI. Ensure any stormwater controls or management practices for new development and redevelopment will prevent or minimize impacts to water quality. This item is implemented through the adoption of the Bylaws and Rules and Regulations.
 - a. Within 2 years of permit effective date, adopt, amend, or modify regulation mechanisms to meet permit requirements.
 - i. Review rules and regulations and modify as needed. Include evaluation of subdivision/redevelopment requirements to keep stormwater runoff onsite and for long-term operations and management of private BMPs.
 - ii. Continue to implement Post-Construction Site Runoff Control Bylaw.
- VII. Monitor construction impacts on amount of impervious surfaces.
 - a. Record pre/post-construction changes to amount of impervious surface.
 - i. Require submittal of impervious area data with as-built records.
 - 1. Projects should report quantities of impervious area per and post-construction, along with the net increase/decrease of impervious area.

SECTION 3.6 GOOD HOUSEKEEPING AND POLLUTION PREVENTION FOR TOWN OWNED PROPERTIES

An operations and maintenance program must be implemented by the Town for Town-owned operations. The program shall focus on preventing or reducing pollutant runoff and protecting water quality from Town operations.

Section 3.6.1 Background

The Town of Hanover has developed and implemented an O&M Plan, which is attached as Appendix K. In addition, the Town has developed Stormwater Pollution Prevention Plans (SWPPPs) for the highway department facility and transfer station.

The Town of Hanover conducts annual sweeping of all streets and monitors active construction sites and performs additional sweeping around these sites to reduce materials entering the catch basins. The roads leading into Town are checked regularly and swept as needed to control silts. Catch basins are cleaned annually. The lack of sand from snow and ice operations reduces the need for semi-annual collections.

Hazardous waste collection takes place on two days annually. Additionally, the Town transfer station offers waste oil and anti-freeze collection to Town residents as well as access to HHW events in other South Shore Recycling Cooperative communities. The Town also sponsors a drug take back event to minimize pharmaceutical waste from entering the groundwater.

The Town completes annual inspections of its inventory of stormwater best management practices. In addition, the Town completed an inventory and stormwater audit of all Town-owned facilities, the audit report is attached as Appendix N.

The Department of Public Works, Conservation Committee, Town Manager, Facility Department, and Planning Board are responsible for pollution prevention BMPs.

Section 3.6.2 Best Management Practices

- I. Create written O&M procedures for parks and open spaces, buildings and facilities, and vehicles and equipment within 2 years of permit effective date.
 - a. Develop standards of practice for O&M of each public facility and combine in Town O&M Manual.
- II. Maintain and update inventory all Town-owned parks and open spaces, buildings and facilities (including their storm drains), and vehicles and equipment within 2 years of the permit effective date.
 - a. Develop a capital improvement plan that deals with flooding prevention measures and water quality improvements.
 - i. Coordinate implementation with Section 5.2.II of the Permit.
- III. Establish and implement program for repair and rehabilitation of MS4 infrastructure within 2 years of the permit effective date.
 - a. Inspect assets and assess condition to develop program
 - b. Review annual budget to set aside funding.
- IV. Stormwater Pollution Prevention Plan (SWPPP) For Maintenance Garages, Transfer Stations and Other Waste-Handling Facilities.
 - a. Develop plan within 2 years of permit effective date.
 - b. Schedule annual employee training.
 - i. Look into workshop and speaking opportunities and seek formal training for all departments
 - c. Develop an asset management system to process complaints, permits, inspections, and maintenance.
 - d. Continue to implement improved recycling standards and requirements.
 - i. Advertise rigid plastic and antifreeze recycling to public. Enforce new standards for private haulers.
- V. Catch Basin Cleaning
 - a. Develop and implement a catch basin cleaning schedule with a goal of ensuring no catch basin is more than 50% full.
 - b. Document catch basins inspected and cleaned, including total mass removed and proper disposal.
 - c. Ensure that all catch basins are cleaned annually and develop reporting and record keeping procedures for cleaning and for repair of damaged catch basins.

