Ruthanne Fuller
Mayor

City of Newton, Massachusetts
Department of Planning and Development
1000 Commonwealth Avenue Newton, Massachusetts 02459

Telephone
(617) 796-1120
Telefax
(617) 796-1086
www.newtonma.gov

Barney S. Heath
Director

Conservation Commission
Notice of Intent (NOI) Application Coversheet/Checklist

Date	4/7/2025

Fill in all white cells completely

Parcel Address Sec/Block/Lot Book & Page	 20 and 30 Rogers Street 62001 001 and 62001 002 49418 163	**Applicant** name Address Email Phone	Newton Parks, Recreation, and Culture (Luis Perez Demorizi) 246 Dudley Street, Newton, MA 02459 lpdemorizi@newtonma.gov 617-796-1500
Owner name Address Email Phone	City of Newton 1000 Commonwealth Avenue Newton, MA 02459 lpdemorizi@newtonma.gov 617-796-1500	**Representative** Address Email Phone	CDM Smith Inc. (Magdalena Lofstedt) 75 State Street, Suite 701 Boston, MA 02109 lofstedtmh@cdmsmith.com 617-452-6597
Legal Ad Payor	Please identify which party will pay for the Legal Ad.		Newton Parks, Recreation, and Culture (Luis Perez Demorizi)

Wetland type		**sf/cf affected**		**Relevant Perf. Stds**	**310 CMR 10.____**
Wetland type		**sf/cf affected**		**Relevant Perf. Stds**	**310 CMR 10.____**
Wetland type		**sf/cf affected**		**Relevant Perf. Stds**	**310 CMR 10.____**

Components of a Complete NOI Application

State NOI Application Form 3	☐ NOI (DEP Form 3)
Fees • Fee Transmittal form • City portion of state filing fee: $ _____ • City's separate filing fee: $ 50	☐ Yes ☐ No ☒ Not Applicable ☐ Yes ☐ No ☒ Not Applicable ☐ Yes ☐ No ☒ Not Applicable
Engineered Plans (11x 17 if legible) with **Existing and Proposed Conditions** for: • Lot lines, owner info • All wetland lines • Topography and datum • North arrow • All structures and hardscape • Stormwater mgt. features • Tree sizes and species • Lawn line • Limit-of-Work line • Erosion controls • Snow storage areas • Exterior lighting	Title(s): Crystal Lake Improvements Project Date: April 2025 Stamped by: Michael Dodson
Abutters • Certified abutters list (within 100') • Newton's Abutter notification form • Affidavit & proof	☒ Yes ☐ No ☒ Yes ☐ No Due prior to hearing
Other Attachments	
• Project Narrative	☒ Yes ☐ No
• Locus map	☒ Yes ☐ No
• Wetland delineation (backup material)	☒ Yes ☐ No
• Proof that all performance standards will be met	☐ Yes ☐ No ☒ Not Applicable
• Planting Plan	☐ Yes ☐ No ☒ Not Applicable
• Floodplain analysis	☐ Yes ☐ No ☒ Not Applicable
• Stormwater analysis	☒ Yes ☐ No ☐ Not Applicable
• Riverfront Area Alternatives Analysis	☐ Yes ☐ No ☒ Not Applicable
• Restoration or mitigation summary	☐ Yes ☐ No ☒ Not Applicable
• Phasing/Sequencing plan, O&M plan, etc.	☐ Yes ☐ No ☒ Not Applicable

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 3 - Notice of Intent
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:
eDEP Transaction #:1882986
City/Town:NEWTON

A.General Information

1. Project Location:

a. Street Address	20 ROGERS STREET		
b. City/Town	NEWTON	c. Zip Code	02459
d. Latitude	42.32537N	e. Longitude	71.20171W
f. Map/Plat #	62001	g.Parcel/Lot #	0002

2. Applicant:

☐ Individual ☑ Organization

a. First Name	LUIS	b.Last Name	PEREZ DEMORIZI		
c. Organization	NEWTON PARKS, RECREATION & CULTURE				
d. Mailing Address	246 DUDLEY STREET				
e. City/Town	NEWTON	f. State	MA	g. Zip Code	02459
h. Phone Number	617-796-1500	i. Fax		j. Email	lpdemorizi@newtonma.gov

3.Property Owner:

☐ more than one owner

a. First Name		b. Last Name			
c. Organization	CITY OF NEWTON				
d. Mailing Address	1000 COMMONWEALTH AVENUE				
e. City/Town	NEWTON	f.State	MA	g. Zip Code	02459
h. Phone Number	617-796-1500	i. Fax		j.Email	lpdemorizi@newtonma.gov

4.Representative:

a. First Name	MAGDALENA	b. Last Name	LOFSTEDT		
c. Organization	CDM SMITH INC.				
d. Mailing Address	75 STATE STREET, SUITE 701				
e. City/Town	BOSTON	f. State	MA	g. Zip Code	02109
h.Phone Number	617-452-6597	i.Fax		j.Email	lofstedtmh@cdmsmith.com

5.Total WPA Fee Paid (Automatically inserted from NOI Wetland Fee Transmittal Form):

a.Total Fee Paid	b.State Fee Paid	c.City/Town Fee Paid

6.General Project Description:

