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TO: Mr. Neil Magenheim, Chairman
Andover Planning Board
Town of Andover
36 Bartlet Street
Andover MA, 01810

DATE: September 30, 2025

FROM: Matthew W. Perry, P.E.
William Burnham, E.I.T.

PROJECT NO.: T1678

RE: Stormwater Report
Proposed Redevelopment – 305 North Main Street

This report serves to accompany the Stormwater Checklist and describes the scope of the project, including existing conditions and proposed work as it pertains to stormwater management.

Project Description

Lupoli Companies, LLC ("the Applicant") is proposing a redevelopment project at 305 North Main Street to improve upon existing infrastructure within and around the existing building. The project involves reconfiguring and resurfacing the existing parking lot and basement access to improve overall site functionality. Sidewalk and parking areas shall include ADA compliant ramps and pathways to improve access to the existing building. Improvements to the building façade are on-going around the existing building. Proposed drainage improvements are aimed at enhancing stormwater conveyance and treatment throughout the site and are detailed further below.

Scope of Work

The work under this Contract consists of improving parking lot, sidewalk, and basement access conditions to promote improved access and decrease the overall risk of flooding. Proposed drainage improvements including area drains, electrical pumps, manholes, pipes, and water quality units proposed to enhance stormwater conveyance and treatment throughout the site. These improvements are aimed at preventing flooding near the existing basement entrances and providing a safe accessway to the basement of the building. Most of the existing drainage and utility infrastructure will be maintained, while limited improvements (electrical conduit, charging stations, curbing at parking areas, etc.) will be provided to meet existing building code(s). Additional site improvements not pertaining to stormwater are mentioned in the proposed improvements section of 1 Narrative.

The work includes furnishings all necessary labor, materials, and equipment required for the following:

- Removal of approximately 1,583 SF of impervious pavement and sidewalk, to be replaced with additional landscaped area.

- Addition of vertical granite curbing, signage, bollards, and cement concrete sidewalks near the southern building entrance.
- Removal and replacement of a non-compliant ADA curb ramp with new compliant, cement concrete curb ramps.
- Addition of concrete and non-slip steel ramps for ADA complaint access to the existing basement.
- Removal and replacement of approximately 36,000 SF of the upper 2" of existing pavement across the existing parking lot and drive aisles.
- Installation of new closed drainage systems (area drains, drainage manholes, and electrical pumps). Basement entrance drainage system to be connected to existing drainage infrastructure.
- Two proposed water quality units (CDS 1515-3-C) added along existing drainage lines leading directly towards the Shawsheen River.

The Contract includes other related items necessary to complete the work, please refer to the attached Permit Plans for more detail.

Existing Conditions

The project includes the building, driveways, parking, and landscaped areas of 305 North Main Street, and existing General Business zoned lot. The project limits are located west of Shawsheen River, South of Balmoral Street, East of North Main Street, and north of 289 North Main Street. As noted above, there is a wetland resource area within 100-feet of the proposed site, therefore, the project is subject to the Wetlands Protection Act.

Design Point (D-1):

Design Point D-1 is the Shawsheen River, a USGS mapped stream with an associated 200-foot Riverfront Area and a well-defined bank. The following areas flow towards this design point:

Bordering North Main Street (Route 28) and 289 North Main Street, drainage generally runs from west to east towards an existing catch basin located against the central landscape island, located in the southern portion of the site (EX-A1).

Located between the above-mentioned central landscape island to the parking lot to the concrete retaining wall located west of the banks of the Shawsheen River, drainage generally runs from west to east towards an existing catch basin located against the eastern retaining wall, near the center of the lot (EX-A2).

Bordering the eastern concrete retaining holding the above-mentioned parking lot (EX-A2) to just before the limits of the Shawsheen River Bank, drainage generally runs from west to east, sheet-flowing into the Shawsheen River (EX-A3).

From the driveway entrance along North Main Street to raised section of drive aisle located adjacent to the central parking landscaping island, drainage runs towards an existing catch basin located near the center of the driveway entrance (EX-A4).

Southeast of the existing building to the concrete retaining wall holding the above-mentioned parking lot (EX-A2) and drive aisle, drainage generally runs towards an existing catch basin located near the center of the drive aisle (EX-A5).

At the southeast corner of the building, between the drive aisle and the building's face drainage runs along concrete retaining walls and landings towards existing area drains located against the building face. These drains lead to an existing storage tank located within the building, which requires a pump to be moved out towards existing drainage infrastructure along the drive aisle (EX-A6).

East of the building, between the concrete retaining wall holding the drive aisle and the building's face, drainage generally runs towards an existing catch basin located near the center of the drive aisle (EX-A7).

At the northwest corner of the building, between the drive aisle and the building's face drainage runs along concrete retaining walls and landings towards existing area drains located against the building face. These drains lead to an existing storage tank located within the building, which requires a pump to be moved out towards existing drainage infrastructure along the drive aisle (EX-A8).

Northeast of the building, between the concrete retaining wall holding the eastern side of the drive aisle and the concrete retaining wall holding the northeast basement entrance area (EX-A8), drainage generally runs from south to north. From here it enters Balmoral Street, outfalling through existing roadway drainage infrastructure to the Shawsheen River (EX-A9).

The rooftop of the existing building has multiple roof drains that outfall to drainage piping within the building. This piping leads out of the building though multiple pipes, going towards existing drainage infrastructure outfalling into the Shawsheen River (EX-A10).

Proposed Conditions

The proposed improvements including a 2" mill and overlay of a majority of the existing parking lot and drive aisles, the addition of the ADA compliant ramps and sidewalk ramps, sections of cement concrete sidewalks, electrical infrastructure, granite curbing, and the addition of new plantings within existing and proposed pervious areas.

Proposed drainage improvements consistently maintain the existing design point and drainage areas. A summary of the proposed drainage improvements are listed below:

Water quality units are proposed along two existing outlet pipes. The first one is proposed at the southeast corner of the site, in the middle of PR-A3. This structure will treat stormwater collected from PR-A1 and PR-A2. The second water quality unit is proposed at the center of the drive aisle in PR-A5. This water quality unit will treat stormwater from PR-A4, PR-A5, PR-A6, and portions of PR-A10.

A set of proposed area drains are proposed to collect stormwater falling within drainage areas PR-A6 and PR-A8. These areas drains lead to a proposed set of pumps (one in each drainage area), which pump stormwater to existing drainage infrastructure along the roadway (PR-A6 leads to the proposed water quality unit in PR-A5, and PR-A8 leads to the existing catch basin at PR-A7). These pumps will replace the need for a pump/storage system within the building.

A slight decrease in overall site impervious area is noted as a result of the proposed improvements (1,583 square feet). The proposed improvements will provide improved stormwater treatment and conveyance throughout the site.

Table 1: Pre Development Conditions

SUBCATCHMENT	IMPERVIOUS (SF)	PERVIOUS (SF)	TOTAL (SF)
EX-A1	11286	2545	13831
EX-A2	12213	712	12925
EX-A3	0	517	517
EX-A4	4472	1270	5742
EX-A5	6714	176	6890
EX-A6	1171	0	1171
EX-A7	1634	0	1634
EX-A8	1299	0	1299
EX-A9	1044	0	1044
EX-A10	15384	0	15384
TOTAL	55217	5220	60437

Table 2: Post Development Conditions

SUBCATCHMENT	IMPERVIOUS (SF)	PERVIOUS (SF)	TOTAL (SF)
PR-A1	10689	3142	13831
PR-A2	11397	1528	12925
PR-A3	0	517	517
PR-A4	4434	1308	5742
PR-A5	6582	308	6890
PR-A6	1171	0	1171
PR-A7	1634	0	1634
PR-A8	1299	0	1299
PR-A9	1044	0	1044
PR-A10	15384	0	15384
TOTAL	53634	6803	60437

Stormwater Standards

Standard 1: No New Untreated Discharges

There are no new untreated discharges. The existing drainage patterns will continue as they currently exist today. All proposed structures will direct stormwater towards existing catch basins and outlets utilized currently.

