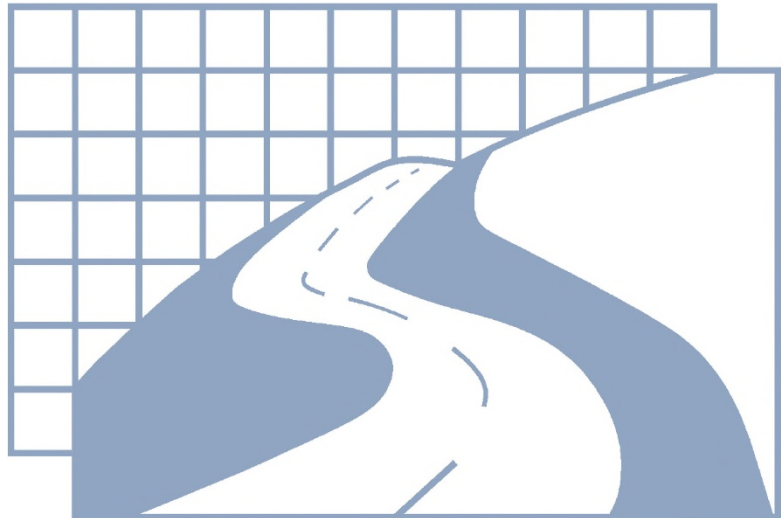


STORMWATER REPORT

Multi-family Redevelopment

267 Mill Street
Worcester, Massachusetts



Prepared for:

267 Mill Street LLC
23 Newell Drive
Franklin, MA

Prepared by:

Land Planning, Inc.
214 Worcester Street
North Grafton, MA 01536



Norman G. Hill, P.E. 2-27-24

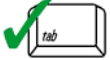
February 23, 2024



Checklist for Stormwater Report

A. Introduction

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



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

The Stormwater Report must include:

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

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

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

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

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

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



Checklist for Stormwater Report

B. Stormwater Checklist and Certification

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

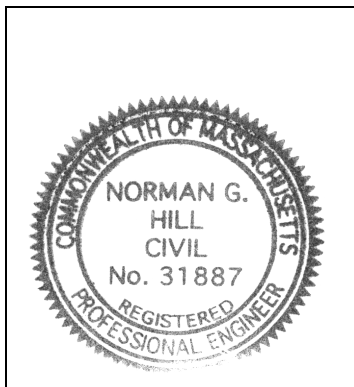
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the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

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

Registered Professional Engineer's Certification

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

Registered Professional Engineer Block and Signature



Norman G. Hill, P.E.
Signature and Date

2-27-24

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

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



Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

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

Standard 4: Water Quality

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

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



Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

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

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

- ☐ 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.

Redevelopment Checklist

Existing Conditions

- On-site: For all redevelopment projects, proponents should document existing conditions, including a description of extent of impervious surfaces, soil types, existing land uses with higher potential pollutant loads, and current onsite stormwater management practices. **See plan for existing conditions.**
- Watershed: Proponents should determine whether the project is in a watershed or subwatershed, where flooding, low streamflow or poor water quality is an issue. **No known water quality issues.**

The Project

Is the project a redevelopment project?

- Maintenance and improvement of existing roadways
Yes, repaving of existing parking area is proposed.
- Development of rehabilitation, expansion or phased project on redeveloped site, or
Yes, repaving activities are within the limits of existing impervious surface. No net increase in impervious area is proposed.
- Remedial stormwater project
Yes, catch basin hoods are proposed in all existing structures to improve stormwater facility.

For non-roadway projects, is any portion of the project outside the definition of redevelopment?

- Development of previously undeveloped area
No
- Increase in impervious surface
No, increase in impervious surface is proposed.

If a component of the project is not a redevelopment project, the proponent shall use the checklist set forth below to document that at a minimum the proposed stormwater management system fully meets each Standard for that component. The proponent shall also document that the proposed stormwater management system meets the requirements of Standard 7 for the remainder of the project.

The Stormwater Management Standards

The redevelopment checklist reviews compliance with each of the Stormwater Management Standards in order.

Standard 1: (Untreated discharges)

No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

Same rule applies for new developments and redevelopments.

Full compliance with Standard 1 is required for new outfalls. **No new outfalls are proposed.**

- What BMPs are proposed to ensure that all new discharges associated with the discharge are adequately treated?

- What BMPs are proposed to ensure that no new discharges cause erosion in wetlands or waters of the Commonwealth? **Not applicable.**
- Will the proposed discharge comply with all applicable requirements of the Massachusetts Clean Waters Act and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00? **Not applicable.**

Existing outfalls shall be brought into compliance with Standard 1 to the maximum extent practicable.

- Are there any existing discharges associated with the redevelopment project for which new treatment could be provided? **Yes.**
- If so, the proponent shall specify the stormwater BMP retrofit measures that have been considered to ensure that the discharges are adequately treated and indicate the reasons for adopting or rejecting those measures. (See Section entitled “Retrofit of Existing BMPs”.)
Install catch basin hoods.
- What BMPs have been considered to prevent erosion from existing stormwater discharges?
No changes in surface conditions are proposed. No erosion occurs at the existing discharge point. Pre and post redevelopment runoff is expected to be equivalent.

Standard 2: (Peak rate control and flood prevention)

Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for land subject to coastal storm flowage.

Full compliance for any component that is not a redevelopment

Compliance to the Maximum Extent Practicable:

- Does the redevelopment design meet Standard 2, comparing post-development to pre-development conditions?
Yes. No permanent changes to ground cover that would alter runoff are proposed.
- If not, the applicant shall document an analysis of alternative approaches for meeting the Standard. (See Menu of Strategies to Reduce Runoff and Peak Flows and/or Increase Recharge Menu included at the end of this chapter.) **Not applicable.**

Improvement of existing conditions:

- Does the project reduce the volume and/or rate of runoff to less than current estimated conditions? Has the applicant considered all the alternatives for reducing the volume and/or rate of runoff from the site? (See Menu.)
No. Runoff will remain the same as the predevelopment conditions.
- Is the project located within a watershed subject to damage by flooding during the 2-year or 10-year 24-hour storm event? If so, does the project design provide for attenuation of the 2-year and 10-year 24-hour storm event to less than current estimated conditions? Have measures been implemented to reduce the volume of runoff from the site resulting from the 2 year or 10 year 24 hour storm event? (See Menu.) **Not applicable. No change in runoff.**
- Is the project located adjacent to a water body or watercourse subject to adverse impacts from flooding during the 100-year 24-hour storm event? If so, are portions of the site available to increase flood storage adjacent to existing Bordering Land Subject to Flooding (BLSF)? **No.**
- Have measures been implemented to attenuate peak rates of discharge during the 100-year 24-hour storm event to less than the peak rates under current estimated conditions? Have measures

been implemented to reduce the volume of runoff from the site resulting from the 100-year 24-hour storm event? (See Menu.) **Not applicable. No change in runoff.**

Standard 3: (Recharge to Ground water)

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

Full compliance for any component that is not a redevelopment.

