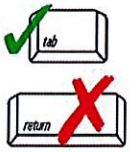
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

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 8[2]
- 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.

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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.

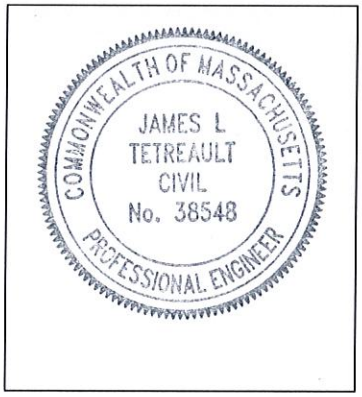
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the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



11/20/2024
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)
- ☒ 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): _____

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

☒ 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 Field[1]

☐ 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)

☒ 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: Redevelopments 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.

EXPEDITED ENGINEERING, LLC
Civil Engineers & Erosion Control Specialists
118 Turnpike Road, Suite 300, Southborough, Massachusetts 01772
Telephone (508) 399-9993 james@expeditedengineers.com

Stormwater Management Standard #1
Computations to show that discharges will not cause scour or erosion

There will be multiple point source discharges created by the proposed development. The main one is the discharge from the infiltration basin on the east side of the main drive at station 5+50. In the 100 year storm event, the peak discharge from that structure will be 3.73 cfs from 6" and 8" hdpe pipes with the discharge from the higher pipe having a maximum velocity of 11.36 fps.

Using table 11-12.1 of the Connecticut DOT's drainage manual we see that for a 12 inch pipe (approximately equivalent of our two pipes) with less than 5 cfs discharge and outlet velocity less than 14 fps, a riprap apron 10 feet long is prescribed. The plans show a 10 foot long and 10 foot wide riprap apron at this outlet.

Another discharge is from the CDS stormwater filtration unit at station 3+25. This structure will discharge 3.06 cfs in the 100 year storm and the velocity of discharge will be much less than 14 fps. So, from the same chart we are, again, prescribed a 10 foot long riprap apron and propose a 10 foot long, 10 foot wide riprap apron here also.

Finally, there will be discharge from area drains picking up runoff behind units 12-17 that will release captured stormwater east of the main infiltration structure. The area from which runoff will be collected is smaller still, only 10,951 square feet but we will have a10 foot long and wide riprap apron at this discharge as well.

EXPEDITED ENGINEERING, LLC
Civil Engineers & Erosion Control Specialists
118 Turnpike Road, Suite 300, Southborough, Massachusetts 01772
Telephone (508) 399-9993 james@expeditedengineers.com

Stormwater Management Standard #2
Peak Rate Attenuation

Runoff from 250 Turnpike Road flows to two properties, Parkerville Road and Turnpike Road (Route 9).

We will infiltrate roof runoff from the proposed contractor's yard building on Lot A, we will infiltrate runoff from the proposed main driveway to the units on Lot B and we will infiltrate roof runoff from several of the proposed townhouse units on Lot B.

By these means, we will decrease the peak flow of runoff from the site to both design points.

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Civil Engineers & Erosion Control Specialists
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Stormwater Management Standard #3
44% removal of TSS before infiltration

There will be one infiltration structure receiving pavement runoff on the east side of the access driveway at station 5+50. Stormwater runoff discharged to that structure will pass through deep sump catch basins and a CDS stormwater filtration unit which, together will exceed 44% removal of TSS before infiltration. Other infiltration structures on site will receive clean roof runoff.

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Stormwater Management Standard #3
65% of impervious surfaces being recharged

A total of 73,104 square feet of impervious surface among driveways, roofs, walks and other surfaces will be created on site.

Stormwater runoff from most of the access drive as well as the backs of units 9, 10, 11, 22, 23, 24, 27, 28 and 29 as well as all of units 20 and 21 and the front of unit 26 will be directed to infiltration structures. All told, this will be 55,569 square feet or 76.0% of the total impervious surface on site.