THE CRYSTAL LAKE IMPROVEMENTS PROJECT CONSISTS OF ADDRESSING THE STORMWATER RUNOFF FROM THE ACCESS DRIVEWAY WHICH IS CAUSING EROSION ON CRYSTAL BEACH. UNDER EXISTING CONDITIONS, A CATCH BASIN LOCATED IN THE NORTHEAST CORNER OF THE PARKING LOT AND A FOUR-INCH-WIDE TRENCH DRAIN (ACO K100S MODEL) LOCATED IN THE MIDDLE OF THE ACCESS DRIVEWAY COLLECT STORMWATER RUNOFF FROM THE PARKING LOT AND DIRECTS IT TO AN EXISTING SUBSURFACE INFILTRATION SYSTEM IN THE OPEN LAWN AREA. TO ADDRESS THE EROSION THAT IS OCCURRING ON CRYSTAL BEACH, A SUBSURFACE INFILTRATION SYSTEM WILL BE CONSTRUCTED DOWNSTREAM OF THE EXISTING TRENCH DRAIN. THE EXISTING TRENCH DRAIN WILL BE REMOVED AND REPLACED WITH A 12-INCH-WIDE TRENCH DRAIN, ACO KLASSIKDRAIN KS300, ALLOWING THE SYSTEM TO MORE EASILY CAPTURE STORMWATER RUNOFF. THIS SYSTEM WILL CONSIST OF A 49-FOOT-LONG BY 14.25-FOOT-WIDE

a. ☑ Yes, Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:

1. ☐ Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol.2, Chapter 3)
2. ☑ A portion of the site constitutes redevelopment
3. ☐ Proprietary BMPs are included in the Stormwater Management System

b. ☐ No, Explain why the project is exempt:

1. ☐ Single Family Home
2. ☐ Emergency Road Repair
3. ☐ Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department by regular mail delivery.

1. USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the ☑ Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)
2. Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland ☑ [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.
3. Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s). ☐ Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.
4. List the titles and dates for all plans and other materials submitted with this NOI. ☑

a. Plan Title:	b. Plan Prepared By:	c. Plan Signed/Stamped By:	c. Revised Final Date:	e. Scale:
COVER SHEET, EX-1: EXISTING CONDITIONS PLAN	S. LANDGREN/M. DODSON		APRIL 2025	
SHEET L-1: SITE PREPARATION AND EROSION AND SEDIMENTATION CONTROL PLAN	S. LANDGREN/M. DODSON		APRIL 2025	
SHEET L-2: SITE IMPROVEMENTS PLAN	S. LANDGREN/M. DODSON		APRIL 2025	
SHEET D-1: SITE CIVIL DETAILS	S. LANDGREN/M. DODSON		APRIL 2025	

5. If there is more than one property owner, please attach a list of these property owners not listed on this form. ☐
6. Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.

Attachment A
Project Narrative

1.0 Introduction

The City of Newton, Parks, Recreation, and Culture proposes the following improvements to the Crystal Lake Park and Beach:

- Construct a subsurface infiltration system to address erosion.
- Install natural stones at the base of the existing stone wall in various locations to improve the wall's stability.
- Remove bituminous concrete covered by sand in front of the bath house.
- Install boulders and granite curbing to transition from the access road to the beach area, and
- Replenish sand to the beach.

This Notice of Intent (NOI) is being filed because the proposed work will alter the 25-ft NVB and 100-foot Buffer Zone to Inland Bank.

The following sections describe existing on-site wetland conditions, work proposed adjacent to wetland resource areas, compliance with performance standards, and proposed measures to mitigate impacts.

2.0 Existing Conditions

Crystal Lake Park and Beach is located on two parcels identified as 20 and 30 Rogers Street, see Figure 1 – Locus Map. A CDM Smith Wetland Scientists delineated the wetland resource areas in the project area on December 19, 2024. Existing field delineated wetland resource boundaries were evaluated for conformance with the Massachusetts Wetlands Protection Act (MGL c.131, s.40) (the Act) and Regulations (310 CMR 10.00) and the U.S. Army Corps of Engineers 1987 Wetlands Delineation Manual (Environmental Laboratory, 1987), and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, North central and Northeast Region (January 2012).

Inland Bank (Bank) is defined as:

> *"a Bank is the portion of the land surface which normally abuts and confines a water body. It occurs between a water body and a vegetated bordering wetland and adjacent floodplain, or, in the absence of these, it occurs between a water body and an upland."*
>
> *…The upper boundary of a Bank is the first observable break in the slope or the mean annual flood level, whichever is lower. The lower boundary of a Bank is the mean annual low flow level." [310 CMR 10.54(2)]*

Top of Bank along Crystal Lak was demarcated in the field by TOB flags 1-1 through 1-12End and based on the mean annual flood level.

The wetland flags, 100-ft Buffer Zone, and the 25-foot NVB are depicted on the project plans in Attachment E.

3.0 Proposed Work

Proposed work is described in detail in the Stormwater Report included as Attachment D.

4.0 Mitigation Measures

Construction at the site will result in alterations to the 25-ft NVB and 100-foot Buffer Zone. No adverse impacts to wetland resource areas are anticipated to occur as a result of this project, on the contrary there will be a reduction of impervious area.

The following sections outline the measures to mitigate construction period and long-term impacts.

4.1 Construction Period

Sedimentation / Erosion Control

Controlling erosion and transport of sediment to downgradient wetland resources requires development of site-specific uses of best management practices (BMPs), both structural controls as well as proper management of construction activities.

- Sedimentation barriers (e.g., compost logs installed per industry standards) will be installed at the downgradient limits of work prior to the commencement of work to prevent the transport of sediment to Crystal Lake. These barriers will be inspected weekly and after all storm events ½-inch or greater and repaired as needed. These barriers will remain in place until all disturbed soils are stabilized.
- Additional BMPs that will be utilized to control the transport of sediment from the work site include street sweeping of paved areas and roadways.
- Periodic inspections will be made by the applicant to ensure compliance with the permit conditions.
- The compost log barrier will not be removed until the site work has been completed. Work will proceed as rapidly as possible, limiting the exposure time of disturbed soils to wind and precipitation.