Compliance to the Maximum Extent Practicable:

- Does the redevelopment design meet Standard 3, comparing post-development to pre-development conditions? **Yes, no increase in impervious surface area is proposed.**
- If not, the applicant shall document an analysis of alternative approaches for meeting the Standard? **Not applicable.**
- What soil types are present on the site? Is the site comprised solely of C and D soils and bedrock at the land surface? **Canton & Urban Land, HSG B and not rated respectively.**
- Does the project include sites where recharge is proposed at or adjacent to an area classified as contaminated, sites where contamination has been capped in place, sites that have an Activity and Use Limitation (AUL) that precludes inducing runoff to the groundwater, pursuant to MGL Chapter 21E and the Massachusetts Contingency Plan 310 CMR 40.0000; sites that are the location of a solid waste landfill as defined in 310 CMR 19.000; or sites where groundwater from the recharge location flows directly toward a solid waste landfill or 21E site?¹ **No.**
- Is the stormwater runoff from a land use with a higher potential pollutant load? **No.**
- Is the discharge to the ground located within the Zone II or Interim Wellhead Protection Area of a public water supply? **No.**
- Does the site have an infiltration rate greater than 2.4 inches per hour? **No.**

Improvements to Existing Conditions:

- Does the project increase the required recharge volume over existing (developed) conditions? If so, can the project be redesigned to reduce the required recharge volume by decreasing impervious surfaces (make building higher, put parking under the building, narrower roads, sidewalks on only one side of street, etc.) or using low impact development techniques such as porous pavement? **No. The proposed construction does not increase the impervious area.**
- Is the project located within a basin or sub-basin that has been categorized as under high or medium stress by the Massachusetts Water Resources Commission, or where there is other evidence that there are rivers and streams experiencing low flow problems? If so, have measures been considered to replace the natural recharge lost as a result of the prior development? (See Menu.) **No.**
- Has the applicant evaluated measures for reducing site runoff? (See Menu.) **Site limitations due to area, proximity to adjacent resource areas, and property line limitations precludes any practicable methods of runoff reduction.**

¹ A mounding analysis is needed if a site falls within this category. See Volume 3.

Standard 4: (80% TSS Removal)

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

- a. Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan and thereafter are implemented and maintained;*
- b. Stormwater BMPs are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and*
- c. Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.*

Full compliance for any component that is not a redevelopment

Full compliance with the long-term pollution plan requirement for new developments and redevelopments.

- Has the proponent developed a long-term pollution plan that fully meets the requirements of Standard 4? **Yes. See attached Operation and Maintenance Plan.**
- Does the pollution prevention plan include the following source control measures?
 - Street sweeping **Yes.**
 - Proper management of snow, salt, sand and other deicing chemicals **Yes.**
 - Proper management of fertilizers, herbicides and pesticides **Yes.**
 - Stabilization of existing eroding surfaces **Yes.**

Compliance to the Maximum Extent Practicable for the other requirements:

- Does the redevelopment design provide for treatment of all runoff from existing (as well as new) impervious areas to achieve 80% TSS removal? If 80% TSS removal is not achieved, has the stormwater management system been designed to remove TSS to the maximum extent practicable? **Yes, no additional impervious surfaces are proposed and catch basin hoods shall be installed in all basins which are not currently hooded.**
- Have the proposed stormwater BMPs been properly sized to capture the prescribed runoff volume? **Not applicable. Treatment has been provided to the maximum extent practicable.**
 - One inch rule applies for discharge
 - within a Zone II or Interim Wellhead Protection Area,
 - near or to another critical area,
 - from a land use with a higher potential pollutant load
 - to the ground where the infiltration rate is greater than 2.4 inches per hour
- Has adequate pretreatment been proposed?
 - 44% TSS Removal Pretreatment Requirement applies if:
 - Stormwater runoff is from a land use with a higher potential pollutant load
 - Stormwater is discharged
 - To the ground within the Zone II or Interim Wellhead Protection Area of a Public Water Supply
 - To the ground with an infiltration rate greater than 2.4 inches per hour
 - Near or to an Outstanding Resource Water, Special Resource Water, Cold-Water Fishery, Shellfish Growing Area, or Bathing Beach.
- If the stormwater BMPs do not meet all the requirements set forth above, the applicant shall document an analysis of alternative approaches for meeting these requirements. (See Section on Retrofitting Existing BMPs (the “Retrofit Section”). **Retrofittable BMPs has been provided by installing hoods in all catch basins.**

Improvements to Existing Conditions:

- Have measures been provided to achieve at least partial compliance with the TSS removal standard? **Yes. Catch basin hoods and nonstructural BMPs designated within the housekeeping section of the Operation and Maintenance Plan.**
- Have any of the best management practices in the Retrofit Section been considered? **Yes.**
- Have any of the following pollution prevention measures been considered? **Yes.**
 - Reduction or elimination of winter sanding, where safe and prudent to do so **Yes, reduced to minimum necessary for safety.**
 - Tighter controls over the application of fertilizers, herbicides, and pesticides **Yes, see Operation & Maintenance Plan.**
 - Landscaping that reduces the need for fertilizer, herbicides and pesticides **Yes, see Operation & Maintenance Plan.**
 - High frequency sweeping of paved surfaces using vacuum sweepers **Yes.**
 - Improved catch basin cleaning **Yes, see Operation & Maintenance Plan.**
 - Waterfowl control programs **Not applicable.**
- Are there any discharges (new or existing) to impaired waters? If so, see TMDL section. **No.**

Standard 5 (Higher Potential Pollutant Loads (HPPL))

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

Full compliance for any component that is not a redevelopment. **This standard is not applicable to this project.**

Full compliance with pollution prevention requirements for new developments and redevelopments.

Pollution Prevention

- Has the proponent considered any of the following operational source control measures?
 - Formation of a pollution prevention team,
 - Good housekeeping practices,
 - Preventive maintenance procedures,
 - Spill prevention and clean up,
 - Employee training, and
 - Regular inspection of pollutant sources.
- Has the proponent considered implementation of any of the following operational changes to reduce the quantity of pollutants on site?
 - Process changes,
 - Raw material changes,
 - Product changes, or
 - Recycling.
- Has the proponent considered making capital improvements to protect the land uses with higher potential pollutant loads from exposure to rain, snow, snow melt, and stormwater runoff?

- Enclosing and/or covering pollutant sources (e.g. placing pollutant sources within a building or other enclosure, placing a roof over storage and working areas, placing tarps under pollutant source)
- Installing a containment system with an emergency shutoff to contain spills?
- Physically segregating the pollutant source to prevent run-on of uncontaminated stormwater?

Treatment

- If applicable, compliance with the treatment and pretreatment requirements of Standard 5 only to the Maximum Extent Practicable by directing the stormwater runoff from land uses with higher potential pollutant loads to appropriate stormwater BMPs?
 - Are the BMPs selected capable of removing the pollutants associated with the higher potential pollutant load land (“LUHPPL”) use?
 - Is the land use likely to generate stormwater with high concentrations of oil and grease? If so has an oil grit separator, sand filter, filtering bioretention area or equivalent been proposed for pretreatment?

Improvement of Existing Conditions.

- If the redevelopment converts a site from a non-LUHPPL use to a LUHPPL use, the applicant shall document how the stormwater BMPs shall be modified or replaced to come into compliance with Standard 5.
- What specific measures have been considered to offset the anticipated impacts of land uses with higher potential pollutant loads?
- If the redevelopment proposal is a brownfield project, the applicant shall demonstrate how the stormwater management measures have been designed to prevent mobilization or remobilization of soil and groundwater contamination. (See Brownfield section)

Other Requirements

- Does the discharge comply with all applicable requirements of the Massachusetts Clean Waters Act, 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00? **Yes.**

Standard 6 (Critical Areas)

Stormwater discharges to a Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or any other critical area require the use of the specific source control and pollution prevention measures and the specific stormwater best management practices determined by the Department to be suitable for managing discharges to such area, as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters or Special Resource Waters shall be set back from the receiving water and receive the highest and best practical method of treatment. A “stormwater discharge,” as defined in 314 CMR 3.04(2)(a)1. or (b), to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of the public water supply.