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Stormwater Management Standard #3
Required Recharge Volume calculation

There will be a total of 73,104 square feet of impervious surface area on Lot B in the postdevelopment condition. Of this, 13,166 s.f. will lie over what are officially mapped as Canton series hydrologic soil group "B" soils and 59,938 s.f. will lie over what are officially mapped as Woodbridge series hydrologic soil group "C" soils.

So, the required recharge volume is:
13,166 s.f. x (1/12 foot/inch) x (0.35 inches) = 384 cubic feet
59,938 s.f. x (1/12 foot/inch) x (0.25 inches) = 1,249 cubic feet

1,633 cubic feet is the required recharge volume.

Summary for Pond 24P: INFILTRATION STRUCTURE UNDER PARKING

Inflow Area = 1.748 ac, 63.70% Impervious, Inflow Depth > 1.22" for Custom event
Inflow = 1.80 cfs @ 12.24 hrs, Volume= 0.178 af
Outflow = 0.19 cfs @ 13.91 hrs, Volume= 0.178 af, Atten= 90%, Lag= 99.9 min
Discarded = 0.18 cfs @ 11.80 hrs, Volume= 0.178 af
Primary = 0.00 cfs @ 13.91 hrs, Volume= 0.000 af
Routed to Reach 26R : FLOW PATH FROM OUTLET TO PARKERVILLE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.04 hrs
Peak Elev= 322.03' @ 13.91 hrs Surf.Area= 3,284 sf Storage= 3,348 cf

Plug-Flow detention time= 174.1 min calculated for 0.178 af (100% of inflow)
Center-of-Mass det. time= 172.5 min (1,012.3 - 839.8)

Volume	Invert	Avail.Storage	Storage Description
#1	320.50'	3,836 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 26,272 cf Overall - 16,683 cf Embedded = 9,589 cf x 40.0% Voids
#2	321.00'	12,422 cf	**retain_it retain_it 5.0'** x 46 Inside #1 Inside= 84.0"W x 60.0"H => 36.41 sf x 8.00'L = 291.3 cf Outside= 96.0"W x 68.0"H => 45.33 sf x 8.00'L = 362.7 cf 1 Rows adjusted for 976.7 cf perimeter wall
		16,258 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
320.50	3,284	0	0
328.50	3,284	26,272	26,272

Device	Routing	Invert	Outlet Devices
#1	Discarded	320.50'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	326.70'	**8.0" Round Culvert** L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 326.70' / 319.00' S= 0.4278 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#3	Primary	322.00'	**6.0" Round Culvert** L= 18.0' Ke= 0.500 Inlet / Outlet Invert= 322.00' / 320.00' S= 0.1111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.18 cfs @ 11.80 hrs HW=320.59' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.18 cfs)

Primary OutFlow Max=0.00 cfs @ 13.91 hrs HW=322.03' (Free Discharge)
├**2=Culvert** (Controls 0.00 cfs)
└**3=Culvert** (Inlet Controls 0.00 cfs @ 0.56 fps)

EXPEDITED ENGINEERING, LLC
Civil Engineers & Erosion Control Specialists
118 Turnpike Road, Suite 300, Southborough, Massachusetts 01772
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Stormwater Management Standard #3
Sizing the Recharge BMP

The required recharge volume will be 1,633 cubic feet. We can see from the Static Method that the proposed infiltration structures are easily adequate to handle this volume. Even the smallest infiltration structures proposed, behind units 9-11 and 22-24 have capacities of nearly have that, 754 cubic feet. The infiltration structure off the east side of the main drive at station 5+50 has a capacity of 16,258 cubic feet or nearly 10 times the required recharge volume. And if we use a storm of 2.4 inches, there is no piped outflow and we can see that storage within that structure was more than double the required recharge volume at 3,348 cubic feet.

72 Hour Drawdown

To confirm that the infiltration structure has been designed with adequate bottom area we confirm that it will completely drain within 72 hours. Because we are also using this structure for detention, we will confirm the 72 hour drawdown even if the whole capacity of the structure is utilized. From the Pond 24P in the Drainage Report, the structure's capacity is 16,258 cubic feet. And the infiltration rate used is that associated with the loamy sand soils observed at DH 22.