Spill Control Measures

- Equipment storage and refueling area will only be allowed outside of the 100-foot Buffer Zone.
- Spill containment equipment (e.g., oil absorbent pads, oil absorbent materials, containment booms, shovels, etc.) will be stored on site in an easily accessible manner for use in the clean-up of accidental releases of fuel or other hazardous materials. Should there be an accidental

release the proper authorities will be notified in accordance with all applicable federal, state, and local laws.

- To minimize the possibility of leakage of hydraulic fluid, all hydraulic lines on all construction equipment and vehicles will be inspected at the end of each workday. If any excessive wear or leakage is observed, the line will be repaired prior to further use. In addition, a supply of oil absorbent materials (i.e., pads, "speedy dry," and/or booms) will be maintained with the equipment at the work area for immediate deployment in the event of an accidental release of fuel, hydraulic fluid, oil, etc.
- Any oil, hydraulic fluid, or other hazardous materials will be stored in original containers; fuels will be stored in tightly sealed containers which are clearly marked; and all such materials will be stored under a roof or in a covered enclosure.

5.0 Compliance with the Performance Standards

Work proposed herein and shown on the attached project plans (see Attachment E) was designed to comply with the Massachusetts Wetlands Protection Act and the Massachusetts Wetland Protection Regulations (Regulations) [310 CMR 10.00 et seq.]. Work is proposed within the 100-foot Buffer Zone to Inland Bank.

There are no performance standards for working in Buffer Zone; however, the guiding principle is to prevent adverse impacts to the downgradient resource areas. As designed, work in the 100-foot Buffer Zone will not adversely affect the downgradient resource area. Construction phase erosion and sedimentation control measures will protect these areas from erosion or deposition of sediment.

6.0 Summary

The proposed improvements project is a temporary solution until Crystal Lake undergoes a more extensive renovation in the future. Alterations within the 100-ft Buffer Zone and 25-ft NVB are not anticipated to have any long-term adverse impacts to downgradient Crystal Lake. The interests of the Massachusetts Wetlands Protection Act will not be impaired because of this project.

Crystal Lake Improvements

Stormwater Management Report

1.0 Existing Conditions

Crystal Lake is located in Newton, MA. Crystal Lake Park and Beach are located off Rogers Street. Features at Crystal Lake Beach include a parking lot, open lawn area, an access driveway down to the beach, and a bathhouse. A stone retaining wall, approximately five feet tall, is located between the beach and open lawn area. The topography slopes from the parking lot to the beach. Stormwater runoff from the access driveway is causing erosion on Crystal Beach. There is an existing catch basin on the northeast corner of the parking lot and an existing four-inch-wide trench drain (ACO K100S Model) located in the middle of the access driveway. This trench drain and catch basin collect stormwater runoff from the parking lot and directs it to an existing subsurface infiltration system in the open lawn area. Roof leaders on the northwestern side of the bathhouse are directed to subsurface gravel trenches below the access driveway that allow the stormwater to infiltrate.

2.0 Proposed Conditions

To address the erosion that is occurring on Crystal Beach, the City of Newton is proposing to construct a subsurface infiltration system downstream of the existing trench drain. The existing trench drain will be removed and replaced with a 12-inch-wide trench drain, allowing the system to more easily capture stormwater runoff. This upland trench drain is designed to capture the first 0.5 inch of stormwater. During a 1-inch storm event, 0.5 inch of runoff will bypass the upland trench drain. A second proposed downstream trench drain will be designed to collect the stormwater runoff that bypasses the upland trench drain as well as 1 inch of runoff between the upland trench drain and the downstream trench drain. Runoff from the downstream trench drain will be directed to a subsurface infiltration system with two 6-inch PVC pipes. This system will be a 3-foot-deep gravel trench, 49-foot-long by 14.33-foot-wide with two 6-inch perforated PVC pipes to distribute the flow within the system. This proposed work is a temporary solution until Crystal Lake Beach undergoes a more extensive renovation in the future. In addition, as part of the project, natural stones will be installed at the base of the existing stone wall along the beach to improve the stability, existing bituminous concrete beneath existing sand in front of the bathhouse will be removed, 19 linear feet of chain link fence will be removed, and existing bituminous concrete will be saw-cut to allow the installation of boulders and granite curbing to transition down to the beach. There will be a reduction of 1,200 sf of impervious area with the removal of the bituminous concrete beneath the sand in front of the bathhouse.

This project is located within the jurisdiction of the MA Wetlands Protection Act and is subject to the requirements of the *Massachusetts Stormwater Handbook*. There is no increase in the impervious area; therefore, this project is a redevelopment project. The project does not require a stormwater management permit to comply with Newton's *Stormwater Management and Erosion Control Rules and Regulations* because the project is disturbing less than 5,000 sf and there will be no increase in impervious area.

3.0 Drainage Analysis

The intent of the subsurface infiltration system is to capture and infiltrate 1 inch of runoff from the tributary impervious area to reduce erosion on Crystal Lake Beach. The existing trench drain, which will be replaced with the upland trench drain, currently captures stormwater runoff from a portion of the parking lot and access driveway. The captured stormwater runoff is directed to a subsurface infiltration system. Email communication with Newton's Department of Public Works (DPW) on December 4, 2024, indicates that the subsurface infiltration system is designed to retain the first 0.5 inch and has a storage volume of 600 cf (Appendix A). The design of the subsurface infiltration system will include retention of the remaining 0.5 inch from the existing system (600 cf). The approximate impervious area associated with 600 cf is 14,400 sf. The additional drainage area, located between the existing and proposed trench drains, is 1,640 sf. The first 1-inch of runoff from that area is 137 cf. The total impervious area tributary to the subsurface infiltration system is 16,040 sf.