Standard 2: Peak Rate Attenuation

Total impervious area associated with the project will increase from pre- to post-development conditions.

Using the rational method (2-Year Storm):
Q = ciA C=0.98 (impervious) i=3.14 in/hr

Pre-development: A = 55,217 SF

Q = 0.98 * 3.14 in/hr * 55,217 SF = 3.93 cfs

Post-development: A = 53,634 SF

Q = 0.98 * 3.14 in/hr * 53,634 SF = 3.82 cfs

Using the rational method (100-Year Storm):
Q = ciA C=0.98 (impervious) i=7.89 in/hr

Pre-development: A = 53,634 SF

Q = 0.98 * 7.89 in/hr * 55,217 SF = 9.88 cfs

Post-development: A = 153,617 SF

Q = 0.98 * 7.89 in/hr * 53,634 SF = 9.60 cfs

As can be seen in the above calculations, there is a decrease in peak flow rate associated with the project, complying with the requirements of Standard 2.

Standard 3: Recharge

Catch basins within the drive aisle/parking lot are currently used for stormwater collection and will be retained. New area drains to replace existing structures are also proposed. There is no area within the project limits of work, that could feasibly be used to propose infiltrating BMP's given the sites existing drainage patterns and a large majority of the site being previously developed and covered within impervious materials. The proposed stormwater conditions will match the existing as closely as possible given the project's scope. With the project being considered a redevelopment project, these proposed improvements meet Standard 3 to the maximum extent practicable.

Standard 4: Water Quality

With the addition of two water quality units in two locations treating a majority of the site, additional TSS removal will be provided with the proposed stormwater improvements. Approximately 93% of the site will receive additional TSS removal provided by the additional water quality units (see attached CDS Estimated Net Annual Solids Load Reduction Worksheets). With the project being considered a redevelopment project, these proposed improvements meet Standard 4 to the maximum extent practicable.

Standard 5: Land Uses with Higher Potential Pollutant Loads

The land use is not considered a land use with a higher potential pollutant load.

Standard 6: Critical Areas

There are no critical areas located near the project site.

Standard 7: Redevelopment Projects

This project is considered a redevelopment project since the proposed development is being conducted on a previously developed site with a net reduction in total impervious area (See Tables 1 and 2). The project meets the requirements of a redevelopment project under Standard 7.

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

Erosion and sedimentation controls will be in place during construction. These will include silt fences and haybales in areas where runoff can carry excess sediment offsite and/or into surrounding resource areas and silt sacks in all catch basins. The erosion and sedimentation controls are shown on the construction plans attached to this report.

This project will disturb over one acre during the construction process. A SWPPP will be provided by the contractor prior to land disturbance.

Standard 9: Operation and Maintenance Plan

Existing infrastructure will be utilized and retrofit as much as possible throughout development. For newly proposed infrastructure, an O&M Plan is included with this submission.

Standard 10: Illicit Discharges

As a drainage system improvement and pavement maintenance project, no illicit discharges are expected or allowed as part of this project.

Conclusion

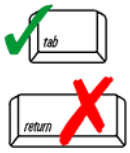
The proposed improvements will improve stormwater conveyance and treatment and will increase the overall impervious area on site. As stated in multiple sections above, the project is considered a redevelopment project and provides multiple stormwater improvements to meet the standards fully or to the maximum extent practicable. On behalf of the Applicant, TEC respectfully requests that the Commission approve the project and issue an Order of Conditions.

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

September 30, 2025

Signature and Date

Checklist

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

☐ New development

☒ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

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

☒ No disturbance to any Wetland Resource Areas

☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)

☒ Reduced Impervious Area (Redevelopment Only)

☒ 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): Water Quality Units

Standard 1: No New Untreated Discharges

☒ No new untreated discharges

☐ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth

☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☒ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☒ Soil Analysis provided.

☐ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☐ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

☐ Site is comprised solely of C and D soils and/or bedrock at the land surface

☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000

☐ Solid Waste Landfill pursuant to 310 CMR 19.000

☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☐ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

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

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

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

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☐ The BMP is sized (and calculations provided) based on:

- ☐ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☒ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

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

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☒ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

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

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☒ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☒ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☒ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

