

Attachment 11
Stormwater Management System Report, Provided by Field Engineering
Co., Inc. (June 16, 2025)

**STORMWATER MANAGEMENT SYSTEM REPORT
HINGHAM WATERFRONT RESILIENCY PROJECT
TOWN OF HINGHAM**

Project Location:
95 Otis Street and 0 Summer Street
Hingham, Massachusetts

Prepared for:

Town of Hingham
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Project No. 2658

June 16, 2025

Preface

Stormwater Management Standards Compliance Checklist



Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the [Massachusetts Stormwater Handbook](#). The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.¹ This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8²
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

¹ The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

² For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.



Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

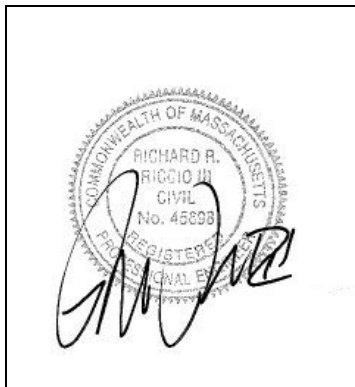
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



Signed and Stamped Electronically 6/16/2025

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

- ☐ New development
- ☐ Redevelopment
- ☒ Mix of New Development and Redevelopment



Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☒ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only) (No net increase in impervious area)
- ☒ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
 - ☐ Credit 1
 - ☐ Credit 2
 - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☒ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☒ Other (describe): Proprietary Water Quality Inlets and Crushed Stone Edge Drains

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.



Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

- ☒ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- ☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.
- ☐ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge (NOT APPLICABLE-NO NEW IMPERVIOUS SURFACES)

- ☐ Soil Analysis provided.
- ☐ Required Recharge Volume calculation provided.
- ☐ Required Recharge volume reduced through use of the LID site Design Credits.
- ☐ Sizing the infiltration, BMPs is based on the following method: Check the method used.
 - ☐ Static
 - ☐ Simple Dynamic
 - ☐ Dynamic Field¹
- ☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.
- ☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- ☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- ☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
 - ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
 - ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
 - ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
 - ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- ☐ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- ☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

¹ 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.



Checklist for Stormwater Report

Checklist (continued)

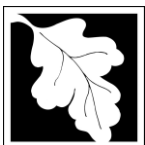
Standard 3: Recharge (continued)

- ☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
- ☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
 - Provisions for storing materials and waste products inside or under cover;
 - Vehicle washing controls;
 - Requirements for routine inspections and maintenance of stormwater BMPs;
 - Spill prevention and response plans;
 - Provisions for maintenance of lawns, gardens, and other landscaped areas;
 - Requirements for storage and use of fertilizers, herbicides, and pesticides;
 - Pet waste management provisions;
 - Provisions for operation and management of septic systems;
 - Provisions for solid waste management;
 - Snow disposal and plowing plans relative to Wetland Resource Areas;
 - Winter Road Salt and/or Sand Use and Storage restrictions;
 - Street sweeping schedules;
 - Provisions for prevention of illicit discharges to the stormwater management system;
 - Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
 - Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
 - List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.
- ☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.
- ☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
- ☐ is within the Zone II or Interim Wellhead Protection Area
 - ☐ is near or to other critical areas
 - ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
 - ☐ involves runoff from land uses with higher potential pollutant loads.
- ☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.
- ☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.



Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

- ☒ The BMP is sized (and calculations provided) based on:
 - ☒ The ½" or 1" Water Quality Volume or
 - ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- ☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- ☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs) - NOT APPLICABLE

- ☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.
- ☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted **prior to** the discharge of stormwater to the post-construction stormwater BMPs.
- ☐ The NPDES Multi-Sector General Permit does **not** cover the land use.
- ☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
- ☐ All exposure has been eliminated.
- ☐ All exposure has **not** been eliminated and all BMPs selected are on MassDEP LUHPPL list.
- ☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

- ☒ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
- ☐ Critical areas and BMPs are identified in the Stormwater Report.



Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopment and Other Projects Subject to the Standards only to the maximum extent practicable

- ☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
 - ☐ Limited Project
 - ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
 - ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
 - ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
 - ☐ Bike Path and/or Foot Path
 - ☒ Redevelopment Project
 - ☒ Redevelopment portion of mix of new and redevelopment.
- ☒ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.
- ☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
 - Construction Period Operation and Maintenance Plan;
 - Names of Persons or Entity Responsible for Plan Compliance;
 - Construction Period Pollution Prevention Measures;
 - Erosion and Sedimentation Control Plan Drawings;
 - Detail drawings and specifications for erosion control BMPs, including sizing calculations;
 - Vegetation Planning;
 - Site Development Plan;
 - Construction Sequencing Plan;
 - Sequencing of Erosion and Sedimentation Controls;
 - Operation and Maintenance of Erosion and Sedimentation Controls;
 - Inspection Schedule;
 - Maintenance Schedule;
 - Inspection and Maintenance Log Form.
- ☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.



Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

- ☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has **not** been included in the Stormwater Report but will be submitted **before** land disturbance begins.
- ☐ The project is **not** covered by a NPDES Construction General Permit.
- ☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- ☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

- ☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:
 - ☐ Name of the stormwater management system owners;
 - ☐ Party responsible for operation and maintenance;
 - ☐ Schedule for implementation of routine and non-routine maintenance tasks;
 - ☐ Plan showing the location of all stormwater BMPs maintenance access areas;
 - ☐ Description and delineation of public safety features;
 - ☐ Estimated operation and maintenance budget; and
 - ☐ Operation and Maintenance Log Form.
- ☐ The responsible party is **not** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
 - ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
 - ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

- ☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
- ☒ An Illicit Discharge Compliance Statement is attached;
- ☐ NO Illicit Discharge Compliance Statement is attached but will be submitted **prior to** the discharge of any stormwater to post-construction BMPs.

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Section 1 – Stormwater Management System Report Narrative

Section 1

Hydrologic Overview

1.0 INTRODUCTION

1.1 Project Description

The Town of Hingham is seeking to address existing and future coastal flooding concerns across the southerly shoreline of Hingham Harbor to protect critical public infrastructure and enhance public access to the Harbor and its amenities. The project team was tasked by the Town to develop a comprehensive coastal flood hazard mitigation strategy for the inner harbor area extending from west of the Hingham Bathing Beach to the P.O.W./M.I.A. Memorial Park, where the project limits connected the higher topographic elevations to both the west and east. In this manner, eliminating storm tide pathways into historic downtown from the Harbor will provide long-term coastal resiliency for this critical portion of the community.

Where possible, nature-based shore protection would provide flood protection in the form of either a contiguous dune or berm. Proposed dune construction will extend from Hingham Bathing Beach to the boat ramp. The dune will be constructed in a similar fashion to the dune fronting Hingham Bathing Beach, with constructed walkways over the dune. It is anticipated that compatible material for dune construction will be sourced from an upland site. It is also anticipated that the Boat Ramp Parking Lot will be elevated, and a vegetated berm will be established at the same elevation as the proposed dune between the Boat Ramp and Town Wharf. By using native vegetation to stabilize the dune, the project will provide aesthetically pleasing shoreline protection.

As part of this project to raise the existing parking lots to provide flood protection and long-term coastal resiliency, the Town is also proposing a number of stormwater improvements to provide some treatment and recharge of the runoff that will be generated from the paved parking area and improve existing conditions in the project vicinity. The BMP's being proposed include new deep sump catch basins, a proposed water quality inlet and a number of rain garden areas to provide for some treatment and attenuation of the runoff prior to discharge to adjacent lawn areas and eventually towards Hingham Harbor.

The project is being designed and permitted in accordance with the Massachusetts Wetlands Protection Act (310 CMR 10.000) and the Town of Hingham Wetland Protection By-Law for the proposed activities within the coastal areas subject to protection. The coastal resource areas within the project site include Land Under the Ocean (LUO), Land Containing Shellfish (LCS), Coastal Beach, Coastal Dune, Coastal Bank and Land Subject to Coastal Storm Flowage.

1.2 Hydrologic Overview

The Plymouth County Soil Conservation Service (SCS) mapping for this area indicates a number of soil types in the project area. The soil classification is as follows:

- Urban land, wet substratum (603A), 0 to 3 percent slopes, Hydrologic Soil Group B/D.
- Udorthents, wet substratum (655A), Hydrologic Soil Group B/D.