Full compliance for component of project that is not a redevelopment

Full compliance with pollution prevention requirements for new developments and redevelopments.

This standard is not applicable to this project.

If applicable, compliance to the Maximum Extent Practicable with the pretreatment and treatment requirements of Standard 6:

- Does the redevelopment project utilize the pretreatment, treatment and infiltration BMPs approved for discharges near or to critical areas?
- If the redevelopment project does not comply with Standard 6, the applicant shall document an analysis of alternative measures for meeting Standard 6. (See Section on Specific Redevelopment Projects.)

Improvements to Existing Conditions:

- Have measures to protect critical areas been considered, including additional pollution prevention measures and structural and non-structural BMPs?

Other Requirements

- Does the discharge comply with the Massachusetts Clean Waters Act, 314 CMR 3.00, 314 CMR 4.00, and 314 CMR 5.00?

Standard 8: (Erosion, Sediment Control)

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

All redevelopment projects shall fully comply with Standard 8.

- Has the proponent submitted a construction period erosion, sedimentation and pollution prevention plan that meets the requirements of Standard 8? **Yes. See attached report.**

Standard 9: (Operation and Maintenance)

A long-term operation and maintenance plan must be developed and implemented to ensure that stormwater management systems function as designed.

All redevelopment projects shall fully comply with Standard 9.

- Has the proponent submitted a long-term Operation and Maintenance plan that meets the requirements of Standard 9? **Yes. See attached Operation & Maintenance Plan.**

Standard 10 (Illicit Discharges)

All illicit discharges to the stormwater management system are prohibited.

All redevelopment projects shall fully comply with Standard 10.

- Are there any known or suspected illicit discharges to the stormwater management system at the redevelopment project site? **No.**
- Has an illicit connection detection program been implemented using visual screening, dye or smoke testing? **Not applicable.**
- Have an Illicit Discharge Compliance Statement and associated site map been submitted verifying that there are no illicit discharges to the stormwater management system at the site? **Yes.**

Improvements to Existing Conditions:

- Once all illicit discharges are removed, has the proponent implemented any measures to prevent additional illicit discharges? **Not applicable.**



267 Mill Street
Multi-family Redevelopment
Stormwater Management Standards Compliance

Standard 1: No New Untreated Discharges
Supporting Calculations

The redevelopment does not propose any changes to existing site conditions. No new untreated discharges proposed. The project complies with the requirements of this standard.

Standard 2: Peak Rate Attenuation

Pre and post development stormwater runoff rates will be unchanged. The redevelopment project complies with the requirements of this standard.

Standard 3: Recharge

Calculate required recharge volume:

Hydrologic Soil Type	F (Inches)	New Impervious Area (Acres)	Rv (ft ³)
A	0.60	0	0 ft ³
B	0.35	0	0 ft ³
C	0.25	0	0 ft ³
D	0.10	0	0 ft ³
Total Recharge Volume			0 ft³

The redevelopment project does not propose any new impervious surfaces. No recharge proposed. The project complies with the requirements of this standard.

Standard 4: Water Quality

Water Quality Treatment Volume:

The redevelopment project does not propose any new impervious surfaces. No treatment for water quality proposed. The redevelopment project complies with the requirements of this standard.

TSS Removal Requirements:

The redevelopment project collects surface runoff through existing catch basins. Therefore, TSS removal is improved to the maximum extent practicable by installing hoods within all catch basins.

Standard 5: Land Uses with Higher Potential Pollutant Loads

The existing and proposed use of the property is not classified as a Land Use with Higher Potential Pollutant Loads (LUHPPL). This standard is not applicable to this site.

Standard 6: Critical Areas

The project is not located within a Critical Area. This standard is not applicable to the project.

Standard 7: Redevelopment Project

This project qualifies as a redevelopment project. The project scope includes repaving the existing impervious surfaces on-site and restriping the existing parking spaces. No amendments of the existing surface coverage are proposed. Compliance with this standard is documented in the redevelopment checklist provided in this report.

Standard 8: Construction Period Pollution Prevention and Erosion Control

See attached report.

Standard 9: Operation and Maintenance Plan

See attached report.

Standard 10: Prohibition of Illicit Discharges

Illicit Discharge Compliance Statement

Per the requirements of Standard 10 of the Stormwater Management Standards, the property has been inspected for the presence of illicit discharges. It has been determined that no illicit discharges exist on the property.

The developer, contractor, and property owner shall continue to be responsible for the prevention, detection, and elimination of illicit discharges.

Land Planning, Inc.



2-27-24

Norman G. Hill, P.E.

Norman G. Hill, P.E.
President

**Storm Water
Pollution Prevention Plan
For:**

**267 Mill Street
Worcester, MA**

Site Owner/Operator
267 Mill Street LLC
23 Newell Drive
Franklin, MA 02038

Prepared by:
Land Planning, Inc.
214 Worcester St
N. Grafton, MA 01536

February 26, 2024

1.0 Site Evaluation, Assessment, and Planning

1.1 Project Information

The construction site is located at 267 Mill Street, Worcester MA.

1.2 Contact Information / Responsible Parties

Project Manager or Site Supervisor

Name: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____

SWPPP Contact

Name: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____

SWPPP prepared by

Norman G. Hill, P.E.

Land Planning, Inc.

214 Worcester Street

N. Grafton, MA 01536

508-839-9526

Property Owner

267 Mill Street, LLC

23 Newell Drive

Franklin, MA 02038

Phone: 617-877-5864

1.3 Nature and Sequence of Construction Activity

The existing impervious surface on-site will be repaved, and the multifamily building will be connected to the existing water line for the fire prevention sprinkler system. Land disturbing activities will include surface milling, grading, excavation, and repaving.

1.4 Soils, Slopes, Vegetation, Drainage Patterns

The soils on site are classified as Canton and Urban Land by the NRCS. Canton and Urban Land soil belongs to hydrologic soil group "B" and "Not rated" classifications respectively.

The existing paved surfaces on site drain toward various catch basins located on-site. Runoff terminates at the boundary of the property at an existing flared end discharge point. No scouring is detected at this discharge point.

Postconstruction runoff flows will not change as no increase in the surfacing or drainage patterns are expected on the site.

1.5 Construction Site Estimates

The following are estimates of the construction site:

Size of property	+/-228,336 ft ²
Construction site area to be disturbed	23,870 ft ²
Percentage of preconstruction pavement area	10.5 %
Percentage of postconstruction impervious area	10.5%

1.6 Receiving Waters

The disturbance area is within the boundaries of the existing paved parking area. The impervious surface does not receive water from off site.

1.7 Site Features and Sensitive Areas to be Protected

Natural features to be protected include the delineated bordering vegetated wetland located along the northerly boundary of the property. No disturbance of these resource areas shall be permitted.