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

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

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

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

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

NOAA Atlas 14, Volume 10, Version 3
Location name: Andover, Massachusetts, USA*
Latitude: 42.6711°, Longitude: -71.1497°
Elevation: 37 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.310** (0.244-0.382)	**0.370** (0.291-0.457)	**0.468** (0.366-0.579)	**0.549** (0.427-0.684)	**0.660** (0.497-0.859)	**0.744** (0.549-0.990)	**0.832** (0.594-1.15)	**0.930** (0.628-1.31)	**1.07** (0.694-1.56)	**1.18** (0.748-1.77)
10-min	**0.439** (0.346-0.542)	**0.524** (0.412-0.647)	**0.662** (0.519-0.822)	**0.777** (0.605-0.968)	**0.935** (0.704-1.22)	**1.05** (0.777-1.40)	**1.18** (0.841-1.63)	**1.32** (0.891-1.86)	**1.52** (0.983-2.22)	**1.68** (1.06-2.50)
15-min	**0.517** (0.407-0.637)	**0.616** (0.485-0.761)	**0.779** (0.610-0.965)	**0.915** (0.712-1.14)	**1.10** (0.828-1.43)	**1.24** (0.914-1.65)	**1.39** (0.990-1.91)	**1.55** (1.05-2.19)	**1.78** (1.16-2.61)	**1.97** (1.25-2.94)
30-min	**0.711** (0.560-0.877)	**0.849** (0.667-1.05)	**1.07** (0.841-1.33)	**1.26** (0.981-1.57)	**1.52** (1.14-1.97)	**1.71** (1.26-2.27)	**1.91** (1.36-2.64)	**2.14** (1.44-3.02)	**2.46** (1.60-3.60)	**2.72** (1.72-4.06)
60-min	**0.906** (0.713-1.12)	**1.08** (0.850-1.34)	**1.37** (1.07-1.69)	**1.60** (1.25-2.00)	**1.93** (1.46-2.52)	**2.18** (1.61-2.90)	**2.44** (1.74-3.36)	**2.73** (1.84-3.85)	**3.14** (2.04-4.59)	**3.47** (2.20-5.18)
2-hr	**1.16** (0.923-1.42)	**1.40** (1.11-1.71)	**1.78** (1.41-2.19)	**2.10** (1.65-2.60)	**2.54** (1.93-3.30)	**2.86** (2.13-3.81)	**3.21** (2.33-4.45)	**3.63** (2.46-5.10)	**4.26** (2.77-6.20)	**4.80** (3.05-7.12)
3-hr	**1.34** (1.07-1.64)	**1.62** (1.29-1.98)	**2.07** (1.65-2.54)	**2.45** (1.93-3.02)	**2.97** (2.27-3.85)	**3.35** (2.51-4.45)	**3.77** (2.75-5.22)	**4.28** (2.91-5.99)	**5.06** (3.30-7.34)	**5.74** (3.65-8.49)
6-hr	**1.71** (1.38-2.07)	**2.08** (1.67-2.52)	**2.68** (2.14-3.26)	**3.17** (2.52-3.89)	**3.86** (2.97-4.98)	**4.36** (3.30-5.76)	**4.92** (3.61-6.79)	**5.60** (3.82-7.80)	**6.68** (4.36-9.62)	**7.61** (4.85-11.2)
12-hr	**2.14** (1.74-2.58)	**2.62** (2.13-3.16)	**3.40** (2.75-4.12)	**4.05** (3.25-4.93)	**4.95** (3.84-6.33)	**5.60** (4.26-7.35)	**6.32** (4.67-8.67)	**7.22** (4.95-9.97)	**8.60** (5.65-12.3)	**9.81** (6.28-14.3)
24-hr	**2.52** (2.07-3.02)	**3.14** (2.57-3.76)	**4.14** (3.38-4.98)	**4.98** (4.03-6.01)	**6.12** (4.79-7.80)	**6.96** (5.34-9.10)	**7.89** (5.88-10.8)	**9.05** (6.23-12.4)	**10.9** (7.18-15.5)	**12.5** (8.02-18.1)
2-day	**2.82** (2.33-3.35)	**3.57** (2.95-4.25)	**4.81** (3.95-5.74)	**5.83** (4.76-7.00)	**7.24** (5.72-9.20)	**8.27** (6.40-10.8)	**9.42** (7.10-12.9)	**10.9** (7.54-14.9)	**13.3** (8.81-18.8)	**15.5** (9.97-22.3)
3-day	**3.09** (2.57-3.65)	**3.90** (3.24-4.62)	**5.22** (4.32-6.21)	**6.32** (5.19-7.56)	**7.83** (6.22-9.91)	**8.93** (6.95-11.6)	**10.2** (7.70-13.9)	**11.8** (8.16-16.0)	**14.4** (9.54-20.3)	**16.8** (10.8-24.0)
4-day	**3.36** (2.80-3.96)	**4.19** (3.49-4.95)	**5.56** (4.61-6.58)	**6.69** (5.51-7.97)	**8.24** (6.57-10.4)	**9.38** (7.32-12.1)	**10.6** (8.08-14.5)	**12.3** (8.55-16.7)	**15.0** (9.97-21.1)	**17.5** (11.3-25.0)
7-day	**4.10** (3.44-4.81)	**4.96** (4.16-5.82)	**6.37** (5.32-7.50)	**7.54** (6.25-8.93)	**9.14** (7.33-11.4)	**10.3** (8.08-13.3)	**11.6** (8.86-15.7)	**13.3** (9.30-18.0)	**16.1** (10.7-22.5)	**18.6** (12.1-26.5)
10-day	**4.76** (4.02-5.57)	**5.64** (4.76-6.61)	**7.09** (5.95-8.33)	**8.29** (6.91-9.79)	**9.94** (7.99-12.4)	**11.1** (8.75-14.2)	**12.5** (9.50-16.7)	**14.2** (9.94-19.1)	**16.9** (11.3-23.5)	**19.4** (12.6-27.4)
20-day	**6.64** (5.66-7.71)	**7.62** (6.48-8.85)	**9.21** (7.80-10.7)	**10.5** (8.86-12.4)	**12.4** (9.97-15.1)	**13.7** (10.8-17.2)	**15.2** (11.5-19.7)	**16.8** (11.9-22.4)	**19.3** (12.9-26.6)	**21.3** (13.9-30.0)
30-day	**8.22** (7.04-9.50)	**9.27** (7.93-10.7)	**11.0** (9.36-12.8)	**12.4** (10.5-14.5)	**14.4** (11.6-17.5)	**15.9** (12.5-19.7)	**17.4** (13.1-22.3)	**19.0** (13.5-25.2)	**21.3** (14.3-29.2)	**23.0** (15.0-32.3)
45-day	**10.2** (8.82-11.8)	**11.4** (9.79-13.1)	**13.2** (11.3-15.3)	**14.8** (12.6-17.2)	**16.9** (13.7-20.4)	**18.6** (14.6-22.8)	**20.2** (15.2-25.6)	**21.8** (15.5-28.7)	**23.9** (16.1-32.5)	**25.4** (16.6-35.4)
60-day	**12.0** (10.4-13.7)	**13.2** (11.4-15.1)	**15.2** (13.0-17.5)	**16.8** (14.3-19.5)	**19.0** (15.5-22.8)	**20.8** (16.4-25.4)	**22.5** (16.9-28.3)	**24.1** (17.2-31.6)	**26.1** (17.7-35.4)	**27.5** (18.0-38.2)

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

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

Please refer to NOAA Atlas 14 document for more information.

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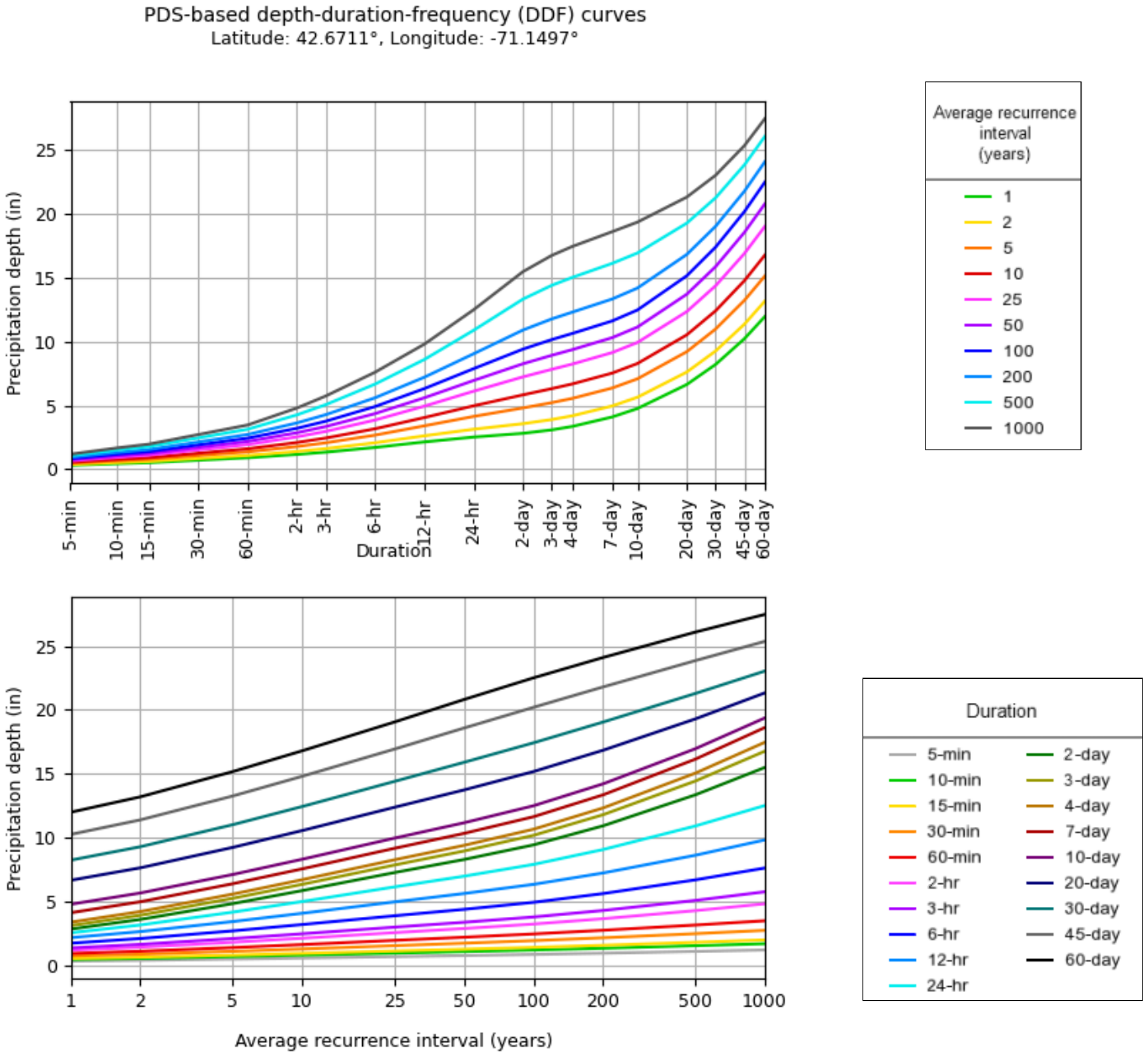
PF graphical