In existing conditions, the runoff from the majority of the paved parking areas (westerly trailer parking area) flows through a closed conduit drainage system consisting of catch basins (with minimal sumps) and reinforced concrete piping to a direct discharge to Hingham Harbor. The runoff from the remaining portions of the paved parking areas (Town Wharf parking area) flows directly towards the existing lawn areas and eventually into Hingham Harbor with no stormwater BMP's providing pre-treatment.

In proposed conditions, the runoff from the westerly trailer parking area will continue to flow through a closed conduit drainage system which will be equipped with new deep sump catch basins and a water quality unit prior to utilizing the same discharge to the Harbor. A portion of this area will flow through a crushed stone edge drain area to a proposed rain garden for pre-treatment prior to overtopping towards the Harbor. The runoff from the Town Wharf parking area will flow through a series of rain gardens for pre-treatment prior to eventually flowing towards the Harbor. There are no increases in impervious surface following completion of this project, therefore there should be no additional runoff being generated from the project site.

1.3 Stormwater Management System Summary

The proposed stormwater management system incorporates Best Management Practices (BMPs) as prescribed in the Department of Environmental Protection Stormwater Management Handbook. These practices include structural and non-structural measures providing stormwater quantity and quality management. These BMPs will function to minimize potential adverse water quality impacts to the surrounding ecosystem. The following sections describe the temporary and permanent stormwater BMPs proposed for the proposed coastal resiliency project.

The proposed stormwater management plan has been developed based on the projected site conditions and the present condition of the water resource areas that receive stormwater runoff from the site. The proposed BMPs have been designed to comply, to the greatest extent practicable, with the Massachusetts Stormwater Management Handbook. As the project area is

discharging runoff towards a coastal resource area and flooding due to storm events is not a direct concern, attenuation under the Stormwater Management Standards 2 is not required so the focus of the stormwater management system design is on water quality. The proposed improved paved parking areas are the primary target area for water quality measures for the project. The runoff from the paved parking areas will either flow through a closed conduit drainage system consisting of deep sump catch basins and a water quality inlet prior to direct discharge to Hingham Harbor or overland through a series of stone edge drains and/or rain gardens prior to discharge to existing lawn areas and ultimately towards the Harbor.

1.4 Select Structural Best Management Practices (BMP's)

Hooded Catch Basins with Deep Sumps

Stormwater from portions of the paved parking areas will be collected in a closed conduit piping system fitted with 4-foot-deep sump catch basins with hooded outlets. Catch basin sump systems are effective devices for removal of large matter and pollutants that adsorb to sediments and other particulates. Catch basins with sumps and hooded outlets are designed to trap sediment particles and floating contaminants (e.g., oil and greases), that are typically the most significant constituents of the urban runoff pollutant load. Regular maintenance and cleaning of catch basins is required to assure adequate performance of these structures. A specific maintenance schedule is submitted in this document.

Crushed Stone Edge Drain

Runoff from a portion of the paved trailer parking area will flow to a crushed stone infiltration trench located along the westerly side of the parking area. This trench will consist of crushed stone wrapped in filter fabric with an additional layer of crushed stone to the surface. This trench will serve as a conduit to facilitate recharge into the subsurface soils as well as provide a means to slow the runoff down prior to discharge to the adjacent rain garden area. This trench will help to minimize the effects of erosion and sedimentation towards the adjacent lawn areas following construction of the proposed improvements. The top 6" of crushed stone above the filter fabric can be inspected and maintained on a regular basis to function as a filter strip for the runoff coming from the paved parking area.

Rain Garden/Bioretention Areas

Stormwater from portions of the paved areas will discharge directly to surface rain gardens which are also effective devices for removal of large matter and pollutants that adsorb to sediments and other particulates. The rain gardens consist of depressed areas which allow

pollutants to settle out prior to discharging either via a surface spillway or a closed piping system. The rain garden areas will be planted with shrubs and grasses that are salt tolerant and will promote nutrient removal of the runoff prior to overtopping. The rain garden areas are constructed with a mulch surface over a soil amendment zone which will also promote some recharge throughout the site.

1.5 Select Non-Structural Best Management Practices (BMP's)

Stormwater Management System Maintenance Program

All structural components of the stormwater management system will be inspected and maintained on a regular basis in accordance with the requirements of the Stormwater Management Policy. A detailed Stormwater Management System Operation and Maintenance Plan has been prepared in accordance with the Stormwater Management Standards and Stormwater Management Handbook prepared by the Massachusetts Department of Environmental Protection.

1.6 Regulatory Compliance

The Massachusetts Stormwater Handbook, Volume 3 (February, 2008), has been used as the primary guidance for the selection and design of permanent non-structural and structural BMPs for the long-term protection of existing resource areas. The Stormwater Management Plan developed for this project incorporates water quality controls that will protect surface and groundwater resources, wetlands and adjacent properties from potential impacts.

The stormwater performance standards developed by the DEP and a brief discussion on how the proposed project will achieve the standards are provided below. The Stormwater Management System Compliance Certification and Checklist has been included as a Preface to this report.

Standard 1. No new stormwater conveyances may discharge untreated stormwater directly to, or cause erosion in wetlands or waters of the Commonwealth.

- No proposed site stormwater conveyance system will discharge untreated stormwater runoff directly to wetlands. Stormwater runoff from a portion of the existing improved parking area will now be directed through deep sump catch basins and a water quality inlet prior to discharge. The remaining portions of the paved parking areas will flow through a combination of stone edge drains and/or rain gardens prior to overtopping towards downgradient areas. These BMP's will eliminate any potential erosive flow velocities and

dissipate the energy of the discharged stormwater, thereby avoiding sedimentation to the downgradient areas.

Standard 2. Stormwater management systems shall be designed so that the post-development peak discharge rates do not exceed pre-development peak discharge rates.

- Standard 2 is not applicable as the project is located in land subject to coastal storm flowage.

Standard 3. Loss of annual recharge to groundwater shall be eliminated or minimized through the use of environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post- development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

- There are no new proposed impervious surfaces as a result of the project, therefore recharge characteristics will not be impacted by the project. Some recharge will occur through the crushed stone edge drain and rain garden areas being proposed around the project.

Standard 4. Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This standard is met when:

- a) Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;**
 - b) Structural stormwater best management practices are sized to capture the required water quality volume as determined in accordance with the Massachusetts Stormwater Handbook; and**
 - c) Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.**
- The proposed deep sump catch basins and water quality inlet will provide substantial improvements to the stormwater leaving the site from the paved trailer parking area. The remaining portions of the paved parking areas will flow through a combination of stone edge

drains and/or rain gardens which will also provide a substantial improvement to the quality of the runoff reaching the Harbor. A Long-Term Pollution Prevention Plan is included as an Appendix to this report.

Standard 5. For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If, through source control and/or pollution prevention, all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L.c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.

- The proposed project is not considered a high intensity use with higher potential pollutant loads.

Standard 6. Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or to any other critical area require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook.

- The runoff discharging to Hingham Harbor has been treated, to the greatest extent practicable, as required by the project's redevelopment status.

Standard 7. A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural stormwater best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all

other requirements of the Stormwater Management Standards and improve existing conditions.

- The redevelopment project meets Standards 1, 2, 8, 9, 10.
- Standards 3, 4, and 6 have been met to the greatest extent practicable.
- Standard 5 is not applicable for this project.
- The proposed project significantly improves existing conditions by raising the parking area and providing stormwater management features downgradient of the parking area to reduce TSS loading to the adjacent lawn areas and eventually towards Hingham Harbor.

Standard 8. A plan to control construction-related impacts, including erosion, sedimentation, and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

- The proposed development will incorporate erosion and sedimentation controls to minimize the potential for sedimentation in down gradient resources. These controls will include a silt curtain as shown on the NOI Plans. A Construction Period Pollution Prevention Plan has been completed and is included in the following sections.

Standard 9. A Long-Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.

- The Stormwater Management Plan for this project has been developed in compliance with the DEP Stormwater Management Policy. The Plan is based on a multi-dimensional approach to stormwater management that recognizes the need for source control of potential contaminants, and implementation of structural and non-structural treatment methods to ensure the protection of water resources in the vicinity of the site and adjacent properties. A Long-Term Operation and Maintenance Plan is included in the in the following sections.

Standard 10. Illicit Discharges to the Stormwater Management System are prohibited.

- An Illicit Discharge Compliance Statement has been completed and is attached to this report.