The formula to confirm this is:

Time = Rv/(K)(Bottom Area)
= (16,258 cubic feet)/((2.41 inches/hour)(3,284 square feet))
= (16,258 cubic feet)/((2.41 inches/hour)(1/12 feet per inch)(3,284 square feet))
= (16,258)/(660)
= 25 hours

This is much less than the maximum 72 hour drawdown time and therefore adequate.

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Stormwater Management Standard #4
Water Quality

Per Town stormwater regulations, the water quality volume this development on Lot B is based on 1 inch depth.

So, water quality volume = (1/12 feet per inch) * (73,104 s.f. impervious surface)
= 6,092 cubic feet.

The infiltration structure receiving runoff from most of the access drive and modeled as pond 24P in the drainage calculations has a storage capacity of 16,258 cubic feet, well in excess of this volume. In a 2.4 inch storm, it accepts a flow discharged to it of 0.178 acre-feet or 7,754 cubic feet with no problem, all of it being infiltrated(See the printout attached to a previous standard). There will be no piped discharge in that storm. This proves the adequacy of the proposed infiltration structure to handle that volume.

As to the removal of total suspended solids(TSS), most of the pavement runoff captured by the new drainage system will pass through deep sump catch basins and then a CDS stormwater filtration unit before being directed to the main infiltration structure.

The runoff captured at the entrance to Lot B will pass through deep sump catch basins and then a CDS stormwater filtration unit before being discharged. Both of these treatment trains will achieve greater than 80% TSS removal.

Attached are the TSS calculation worksheets and a copy of testing data for the CDS stormwater filtration unit.

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Stormwater Management Standard #5
Land Uses with Higher Potential Pollutant Loads

The proposed residential use will not be classified as a use with higher potential pollutant loading.

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Stormwater Management Standard #6
Critical Areas

This project will include discharges to the outstanding resource water of the reservoir watershed. The Applicant will meet DEP's Stormwater Management Standards with the proposed drainage system.

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Stormwater Management Standard #7
Redevelopment

The proposed development will not constitute a redevelopment project.

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Stormwater Management Standard #8
Construction Period Controls

Erosion and sediment control measures are shown on sheet ESC1 & ESC2 of the Site Plans and a construction sequence is outlined on detail sheet D4 as well as descriptions of the proposed application of various bmp's. A long term operation and maintenance plan is also included in this filing.

CONSTRUCTION PERIOD (SHORT TERM)
STORMWATER OPERATION & MAINTENANCE PROGRAM
November 20, 2024

250 Turnpike Road, Southborough, Massachusetts

Currently Owned by:
FD 250 Turnpike, LLC

During Construction the contractor is responsible for the following inspection and maintenance. Inspections and resulting maintenance tasks shall be recorded in an Inspection Log that is kept on site and available for inspection by Town, State, and Federal officials.

Contractor Information:

Contractor/Operator: TBD

Address: _____

Contact Name and Phone Number: Chris Champagne (508)523-4003

1. Water tightness of moved or replace catch basin sumps shall be tested and assured after installation.

2. Nearby catch basins on Lot A shall be protected from sedimentation through haybale filter dikes, filter fabric sacks, or other approved methods. At all times, sedimentation of the infiltration system shall be prohibited and prevented.

3. Catch basin grates shall be inspected monthly. Debris, sand, and accumulated trash shall be removed from inlets.

4. Catch basins shall be inspected bi-weekly and shall be cleaned out as necessary, when the siltsacks or sumps have accumulated one half (1/2) the original depth. If excessive oil, gasoline, or sediment is present, remove all liquid and solids from the sumps. If catch basins are regularly observed to have a sheen of petroleum product, install oil adsorbent materials that float on the surface Dispose of waste properly. Catch basin sumps shall be cleaned out quarterly. Catch basin traps shall be inspected after each cleaning, and any damage shall be repaired.

5. The CDS units and the infiltration structures area shall be inspected at least monthly and shall be cleaned out as necessary. Cleanout shall be recorded in the maintenance log. Dispose of waste properly.