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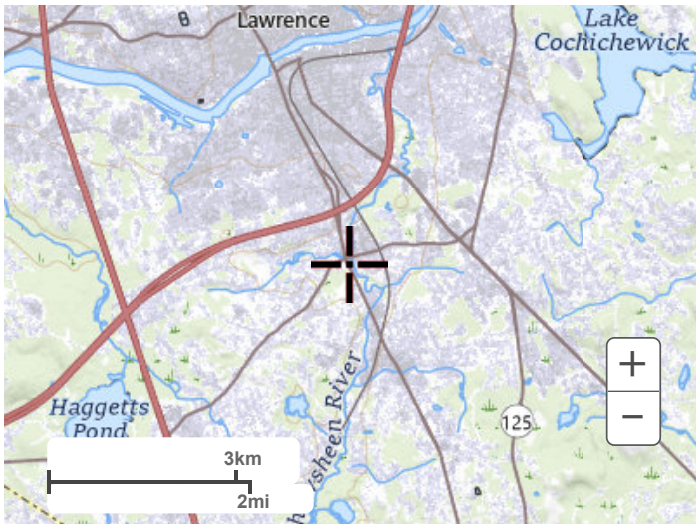
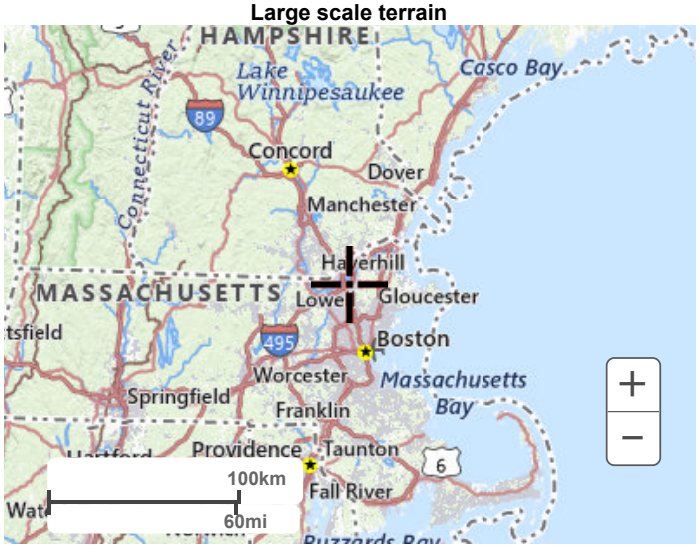
Maps & aerials

Small scale terrain



Large scale terrain



Large scale map

Large scale aerial

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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Project: 305 North Main Street
Location: Andover, MA
Prepared For: TEC

Purpose: To calculate the water quality flow rate (WQF) over a given site area. In this situation the WQF is derived from the first 1" of runoff from the contributing impervious surface.

Reference: Massachusetts Dept. of Environmental Protection Wetlands Program / United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual

Procedure: Determine unit peak discharge using Figure 3 or 4. Figure 4 is in tabular form so is preferred. Using the tc, read the unit peak discharge (qu) from Figure 3 or Table in Figure 4. qu is expressed in the following units: cfs/mi^2/watershed inches (csm/in).

Compute Q Rate using the following equation:

$$Q = (qu)\ (A)\ (WQV)$$

where:

Q = flow rate associated with first 1" of runoff
qu = the unit peak discharge, in csm/in.
A = impervious surface drainage area (in square miles)
WQV = water quality volume in watershed inches (1" in this case)

Structure Name	Impv. (acres)	A (miles^2)	t_c (min)	t_c (hr)	WQV (in)	qu (csm/in.)	Q (cfs)
WQU North	0.35	0.0005469	6.0	0.100	1.00	774.00	0.42
WQU South	0.60	0.0009375	6.0	0.100	1.00	774.00	0.73

The WQf sizing calculation selects the minimum size CDS/Cascade/StormCeptor model capable of operating at the computed WQf peak flowrate prior to bypassing. It assumes free discharge of the WQf through the unit and ignores the routing effect of any upstream storm drain piping. As with all hydrodynamic separators, there will be some impact to the Hydraulic Gradient of the corresponding drainage system, and evaluation of this impact should be considered in the design.

CONTECH ENGINEERED SOLUTIONS

CDS TECHNOLOGIES

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION
BASED ON THE RATIONAL RAINFALL METHOD

305 NORTH MAIN STREET
ANDOVER, MA

Area	**0.35 ac**	Unit Site Designation	**WQU North**
Weighted C	**0.9**	Rainfall Station #	**69**
t_c	**6 min**		
CDS Model	**1515-3**	CDS Treatment Capacity	**1.0 cfs**

Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Total Flowrate (cfs)	Treated Flowrate (cfs)	Incremental Removal (%)
0.02	10.2%	10.2%	0.01	0.01	10.2
0.04	9.6%	19.8%	0.01	0.01	9.6
0.06	9.4%	29.3%	0.02	0.02	9.4
0.08	7.7%	37.0%	0.03	0.03	7.7
0.10	8.6%	45.6%	0.03	0.03	8.6
0.12	6.3%	51.9%	0.04	0.04	6.3
0.14	4.7%	56.5%	0.04	0.04	4.6
0.16	4.6%	61.2%	0.05	0.05	4.6
0.18	3.5%	64.7%	0.06	0.06	3.5
0.20	4.3%	69.1%	0.06	0.06	4.3
0.25	8.0%	77.1%	0.08	0.08	7.8
0.30	5.6%	82.7%	0.09	0.09	5.4
0.35	4.4%	87.0%	0.11	0.11	4.2
0.40	2.5%	89.5%	0.13	0.13	2.4
0.45	2.5%	92.1%	0.14	0.14	2.4
0.50	1.4%	93.5%	0.16	0.16	1.3
0.75	5.0%	98.5%	0.24	0.24	4.5
1.00	1.0%	99.5%	0.32	0.32	0.9
1.50	0.0%	99.5%	0.47	0.47	0.0
2.00	0.0%	99.5%	0.63	0.63	0.0
3.00	0.5%	100.0%	0.95	0.95	0.3
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
					98.1
				Removal Efficiency Adjustment[2] =	6.5%
				Predicted % Annual Rainfall Treated =	93.5%
				Predicted Net Annual Load Removal Efficiency =	**91.6%**

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION
BASED ON THE RATIONAL RAINFALL METHOD

305 NORTH MAIN STREET
ANDOVER, MA

Area	**0.60 ac**	Unit Site Designation	**WQU South**
Weighted C	**0.9**	Rainfall Station #	**69**
t_c	**6 min**		
CDS Model	**1515-3**	CDS Treatment Capacity	**1.0 cfs**

Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Total Flowrate (cfs)	Treated Flowrate (cfs)	Incremental Removal (%)
0.02	10.2%	10.2%	0.01	0.01	10.2
0.04	9.6%	19.8%	0.02	0.02	9.6
0.06	9.4%	29.3%	0.03	0.03	9.4
0.08	7.7%	37.0%	0.04	0.04	7.7
0.10	8.6%	45.6%	0.05	0.05	8.5
0.12	6.3%	51.9%	0.06	0.06	6.2
0.14	4.7%	56.5%	0.08	0.08	4.6
0.16	4.6%	61.2%	0.09	0.09	4.5
0.18	3.5%	64.7%	0.10	0.10	3.4
0.20	4.3%	69.1%	0.11	0.11	4.2
0.25	8.0%	77.1%	0.14	0.14	7.6
0.30	5.6%	82.7%	0.16	0.16	5.2
0.35	4.4%	87.0%	0.19	0.19	4.0
0.40	2.5%	89.5%	0.22	0.22	2.3
0.45	2.5%	92.1%	0.24	0.24	2.3
0.50	1.4%	93.5%	0.27	0.27	1.2
0.75	5.0%	98.5%	0.41	0.41	4.1
1.00	1.0%	99.5%	0.54	0.54	0.8
1.50	0.0%	99.5%	0.81	0.81	0.0
2.00	0.0%	99.5%	1.08	1.00	0.0
3.00	0.5%	100.0%	1.62	1.00	0.2
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
					96.0
				Removal Efficiency Adjustment[2] =	6.5%
				Predicted % Annual Rainfall Treated =	93.4%
				Predicted Net Annual Load Removal Efficiency =	**89.6%**

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

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 Essex County, Massachusetts, Northern Part

305 North Main St Andover, Massachusetts

August 27, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,040 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

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 1:15,800.

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: Essex County, Massachusetts, Northern Part
Survey Area Data: Version 20, 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
1	Water	0.3	10.1%
260A	Sudbury fine sandy loam, 0 to 3 percent slopes	2.5	88.3%
651	Udorthents, smoothed	0.0	1.6%
Totals for Area of Interest		**2.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Essex County, Massachusetts, Northern Part

1—Water

Map Unit Setting

National map unit symbol: vjx4
Frost-free period: 125 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

260A—Sudbury fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: vjsk
Elevation: 0 to 2,100 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sudbury and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sudbury

Setting

Landform: Flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Rise
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Friable loamy eolian deposits over loose sandy glaciofluvial deposits derived from granite and gneiss

Typical profile

O - 0 to 1 inches: muck
H2 - 1 to 5 inches: fine sandy loam
H3 - 5 to 21 inches: sandy loam
H4 - 21 to 27 inches: loamy sand
H5 - 27 to 60 inches: Error

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)

Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 15 percent
Hydric soil rating: No

Walpole

Percent of map unit: 5 percent
Landform: Terraces
Hydric soil rating: Yes

651—Udorthents, smoothed

Map Unit Setting

National map unit symbol: vjwk
Elevation: 0 to 3,000 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Parent material: Excavated and filled land loamy and/or excavated and filled land sandy and gravelly

Typical profile

H1 - 0 to 6 inches: variable
H2 - 6 to 60 inches: variable

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.06 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Hydric soil rating: Unranked

Minor Components

Urban land

Percent of map unit: 10 percent
Hydric soil rating: Unranked

Beaches

Percent of map unit: 8 percent
Hydric soil rating: Unranked

Dumps

Percent of map unit: 2 percent
Hydric soil rating: Unranked

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STORMWATER MANAGEMENT OPERATIONS AND MAINTENANCE PLAN

PROPOSED COMMERCIAL REDEVELOPMENT

305 NORTH MAIN STREET
ANDOVER, MASSACHUSETTS

Prepared for:

Lupoli Companies
280 Merrimack Street
Lawrence, MA 01843

Prepared by:

TEC, Inc.
282 Merrimack Street
2nd Floor
Lawrence MA, 01843

TEC
The Engineering Corp

September 30, 2025

Stormwater Management Operation and Maintenance Plan
September 30, 2025

Name of Owner: **Lupoli Companies**
Name of Facility: **305 North Main Street**
Location: **305 North Main Street, Andover, MA 01810**

A detailed, written log of all scheduled preventative and corrective maintenance performed for the stormwater management measures must be kept on site, including a record of all inspections and copies of maintenance-related work orders.

An "Inspection and Maintenance Check List" shall be maintained as a record of regularly scheduled inspection and maintenance items as outlined below for every year. Maintenance required and actions taken shall be recorded in a "Inspection and Maintenance Log". The funding, operation, and maintenance of all stormwater management Best Management Practices (BMPs) shall be provided by the Owner, or their appointee.

Maintenance routine and schedule: Routine inspections will be conducted monthly and thorough investigations will be conducted twice a year. Task systems include regular removal of accumulated sediments, floatables and debris, and scour inspection. Inspections will occur after every major storm event throughout construction and for the first six (6) months after construction is completed. Inspections will be conducted by a qualified person, experienced in drainage design and stormwater management systems. Annual reports will be prepared detailing the status of the stormwater system and the maintenance performed. A copy of the annual report will be kept by the Town of Andover, if requested.

The Owner agrees with a minimum maintenance schedule as follows:

1. **Monthly Inspection for damaged or clogged catch basins and area drains.**
   Catch basins & area drains shall be inspected and cleared of debris to maintain inlet capacity. Any damage to the grates/inlets shall be noted for future repairs and fixed/replaced as soon as possible. Inspectors shall also note the sediment buildup present within the structure. Sediment buildup and debris within the catch basin and area drains shall be removed every six months, at the beginning of spring and end of fall preferably. All sediments shall be properly handled and disposed of in accordance with local, state, and federal guidelines and regulations

2. **Inspection and cleaning of drainage pipes and manholes.** Drainage pipes and manholes shall be inspected and cleaned of sediment at least every five (5) years or as required to maintain adequate functionality of the stormwater conveyance system. All sediments shall be properly handled and disposed of in accordance with local, state, and federal guidelines and regulations.

3. **Grass Landscaping**
   The grass landscaping and plantings will be inspected after every major

storm event for the two (2) months after seeding to ensure functionality. Thereafter, inspections should take place every six (6) months in the spring and fall. Grass landscaping showing signs of wear and erosion will be reloamed and reseeded as necessary to prevent further erosion from taking place.

4. **Snow removal.** Snow will be removed as needed from the roadway. Snow shall not be stored within the resource area.

The Long-Term Pollution Prevention Plan

The State agrees to comply with the following Long-Term Pollution Prevention Plan to ensure long-term stormwater quality discharge from the site:

- *Good housekeeping practices:* The project is a public roadway that will be maintained by the State, including snow removal, de-icing, street sweeping and BMP inspection/maintenance.

- *Provisions for storing materials and waste products inside or under cover*: Waste products are not anticipated to be produced or stored on this site.

- *Vehicle washing controls:* Vehicle washing is not anticipated as a reasonably foreseeable use of the site.

- *Spill prevention and response plans:* There are no proposed uses at the site that would provide an opportunity for a spill of oil or hazardous materials, other than a sudden, catastrophic, vehicle failure. If a vehicle release is the result of an accident, the police and fire department will respond and address any release.

- *Provisions for maintenance of lawns, gardens, and other landscaped areas:* The Owner will provide long-term maintenance for the landscaped areas and stormwater BMPs.

- *Requirements for storage and use of fertilizers, herbicides, and pesticides:* At this time there would be no foreseeable need for fertilizers, herbicides, and pesticides.

- *Provisions for operation and management of septic systems:* Not Applicable

- *Provisions for solid waste management:* Not Applicable.

- *Snow disposal and plowing plans relative to Wetland Resource Areas:* No snow will be stored or disposed of in surrounding resource areas.

- *Street sweeping*: The Owner will perform street sweeping as needed to minimize sediment build up along the roadway. Visible sediment build-up shall be removed as needed.