1.8 Potential Sources of Pollution

Potential sources of sediment to stormwater runoff include:

- Clearing and grubbing operations
- Grading and excavation operations
- Vehicle tracking
- Landscaping operations

Potential pollutants and sources, other than sediment, to stormwater runoff:

- Combined Staging Area – fueling activities, equipment maintenance, sanitary facilities, waste storage
- Materials Storage Area – general building materials, solvents, adhesives, paving materials, paints, aggregates, and trash.
- Construction Activity – pavement milling and repaving

See table below for potential construction site pollutants:

TRADE NAME MATERIAL	CHEMICAL/PHYSICAL DESCRIPTION	STORM WATER POLLUTANTS
Pesticides	Various colored to colorless liquid, powder, grains, or pellets	Chlorinated hydrocarbons, organophosphates, carbamates, arsenic
Fertilizer	Liquid or solid grains	Nitrogen, Phosphorous
Plaster	White granules or powder	Calcium sulphate, calcium carbonate, sulfuric acid
Cleaning solvents	Colorless, blue, or yellow-green liquid	Perchloroethylene, methylene chloride, trichloroethylene, petroleum distillates
Asphalt	Black solid	Oil, petroleum distillates
Concrete	White solid	Limestone, sand
Glue, adhesives	White or yellow liquid	Polymers, epoxies
Paints	Various colored liquid	Metal oxides, stoddard solvent, talc, calcium carbonate, arsenic
Curing compounds	Creamy white liquid	Naphtha
Waste water from construction equipment washing	Water	Soil, oil and grease, solids
Wood preservatives	Clear amber or dark brown liquid	Stoddard solvent, petroleum distillates, arsenic, copper, chromium
Hydraulic oil/fluids	Brown oily petroleum hydrocarbon	Mineral oil
Gasoline	Colorless, pale brown or pink petroleum hydrocarbon	Benzene, ethyl benzene, toluene, xylene, MTBE
Diesel fuel	Clear, blue-green to yellow liquid	Petroleum distillate, oil and grease, naphthalene, xylenes
Kerosene	Pale yellow liquid petroleum hydrocarbon	Coal oil, petroleum distillates
Antifreeze/coolant	Clear green/yellow liquid	Ethylene glycol, propylene glycol, heavy metals (copper, zinc, lead)
Sanitary toilets	Various colored liquid	Bacteria, parasites, and viruses

2.0 Erosion and Sedimentation Control BMPs

- **Minimize disturbed area and protect natural features and soil**

Pavement milling will be removed and immediately trucked offsite. Road base materials will not be stockpiled on site. All construction materials will be placed as delivered.

- **Phase Construction Activity**

The proposed site is too small for phased disturbance areas to be practical. To minimize erosion construction activities should be limited to the spring, summer, and fall seasons.

- **Control stormwater flowing onto and through the project**

No runoff intercepts the construction area. If runoff does enter the construction site it shall be diverted around the disturbed area and silt fence shall be installed surrounding the construction activities within this area.

- **Stabilize soils**

Temporary Stabilization

Hydromulching will provide immediate protection to exposed soils where construction will cease for more than 14 days and over the winter months. Straw mulch and wood fiber will be mixed with a tackifier (amount specified per manufacturer's instructions) and applied uniformly by machine with an application rate of 90–100 pounds (2–3 bales) per 1,000 square feet or 2 tons (100–200 bales) per acre. If the tackifier does not appear effective in anchoring the mulch to the disturbed soil, crimping equipment will be used to provide additional binding to the soil. The mulch will cover 75 to 90 percent of the ground surface. In areas, where hydromulching is inaccessible, straw mulch will be applied by hand with an application rate of 90–100 pounds (2–3 bales) per 1,000 square feet.

Permanent Stabilization

Permanent stabilization will be done immediately after the final design grades are achieved but no later than 14 days after construction ceases. Native species of plants will be used to establish vegetative cover on exposed soils. Permanent stabilization will be completed in accordance with the final stabilization procedures.

- **Protect slopes**

The area of disturbance does not include slopes exceeding 3:1.

- **Establish perimeter controls and sediment barriers**

Sediment barriers consisting of straw wattles and silt fence will be installed at the perimeter of the site as indicated on the Sedimentation & Erosion Control Plan. See the detail provided on the Sedimentation & Erosion Control Plan for specifications and installation requirements of the sediment barrier.

- **Establish stabilized construction exits**

An anti-tracking pads consisting of washed stone will be installed at the exit of the site, as identified on the Sedimentation & Erosion Control Plan, to prevent the off-site transport of sediment by construction vehicles.

3.0 Good Housekeeping BMPs

3.1 Material Handling and Waste Management

- **Waste Materials**

All waste materials will be collected and disposed of into metal trash dumpsters. Dumpsters will have a secure watertight lid, be placed away from stormwater conveyances and drains, and meet all federal, state, and municipal regulations. Only trash and construction debris from the site will be deposited in the dumpster. No construction materials will be buried on-site.

- **Hazardous Waste Materials**

All hazardous waste materials such as oil filters, petroleum products, paint, and equipment maintenance fluids will be stored in structurally sound and sealed shipping containers, within the hazardous materials storage area. Hazardous waste materials will be stored in appropriate and clearly marked containers and segregated from other non-waste materials. Secondary containment will be provided for all waste materials in the hazardous materials storage area and will consist of commercially available spill pallets. Additionally, all hazardous waste materials will be disposed of in accordance with federal, state, and municipal regulations. Hazardous waste materials will not be disposed of into the on-site dumpsters.

- **Sanitary Waste**

Temporary sanitary facilities (portable toilets) will be provided at the site throughout the construction phase. The toilets will be in the staging area. The portable toilets will be located away from a concentrated flow paths and traffic flow and will have collection pans underneath as secondary containment.

3.2 Equipment/Vehicle Fueling and Maintenance Practices

- **Fueling and Maintenance**

Several types of vehicles and equipment will be used on-site throughout the project, including graders, scrapers, excavators, loaders, paving equipment, rollers, trucks and trailers, backhoes, and forklifts. All major equipment maintenance will be performed off-site. Vehicle fueling and minor maintenance will be performed outside of and, as far as practicable, away from the resource areas. Absorbent, spill-cleanup materials and spill kits will be available on-site.

3.6 Spill Prevention and Control

- **Spill Prevention and Control Procedures**

- I. Employee Training: All employees will be trained via monthly tailgate sessions.
- II. Vehicle Maintenance: Vehicles and equipment will be maintained off-site. All vehicles and equipment including subcontractor vehicles will be checked for leaking oil and fluids. Vehicles leaking fluids will not be allowed on-site.
- III. Hazardous Material Storage: Hazardous materials will be stored in accordance with Section 3 and federal and municipal regulations.
- IV. Spill Kits: Spill kits will be within the materials storage area and concrete washout areas.
- V. Spills: All spills will be cleaned up immediately upon discovery. Spent absorbent materials and rags will be hauled off-site immediately after the spill is cleaned up for proper disposal. Spills large enough to discharge to surface water will be reported to the National Response Center at 1-800-424-8802 and MassDEP Emergency Response Line at 1-888-304-1133.
- VI. Material safety data sheets, a material inventory, and emergency contact information will be maintained at the on-site project trailer.

4.0 Inspections

4.1 Inspection Schedule and Procedures

- Inspections of the site will be performed once every 7 days and within 24 hours of the end of a storm event of one-half inch or greater. The inspections will verify that all BMPs required in Sections 2 and 3 are implemented, maintained, and effectively minimizing erosion and preventing stormwater contamination from construction materials. For detailed inspection procedures, see Sections 2 and 3.
- A maintenance inspection report will be made after each inspection. A copy of the report form to be completed by the SWPPP Coordinator is provided Section 8. Completed forms will be maintained on-site throughout construction. Following construction, the completed forms will be retained at the site operators' office for a minimum of 1 year.

5.0 Recordkeeping and Training

5.1 Recordkeeping

- Records will be retained for a minimum period of at least 3 years after the Certificate of Compliance is issued.