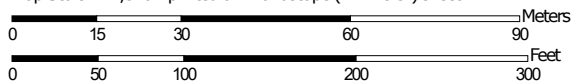
Section 2

Supplemental Data

Soil Map—Plymouth County, Massachusetts



Map Scale: 1:1,340 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

3/13/2025
Page 1 of 3

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Plymouth County, Massachusetts

Survey Area Data: Version 17, Aug 27, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
603A	Urban land, wet substratum. 0 to 3 percent slopes	3.9	77.9%
608	Water, ocean	0.2	4.9%
610	Beaches, sand	0.8	16.5%
655A	Udorthents, wet substratum, 0 to 3 percent slopes	0.0	0.7%
Totals for Area of Interest		5.0	100.0%

Cascade Separator Project Details

Description

The Cascade Separator® is the latest innovation in hydrodynamic separation from Contech. The Cascade uses advanced sediment capture technology to provide the highest sediment removal efficiency of any Contech HDS product.

Project Information

Project Name 78160 - New Water Quality Inlet
Location Hingham, MA
Date June 15 2025

Design Parameters	
System Type	Cascade Separator
Particle Size D50	110
System Model	CS-4
Sizing Method	Net Annual Removal
Drainage Area	1.02 acres
Runoff Coefficient	.90
Time of Concentration	6 min
Peak Conveyance	5ft ³ /sec
100% Trash Capture?	No
Primary Access Casting	Grate Inlet
Target Removal %	80%

Outlet Pipe Information	
# of Pipes	1
Outlet Diameter	15 inches
Outlet Invert Elev	4.37 ft
Outlet Angle	180°
Outlet Material	RCP
Inlet Pipe Information	
# of Pipes	1
Inlet Diameter	15 inches
Inlet Invert Elev	4.37 ft
Inlet Angle	0°
Inlet Material	RCP

SECTION (____)
STORM WATER TREATMENT DEVICE

1.0 GENERAL

- 1.1 This item shall govern the furnishing and installation of the Cascade Separator™ by Contech Engineered Solutions LLC, complete and operable as shown and as specified herein, in accordance with the requirements of the plans and contract documents.
- 1.2 The Contractor shall furnish all labor, equipment and materials necessary to install the storm water treatment device(s) (SWTD) and appurtenances specified in the Drawings and these specifications.
- 1.3 The manufacturer of the SWTD shall be one that is regularly engaged in the engineering design and production of systems deployed for the treatment of storm water runoff for at least five (5) years and which have a history of successful production, acceptable to the Engineer. In accordance with the Drawings, the SWTD(s) shall be a Cascade Separator™ device manufactured by:

Contech Engineered Solutions LLC
9100 Centre Pointe Drive
West Chester, OH, 45069
Tel: 1 800 338 1122

1.4 Related Sections

- 1.4.1 Section 02240: Dewatering
 - 1.4.2 Section 02260: Excavation Support and Protection
 - 1.4.3 Section 02315: Excavation and Fill
 - 1.4.4 Section 02340: Soil Stabilization
- 1.5 All components shall be subject to inspection by the engineer at the place of manufacture and/or installation. All components are subject to being rejected or identified for repair if the quality of materials and manufacturing do not comply with the requirements of this specification. Components which have been identified as defective may be subject for repair where final acceptance of the component is contingent on the discretion of the Engineer.
 - 1.6 The manufacturer shall guarantee the SWTD components against all manufacturer originated defects in materials or workmanship for a period of twelve (12) months from the date the components are delivered to the owner for installation. The manufacturer shall upon its determination repair, correct or replace any manufacturer originated defects advised in writing to the manufacturer within the referenced warranty period. The use of SWTD components shall be limited to the application for which it was specifically designed.
 - 1.7 The SWTD manufacturer shall submit to the Engineer of Record a "Manufacturer's Performance Certification" certifying that each SWTD is capable of achieving the specified removal efficiencies listed in these specifications. The certification shall be supported by independent third-party research

- 1.8 No product substitutions shall be accepted unless submitted 10 days prior to project bid date, or as directed by the Engineer of Record. Submissions for substitutions require review and approval by the Engineer of Record, for hydraulic performance, impact to project designs, equivalent treatment performance, and any required project plan and report (hydrology/hydraulic, water quality, stormwater pollution) modifications that would be required by the approving jurisdictions/agencies. Contractor to coordinate with the Engineer of Record any applicable modifications to the project estimates of cost, bonding amount determinations, plan check fees for changes to approved documents, and/or any other regulatory requirements resulting from the product substitution.

2.0 MATERIALS

- 2.1 Housing unit of stormwater treatment device shall be constructed of pre-cast or cast-in-place concrete, no exceptions. Precast concrete components shall conform to applicable sections of ASTM C 478, ASTM C 857 and ASTM C 858 and the following:
- 2.1.1 Concrete shall achieve a minimum 28-day compressive strength of 4,000 pounds per square-inch (psi);
 - 2.1.2 Unless otherwise noted, the precast concrete sections shall be designed to withstand lateral earth and AASHTO H-20 traffic loads;
 - 2.1.3 Cement shall be Type III Portland Cement conforming to ASTM C 150;
 - 2.1.4 Aggregates shall conform to ASTM C 33;
 - 2.1.5 Reinforcing steel shall be deformed billet-steel bars, welded steel wire or deformed welded steel wire conforming to ASTM A 615, A 185, or A 497.
 - 2.1.6 Joints shall be sealed with preformed joint sealing compound conforming to ASTM C 990.
 - 2.1.7 Shipping of components shall not be initiated until a minimum compressive strength of 4,000 psi is attained or five (5) calendar days after fabrication has expired, whichever occurs first.
- 2.2 Internal Components and appurtenances shall conform to the following:
- 2.2.1 Hardware shall be manufactured of Type 316 stainless steel conforming to ASTM A 320;
 - 2.2.2 Support brackets shall be manufactured of 5052 Aluminum
 - 2.2.3 Fiberglass components shall conform to applicable sections of ASTM D-4097
 - 2.2.4 Polypropylene copolymer components shall conform to a tensile strength of 3,600 psi (ASTM D-638), and Izod impact value of "no break" (ASTM D-256).
 - 2.2.5 Access system(s) conform to the following:
Manhole castings shall be designed to withstand AASHTO H-20 loadings and manufactured of cast-iron conforming to ASTM A 48 Class 30.

3.0 PERFORMANCE

- 3.1 The SWTD shall be capable of achieving an annualized weighted reduction of at least 80% of the OK-110 particle distribution having particles ranging from 53 microns to 212 microns with a d_{50} of approximately 110 microns unless otherwise stated.
- 3.2 The SWTD shall be designed with a sump chamber for the storage of captured sediments and other negatively buoyant pollutants in between maintenance cycles. The minimum storage capacity provided by the sump chamber shall be in accordance with the volume listed in Table

1. The boundaries of the sump chamber shall be limited to that which do not degrade the SWTD's treatment efficiency as captured pollutants accumulate. In order to not restrict the Owner's ability to maintain the SWTD, the minimum dimension providing access from the ground surface to the sump chamber shall be 16 inches in diameter.
- 3.3 The SWTD shall be designed to capture and retain Total Petroleum Hydrocarbons generated by wet-weather flow and dry-weather gross spills and have a capacity listed in Table 1 of the required unit.
- 3.4 The SWTD shall convey the flow from the peak storm event of the drainage network, in accordance with required hydraulic upstream conditions as defined by the Engineer. If a substitute SWTD is proposed, supporting documentation shall be submitted that demonstrates equal or better upstream hydraulic conditions compared to that specified herein. This documentation shall be signed and sealed by a Professional Engineer registered in the State of the work. All costs associated with preparing and certifying this documentation shall be born solely by the Contractor.

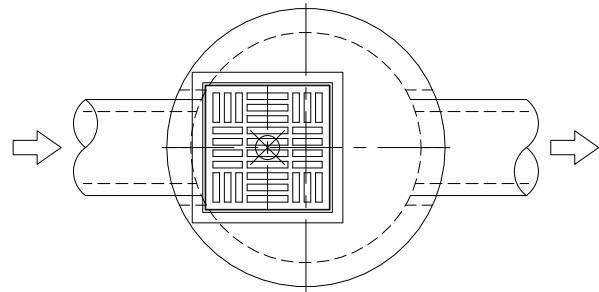
4.0 EXECUTION

- 4.1 The contractor shall exercise care in the storage and handling of the SWTD components prior to and during installation. Any repair or replacement costs associated with events occurring after delivery is accepted and unloading has commenced shall be borne by the contractor.
- 4.2 The SWTD shall be installed in accordance with the manufacturer's recommendations and related sections of the contract documents. The manufacturer shall provide the contractor installation instructions and offer on-site guidance during the important stages of the installation as identified by the manufacturer at no additional expense. A minimum of 72 hours notice shall be provided to the manufacturer prior to their performance of the services included under this subsection.
- 4.3 The contractor shall fill all voids associated with lifting provisions provided by the manufacturer. These voids shall be filled with non-shrinking grout providing a finished surface consistent with adjacent surfaces. The contractor shall trim all protruding lifting provisions flush with the adjacent concrete surface in a manner, which leaves no sharp points or edges.
- 4.4 The contractor shall removal all loose material and pooling water from the SWTD prior to the transfer of operational responsibility to the Owner.