- *Provisions for prevention of illicit discharges to the stormwater management system: Only* stormwater is proposed to be conveyed through the stormwater

management system. No illicit materials will be permitted. The Owner will be responsible for maintaining this 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.* The project location is not considered a LUHPPL, however in the event or a vehicular spill, the fire department and police department of Andover will be responsible for cleaning up and contamination removal. The current stormwater design has BMPs in place to mitigate the risk of a spill and provide containment.

- *Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan:* Prior to implementation of the LTPPP, the Owner shall provide an on-site meeting with the maintenance personnel to present the contents and requirements of the Stormwater Operation and Maintenance Plan and the LTPPP.

- *List of Emergency contacts for implementing Long-Term Pollution Prevention Plan*:

  Lupoli Companies
  (978) 681-7777
  280 Merrimack Street
  Lawrence, MA 01843

INSPECTION AND MAINTENANCE CHECK LIST -
305 North Main Street, Andover, MA 01810

For Year: _____

	Inspection Item	Inspection Frequency*											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	Catch Basins and Area Drains												
2	Drainage Pipes and Manholes	At least every 5 years or as needed											
3	Grass Landscaping												

	Maintenance Item	Maintenance Frequency*											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Catch Basins and Area Drains												
2	Drainage Pipes and Manholes	At least every 5 years or as needed											
3	Grass Landscaping												
4	Street Sweeping and Snow Removal	As needed.											

* Actual time of inspecting and maintaining items may vary. Chart shall be used to indicate frequency of events

** This chart shall be used in conjunction with the attached "Stormwater Management Operations and Maintenance Plan", dated September 30, 2025

CONTECH®
ENGINEERED SOLUTIONS

CDS® Inspection and Maintenance Guide

CDS TECHNOLOGIES

Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allows both sump cleanout and access outside the screen.

The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine weather the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

Cleaning

Cleaning of a CDS systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill should be cleaned out immediately. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be power washed to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes.

CDS Model	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	y^3	m^3
CDS1515	3	0.9	3.0	0.9	0.5	0.4
CDS2015	4	1.2	3.0	0.9	0.9	0.7
CDS2015	5	1.3	3.0	0.9	1.3	1.0
CDS2020	5	1.3	3.5	1.1	1.3	1.0
CDS2025	5	1.3	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3025	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3
CDS5640	10	3.0	6.3	1.9	8.7	6.7
CDS5653	10	3.0	7.7	2.3	8.7	6.7
CDS5668	10	3.0	9.3	2.8	8.7	6.7
CDS5678	10	3.0	10.3	3.1	8.7	6.7

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities

Support

- Drawings and specifications are available at www.contechstormwater.com.
- Site-specific design support is available from our engineers.

Contech Engineered Solutions LLC provides site solutions for the civil engineering industry. Contech's portfolio includes bridges, drainage, sanitary sewer, stormwater, earth stabilization and wastewater treament products. For information, visit www.ContechES.com or call 800.338.1122

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800.925.5240
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CDS Inspection & Maintenance Log

CDS Model: _____ Location: _____

Date	Water depth to sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the values listed in table 1 the system should be cleaned out. **Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.**

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

CONSTRUCTION PERIOD POLLUTION PREVENTION AND EROSION AND SEDIMENTATION CONTROL PLAN
September 30, 2025

Name of Applicant:	**Lupoli Companies**
Name of Facility:	**305 North Main Street**
Location:	**305 North Main Street**
	Andover, MA 01810

Good Housekeeping BMPs

Goals

Minimize the potential for contaminants to enter or runoff the site during construction activities. Fuel and other equipment related fluids will be properly stored. The Contractor shall establish secure storage areas that collect any spillage to meet requirements of the Town of Andover Fire Department regarding the storage of flammable materials. The Contractor shall complete and submit the plans to the Engineer.

General Requirements

The following presents a proactive approach to all of the best management practices, erosion and sedimentation controls, mitigation measures, and monitoring activities for this Project.

Compost Filter Tubes and Silt Fence

Compost Filter Tubes and silt fence are used as temporary perimeter controls where construction activities will disturb existing surfaces. They can also be used to contain soil stockpiles areas. Compost filter tubes and silt fence consist of a length of filter fabric stretched between two anchoring posts spaced at regular intervals along the site at low/downslope areas with compost filter tubes. The filter fabric should be entrenched in the ground between the support posts. When installed correctly and inspected frequently, compost filter tubes and silt fence can be an effective barrier to sediment leaving the site in stormwater runoff.

Storm Drain Inlet Protection

Storm drain inlet protection measures prevent soil and debris from entering storm drain inlets. These measures will be implemented before the Site is disturbed by using silt sacks, compost filter socks, or staked bales in combination with silt fence. Storm drain inlet protection will be installed at all down gradient catch basins adjacent to the project site outside the protection of other erosion control barriers, all catch basins within the construction site, and at low points within the construction site that are connected to the storm drainage system.

Temporary Seeding and Slope Stabilization

Seeding shall be used to temporarily stabilize areas that will not be brought to final grade for a period of more than 30 working days and to stabilize disturbed areas before final grading or in a season not suitable for permanent seeding. Stabilization of open soil surfaces will be implemented within 14 days after grading or construction activities have temporarily or permanently ceased, unless there is sufficient snow cover to prohibit implementation.

Vegetative slope stabilization will be used to minimize erosion on slopes of 3:1 or flatter. Annual grasses, such as annual rye, will be used to ensure rapid germination and production of root mass. Permanent stabilization will be completed with the planting of perennial grasses or legumes. Establishment of temporary and permanent vegetative cover may be established by hydro-seeding or sodding. A suitable topsoil, good seedbed preparation, and adequate lime, fertilizer, and water will be provided for effective establishment of these vegetative stabilization methods. Root systems restrain the soils so that they are less apt to be dislodged and carried offsite by stormwater runoff or wind. Temporary seeding also reduces the problems associated with mud and dust from bare soil surfaces during construction. Mulch will also be used after permanent seeding to protect soil from the impact of falling rain and to increase the capacity of the soil to absorb water.

General Maintenance

Refer to the Inspection and Maintenance Checklist (at the end of this section) identifying inspection and maintenance measures for each specific practice.

The contractor or subcontractor will be responsible for implementing each control shown on the Plan. In accordance with EPA regulations, the contractor must sign a copy of a certification to verify that a plan has been prepared and that permit regulations are understood.

The onsite contractor will inspect all sediment and erosion control structures weekly and after each rainfall event meeting the minimum requirements as defined in the Plan. Records of the inspections will be prepared and maintained onsite by the contractor as required by the Plan.

- Silt shall be removed from behind barriers if greater than 6-inches deep or as needed.
- Damaged or deteriorated items will be repaired immediately after identification.
- The underside of straw bales should be kept in close contact with the earth and reset as necessary.
- Sediment that is collected in structures shall be disposed of properly and covered if stored onsite.
- At a minimum establish good housekeeping BMPs for:
    - Material handling and waste management
    - Staging areas
    - Designate washout areas
    - Equipment vehicle fueling and maintenance
    - Spill prevention and control

Erosion control structures shall remain in place until all disturbed earth has been securely stabilized. After removal of structures, disturbed areas shall be regraded and stabilized as necessary.

Spill Prevention and Control

The Contractor will actively maintain and manage the site activities with the procedures outlined in this Plan. In the event of petroleum or other deleterious substance spill, action will be taken by the Contractor to contain and remove the spill. The Contractor will comply with the relevant section(s) of the Oil Pollution Prevention Act, 40 CFR 112.7.

Responsibility

All project personnel share the responsibility for the initial control and reporting of the oil and other substance spill, especially the personnel that first discover the spill. The Site Safety and Health Officer (SSHO) will be responsible for determining the necessary safety equipment and for establishing safety practices to be followed by the Contractor during the clean-up operations. All personnel will be trained in the use of and location of this equipment, prior to the commencement of the construction.