5.2 Log of Changes to the SWPPP

No.	Description of Amendment	Date of Amendment	Amendment Prepared by

5.3 Training

- **General stormwater and BMP awareness training**

The SWPPP Coordinator will conduct informal training for all staff, including subcontractors, on the site. The training will be conducted primarily via tailgate sessions and will focus on avoiding damage to stormwater BMPs and preventing illicit discharges. The tailgate sessions will be conducted monthly and will address the following topics: Erosion Control BMPs, Sediment Control BMPs, Non-Stormwater BMPs, Waste Management and Materials Storage BMPs, and Emergency Procedures specific to the construction site.

- **Detailed training for staff with specific stormwater responsibilities**

The SWPPP Coordinator will provide formal training to all staff and subcontractors with specific stormwater responsibilities, such as installing and maintaining BMPs. The formal training will cover all design and construction specifications for installing the BMPs and proper procedures for maintaining each BMP. Formal training will occur before any BMPs are installed on the site.

6.0 Final Stabilization

6.1 Permanent Seeding

- **Seedbed Preparation**

- a. In areas where disturbance results in subsoil or fill material being the final grade surface, topsoil will be spread over the finished area at minimum depth of 4 inches.
- b. The seedbed will be free of large clods, rocks, woody debris and other objectionable materials.
- c. Fertilizer and lime will be applied to the seedbed according to the manufacturer's recommendations or soil tests.
- d. The top layer of soil will be loosened to a depth of 3–5 inches by raking, tilling, disking or other suitable means.

- **Grass Selection/Application**

- a. Lawns will be stabilized with a mixture of Kentucky Blue Grass and Creeping Red Fescue at an application rate of 100 pounds per acre or 2.3 pounds per 1,000 square feet.
- b. Seed will be applied uniformly by hydroseeding or broadcasting. Where broadcasting is used, the seed will be covered with .25 inch of soil or less.

- **Mulching**

- a. Hydromulch will be applied immediately following seeding at an application rate of 90–100 pounds (2–3 bales) per 1,000 square feet.

7.0 SWPPP Coordinator and Duties

The construction site SWPPP Coordinator for the facility is:

Name: _____ Title: _____

Company: _____ Phone: _____.

The SWPPP Coordinator's duties include the following:

- Implement the SWPPP plan;
- Oversee maintenance practices identified as BMPs in the SWPPP;
- Implement and oversee employee training;
- Conduct or provide for inspection and monitoring activities;
- Identify other potential pollutant sources and make sure they are added to the SWPPP;
- Identify any deficiencies in the SWPPP and make sure they are corrected and
- Ensure that any changes in construction plans are addressed in the SWPPP.

8.0 Forms and Logs

Initial Inspection of Erosion and Sediment Control

DEP File Number: _____ Date: _____

Contractor/Representative: _____

Evaluated by SWPPP Coordinator: _____

A. Project Overview

- How Many Acres Total Does the Project Disturb? _____
- Project Start Date: _____ Project End Date: _____
- Phase I start date? _____

B. Paperwork

- | | | | |
|---|-----|----|-----|
| • *Does the project have a Order of Conditions? | Yes | No | N/A |
| • *Is the SWPPP Notebook onsite? | Yes | No | N/A |

C. Site Preparation

- | | | | |
|--|-----|----|-----|
| • *Has the contractor installed temporary construction entrance(s) and are the vehicles using it? | Yes | No | N/A |
| • *Is there a place for concrete wash-out, is it clearly marked and do concrete trucks appear to be using it? | Yes | No | N/A |
| • *Is the site largely free of construction trash? (cups, lunch sacks, material packaging, etc.) | Yes | No | N/A |
| • *Have perimeter sediment controls been installed? | Yes | No | N/A |
| • *Have pre-construction controls been installed per the plan been installed? | Yes | No | N/A |
| • *Have easily recognizable indications of the construction limits been installed? (fencing, staking, physical barriers) | Yes | No | N/A |

* Must be "yes" or N/A in order for inspection to be "satisfactory".

Note: The local Conservation Commission must inspect and approve of the initial erosion and sediment controls, as installed, prior to the start of construction.

Erosion and Sediment Control Inspection Report Form

Project Name and Location

Weather:

Rain in last 24 hrs (inches):

Owner / Permittee:

A. Current Construction / Active Areas:

Pollution Control Measures (BMP) Checklist:

- _____ Inlet Barrier (ie: filter bags)
- _____ Sediment Barriers (ie: wattles/silt fence)
- _____ Erosion Blankets, Hydromulch / Seed
- _____ Stabilized Construction Entrance
- _____ Diversion Berms
- _____ Seed / Sod Areas
- _____ Sediment Basins & Discharge
- _____ Borrow Areas
- _____ General Site Condition (trash, etc)

B. Problem Areas / Special Observations(*Note problem areas ONLY below*):

BMP	Location	Observations, Effectiveness, & Corrective Actions Ordered

C. Listing of Areas where construction operations have permanently or temporarily stopped; stabilization measures initiated.

D. Have items noted on last inspection been corrected? Yes No (if No, Explain:)

Note: Inspection comments above indicate deficiencies only. Deficiencies must be corrected within 7 days, unless otherwise noted. All other BMP's on site are considered to be in good working condition.

Inspection Date

SWPPP Coordinator Signature

BMP INSPECTION CHECKLIST

General notes about Inspections:

- 1) Site inspected weekly
- 2) Within 24 hours of the end of a storm with rain >0.5"
- 3) Deficiencies corrected within 7 calendar days of inspection

Key elements to look at during inspection

- 1) Proper installation
- 2) Operation
- 3) Maintenance

Inlet Barriers (ie: sand bags, filter bags, straw wattles)

- ✓ Is the structure deteriorating
- ✓ Is sediment >1/2 the height of structure?
- ✓ Evidence of water/sediment getting **around or under** barrier?
- ✓ Are there other structures that require inlet barriers?

Sediment Barriers (ie: silt fence/straw wattles)

- ✓ Are they trenched in or falling down?
- ✓ Evidence of sediment/water getting **around or under** barrier?
- ✓ Is sediment more than 1/3 height of structure?
- ✓ Are there areas where more sediment barriers are required or need extended?

Stabilized Construction Entrance

- ✓ Is gravel clean or getting filled with mud?
- ✓ Evidence of sediment being tracked off site onto public streets?

Final or temporary Stabilization area

- ✓ Mulches/Grasses-are areas thinning or have been disturbed? Re-application req'd?
- ✓ Straw Blankets-are they deteriorating and need replaced?

Borrow Areas

- ✓ When on site or offsite borrow areas, which include contractor furnished, are to be excavated below ground elevations, an earth berm must be constructed around the borrow area to prevent runoff from entering excavation area

Sediment Basin

- ✓ Note the basin depth. Is the basin more than 1/2 full of sediment from original design?
- ✓ Condition of basin side slopes
- ✓ Evidence of overtopping embankment
- ✓ Condition of outfall

General Site Conditions

- ✓ Trash barrels-any evidence of trash lying around site
- ✓ Location of porta potties
- ✓ Leaking vehicles
- ✓ Concrete Washouts Designated

Quality Assurance Field Review – Erosion and Sediment Control

DEP File Number: _____ Contractor/Representative: _____

Date: _____ Evaluated by SWPPP Coordinator: _____

A. Project Status: *(brief description of the current phase of construction; major items of work in progress; and general observations of effectiveness and maintenance of site controls, and stormwater discharge at outfalls).*

B. Deficiencies Noted *(List any specific deficiencies found during the review).*

C. Have weekly and rainfall-required inspections been conducted since the last compliance evaluation? Were noted deficiencies corrected within 7 days?