6. The areas where infiltration structures are to be installed must be kept free of sediment and shall not be used as a temporary settling area or for discharge of excavation dewatering.

7. The interior of the infiltration structures shall be observed through inspection ports monthly for any sign of sediment laden water, backup, or contamination. The Engineer shall be notified if any of these conditions are observed.

8. Sediment control barriers shall be inspected at least weekly. Any defect shall be repaired as soon as possible.

9. If a temporary settling basin is being used on site, it shall be inspected at least weekly for the integrity of its side slopes and outlet and whether it needs to be dredged out to restore capacity. Any defect shall be repaired as soon as possible.

10. The site exit mat shall be inspected at least weekly and refreshed as necessary.

11. If soil is stockpiled on site, the stockpile shall be surrounded with silt fencing at least five feet off the base of the stockpile. The fencing and stockpile shall be inspected at least weekly for any defect in the former or instability in the latter. Either shall be repaired as soon as possible.

12. All areas given temporary stabilization shall be inspected at least weekly for any signs of erosion or insufficient or improper temporary cover. Any deficiencies shall be repaired as soon as possible.

13. All areas given permanent stabilization before work is otherwise completed shall be inspected at least weekly including slopes steeper than 3:1 with geotextile fabric used for stabilization. And defects shall be repaired as soon as possible.

13. Stone lined drainage swales and riprap splash pads shall be inspected at least weekly for any signs of instability or erosion and any defects discovered shall be repaired as soon as possible.

14. Retaining walls on site shall be inspected at least weekly for any signs of instability or loss of batter. Any defects discovered shall be repaired as soon as possible.

15. The owner's designee shall inspect the systems, and the contractor shall clean all components as necessary (e.g. by removing the siltsacks, sediment, and sand) in order to turn over to the owner a clean and functioning system.

---------- Owner, FD 250 Turnpike, LLC

POST CONSTRUCTION (LONG TERM)
STORMWATER OPERATION & MAINTENANCE PROGRAM
November 20, 2024

250 Turnpike Road, Southborough, Massachusetts

Owner and Applicant:

FD 250 Turnpike, LLC
118 Turnpike Road, Suite 300, Southborough, MA 01772
Contact: Chris Champagne Phone: 508-523-4003

Upon completion of the project, the Lot B drainage system will be maintained by the owner. Once the construction site has been fully stabilized, the owner should establish a schedule and keep a log of inspection and maintenance activities for the measures described below:

Landscape Maintenance:

Vegetated areas in the landscape will reduce erosion, encourage infiltration of rainwater, and keep stormwater clean. It is important to maintain the vegetated areas of the site.

1. Proper mowing is one of the most important ways to maintain a healthy lawn. Mow only when the grass is dry to get a clean cut and minimize the spread of disease. Mow grass to a height of 3". Mow frequently, cutting no more than 1/3 of the height of the grass at a time. Sharpen your mower blades after every 10 hours of mowing.

2. Grass clippings contain high amounts of nitrogen, a key ingredient in fertilizer. Make all attempts to use your grass clippings by leaving them on your lawn. If the grass clippings are not used, do not dispose of them near any wetlands and or water bodies and designate a place to compost them in an upland area.

3. If your lawn areas and plant material demand fertilizer then use only low phosphorous fertilizers. Fertilize in the fall, but in coordination with weather patterns.

4. The best defense against pests within the grass is to use an Integrated Pest Management system which consists of beneficial insects (lady bugs, spiders, certain nemetodes and bacteria.)

5. Minimize watering the lawn areas. If needed water in the early morning and water deeply and infrequently.

6. If needed, the trees and shrubs shall be pruned but at a minimum of once a year.

Impervious Surface Maintenance:

Particles that collect on paved surfaces can contain materials that can inhibit water quality. Sweeping sand and debris from the parking lot is a good housekeeping measure that will remove gross pollutants, and should be undertaken a minimum of twice per year. DEP

recommends frequent sweeping of parking lots in high traffic areas as an integral part of stormwater management.