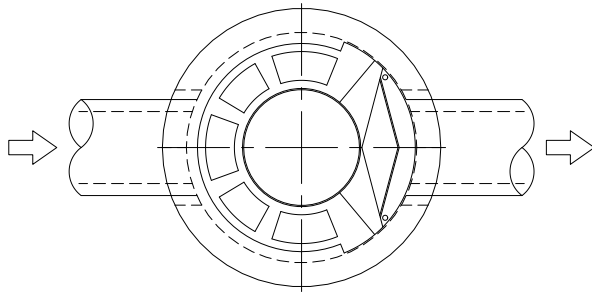
TABLE 1: Storm Water Treatment Device Storage Capacities

Cascade Model	Minimum Sump Storage Capacity (yd ³)	Minimum Oil Storage Capacity (gal)
CS-3	0.41	59.0
CS-4	0.70	141.0
CS-5	1.09	269.3
CS-6	1.57	475.9
CS-8	2.79	1128.0
CS-10	4.36	2203.2
CS-12	6.28	3807.1

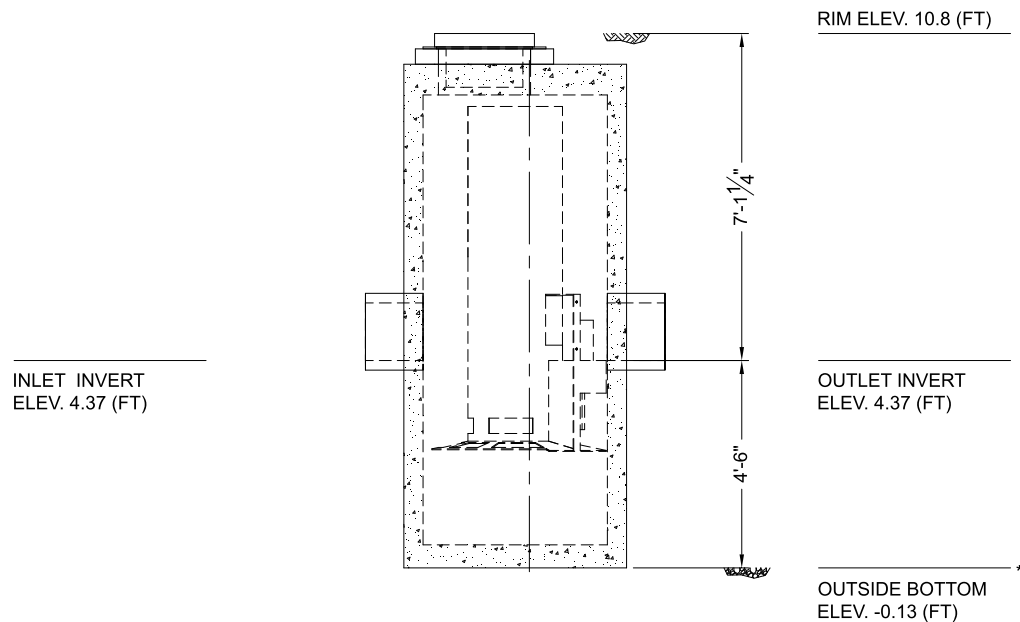
END OF SECTION



PLAN VIEW
(INTERNALS NOT SHOWN)
SCALE: 1"=40'



SECTION FOR PIPE ORIENTATION
(TOP SLAB NOT SHOWN)
SCALE: 1"=40'



ELEVATION VIEW

SCALE: 1"=50'

MATERIAL LIST		
COUNT	DESCRIPTION	INSTALLED BY
1	CS-4 CYLINDER INSERT, STD	CONTECH
1	SEALANT FOR JOINTS	CONTRACTOR
1	24" x 24" FRAME & GRATE, EJ#45624050A01, OR EQUIV.	CONTRACTOR
1	24" INLET TRAY	CONTRACTOR

PROJECT SUMMARY

DESIGN PARAMETERS

- TREATMENT METHOD = Cascade Separator
- MODEL = CS-4

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH REPRESENTATIVE. www.ContechES.com
3. CASCADE SEPARATOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2'. AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. CASCADE SEPARATOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES

- A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CASCADE SEPARATOR MANHOLE STRUCTURE.
- C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
- D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
- E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

* OUTSIDE TOP AND BOTTOM OF SYSTEM
MAY DIFFER DEPENDING ON
MANUFACTURING LOCATION.

CONTECH
DYOHDS
DRAWING

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Cascade Separator CS-4
HINGHAM COASTAL RESILIENCY
NEW WATER QUALITY INLET
HINGHAM, MA