Notice to Contractor: All deficiencies must be corrected within 7 days unless otherwise noted. A record of corrected deficiencies must be maintained.

Final Inspection of Erosion and Sediment Control

DEP File Number: _____ Date: _____

Contractor/Representative: _____

Evaluated by SWPPP Coordinator: _____

Project Overview

- How Many Acres Total Does the Project Disturb? _____
- Project Start Date _____ Project End Date _____

Paperwork

- | | | | |
|---------------------------------|-----|----|-----|
| • Is the SWPPP Notebook onsite? | Yes | No | N/A |
|---------------------------------|-----|----|-----|

Final Site Preparation*

- | | | | |
|---|-----|----|-----|
| • Has the concrete wash-out area been cleaned? | Yes | No | N/A |
| • Is the site free of construction trash?
(cups, lunch sacks, material packaging, wood debris, etc.) | Yes | No | N/A |
| • Have perimeter sediment controls been taken down? | Yes | No | N/A |
| • Have indications of the construction limits
been taken down? (fencing, staking, physical barriers) | Yes | No | N/A |
| • Has all the dirt on the site been covered? | Yes | No | N/A |
| • Have appropriate grasses/sod/trees been planted? | Yes | No | N/A |
| • Have the plants accepted? | Yes | No | N/A |
| • Have gutters and streets been cleaned of soil/trash? | Yes | No | N/A |
| • Have all erosion controls been removed? | Yes | No | N/A |

* Must be "yes" or N/A in order for inspection to be "satisfactory".

Stormwater Management Operation & Maintenance Plan

**267 Mill Street
Worcester, MA**

**Prepared by:
Land Planning, Inc.
214 Worcester St
N. Grafton, MA 01536**

February 26, 2024

Operation & Maintenance Plan

Property Owner

267 Mill Street LLC
23 Newell Drive
Franklin, MA 02038

Site Operator

267 Mill Street LLC
23 Newell Drive
Franklin, MA 02038

Facility Location

267 Mill Street
Worcester MA

This Operation & Maintenance Plan is transferable to future property owners and operators. The above information shall be updated as required should a change in ownership or operation occur.

Non-Structural Controls and Housekeeping

Snow Removal

Snow shall be plied along the perimeter of the paved parking area as necessary.

Deicing Chemicals

Application of deicing chemicals shall be done sparingly as needed to ensure the safety of the vehicles and pedestrians. Exterior storage of deicing materials on this property is prohibited.

Fertilizers, Pesticides, Herbicides

Organic, slow-release fertilizers should be used within the landscaped areas and maintained lawn areas. Use of pesticides and herbicides is discouraged. Outside storage of fertilizers, pesticides, and herbicides is forbidden.

Landscape Maintenance

Leaves, trimmings, and grass clippings shall be properly disposed of. If these materials are to be composted on-site, it shall be done outside of any wetland resource area or buffer zone.

Street Sweeping

The driveway shall be swept as necessary with a minimum frequency of twice per year. The first sweeping shall take place in early spring after the snow has melted. The second sweeping should be done in autumn.

Maintenance and Inspection Log

Inspections for year _____

BMP	Action	Date	Comment	By
Catch Basins	Inspect			
	Inspect			
	Inspect			
	Inspect			
	Clean			
	Clean			
	Clean			
	Clean			
	Other			
	Other			

Catch basins shall be inspected and cleaned a minimum of four times per year. Sediment buildup that reaches half the depth of the outlet invert to basin bottom shall be cleaned. Any obstruction within the unit shall be removed immediately.



United States
Department of
Agriculture

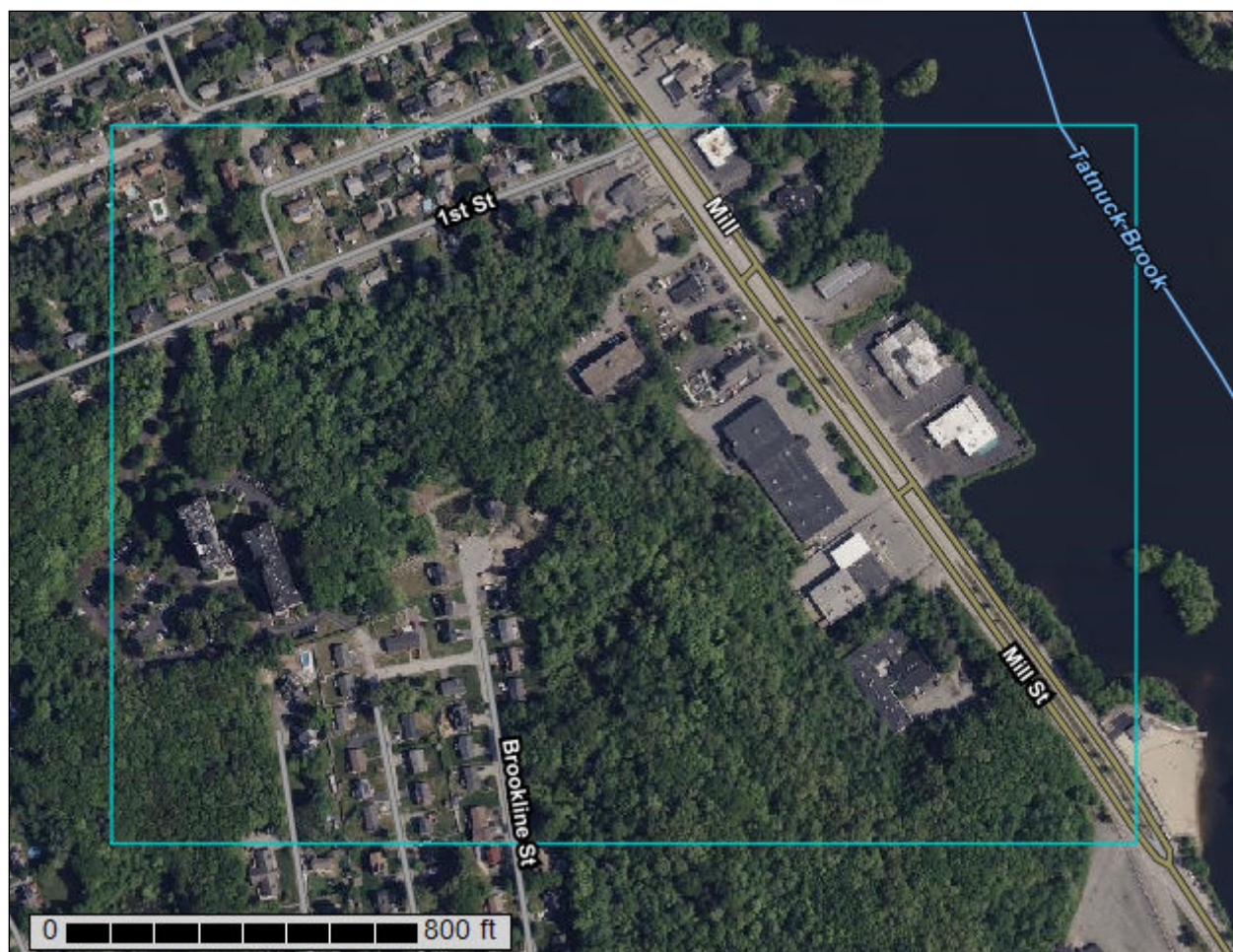
NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