Following is a summary of the assumptions used to perform the drainage analyses.

- The Natural Resources Conservation Service's (NRCS) Web Soil Survey was consulted to determine the hydrologic soil groups (HSG) for the site. The NRCS has classified the site as "Merrimac-Urban land," which is assigned to HSG "A." Appendix B provides soils information from Web Soil Survey.
- The December 4, 2024, email from Newton DPW identified the soil infiltration rate as 2.41 in/hr (Appendix A).
- The void ratio in the gravel trench is assumed to be 35%.
- The total storage provided in the gravel trench is 737 cf.

Along the access driveway there will be no increase in peak rates of runoff for the 2-, 10, and 100-year, 24-hour storm events because there is no increase in impervious area for the area tributary to the subsurface infiltration system. Overall, there will be a small decrease in peak rates of runoff to Crystal Lake with the removal of the impervious area in front of the bathhouse.

The site was also analyzed for compliance with the recharge volume (Rv) and water quality volume (WQv) requirements in the *Massachusetts Stormwater Handbook*. Calculation of the Rv and WQv are based on the impervious within the limit of disturbance for this project, 1,640 sf. The existing subsurface infiltration system provides water quality treatment and groundwater recharge for the impervious area tributary to the existing trench drain and is not included in the calculation for the new subsurface infiltration system. Since the soils at the location of the access road are located on HSG "A" soils, the recharge target depth factor of 0.60 inches was used. The total corresponding Rv is 82 cf. Because the site is located at a bathing beach, the water quality volume is based on 1.0 inch times the access road area, with a total corresponding WQv of 137 cf.

The drawdown time of the water in the subsurface infiltration system was calculated using the total storage volume in the gravel trench and the total available bottom surface area of the gravel trench. The drawdown calculations indicate that stormwater will infiltrate within 15 hours, which meets the required 72 hours, based on the infiltration rate of 2.41 in/hr.

Table 1 summarizes compliance with the Rv and WQv, providing the calculated required recharge and water quality volumes, along with the total storage volume provided in the subsurface infiltration system. As shown in this table, the gravel trench provides sufficient storage volume to meet the total required recharge volume and water quality volume for the impervious area within the limit of disturbance. Appendix C provides the recharge volume, water quality volume, and drawdown calculations.

Table 1
Summary of Impervious Area, Rv and WQv
Crystal Lake Improvements

Stormwater Management Facility	*Impervious Area *(sf)*	*Recharge Volume (cf)*	*Water Quality Volume (cf)*	*Volume Provided (cf)*
Gravel Trench	1,640	82	137	737

*This does not include the impervious area tributary to the existing subsurface infiltration system.

For redevelopment projects, stormwater management systems should be designed to remove 80% of the average annual load (post-construction conditions) of Total Suspended Solids (TSS) to the maximum extent practicable. For this project, the WQv is fully captured within the subsurface infiltration system. Thus, the full 80% TSS removal is met for the access driveway within the limit of disturbance. The TSS removal spreadsheet is provided in Appendix D.

The Charles River is subject to a TMDL for phosphorus; thus, Newton requires a 60 percent reduction in post-construction phosphorus to meet the TMDL. The subsurface infiltration system provides phosphorus removal for the stormwater flow that bypasses the existing trench drain and the stormwater runoff from the impervious area within the limit of disturbance. The estimated reduction in phosphorus is 88.5%. Therefore, this project is meeting the phosphorus removal requirement for the Charles River TMDL. The phosphorous removal calculations are provided in Appendix E.

4.0 Compliance with Stormwater Standards

Under the *Massachusetts Stormwater Handbook*, this project is considered a redevelopment project because there is no increase in impervious area. All redevelopment projects are required to meet the following stormwater standards 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; the remaining standards must be fully met. The following summary below describes compliance with each of the stormwater standards. The Stormwater Checklist is provided at the end of this section.

3.1 Stormwater Standard No. 1 – No New Untreated Discharges

This standard is fully met. Stormwater runoff from the access driveway will receive treatment in the subsurface infiltration system before discharging to Crystal Lake.

3.2 Stormwater Standard No. 2 – Peak Rate Attenuation

This standard is fully met. There will be an overall decrease in the peak rates of runoff for the 2-, 10, and 100-year, 24-hour storm events because there is a decrease in the impervious area at the beach.

3.3 Stormwater Standard No. 3 - Recharge

This standard is met. Stormwater runoff that is collected in the subsurface infiltration system will infiltrate. As shown in Table 1, the recharge requirement is exceeded for the impervious area within the limit of disturbance.

3.4 Stormwater Standard No. 4 – Water Quality

This standard is fully met. The subsurface infiltration system provides 80% TSS removal for the paved access driveway within the limit of disturbance.

3.5 Stormwater Standard No. 5 – Land Use with Higher Potential Pollutant Loads (LUHPPLs)

This standard is not applicable to this project. There are no LUHPPLs in the project area.

3.6 Stormwater Standard No. 6 – Critical Areas

This standard is applicable to this project. The required water quality volume depth is 1 inch because the site is a bathing beach.

3.7 Stormwater Standard No. 7 - Redevelopments and Other Projects Subject to the Standards Only to the Maximum Extent Practicable

This project is a redevelopment project and is fully meeting Standards 1, 2, 3, 4, 5, 6, 8, 9 and 10.

3.8 Stormwater Standard No. 8 – Construction Period Pollution Prevention and Erosion and Sedimentation Control

This standard is fully met. The project is not subject to a NPDES General Construction Permit. Compost filter sock at the downstream end of the project area will be installed to protect Crystal Lake.