CONTECH®
ENGINEERED SOLUTIONS LLC
www.ContechIES.com

CASCADE
separator™

DATE: 06/15/2025	
DESIGNED: DYO	DRAWN: DYO
CHECKED: DYO	APPROVED: DYO
PROJECT No.: 56538	DESIGN No.: 78160
SHEET: 1 OF 1	



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps & aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.305 (0.240-0.382)	0.377 (0.297-0.473)	0.495 (0.387-0.623)	0.594 (0.463-0.752)	0.729 (0.551-0.976)	0.830 (0.614-1.14)	0.938 (0.676-1.35)	1.07 (0.721-1.56)	1.26 (0.820-1.92)	1.43 (0.905-2.22)
10-min	0.432 (0.340-0.541)	0.534 (0.420-0.670)	0.702 (0.550-0.883)	0.841 (0.655-1.07)	1.03 (0.780-1.38)	1.18 (0.870-1.62)	1.33 (0.958-1.91)	1.51 (1.02-2.21)	1.79 (1.16-2.72)	2.02 (1.28-3.14)
15-min	0.508 (0.400-0.636)	0.629 (0.494-0.788)	0.827 (0.648-1.04)	0.991 (0.771-1.26)	1.22 (0.918-1.63)	1.38 (1.02-1.90)	1.56 (1.13-2.25)	1.78 (1.20-2.60)	2.10 (1.36-3.20)	2.38 (1.51-3.70)
30-min	0.708 (0.557-0.887)	0.877 (0.689-1.10)	1.15 (0.904-1.45)	1.38 (1.08-1.75)	1.70 (1.28-2.27)	1.93 (1.43-2.65)	2.18 (1.57-3.14)	2.48 (1.68-3.63)	2.94 (1.91-4.47)	3.33 (2.11-5.18)
60-min	0.908 (0.715-1.14)	1.12 (0.884-1.41)	1.48 (1.16-1.86)	1.77 (1.38-2.25)	2.18 (1.64-2.92)	2.48 (1.83-3.40)	2.80 (2.02-4.03)	3.19 (2.15-4.66)	3.78 (2.45-5.75)	4.29 (2.72-6.66)
2-hr	1.15 (0.915-1.44)	1.45 (1.15-1.81)	1.94 (1.53-2.42)	2.34 (1.83-2.94)	2.89 (2.20-3.85)	3.30 (2.46-4.51)	3.75 (2.73-5.37)	4.29 (2.91-6.22)	5.13 (3.34-7.72)	5.86 (3.73-9.00)
3-hr	1.34 (1.06-1.66)	1.69 (1.34-2.09)	2.25 (1.78-2.81)	2.72 (2.14-3.41)	3.37 (2.57-4.46)	3.85 (2.88-5.23)	4.37 (3.19-6.22)	5.01 (3.40-7.21)	5.99 (3.91-8.96)	6.84 (4.36-10.4)
6-hr	1.76 (1.41-2.16)	2.18 (1.75-2.69)	2.88 (2.30-3.57)	3.46 (2.74-4.31)	4.26 (3.27-5.59)	4.85 (3.65-6.53)	5.49 (4.02-7.73)	6.27 (4.28-8.94)	7.46 (4.89-11.0)	8.48 (5.43-12.8)
12-hr	2.30 (1.85-2.81)	2.80 (2.26-3.43)	3.62 (2.91-4.45)	4.30 (3.43-5.32)	5.24 (4.04-6.81)	5.94 (4.49-7.90)	6.69 (4.91-9.28)	7.58 (5.21-10.7)	8.91 (5.87-13.0)	10.0 (6.46-15.0)
24-hr	2.80 (2.27-3.40)	3.41 (2.76-4.15)	4.41 (3.56-5.38)	5.24 (4.21-6.43)	6.38 (4.96-8.23)	7.23 (5.50-9.54)	8.14 (6.01-11.2)	9.24 (6.38-12.9)	10.9 (7.20-15.7)	12.3 (7.93-18.1)
2-day	3.17 (2.59-3.82)	3.93 (3.21-4.75)	5.18 (4.22-6.28)	6.22 (5.03-7.58)	7.65 (5.98-9.81)	8.71 (6.67-11.4)	9.86 (7.35-13.5)	11.3 (7.81-15.6)	13.5 (8.95-19.3)	15.4 (9.96-22.4)
3-day	3.46 (2.84-4.16)	4.29 (3.52-5.16)	5.64 (4.61-6.81)	6.76 (5.49-8.20)	8.31 (6.52-10.6)	9.44 (7.27-12.3)	10.7 (8.00-14.6)	12.2 (8.50-16.8)	14.6 (9.74-20.8)	16.7 (10.8-24.2)
4-day	3.75 (3.09-4.49)	4.60 (3.78-5.52)	6.00 (4.91-7.22)	7.16 (5.83-8.66)	8.76 (6.89-11.1)	9.94 (7.66-12.9)	11.2 (8.42-15.2)	12.8 (8.92-17.5)	15.3 (10.2-21.6)	17.4 (11.3-25.1)
7-day	4.55 (3.76-5.42)	5.44 (4.50-6.49)	6.90 (5.68-8.26)	8.12 (6.64-9.76)	9.78 (7.73-12.3)	11.0 (8.52-14.2)	12.4 (9.28-16.6)	14.0 (9.78-18.9)	16.5 (11.0-23.1)	18.6 (12.1-26.5)
10-day	5.29 (4.39-6.28)	6.21 (5.15-7.38)	7.71 (6.37-9.19)	8.96 (7.36-10.7)	10.7 (8.46-13.4)	12.0 (9.26-15.3)	13.3 (10.0-17.7)	15.0 (10.5-20.1)	17.4 (11.7-24.2)	19.4 (12.7-27.6)
20-day	7.42 (6.20-8.74)	8.42 (7.03-9.93)	10.1 (8.37-11.9)	11.4 (9.44-13.6)	13.3 (10.6-16.4)	14.7 (11.4-18.5)	16.2 (12.1-21.0)	17.8 (12.6-23.7)	20.1 (13.6-27.6)	21.9 (14.4-30.7)
30-day	9.17 (7.69-10.8)	10.2 (8.58-12.0)	12.0 (10.0-14.1)	13.4 (11.2-15.9)	15.4 (12.3-18.9)	17.0 (13.2-21.1)	18.5 (13.8-23.7)	20.1 (14.3-26.6)	22.3 (15.1-30.3)	23.9 (15.7-33.2)
45-day	11.4 (9.57-13.3)	12.5 (10.5-14.6)	14.4 (12.1-16.9)	15.9 (13.3-18.8)	18.1 (14.4-21.9)	19.7 (15.4-24.4)	21.4 (15.9-27.1)	22.9 (16.3-30.1)	24.9 (17.0-33.7)	26.4 (17.4-36.4)
60-day	13.2 (11.2-15.4)	14.4 (12.2-16.8)	16.4 (13.8-19.1)	18.0 (15.0-21.1)	20.2 (16.2-24.4)	22.0 (17.2-27.0)	23.7 (17.7-29.8)	25.2 (18.0-32.9)	27.1 (18.5-36.5)	28.4 (18.8-39.0)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

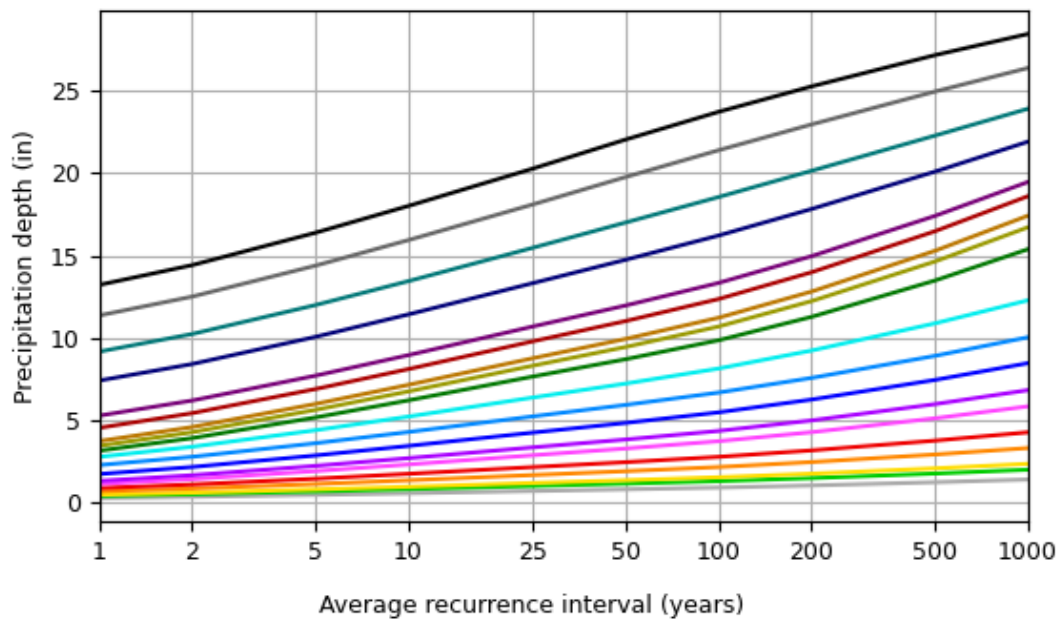
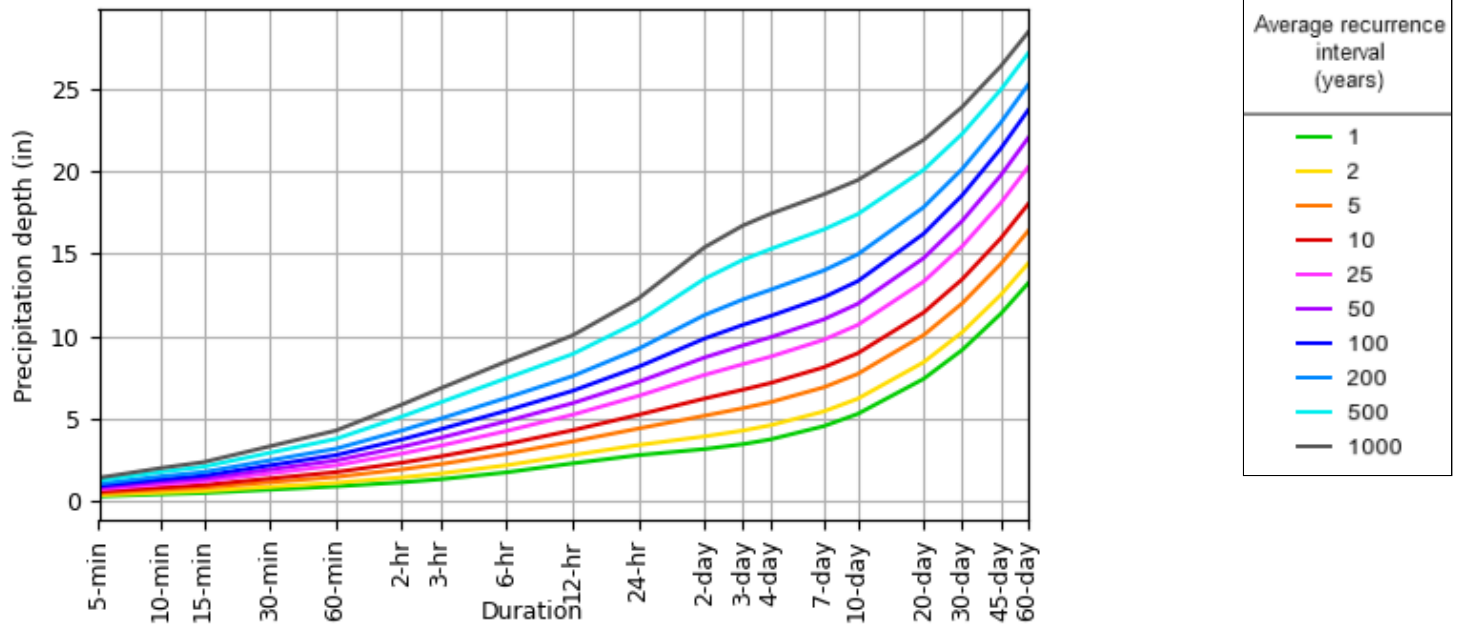
Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves