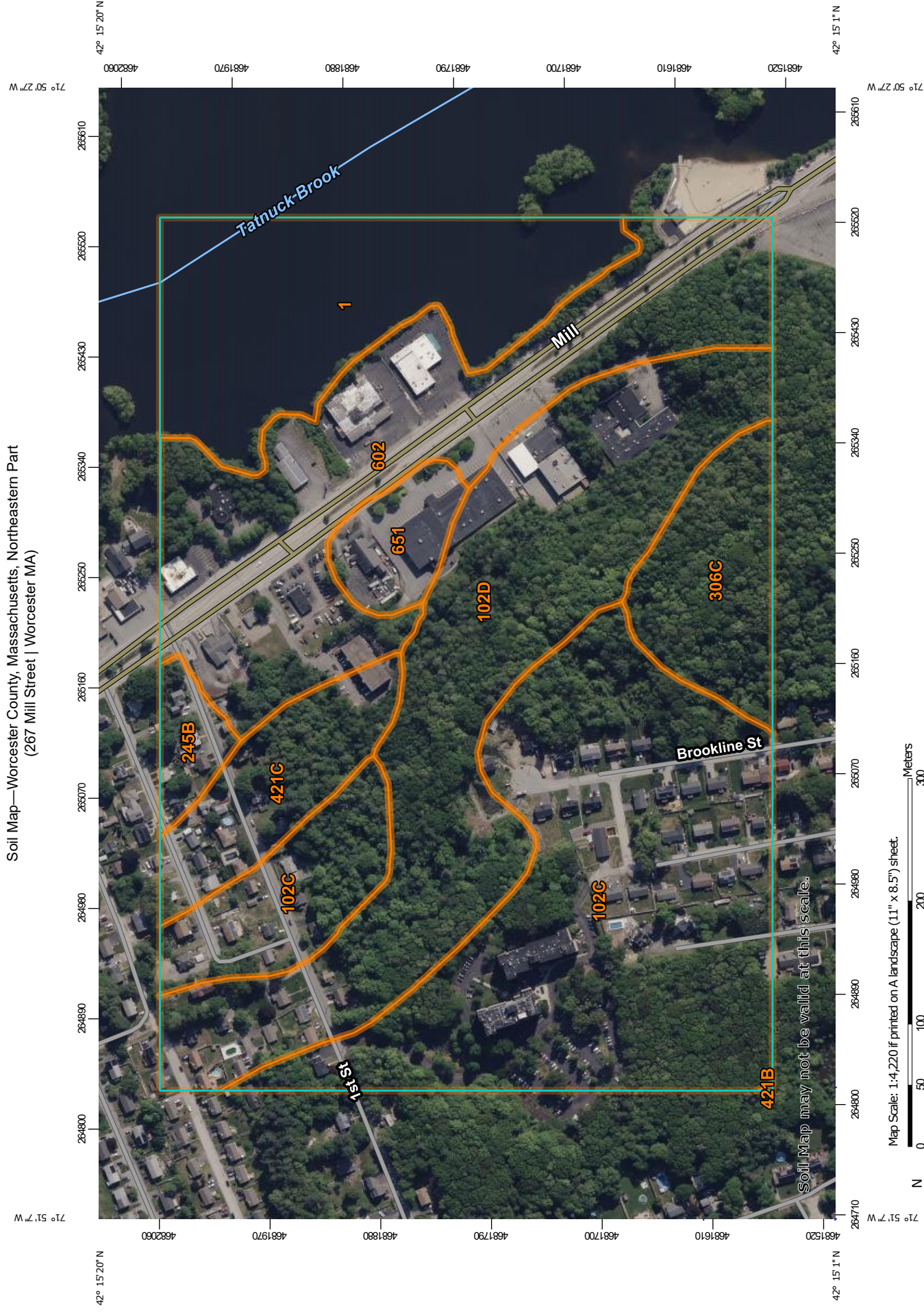
Custom Soil Resource Report for Worcester County, Massachusetts, Northeastern Part

267 Mill Street | Worcester MA

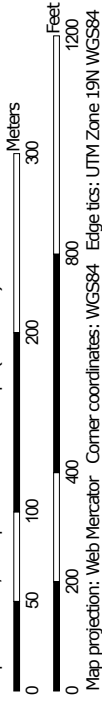


February 1, 2024

Soil Map—Worcester County, Massachusetts, Northeastern Part (267 Mill Street | Worcester MA)



Map Scale: 1:4,220 if printed on A landscape (11" x 8.5") sheet.



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

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

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 18, Sep 10, 2023

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

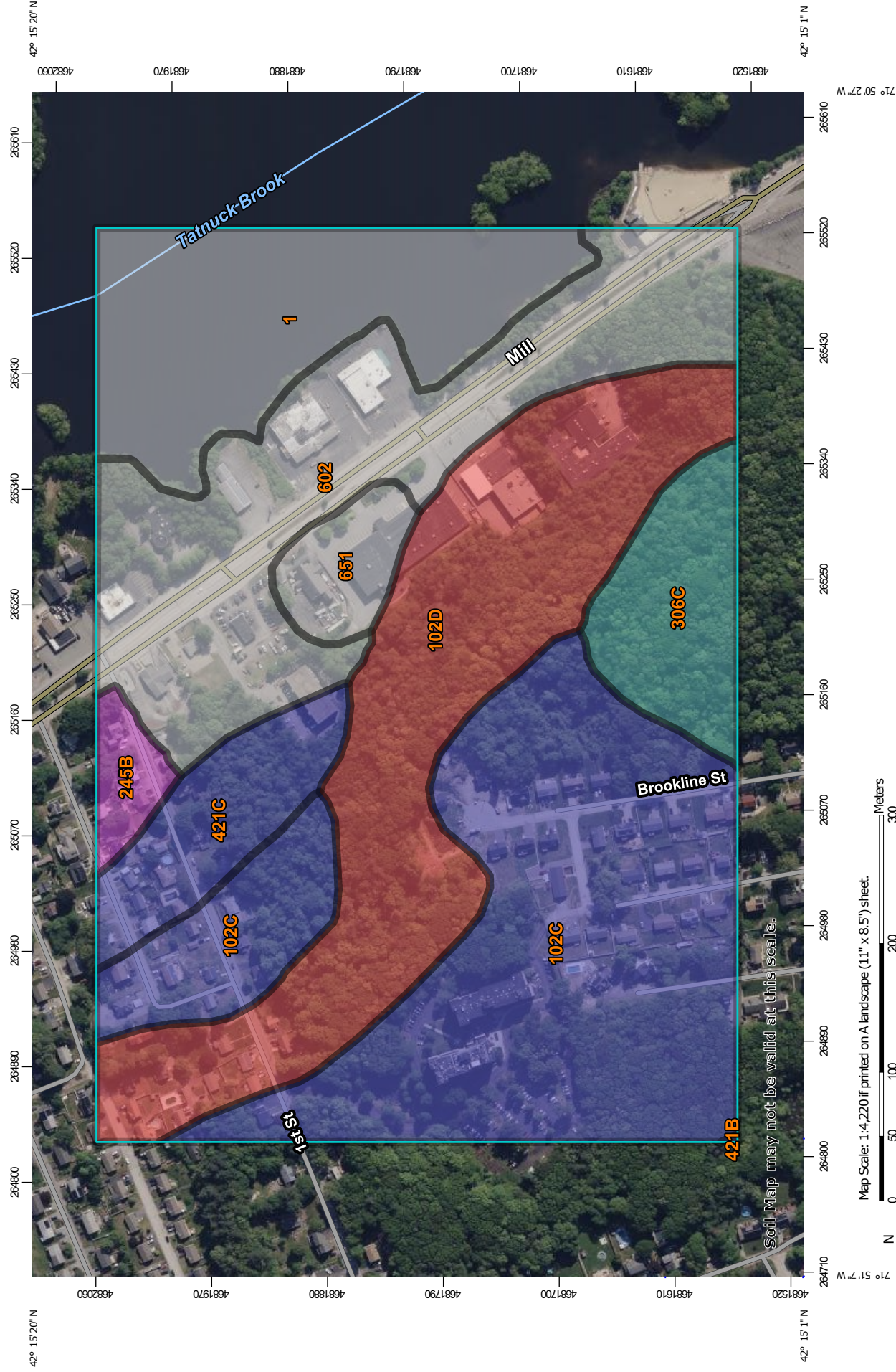
Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Water	11.6	13.2%
102C	Chatfield-Hollis-Rock outcrop complex, 0 to 15 percent slopes	26.6	30.3%
102D	Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes	19.6	22.3%
245B	Hinckley loamy sand, 3 to 8 percent slopes	1.4	1.6%
306C	Paxton fine sandy loam, 8 to 15 percent slopes, very stony	4.9	5.6%
421B	Canton fine sandy loam, 0 to 8 percent slopes, very stony	0.0	0.0%
421C	Canton fine sandy loam, 8 to 15 percent slopes, very stony	4.4	5.0%
602	Urban land	17.2	19.5%
651	Udorthents, smoothed	2.2	2.6%
Totals for Area of Interest		88.1	100.0%