3.9 Stormwater Standard No. 9 – Operation and Maintenance Plan

This standard is fully met. An Operation and Maintenance Plan and Long-Term Pollution Prevention Plan are included with this submittal in Appendix F.

3.10 Stormwater Standard No. 10 – Prohibition of Illicit Discharges

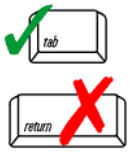
The proposed project fully meets the requirement of Stormwater Standard No. 10. The subsurface infiltration system is only collecting stormwater runoff and is not connected to any sanitary system.

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.

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

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.

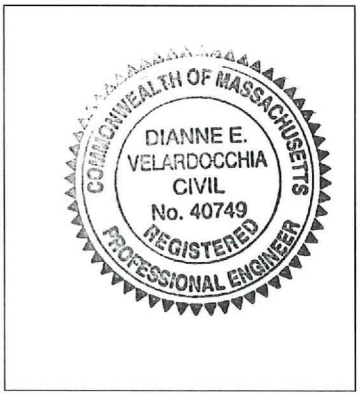
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the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



Dianne E. Velardocchia 4/7/25

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

No calculations comparing pre-development and post-development rates were prepared. There is no increase in impervious area. Post-development rates should not increase over pre-development rates.

☐ 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) 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: 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.

Velardocchia, Dianne

From: Dodson, Michael
Sent: Thursday, December 5, 2024 11:47 AM
To: Velardocchia, Dianne
Subject: FW: Crystal Lake Scoping Questions

Categories: Blue Category

From: Luis Perez Demorizi <lpdemorizi@newtonma.gov>
Sent: Wednesday, December 4, 2024 12:45 PM
To: Dodson, Michael <DodsonMA@cdmsmith.com>; Landgren, Scott W. <landgrensw@cdmsmith.com>
Subject: FW: Crystal Lake Scoping Questions

Luis Perez Demorizi
Director of Parks & Open Space
Parks, Recreation & Culture Department
City of Newton
T. 617-796-1500

"Earth work is more durable than any other human work" --Charles W. Eliot

https://www.newtonma.gov/government/parks-recreation-culture/parks-open-space
For questions about Athletic Fields Projects: Athleticfieldproject@newtonma.gov
For questions about the Gath Pool Project: Gathpoolproject@newtonma.gov

---

From: Eric Highers <ehighers@newtonma.gov>
Sent: Wednesday, December 4, 2024 11:25 AM
To: Luis Perez Demorizi <lpdemorizi@newtonma.gov>; Frank Nichols <fnichols@newtonma.gov>
Subject: RE: Crystal Lake Scoping Questions

Hey Luis,

To my understanding this system was designed inhouse by Engineering. I don't have access to the formal calcs but have the quick details for you below:

Drainage Area: 0.367ac
Volume Storage: 600cf
Approximately sized for first 0.5in
Soil Infiltration Rate: 2.41in/hr
BMP Performance Curve: approximately 90% effective
Total Phosphorus Reduction: -0.60lbs/yr
Last Maintained: June 2024.

Hope this helps,

_____

Eric Highers
Environmental Engineer
Department of Public Works – Utilities Division
60 Elliot St, Newton, MA 02464
Office #: 617-796-1038

From: Luis Perez Demorizi <lpdemorizi@newtonma.gov>
Sent: Wednesday, December 4, 2024 9:02 AM
To: Frank Nichols <fnichols@newtonma.gov>; Eric Highers <ehighers@newtonma.gov>
Subject: RE: Crystal Lake Scoping Questions

I believe it was in 2014ish. The attached plans is all I have and the date seems to be cut off. Lou Taverna will definitely know.

Thanks,

Luis Perez Demorizi
Director of Parks & Open Space
Parks, Recreation & Culture Department
City of Newton
T. 617-796-1500

"Earth work is more durable than any other human work" --Charles W. Eliot

https://www.newtonma.gov/government/parks-recreation-culture/parks-open-space
For questions about Athletic Fields Projects: Athleticfieldproject@newtonma.gov
For questions about the Gath Pool Project: Gathpoolproject@newtonma.gov

---

From: Frank Nichols <fnichols@newtonma.gov>
Sent: Wednesday, December 4, 2024 8:58 AM
To: Luis Perez Demorizi <lpdemorizi@newtonma.gov>; Eric Highers <ehighers@newtonma.gov>
Subject: RE: Crystal Lake Scoping Questions

Luis, do you have any idea of when the system was installed?