The Contractor's goal is to provide effective, efficient, and coordinated action to minimize or mitigate damages to the environment and public health and welfare from oil or other substance discharges, conforming to applicable federal, state, and local regulations, as well as other provisions and restrictions. In the event of spills or releases that may occur during the Project, a representative on-site qualified by OSHA training requirements (29 CFR 1910.120) for a Level 3 Hazmat Technician will be provided and will have the responsibility and authority for supervising the cleanup. If the representative determines that the cleanup operations are beyond the capacity of the Contractor, assistance shall be requested from its Subcontractor.

In the event of an emergency spill, the Contractor will be responsible for retaining the environmental Subcontractor. The selected environmental subcontractor will develop a Hazardous Materials Health and Safety Plan, which will be referenced when a spill or release is discovered, and the control of the spill or release is beyond the scope of the Spill Prevention Control and Countermeasure plan. The Contractor's Project Manager is responsible for giving the SSHO directions for initiating the Hazardous Materials Health and Safety Plan.

Alert and reporting procedures will become effective immediately upon observance and indication of a spill or discharge of oil or other substances on the project.

Reportable observations are:

1. Leaks or spills
2. Soils which are discolored or have an odor
3. Discharge of oil or other similar substances from drain pipes

The Engineer will be informed immediately of all substantial spills, releases, or other substance discharges. All telephone numbers for the Emergency Response agencies will be posted on site. The Contractor or its Subcontractors will implement control and countermeasures immediately.

Fuel and Oil Delivery Trucks

The equipment superintendent or designee will monitor all truck unloading procedures to verify all hoses are tight and do not leak, and if necessary, will tighten, adjust, or replace them to prevent a release of any kind. In the event of a major spill, alert and initial report procedures will be implemented, and an emergency response contractor will be called in to perform the cleanup.

Equipment

Motorized equipment that require fuel and oil to operate will be inspected prior to the start of each work shift by the operator (in the field) to ensure there is no leakage of oil, fuel, or other material. Trucks will be inspected prior to use for potential leaks or drips. If a leak is found, repairs will be made immediately, and spillage will be cleaned up manually using sorbent material. Vehicles that are found to be leaking will be immediately taken out of service until repairs can be made.

Drum Storage

Drum storage, if any, will be located in a secure area within the Project limits away from environmental areas of concern. Petroleum liquids and other substances stored in drums will be kept in a drum container that consists of a drum rack and drip containment pan that is capable of containing 110% of the stored volume should the drum rupture.

Lubrication / Oil Maintenance

Replacement lubrication will be directly deposited from the lubrication truck to the equipment lubrication reservoir. No other container system will be used to transport oil to the equipment. Mobile equipment will be serviced off site or in the lay-down area. Equipment that cannot be moved will be serviced in the field. The Contractor will place a containment pan or absorbent below the service area prior to initiating service activities in the field. Waste disposal will be completed by the Contractor or by a waste disposal firm. Miscellaneous lubricants for operating equipment will be limited to daily quantities.

Spent Oil

Oil that has already been used on the job will be disposed of via a certified waste disposal firm. Spent oil will be stored in a labeled (hazardous waste signs) and vented fuel storage cell located at the staging area awaiting disposal by a certified waste disposal firm (i.e. Enpro, Inc.). The staging area will be located within the boundary of the project and inspected daily for leaks or spills. The storage cell will be bermed to contain 110% of the largest container or 10% of the total volume in storage, whichever is greater.

Special Oil Spill Equipment

Sorbent Pads

Sorbent pads will be available to absorb oil and petroleum compounds. If necessary, the pads will be used to absorb oil spills or leaks by placing them on the oil and giving them adequate time to absorb it. The sorbent pads will be stored in equipment box located in the maintenance area. The pads shall float and be water repellent, so they can absorb oil on water. Saturated/contaminated pads will be placed in an appropriate container and stored within the maintenance area. A certified waste disposal firm will dispose of the approved containers.

Sorbent Compound

The compound will be used for contaminants spilled on decks or hard surfaces. In most cases, it can be applied directly to spills, but if the spill is large, it can be used to form a dike around the spill to prevent further migration.

Best Management Practices – Maintenance/Evaluation Checklist
Construction Practices

Best Management Practice	Inspection Frequency	Date Inspected	Inspector	Minimum Maintenance and Key Items to Check	Cleaning/Repair Needed ☐yes ☐no (List Items)	Date of Cleaning/Repair	Performed by
Compost filter tube and Silt Fence	Inspect at least once per week and after each rainstorm of 0.5 inch or greater.			• Silt shall be removed from behind barriers if greater than 6 inches deep or as needed. The underside of compost filter tubes should be kept in close contact with the earth and reset as necessary.			
Catch Basin Inlet Protection	Inspect at least once per week and after each rainstorm of 0.25 inch or greater.			• Check all temporary control measures after each storm event. • To maintain the capacity, remove accumulated sediment when the capacity is reduced by half.			
Temporary Seeding and Slope Stabilization	Inspect at least once per week and after every rainstorm.			• Seeding shall be used to temporarily stabilize areas that will not be brought to final grade for a period of more than 30 working days and to stabilize disturbed areas before final grading or in a season not suitable for permanent seeding. Stabilization of open soil surfaces will be implemented within 14 days after grading or construction activities have temporarily or permanently ceased, unless there is sufficient snow cover to prohibit implementation.			

Illicit Discharge Compliance Statement

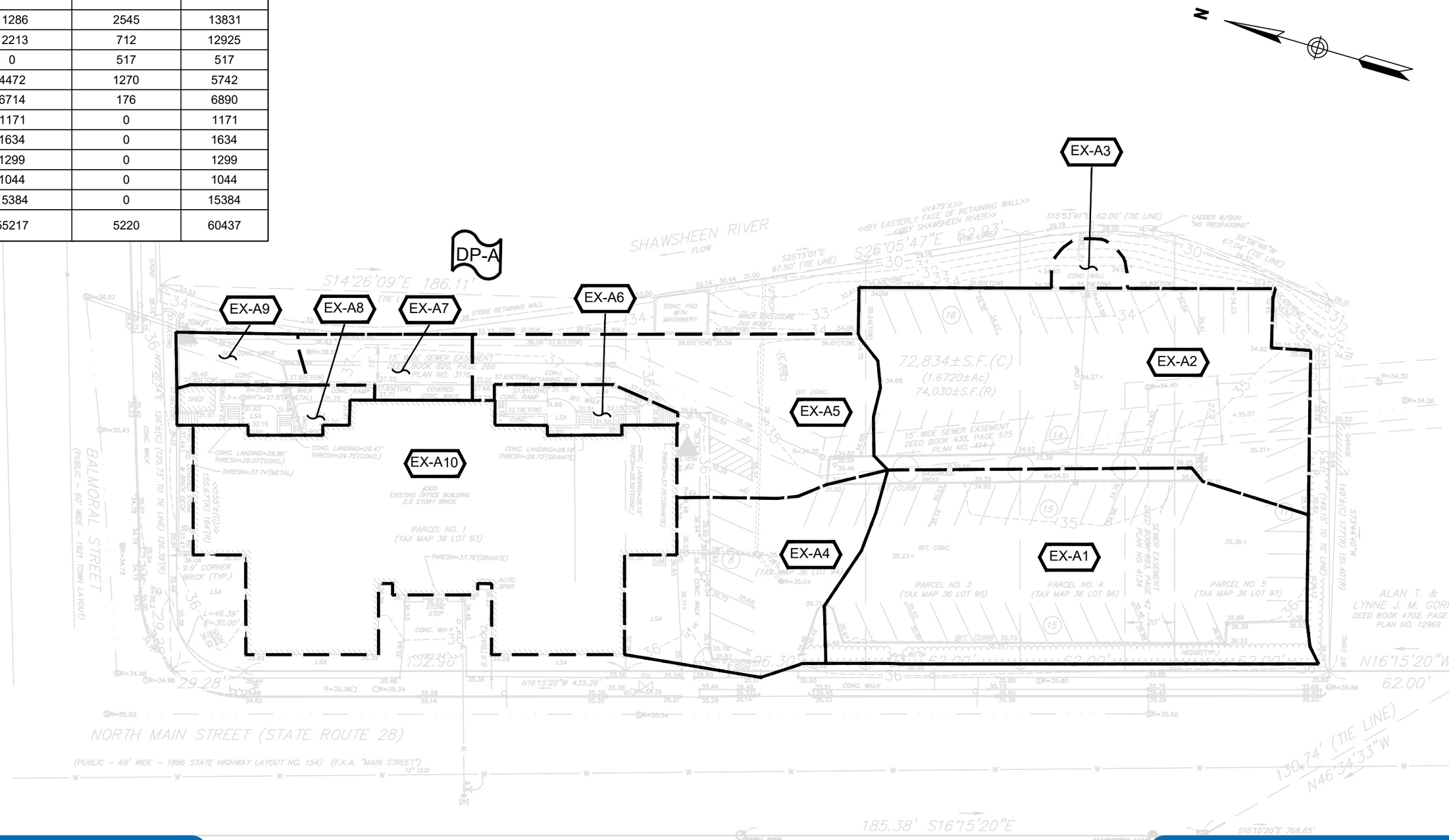
Name of Owner: **Lupoli Companies**
Name of Facility: **305 North Main Street**
Location: **305 North Main Street, Andover, MA**