Hydrologic Soil Group—Worcester County, Massachusetts, Northeastern Part (267 Mill Street | Worcester MA)



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

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

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

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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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 18, Sep 10, 2023

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

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

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Water		11.6	13.2%
102C	Chatfield-Hollis-Rock outcrop complex, 0 to 15 percent slopes	B	26.6	30.3%
102D	Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes	D	19.6	22.3%
245B	Hinckley loamy sand, 3 to 8 percent slopes	A	1.4	1.6%
306C	Paxton fine sandy loam, 8 to 15 percent slopes, very stony	C	4.9	5.6%
421B	Canton fine sandy loam, 0 to 8 percent slopes, very stony	B	0.0	0.0%
421C	Canton fine sandy loam, 8 to 15 percent slopes, very stony	B	4.4	5.0%
602	Urban land		17.2	19.5%
651	Udorthents, smoothed		2.2	2.6%
Totals for Area of Interest			88.1	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

Worcester County, Massachusetts, Northeastern Part

102D—Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes

Map Unit Setting

National map unit symbol: 2w69h

Elevation: 0 to 1,540 feet

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Chatfield, extremely stony, and similar soils: 35 percent

Hollis, extremely stony, and similar soils: 30 percent

Rock outcrop: 20 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Extremely Stony

Setting

Landform: Ridges, hills

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Nose slope, side slope, crest

Down-slope shape: Convex

Across-slope shape: Linear, convex

Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

A - 1 to 2 inches: fine sandy loam

Bw - 2 to 30 inches: gravelly fine sandy loam

2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent

Surface area covered with cobbles, stones or boulders: 9.0 percent

Depth to restrictive feature: 20 to 41 inches to lithic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: B

Ecological site: F144AY034CT - Well Drained Till Uplands

Hydric soil rating: No

Description of Hollis, Extremely Stony

Setting

Landform: Ridges, hills

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Nose slope, side slope, crest

Down-slope shape: Convex

Across-slope shape: Linear, convex

Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material

A - 2 to 7 inches: gravelly fine sandy loam

Bw - 7 to 16 inches: gravelly fine sandy loam

2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent

Surface area covered with cobbles, stones or boulders: 9.0 percent

Depth to restrictive feature: 8 to 23 inches to lithic bedrock

Drainage class: Somewhat excessively drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Ecological site: F144AY033MA - Shallow Dry Till Uplands

Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Ridges, hills

Parent material: Igneous and metamorphic rock

Typical profile

R - 0 to 79 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent

Depth to restrictive feature: 0 inches to lithic bedrock

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low
(0.00 to 0.00 in/hr)

Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydrologic Soil Group: D

Hydric soil rating: No

Minor Components

Charlton, extremely stony

Percent of map unit: 7 percent

Landform: Ridges, hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear

Across-slope shape: Convex

Hydric soil rating: No

Leicester, extremely stony

Percent of map unit: 4 percent

Landform: Ground moraines, hills, drainageways, depressions

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave, linear

Across-slope shape: Concave

Hydric soil rating: Yes

Paxton, extremely stony

Percent of map unit: 2 percent

Landform: Hills, drumlins, ground moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex

Hydric soil rating: No

Sutton, extremely stony

Percent of map unit: 2 percent

Landform: Ground moraines, hills

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

Data Source Information

Soil Survey Area: Worcester County, Massachusetts, Northeastern Part

Survey Area Data: Version 18, Sep 10, 2023

Worcester County, Massachusetts, Northeastern Part

421C—Canton fine sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w814

Elevation: 0 to 1,160 feet

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 240 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Canton, very stony, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton, Very Stony

Setting

Landform: Moraines, ridges, hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear

Across-slope shape: Convex

Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material

A - 2 to 5 inches: fine sandy loam

Bw1 - 5 to 16 inches: fine sandy loam

Bw2 - 16 to 22 inches: gravelly fine sandy loam

2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent

Surface area covered with cobbles, stones or boulders: 1.6 percent

Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water

(Ksat): Moderately low to high (0.14 to 14.17 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B

Ecological site: F144AY034CT - Well Drained Till Uplands

Hydric soil rating: No

Minor Components

Montauk, very stony

Percent of map unit: 6 percent

Landform: Recessional moraines, ground moraines, hills, drumlins

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear

Across-slope shape: Convex

Hydric soil rating: No

Scituate, very stony

Percent of map unit: 5 percent

Landform: Ground moraines, hills, drumlins

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear

Across-slope shape: Convex

Hydric soil rating: No

Chatfield, very stony

Percent of map unit: 3 percent

Landform: Hills, ridges

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Swansea

Percent of map unit: 1 percent

Landform: Marshes, depressions, bogs, swamps, kettles

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Worcester County, Massachusetts, Northeastern Part

Survey Area Data: Version 18, Sep 10, 2023

Worcester County, Massachusetts, Northeastern Part

602—Urban land

Map Unit Setting

National map unit symbol: w3q8

Mean annual precipitation: 32 to 50 inches

Mean annual air temperature: 45 to 50 degrees F

Frost-free period: 145 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Excavated and filled land

Data Source Information

Soil Survey Area: Worcester County, Massachusetts, Northeastern Part

Survey Area Data: Version 18, Sep 10, 2023

Worcester County, Massachusetts, Northeastern Part

651—Udorthents, smoothed

Map Unit Setting

National map unit symbol: w3q6

Elevation: 180 to 1,020 feet

Mean annual precipitation: 32 to 50 inches

Mean annual air temperature: 45 to 50 degrees F

Frost-free period: 145 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 80 percent

Urban land: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Parent material: Made land over firm loamy basal till

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Data Source Information

Soil Survey Area: Worcester County, Massachusetts, Northeastern Part

Survey Area Data: Version 18, Sep 10, 2023