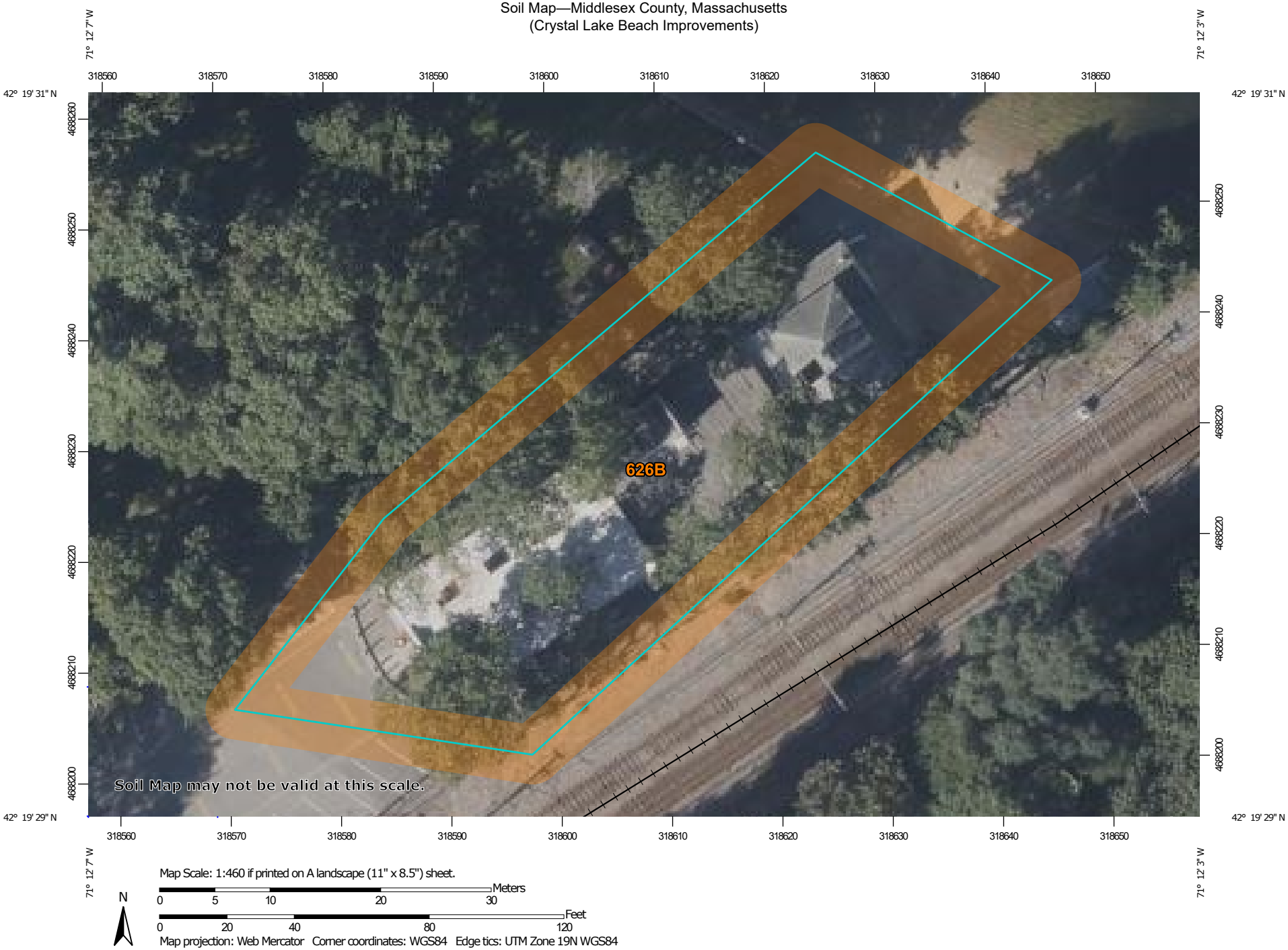
From: Luis Perez Demorizi <lpdemorizi@newtonma.gov>
Sent: Wednesday, December 4, 2024 8:43 AM
To: Frank Nichols <fnichols@newtonma.gov>; Eric Highers <ehighers@newtonma.gov>
Subject: Fw: Crystal Lake Scoping Questions

See below. Can you help me find the calcs for the subsurface system at Crystal lake?

Thanks!

Luis Perez Demorizi
Director of Parks & Open Space
Parks, Recreation & Culture Department
City of Newton
T. 617-796-1500

Soil Map—Middlesex County, Massachusetts
(Crystal Lake Beach Improvements)



Map Scale: 1:460 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 20 40 80 120

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 1:24,000.

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: Middlesex County, Massachusetts
Survey Area Data: Version 24, Aug 27, 2024

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

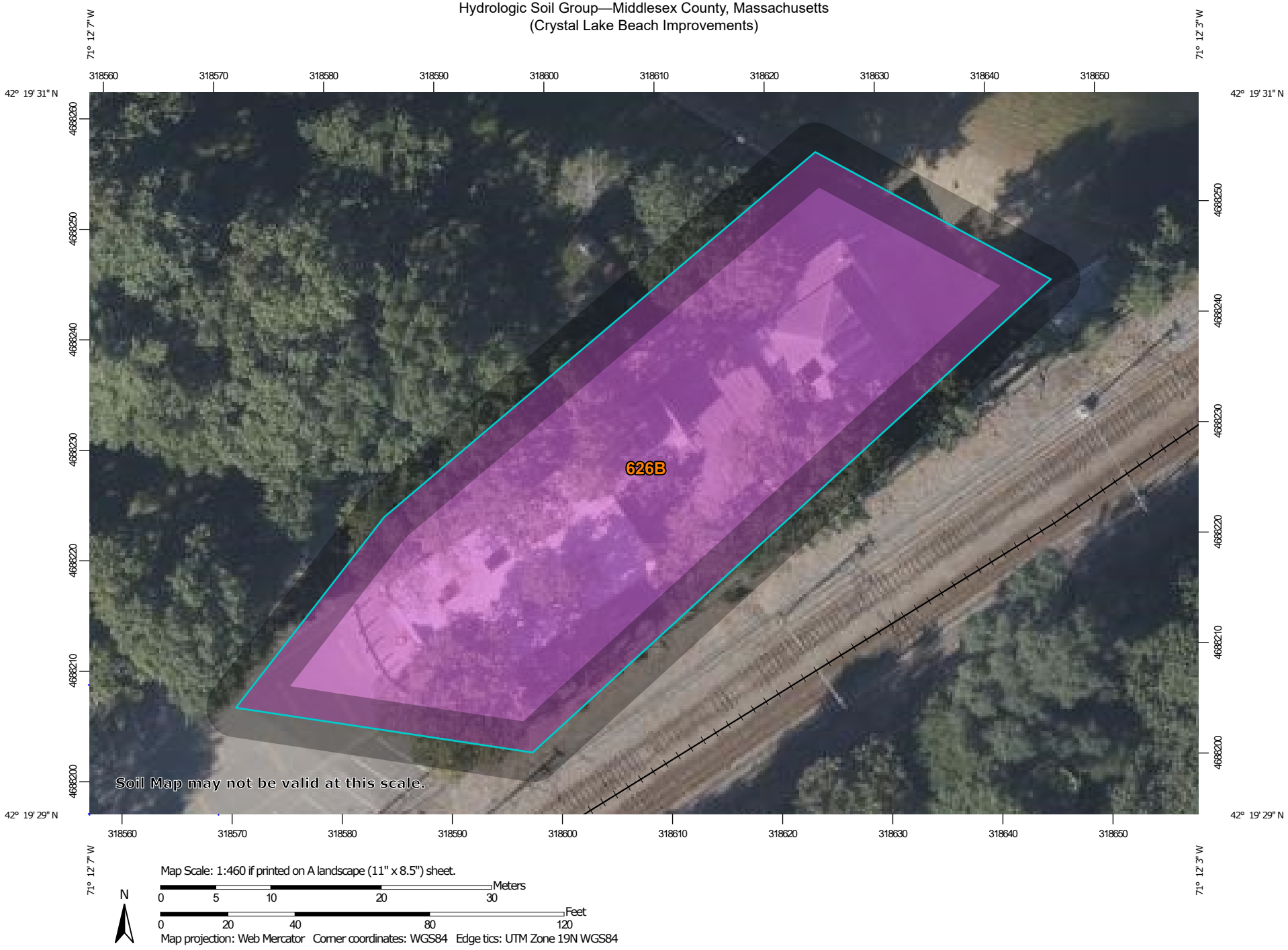
Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