Latitude: 42.2458°, Longitude: -70.8856°



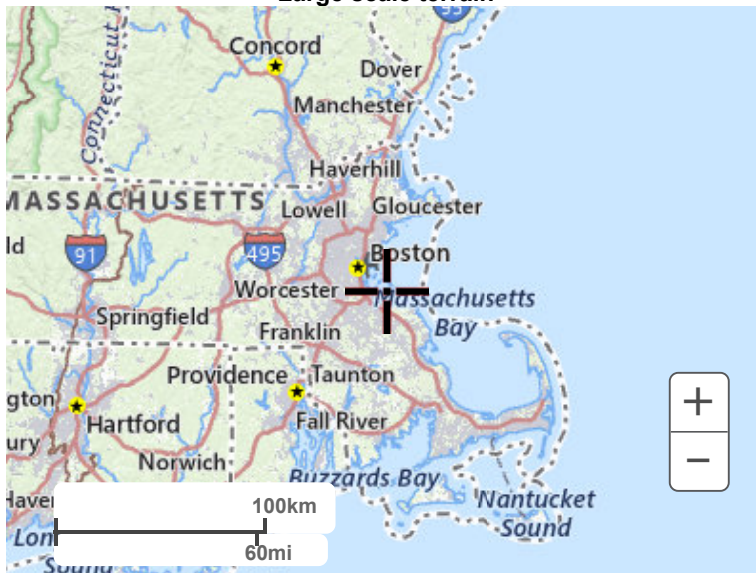
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Maps & aerials

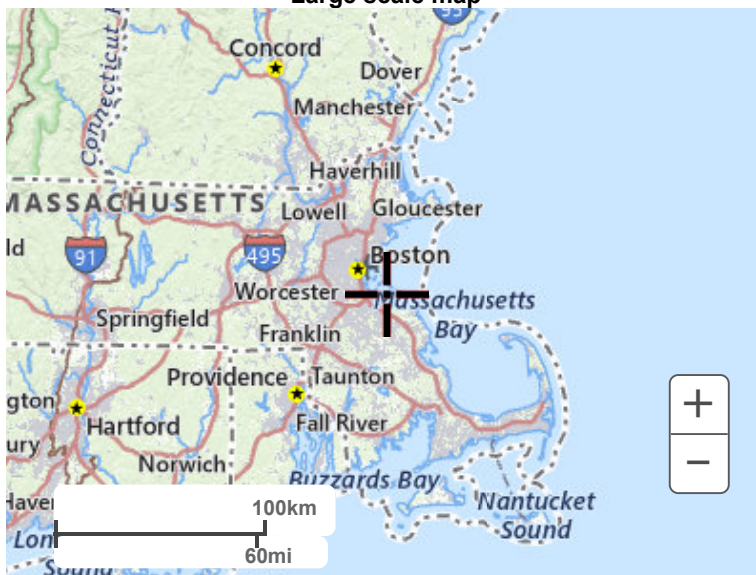
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



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1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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Stormwater Management Facility Operation and Maintenance Cost

Methodology for determining costs:

Unit costs based on review of available literature including the 1999 "Preliminary Data Summary for Urban Storm Water Management Best Practices" prepared by the United States Environmental Protection Agency and have been prorated assuming an inflation rate of 3.0%.

Catch Basins

Assume \$500.00/Structures to inspect and clean

2 Structures on site

Estimated Annual O&M Cost = 2 Structures * \$500/Basin * 4 Cleanings a Year = \$4,000

Water Quality Inlets

Assume \$1,000.00/Structures to inspect and clean

1 Structures on site

Estimated Annual O&M Cost = 2 Structures * \$1,000/Structure * 2 Cleanings a Year = \$2,000

Rain Gardens

Approximate Volume – 4,000 CF

Assume Construction Cost of \$15.00 per CF

Estimated Cost to Construct - \$60,000

O&M Cost for Constructed Wetland Assumed to be 2% of Construction Cost (See Table 6-10, Attached)

Estimated Annual O&M Cost = 2% * \$60,000 = \$1,200 Say \$1,500

Total Estimated Cost for Operation and Maintenance of Proposed Stormwater BMP'S = \$7,000/year

maintenance, others need more frequent but less costly maintenance.⁵ Accordingly, selection of appropriate structural BMPs must factor in maintenance cost (and a responsible party to carry out maintenance) to ensure the necessary long-term performance. Typical maintenance activities are included in Table 5-3.

Table 6-10. Annual Maintenance Costs

BMP	Annual Maintenance Cost (% of Construction Cost)	Source(s)
Retention Basins and Constructed Wetlands	3%-6%	Wiegand et al, 1986 Schueler, 1987 SWRPC, 1991
Detention Basins¹	<1%	Livingston et al, 1997; Brown and Schueler, 1997b
Constructed Wetlands¹	2%	Livingston et al, 1997; Brown and Schueler, 1997b
Infiltration Trench	5%-20%	Schueler, 1987 SWRPC, 1991
Infiltration Basin¹	1%-3%	Livingston et al, 1997; SWRPC, 1991
	5%-10%	Wiegand et al, 1986; Schueler, 1987; SWRPC, 1991
Sand Filters¹	11%-13%	Livingston et al, 1997; Brown and Schueler, 1997b
Swales	5%-7%	SWRPC, 1991
Bioretention	5%-7%	(Assumes the same as swales)
Filter strips	\$320/acre (maintained)	SWRPC, 1991

1. Livingston et al (1997) reported maintenance costs from the maintenance budgets of several cities, and percentages were derived from costs in other studies

⁵ Maintenance costs can also vary significantly based on a variety of site- and region-specific parameters, therefore the maintenance costs presented in Table 6-10 should be considered only as general guidelines.

Table 6-1. Typical Base Capital Construction Costs for BMPs

BMP Type	Typical Cost* (\$/cf)	Notes	Source
Retention and Detention Basins	0.50-1.00	Cost range reflects economies of scale in designing this BMP. The lowest unit cost represents approx. 150,000 cubic feet of storage, while the highest is approx. 15,000 cubic feet. Typically, dry detention basins are the least expensive design options among retention and detention practices.	Adapted from Brown and Schueler (1997b)
Constructed Wetland	0.60-1.25	Although little data are available to assess the cost of wetlands, it is assumed that they are approx. 25% more expensive (because of plant selection and sediment forebay requirements) than retention basins..	Adapted from Brown and Schueler (1997b)
Infiltration Trench	4.00	Represents typical costs for a 100-foot long trench.	Adapted from SWRPC (1991)
Infiltration Basin	1.30	Represents typical costs for a 0.25-acre infiltration basin.	Adapted from SWRPC (1991)
Sand Filter	3.00-6.00	The range in costs for sand filter construction is largely due to the different sand filter designs. Of the three most common options available, perimeter sand filters are moderate cost whereas surface sand filters and underground sand filters are the most expensive.	Adapted from Brown and Schueler (1997b)
Bioretention	5.30	Bioretention is relatively constant in cost, because it is usually designed as a constant fraction of the total drainage area.	Adapted from Brown and Schueler (1997b)
Grass Swale	0.50	Based on cost per square foot, and assuming 6 inches of storage in the filter.	Adapted from SWRPC (1991)
Filter Strip	0.00-1.30	Based on cost per square foot, and assuming 6 inches of storage in the filter strip. The lowest cost assumes that the buffer uses existing vegetation, and the highest cost assumes that sod was used to establish the filter strip.	Adapted from SWRPC (1991)

* Base year for all cost data: 1997

In some ways there is no such value as the "average" construction cost for some BMPs, because many BMPs can be designed for widely varying drainage areas. However, there is some

Appendix A

Construction Period Stormwater Pollution Prevention Plan

**CONSTRUCTION PERIOD
POLLUTION PREVENTION AND
EROSION AND SEDIMENTATION
CONTROL PLAN
HINGHAM WATERFRONT RESILIENCY PROJECT
HINGHAM, MASSACHUSETTS**

1. Narrative

The Town of Hingham is seeking to address existing and future coastal flooding concerns across the southerly shoreline of Hingham Harbor to protect critical public infrastructure and enhance public access to the Harbor and its amenities. The project team was tasked by the Town to develop a comprehensive coastal flood hazard mitigation strategy for the inner harbor area extending from west of the Hingham Bathing Beach to the P.O.W./M.I.A. Memorial Park, where the project limits connected the higher topographic elevations to both the west and east. In this manner, eliminating storm tide pathways into historic downtown from the Harbor will provide long-term coastal resiliency for this critical portion of the community.