- VI. Street Sweeping Program
 - a. Sweep streets (rural and uncurbed exceptions apply) a minimum of once a year in the spring.
 - b. Each annual report shall include number of miles cleaned and volume or mass of material removed. Continue to implement street sweeping program.
- VII. Road Salt Use Optimization Program
 - a. Develop and implement winter road maintenance procedures including use and storage of salt and sand.
 - b. Minimize the use of salts
 - i. Calibrate spreaders to reduce salt use.
 - c. Ensure snow is not disposed into waters.
 - d. Continue working on salt reduction strategies.
- VIII. Inspection and maintenance of stormwater treatment structures.
 - a. Establish and implement inspection and maintenance procedures for annual inspection/maintenance.

SECTION 4 WATER QUALITY BASED REQUIREMENTS

In compliance with the Clean Water Act (CWA), each state must administer a program to monitor and assess the quality of its surface and groundwater. Section 305(b) process of the CWA entails assessing each use for rivers, lakes, and coastal waters, and causes and sources of impairment are identified wherever possible. Section 303(d) of the CWA along with the regulations at 40 CFR 130.7 requires states to identify those water bodies that are not expected to meet surface water quality standards (SWQS) after the implementation of technology based controls and prioritize them for the development of Total Maximum Daily Loads (TMDLs). A TMDL establishes the maximum amount of a pollutant that may be introduced into a water body and still ensure attainment and maintenance of water quality standards. The 303(d) List of Impaired Waters (303(d) List) lists each water body in one of the following five categories:

- Category 1. Unimpaired and not threatened for all designated uses;
- Category 2. Unimpaired for some uses and not assessed for others;
- Category 3. Insufficient information to make assessments for any uses;
- Category 4. Impaired or threatened for one or more uses, but not requiring the calculation of a TMDL; or
- Category 5. Impaired or threatened for one or more uses and requiring a TMDL.

Waters listed in Category 5 constitute the 303(d) List and are to be reviewed and approved by the EPA. Table 3-1: Impaired Waters, TMDLs and Impairments details the Town's Category 5 and 4 water bodies. An overall map of the Town of Hanover's stormwater system is attached as Figure 3: Stormwater System Map.

SECTION 4.1 BACKGROUND

Best management practices aim to improve and mitigate stormwater water quality impairments. This program will focus on impaired waters requiring a TMDL in the South Coastal Watershed, shown on Figure 4: Town Watersheds.

The entirety of the Town is located within the South Coastal Watershed. This area can be seen on Figure 4 – Town Watersheds. The South Coastal Watershed has an approved TMDL for bacteria and pathogens. These impairments require the Town to follow the specific requirements listed under Appendix H to mitigate bacteria and pathogen discharges from the MS4 to the respective watershed. The Hanover Public Works Department and Board of Health are responsible for adhering to these requirements.

The Massachusetts category 5 impaired waters requiring a TMDL in Hanover are all located within the South Coastal watershed. As shown in Table 1 – Impaired Waters, TMDLs and Impairments, these water bodies include Cushing Brook, Drinkwater River, Factory Pond, French Stream, Indian Head River, Longwater Brook, and North River. The Town should prioritize sampling outfalls to these water bodies for their respective impairments, also listed in Table 2-1. The Hanover Public

Works Department and Board of Health are the primary party responsible for the BMPs to meet these TMDL requirements. The additional best management practices required to address impaired waters, TMDLs and other impairments are discussed in the following sections.

SECTION 4.2 PERMIT REQUIREMENTS

Section 4.2.1 Public Education and Outreach

- A. Bacteria or Pathogens
 - 1. Distribute an annual message that encourages the proper management of pet waste, including noting any existing ordinances where appropriate.
 - 2. Disseminate educational materials to dog owners at the time of issuance or renewal of dog license, or other appropriate time.
 - 3. Provide information to owners of septic systems about proper maintenance in any catchment that discharges to a water body impaired for bacteria or pathogens.
- B. Phosphorus
 - 1. Distribute an annual message in the spring (March/April) timeframe that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release and phosphorus-free fertilizers.
 - 2. Distribute an annual message in the summer (June/July) timeframe encouraging the proper management of pet waste, including noting any existing ordinances where appropriate.
 - 3. Distribute an annual message in the fall (August/September/October) timeframe encouraging the proper disposal of leaf litter.
 - 4. Deliver an annual message on each of these topics, unless the Town determines that one of more of these issues is not a significant contributor of phosphorus to discharges from the MS4.