1. The main driveway and parking areas shall be swept at least twice a year.

2. Accumulated leaves and grass clippings shall also be removed from the impervious surfaces at a minimum of twice a year

3. In the winter months, CaCl application shall be used sparingly and sand shall be used sparingly but in sufficient quantity to maintain the driving and parking area surfaces in a safe condition.

Catch Basins:

Catch basins with oil traps and deep sumps are the first line of defense to prevent pollutants from reaching water resources. Regular maintenance and cleaning of the catch basins is key to protecting water quality and can reduce the more expensive maintenance of other devices in the treatment train.

1. If excessive oil, gasoline, or sediment is present, remove all liquid and solids from the sumps. Absorbent products are available to attach to the interior of catch basins in order to absorb floatable petroleum products from sumps. If floatables are noted on a regular basis, these measures should be added to the catch basin sumps. Dispose of waste properly.

2. Catch basin grates shall be inspected on a monthly basis. Debris, sand, vegetation, and accumulated trash shall be removed and disposed of properly.

3. Catch Basin outlet controls and sumps shall be inspected on a monthly basis for the first year and quarterly thereafter, and will be cleaned upon the observance of spill of observable petroleum products, such as oil, coolant, or fuel. Dispose of waste properly.

4. If a spill of any harmful substance occurs on the surface of the parking area, the catch basin shall be protected against contamination by the use of a dike or absorbent material. Adequate quantities of absorbent material shall be stored in an accessible location. An emergency spill kit containing absorbent material should be kept in an area accessible to the parking lot.

5. In any case Catch Basin sumps shall be cleaned of sand and liquid at least twice per year and the waste disposed of properly.

6. Catch basin traps shall be inspected after each cleaning, and any damaged shall be repaired.

Hydrodynamic Separators (CDS Unit):

The CDS units remove floatable trash, petroleum products, and sediments from the stormwater in order to prevent them from reaching the water supply. They must be inspected and cleaned periodically to be sure they are operating properly.

1. The separator shall be inspected at a minimum of two times a year (i.e. spring and fall).

2. The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions to the inlet and or separation screen.

3. If during the inspection, it is noticed that any of the internal components are damaged or missing, contact CONTECH 1-800-338-2211.

4. The inspection should also identify evidence of vector infestation (mosquito larvae, for example) and accumulation of hydrocarbons, trash, and sediment in the system and the screen.

5. The screens shall be power washed and the unit's internal components cleaned when the level of sediment reached 75% of capacity in the isolated sumps and/or when an appreciable level of hydrocarbons and trash has accumulated.

6. A vactor truck is recommended for cleanout of the CDS units. Disposal of the material from the CDS units should be in accordance with the local municipality's requirements.

7. Clean the treatment units during dry weather conditions when no flow is entering the system. Remove debris, sand, and accumulated trash from the units' interiors and remove fines from the screens.

8. The CDS Units are confined spaces and only properly trained personnel possessing the proper training and possess the necessary safety equipment should enter the units. Confined spaces can contain odorless, colorless poison gas.

In Ground Detention/Infiltration System

The underground stone and chambers at multiple locations throughout the site receiving piped stormwater runoff constitute infiltration systems. They keep the peak rate of flow of runoff from this project from exceeding the peak rate of flow of runoff to abutting properties in the predevelopment condition. They must be inspected to make sure that debris has not entered these structures, that captured runoff is adequately infiltrating and that there has been no unusual settling that threatens the integrity of the systems.

1. The in ground detention systems shall be inspected twice per year at the inspection ports. Look for debris, hydrocarbons or signs that runoff is not infiltrating down from the stone layers.

2. The inspection should also include looking for any signs of damage to or deformation of the chambers or their upheaval or being excessively affected by freeze thaw action. If water, trash, sediment or other material has visibly entered into the system, report this to the owner or property manager so that maintenance can be scheduled.
3. The surface area around the structures should be inspected for any signs of water breakout, erosion, settling or slumping indicating that runoff from within the system is not infiltrating but pressing through nearby slopes. If any significant defect is observed it should be reported to the owner or property manager immediately.
4. If, during the inspection, it is noticed that any components of the in ground detention systems are damaged or missing, contact the owner, property manager and the manufacturer.