The Site Plans and Stormwater Report for the Commercial Redevelopment Project located at 305 North Main Street, Andover, MA, meet the requirements of Standard 10 of the Massachusetts Stormwater Handbook.

The Site Plans were prepared by qualified personnel at the direction of Lupoli Companies. The Site Plans identify the location of stormwater management and utility systems. As designed, the systems do not allow for any connections between stormwater management and sanitary sewer utilities.

Signature: _____
(To be signed prior to occupancy)

	IMPERVIOUS (SF)	PERVIOUS (SF)	TOTAL (SF)
EX-A1	11286	2545	13831
EX-A2	12213	712	12925
EX-A3	0	517	517
EX-A4	4472	1270	5742
EX-A5	6714	176	6890
EX-A6	1171	0	1171
EX-A7	1634	0	1634
EX-A8	1299	0	1299
EX-A9	1044	0	1044
EX-A10	15384	0	15384
TOTAL	55217	5220	60437



Scale: 1" = 20'
September 8, 2025

20 0 20 40
SCALE IN FEET

LEGEND

EX-# SUBCATCHMENT AREA

DP-# DESIGN POINT

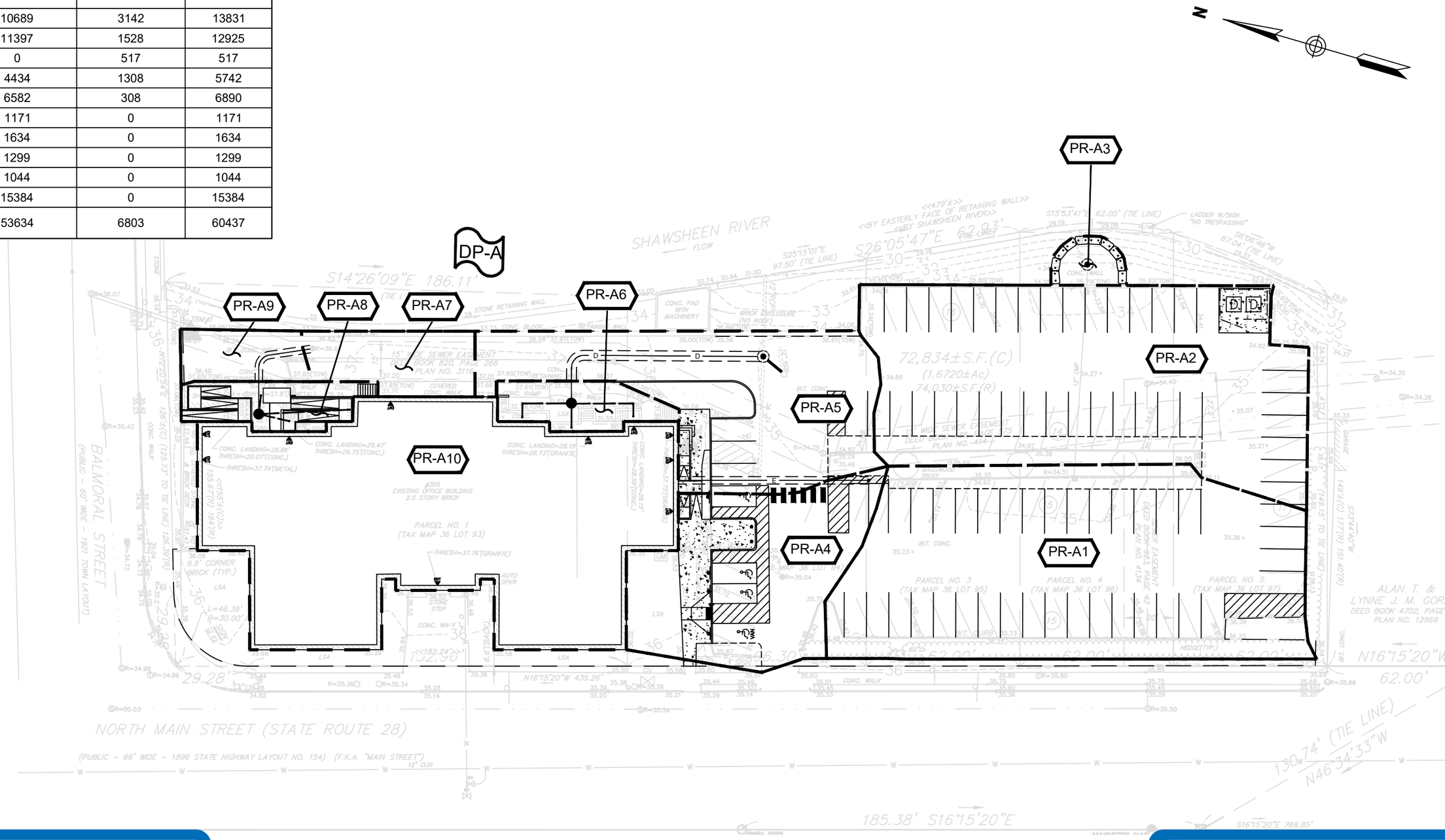
DRAINAGE AREA BOUNDARY

TEC
The Engineering Corp

Figure D-1
Pre-Development Drainage

305 North Main Street
Andover, MA 01810

	IMPERVIOUS (SF)	PERVIOUS (SF)	TOTAL (SF)
PR-A1	10689	3142	13831
PR-A2	11397	1528	12925
PR-A3	0	517	517
PR-A4	4434	1308	5742
PR-A5	6582	308	6890
PR-A6	1171	0	1171
PR-A7	1634	0	1634
PR-A8	1299	0	1299
PR-A9	1044	0	1044
PR-A10	15384	0	15384
TOTAL	53634	6803	60437



Scale: 1" = 20'
September 29, 2025

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SCALE IN FEET

LEGEND

PR-# SUBCATCHMENT AREA

DP-# DESIGN POINT

DRAINAGE AREA BOUNDARY

TEC
The Engineering Corp

Figure D-2
Post-Development Drainage

305 North Main Street
Andover, MA 01810