Where possible, nature-based shore protection would provide flood protection in the form of either a contiguous dune or berm. Proposed dune construction will extend from Hingham Bathing Beach to the boat ramp. The dune will be constructed in a similar fashion to the dune fronting Hingham Bathing Beach, with constructed walkways over the dune. It is anticipated that compatible material for dune construction will be sourced from an upland site. It is also anticipated that the Boat Ramp Parking Lot will be elevated, and a vegetated berm will be established at the same elevation as the proposed dune between the Boat Ramp and Town Wharf. By using native vegetation to stabilize the dune, the project will provide aesthetically pleasing shoreline protection.

As part of this project to raise the existing parking lots to provide flood protection and long-term coastal resiliency, the Town is also proposing a number of stormwater improvements to provide some treatment and recharge of the runoff that will be generated from the paved parking area and improve existing conditions in the project vicinity. The BMP's being proposed include new deep sump catch basins, a proposed water quality inlet and a number of rain garden areas to provide for some treatment and attenuation of the runoff prior to discharge to adjacent lawn areas and eventually towards Hingham Harbor.

2. Construction Plan Pollution Prevention Measures and Operation and Maintenance Plan

Prior to the performance of any construction the contractors shall install floating booms/silt curtains around the work area. These booms will prevent the migration of any construction debris outside of the work area to downgradient and off-site receptors.

The floating booms will be inspected and maintained/repared at the beginning of each work day until all work has been completed. Debris will be removed on a regular basis.

Additionally, the contractor will also install silt fence and/or straw wattles on the landward side of the work area to protect adjacent properties from the potential of any erosion and/or sedimentation from the construction site. Finally, silt sacks will be installed in any existing catch basins along adjacent streets in close proximity to the construction site. Erosion control measures will be shown on the Construction drawings prepared by Foth.

Upon completion of the work and stabilization of all disturbed surfaces, the erosion controls will be removed and properly disposed of by the contractor.

3. Person or Entity Responsible for Plan Compliance

Foth Infrastructure and Environment, LLC
15 Creek Road
Marion, MA 02738

Upon a transfer of ownership, the future owner shall assume the responsibilities for compliance with this O&M Plan.

4. Construction Plan Pollution Prevention Measures

The previously described floating booms will be used for pollution prevention to the surrounding coastal resource areas. Additionally, silt protection shall be installed in any stormwater inlets within close proximity of the project site to minimize the potential for debris entering the stormwater management system.

5. Vegetation Planning

Any disturbed surfaces will be restored to pre-existing conditions. Areas not being covered by pavement or gravel will be loamed and seeded to establish vegetation and stabilize these areas.

6. Site Plan Erosion and Sedimentation Control Plan Drawings

The proposed site plans that have been previously prepared and submitted for the project by Foth Infrastructure and Environment for the applicant shall serve as the erosion and sedimentation control plan drawings for the project. Floating booms, silt curtains, and erosion control barriers have been specified on the plans and in the narrative.

7. Inspection and Maintenance Log Form

A sample inspection and maintenance log form is attached.

**CONSTRUCTION PERIOD POLLUTION PREVENTION AND
EROSION AND SEDIMENTATION CONTROL PLAN
HINGHAM COASTAL RESILIENCY PROJECT
HINGHAM, MASSACHUSETTS**

INSPECTION AND MAINTENANCE REPORT FORM

INSPECTOR: _____ DATE: _____

INSPECTOR'S QUALIFICATIONS:

DAYS SINCE LAST RAINFALL: _____ AMOUNT OF LAST RAINFALL ____ INCHES

STABILIZATION MEASURES

AREA	DATE SINCE LAST DISTURBED	DATE OF NEXT DISTURBANCE	STABILIZED? (YES/NO)	STABILIZED WITH	CONDITION

STABILIZATION REQUIRED:

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

STRUCTURAL CONTROLS – FLOATING BOOMS/SILT CURTAINS

AREA	ARE BOOMS IN PLACE	IS THERE EVIDENCE OF OVER-TOPPING OR DEBRIS LEAVING THE SITE?	IF YES, WHERE?

MAINTENANCE REQUIRED FOR EROSION CONTROLS:

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

STRUCTURAL CONTROLS – FIBER ROLLS/STRAW WATTLES

AREA	ARE CONTROLS IN PLACE	IS THERE EVIDENCE OF OVER-TOPPING OR DEBRIS LEAVING THE SITE?	IF YES, WHERE?

MAINTENANCE REQUIRED FOR FIBER ROLLS/STRAW WATTLES:

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

STRUCTURAL CONTROLS – STABILIZED CONSTRUCTION ENTRANCE

AREA	ARE CONTROLS IN PLACE	IS THERE EXTENSIVE SEDIMENT LEAVING THE SITE?	IF YES, WHERE?

MAINTENANCE REQUIRED FOR STABILIZED CONSTRUCTION ENTRANCE:

TO BE PERFORMED BY: _____ ON OR BEFORE: _____

CHANGES REQUIRED TO THE POLLUTION PREVENTION PLAN:

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.

SIGNATURE: _____ DATE: _____

Appendix B

Post Construction (Long-Term) Operation and Maintenance Plan

Post Construction (Long Term) Operation and Maintenance Plan

Name and address of the Owner/Applicant of Record

Town of Hingham
210 Central Street
Hingham, MA 02043

Name and address of the Contractor of Record

The contractor as not yet been chosen for this project.

Plans of Record

Refer to the Site Plans prepared by Foth Infrastructure and Environment LLC for the Town of Hingham. Refer to the Order of Conditions to be issued by the Hingham Conservation Commission for additional information regarding the operation and maintenance of the stormwater management BMP's on site.

1. The contractor shall be responsible for the proper inspection and maintenance of all stormwater management facilities until such time as the Stormwater Management System is accepted by the Owner. Thereafter the Owner shall be responsible for the proper inspection and maintenance of the stormwater facilities in accordance with this Operation and Maintenance Plan as well as the continuing conditions of the Certificate of Compliance on the property.
2. All Structural Best Management Practices (BMP's) should be inspected after every major rainfall event exceeding 1.0-inch for the first 6 months after construction to ensure proper stabilization, construction, and function.
3. Thereafter, regular BMP inspections should be conducted according to the following schedule:

<u>BMP Structure</u>	<u>Inspections per Year</u>
Deep Sump Catch Basin	4
Crushed Stone Edge Drain	2
Rain Garden	4
Water Quality Inlet	Per Manufacturer's Specifications

4. The contractor and the owner shall maintain and submit to the Conservation Commission a BMP Inspection Report following each site inspection as recommended above. The BMP

Inspection report shall identify the Date of Inspection, the name and contact number of the responsible party, specific structures inspected, specific maintenance required and observations at a minimum, inspection reports should address the following conditions:

1. Embankment Subsidence
 2. Erosion
 3. Condition of Stone Filter Berm
 4. Inlet/Outlet Conditions
 5. Sediment Accumulations
 6. Slope Stability
-
5. All removed sediments are to be properly disposed of at a location to be approved by the Board of Health. Transportation and disposal of sediments shall comply with all applicable local, state, and federal regulations.
 6. The crushed stone edge drain shall be inspected twice per year. If it is determined that the top stone above the filter fabric is silted or compromised, the top stone shall be removed, any damaged filter fabric shall be removed and replaced and clean stone shall be placed over the filter fabric.
 7. The paved parking areas shall be swept at least twice per year.
 8. The site shall be monitored to ensure proposed drainage patterns are maintained following construction. Should channel flow from runoff develop within the site that requires corrective measures, these measures shall be reviewed with the Conservation Commission prior to their implementation.
 9. The site should be inspected for trash on a regular basis. Any accumulated trash, litter, and discarded materials should be removed.
 10. No disposal of materials shall be permitted within the buffer zones or resource areas on the project site. This prohibition applies to trash, fill material, construction debris, grass clippings, collected leaves and cut branches.
 11. Any deficiencies noted during an inspection shall be reported to and corrected to the satisfaction of the project engineer and/or Conservation Commission.
 12. An Operation and Maintenance Inspection Form shall be developed and copies of the completed forms shall be submitted to the Conservation Commission in accordance with the determined schedule.