Section 4.2.2 Stormwater Management in New Development and Redevelopment

- A. Solids, Oil and Grease, or Metals
 - 1. Incorporate designs that allow for shutdown and containment where appropriate to isolate the system in the event of an emergency spill or unexpected event.
 - 2. Require any stormwater management system designed to infiltrate stormwater on commercial or industrial sites to provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration of the same volume of runoff to be infiltrated, prior to infiltration.
- B. Phosphorus
 - 1. Include a requirement that new development and redevelopment stormwater management BMPs be optimized for phosphorus removal.
 - 2. Retrofit inventory and priority ranking under 2.3.6.1.b shall include consideration of BMPs that infiltrate stormwater where feasible.

Section 4.2.3 Good Housekeeping and Pollution Prevention

- A. Solids, Oil and Grease, or Metals
 - 1. Increase street sweeping frequency of all municipal owned streets and parking lots to a schedule determined by the Town to target areas with potential for high pollutant loads.
 - 2. Prioritize inspection and maintenance for catch basins to ensure that no sump shall be more than 50 percent full. Each annual report shall include the street sweeping schedule determined by the Town to target high pollutant loads.
- B. Phosphorus
 - 1. Establish procedures to properly manage grass cuttings and leaf litter on Town property, including prohibiting blowing organic waste materials onto adjacent impervious surfaces.
 - 2. Increase street sweeping frequency of all municipal owned streets and parking lots subject to Permit part 2.3.7.a.iii. near impaired waters to a minimum of two times per year, once in the spring (following winter activities such as sanding) and at least once in the fall (September 1 - December 1; following leaf fall).

Section 4.2.4 Illicit Discharge

- A. Bacteria or Pathogens
 - 1. Implement the illicit discharge program required by the Permit. Catchments draining to any water body impaired for bacteria or pathogens shall be designated either Problem Catchments or HIGH priority in implementation of the IDDE program.

Section 4.2.5 Additional Requirements (Phosphorus)

- A. Phosphorus
 - 1. Complete a Phosphorus Source Identification Report within four years of the permit effective date. The report shall include the following elements:
 - i. Calculation of total MS4 area draining to the water quality limited water segments or their tributaries, incorporating updated mapping of the MS4 and catchment delineations produced pursuant to part 2.3.4.6
 - ii. All screening and monitoring results pursuant to part 2.3.4.7.d, targeting the receiving water segment(s)
 - iii. Impervious area and DCIA for the target catchment
 - iv. Identification, delineation, and prioritization of potential catchments with high phosphorus loading
 - v. Identification of potential retrofit opportunities or opportunities for the installation of structural BMPs during redevelopment, including the removal of impervious areas
 - 2. Submit the final Phosphorus Source Identification Report to EPA as a part of the year 4 annual report.
 - 3. Evaluate all Town-owned properties identified as presenting retrofit opportunities or areas for structural BMP installation under permit part 2.3.6.d.ii. or identified in the

Phosphorus Source Identification Report that are within the drainage area of the impaired water or its tributaries within five years of the permit effective date.

4. Provide a listing of planned structural BMPs and a plan and schedule for implementation in the year 5 annual report.
5. Install a minimum of one structural BMP as a demonstration project within the drainage area of the water quality limited water or its tributaries within six years of the permit effective date. The demonstration project shall be installed targeting a catchment with high phosphorus load potential.
6. Install the remainder of the structural BMPs in accordance with the plan and schedule provided in the year 5 annual report.
7. Track and estimate the phosphorous removal of any structural BMPs listed in Table 3 of Attachment 3 to Appendix F already existing or installed in the regulated area by the Town or its agents consistent with Attachment 1 to Appendix H. For each structural BMP document the BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated phosphorus removed in mass per year by the BMP in each annual report.

At any time during the permit term, the Town may be relieved of additional requirements in Appendix H applicable to it when in compliance with the requirements in Appendix H.



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