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
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	0.4	100.0%
Totals for Area of Interest		**0.4**	**100.0%**

Hydrologic Soil Group—Middlesex County, Massachusetts
(Crystal Lake Beach Improvements)



Map Scale: 1:460 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 5 10 20 30

Feet: 0 20 40 80 120

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 Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

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 1:24,000.

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: Middlesex County, Massachusetts
Survey Area Data: Version 24, 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: Mar 1, 2023—Sep 1, 2023

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	A	0.4	100.0%
Totals for Area of Interest			**0.4**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix C

Recharge Volume and Water Quality Volume Calculations

Crystal Lake Improvements
WQv and Rv Calculations

Water Quality Volume - Overall		
Driveway Limit of Disturbance - Impervious Area	1,638	sf
WQV Target:	1.0	in
WQv Required:	**137**	**cf**
WQv Required:	**0.003**	**af**
Provided:	**737**	**cf**
	0.017	**af**

Recharge Volume - Overall		
Driveway Limit of Disturbance - Impervious Area	1,638	sf
Rv Target:	0.60	in
Rv Required:	**82**	**cf**
Rv Required:	**0.002**	**af**
Provided:	**737**	**cf**
	0.017	**af**

Note: Subsurface infiltration system is designed to accept bypass flow from upstream trench drain. The volume of this runoff is 600 cf.

Drawdown Time - Gravel Infiltration Trench

2.41	in/hr infiltration rate	
244	sf, bottom area	(takes into consideration 35% voids)
737	cf, total volume provided	
15	hours	<72 hours, ok

Appendix D

TSS Removal Worksheet

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Crystal Lake Beach - Newton, MA

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Infiltration Trench	**0.80**	**1.00**	**0.80**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**

Total TSS Removal = **80%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: Crystal Lake Beach Improvements

Prepared By: DEV

Date: 3/17/2025

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

Appendix E

Phosphorus Removal Calculation

Crystal Lake Improvements
Phosphorus Removal Calculations

Gravel trench collects stormwater runoff from existing impervious area and the impervious area within the limit of disturbance.

Existing Impervious Area:

Approximate Impervious Area:	14,400	sf
Treatment Depth:	0.5	in

Impervious Area - Limit of Disturbance

Impervious Area:	1,638	sf
Treatment Depth:	1.0	in

Total Storage Volume	737	cf

Phosphorus Removal Calculation

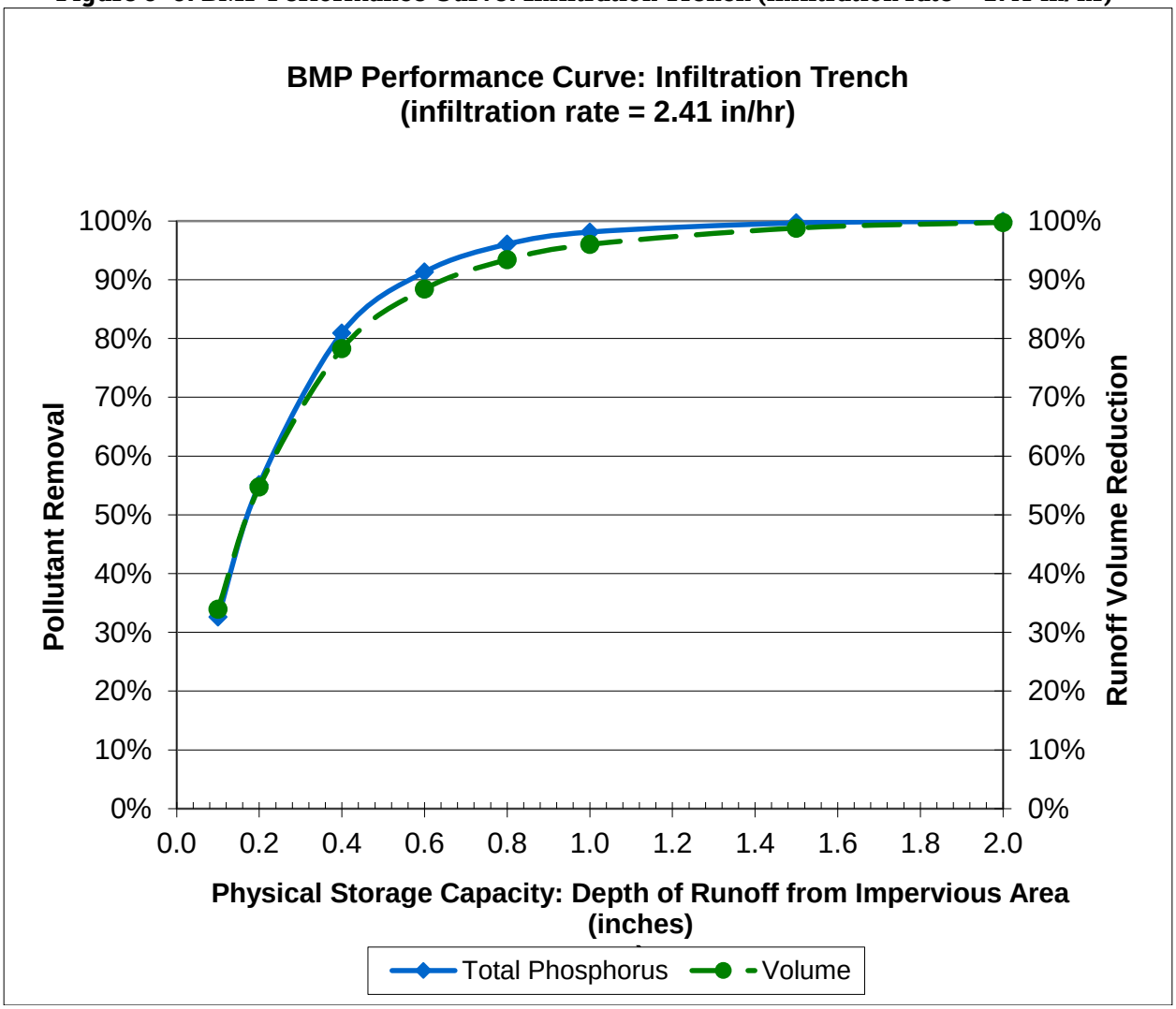
Volume of gravel trench	737	cf
Impervious area	0.37	ac
Equivalent depth (impervious)	0.55	in

By interpolation of Figure 3-8 in Appendix F of MA MS4 Permit, TP reduction = 88.5%

Table 3- 8: Infiltration Trench (IR = 2.41 in/hr) BMP Performance Table

Infiltration Trench (IR = 2.41 in/hr) BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff Treated from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Runoff Volume Reduction	34.0%	54.7%	78.3%	88.4%	93.4%	96.0%	98.8%	99.8%
Cumulative Phosphorus Load Reduction	33%	55%	81%	91%	96%	98%	100%	100%

Figure 3- 5: BMP Performance Curve: Infiltration Trench (infiltration rate = 2.41 in/hr)



Appendix F

Operation and Maintenance Plan/ Long-Term Pollution Prevention Plan

Post-Construction Operation and Maintenance Plan

Project: Crystal Lake Improvements Project

Location: Crystal Lake Beach, Newton, MA

Owner/Responsible Party: City of Newton

This document describes the operation and maintenance activities for the proposed stormwater management facilities associated with the Crystal Lake improvements.

Gravel Infiltration Trench

A gravel infiltration trench is located adjacent to the bathhouse, under the driveway. Maintenance activities include the following:

- Inspect the trench drains and catch basins for the accumulation of debris at least quarterly in the schedule below and after large storm events. Any debris found in the trench drains should be promptly removed.
    - Early April to remove debris accumulated during the winter.
    - July during the middle of the beach season at the pond.
    - Late September/early October at the end of beach season at the pond.
    - Mid-December to remove foliage and other debris.
- Inspect for signs of standing water in the trench drains after 72 hours. If there is standing water, the gravel infiltration trench is likely clogged.
- To rehabilitate a failed gravel infiltration trench, remove the bituminous pavement to expose the gravel infiltration trench, strip all accumulated sediment from the bottom of the gravel infiltration trench, and then scarify and till the bottom of the trench to induce infiltration. Replace all the stone aggregate and filter fabric in the gravel infiltration trench.
- Dispose of any collected sediment at a landfill or other facility permitted by MassDEP to accept solid waste, without any prior approval by MassDEP, unless the sediments are contaminated.

Stormwater Management Facility Inspection Form

Location: Crystal Lake Beach, Newton, MA
Adjacent to Bathhouse

Inspected By:_____

Inspection Date:_____

BMP Measure	Status/Inspection	Action Taken
Gravel Infiltration Trench		

Long-Term Pollution Prevention Plan

The following practices will be employed at Crystal Lake to provide source control and pollution prevention:

1. The driveway and parking lot will be periodically swept to remove trash and debris.
2. The trench drains will be periodically inspected to remove trash and debris.
3. No hazardous materials shall be stored outside at the lake.
4. Salt and de-icing chemicals shall be used sparingly at the lake.
5. Any spills that occur at the lake shall be contained and cleaned up in a timely manner to prevent the spilled product from entering the trench drains and gravel infiltration trench.

All personnel who provide regular maintenance at Crystal Lake shall be trained annually on the pollution prevention measures described above.