13. The Town shall either conduct the maintenance themselves or contract with a maintenance company to perform the operation and maintenance of the stormwater management system. The contact information for this company, if applicable, shall be provided to the Conservation Commission for their files.

Invasive Species Control Plan (LSCP)

The Town will monitor the landscaped areas, shoreline, and rain garden areas for invasive species pursuant to the recommendations outlined in the USACE document titled "New England District Compensatory Mitigation Guidance" document, pages 24-26 section 4.f. Invasive species. Due to the proximity of the site to coastal resource areas, the applicant has chosen a mechanical control method of removal. Invasive species will be removed by hand (pulling, mowing or excavating on-site). No chemical control will be utilized.

Special attention will be given to assure that none of the following invasive species populate the landscaped areas, shoreline, and storm water bmp's: Common Reed (*Phragmites Australis*), Purple Loosestrife (*Lythrum Salicaria*), Smooth and Common Buckthorn (*Frangula Alnus*, *Rhamnus Carthartica*), Russian and Autumn Olives (*Elaeagnus Angustifolia* and *E. Umbellata*), Multiflora Rose (*Rosa Multiflora*), Reed Canary-Grass (*Phalaris Arundinacea*), And Japanese Knotweed (*Fallopia Japonica*).

Appendix C

Long Term Pollution Prevention Plan

LONG TERM POLLUTION PREVENTION PLAN HINGHAM WATERFRONT RESILIENCY PROJECT HINGHAM, MASSACHUSETTS

1.0 Introduction

This Long-Term Pollution Prevention Plan has been prepared in accordance with the Massachusetts Stormwater Handbook for Compliance with Stormwater Standards 4-6. The responsible party for implementing this plan will be the owner of record of the subject property.

2.0 Good Housekeeping Practices/Storage Provisions

Good housekeeping practices including periodic inspections of stormwater management system components will be performed in accordance with the Stormwater Management System Operation and Maintenance Plan. It is not anticipated that any high pollutant materials would be stored on site in areas that would discharge directly to the stormwater management systems.

3.0 Routine Maintenance of Stormwater BMP's

The Stormwater BMP's including the deep sump catch basins, rain gardens, crushed stone edge drain, and proprietary water quality inlet will be operated and maintained in accordance with the Post Construction Stormwater Management System Operation and Maintenance Plan which is discussed in this Report.

4.0 Spill Prevention and Response Plans

It is anticipated that Town employees would be on site on a regular basis trained in spill prevention and response. No leaking vehicles or obsolete vehicles will be stored on site. MSDS sheets are required to be on site for the handling of any chemicals or compounds that may be associated with any of the approved uses at the site. Emergency contact numbers will be at the facility with a 24-hour contact number in the event of any spills on-site.

5.0 Landscaping Provisions

Proper maintenance of vegetated areas can prevent the pollution of stormwater runoff by controlling the source of pollutants such as suspended sediments, excess nutrients, and chemicals from landscape care products. Practices that should be followed under the regular maintenance of the vegetated landscape include:

- Inspect planted areas on a semi-annual basis and remove any litter.
- Maintain planted areas adjacent to pavement to prevent soil washout.
- Immediately clean any soil deposited on pavement.
- Re-seed bare areas: install appropriate erosion control measures when native soil is exposed, or erosion channels are forming.

- Plant alternative mixture of grass species in the event of unsuccessful establishment.
- Grass vegetation should not be cut to a height less than four inches.
- Pesticide/Herbicide Usage – No pesticides are to be used unless a single spot treatment is required for a specific control application.
- Fertilizer usage should be avoided. If deemed necessary, slow-release fertilizer should be used. Fertilizer may be used to begin the establishment of vegetation in bare or damaged areas but should not be applied on a regular basis unless necessary.

6.0 Pet Waste Management Provisions

It is not anticipated that a significant number of pets will be on site at this waterfront facility. In the event that pets are on-site, their owners will be encouraged to pick up any pet waste and dispose of it properly.

7.0 Provisions for Solid Waste Management

Dumpsters or trash receptacles may be provided on-site for the disposal of solid waste. Dumpsters shall be covered, sealed and inspected for leaks on a bi-monthly basis. These dumpsters/receptacles will be emptied on a regular basis in accordance with Board of Health regulations.

8.0 Snow Disposal Guidelines

Should significant snow fall events occur, which result in stockpiled snow impacting the operation of the Project Site, through the temporary loss of parking or limiting access in any way, the property manager may choose to have snow removed from the site. All significant snowfall events will be plowed onto the loam and seed areas of site, away from the Harbor. All snow removal operations will be done in accordance with Massachusetts DEP guidelines BRPG01-01, effective date March 8, 2001. No snow shall be dumped directly into the Harbor.

9.0 Winter Road Salt and Sand Use

The amount of salt and deicing chemicals to be used on the site shall be reduced to the minimum amount needed to provide safe pedestrian and vehicle travel. The following practices should be followed to control the amount of salt and deicing materials that come into contact with stormwater runoff:

- Devices used for spreading salt and deicing chemicals should be capable of varying the rate of application based on the site-specific conditions.
- Sand and salt shall NOT be stockpiled onsite.

10.0 Illicit Discharge Prevention

Illicit connections to the stormwater management system will be strictly prohibited. Any contractors performing work at the site will be notified of the prohibition of any illicit connections to the stormwater management system. All work done on site shall be per the approved design plans. Vehicle or equipment maintenance shall not be performed onsite.

11.0 Training for Staff

Training of personnel is essential to achieving proper operation and maintenance of the stormwater management system. Therefore, Town personnel who are responsible for operation and maintenance will be trained on the following subjects:

- Environmental laws and regulations relating to stormwater,
- The components and goals of the current Erosion and Sediment Control Plan,
- Site specific permit conditions and requirements,
- General Facility spill response procedures,
- General good housekeeping procedures, and
- General material management procedures.

Refresher training sessions will be held once a year following the completion of the Site Compliance Evaluation. Records of inspections and maintenance shall be up to date and available for review and inspection.

12.0 Emergency Contacts

The applicants of the project, the Town of Hingham, would be the emergency contacts for any implementation measures that may be required on this Long-Term Pollution Prevention Plan. It would be anticipated that emergency contact numbers would be posted throughout the site and facilities should any situations arise.

Appendix D

Illicit Discharge Compliance Statement

**ILLICIT DISCHARGE COMPLIANCE STATEMENT
HINGHAM WATERFRONT RESILIENCY PROJECT
HINGHAM, MASSACHUSETTS**

1.0 Description of Illicit Discharges

Illicit discharges are discharges to the stormwater management system that are not entirely composed of stormwater. Illicit discharges include (but are not limited to) wastewater discharges and discharges of stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease.

2.0 Illicit Discharge Prevention

The project, as designed, does not provide for any illicit connections to the proposed stormwater management system. As part of the long-term pollution prevention plan that will be on file at the City, illicit connections to the stormwater management system will be strictly prohibited. Any contractors performing work at the site will be notified of the prohibition of any illicit connections to the stormwater management system.

3.0 Training for Staff

All staff will be properly trained as required to detect any unauthorized illicit discharges to the stormwater management system and eliminate them as soon as possible. It is anticipated that the staff will be performing routine maintenance on the stormwater management system and at this time would be able to detect any unauthorized illicit discharges.

4.0 Site Map

Refer to Permitting Drawings entitled "Hingham Waterfront Resiliency Project" prepared by Sustainable Coastal Solutions, Inc. and Foth Environmental and Infrastructure for locations and information on the proposed stormwater management system associated with this project.

5.0 Certification

As the design plan shows, there are no provisions for illicit discharges to the stormwater management system being proposed. Additionally, there are no proposed connections between any stormwater and wastewater management systems. Illicit discharges will be prohibited to the new stormwater management system associated with the proposed parking and wharf improvements and Town staff will be trained to detect any unauthorized illicit discharges and to eliminate them as soon as possible.



Signed Electronically 6/16/2025

Richard R. Riccio III, P.E.