There will be no on site storage of waste products. Waste generated on site will be normal residential waste and will be disposed of in dumpsters.

The management company will minimize the use of sodium based de-icing agents. The application of sand in winter will be also be minimized.

_____ Owner, FD 250 Turnpike, LLC

EXPEDITED ENGINEERING, LLC
Civil Engineers & Erosion Control Specialists
118 Turnpike Road, Suite 300, Southborough, Massachusetts 01772
Telephone (508) 399-9993 james@expeditedengineers.com

Stormwater Management Standard #9
Construction Period Controls

A post construction Operation and Maintenance Plan is included in this filing.

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Stormwater Management Standard #10
Prevention of illicit discharges

The users of this site will be renting the townhouse units. Their leases will include clauses prohibiting illicit discharges. In addition, an illicit discharge statement is attached.

ILLICIT DISCHARGE COMPLIANCE STATEMENT
250 Turnpike Road, Southborough, MA

Applicant: FD 250 Turnpike, LLC
Engineer: Expedited Engineering, LLC

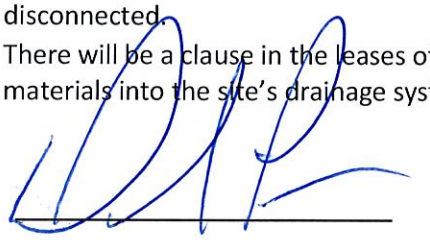
This statement is provided in accordance with the provisions of the Massachusetts Stormwater Management Standard 10 and of the Massachusetts Stormwater Management Handbook.

Expedited Engineering, LLC, has prepared a design on behalf of the applicant for the construction of 32 townhouse units on a lot to have its boundaries revised at the subject property in Southborough, MA. The project includes a new septic system and drainage system. Stormwater will be captured by the new drainage system, and total suspended solids removed by stormwater filtration units before being directed to an infiltration structure. Discharge from the infiltration structure will be directed to a riprap splash pad.

Access to the stormwater management system is limited because most of the system routing stormwater to the ponds will be subsurface and not generally accessible. Access to underground chambers will only occur during routine inspection and cleanings. There shall be no illicit discharges into the infiltration chambers.

Note the following:

- All stormwater management systems contain no connection to the site's wastewater system or to any non-stormwater collection system.
- The facility's Operations & Maintenance Manual is designed to prevent any discharge of non-stormwater to the drainage system.
- Any illicit discharges identified during or after construction will be immediately disconnected.
- There will be a clause in the leases of future lessees prohibiting discharge of any illicit materials into the site's drainage system.

Signed: 

Date:
November , 2024

Soil Map—Worcester County, Massachusetts, Northeastern Part

Map Scale: 1:4,210 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

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

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 1:20,000.

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: Worcester County, Massachusetts, Northeastern Part
Survey Area Data: Version 16, Sep 3, 2021

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

Date(s) aerial images were photographed: Jul 28, 2019—Aug 15, 2019

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
70A	Ridgebury fine sandy loam, 0 to 3 percent slopes	3.2	3.8%
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	0.1	0.1%
102C	Chatfield-Hollis-Rock outcrop complex, 0 to 15 percent slopes	6.0	7.3%
102D	Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes	1.6	2.0%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	1.7	2.1%
310B	Woodbridge fine sandy loam, 3 to 8 percent slopes	16.2	19.5%
311B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	9.2	11.1%
420B	Canton fine sandy loam, 3 to 8 percent slopes	13.9	16.7%
420C	Canton fine sandy loam, 8 to 15 percent slopes	22.2	26.7%
422B	Canton fine sandy loam, 0 to 8 percent slopes, extremely stony	6.7	8.1%
422C	Canton fine sandy loam, 8 to 15 percent slopes, extremely stony	2.3	2.7%
Totals for Area of Interest		**83.1**	**100.0%**