

MEMORANDUM

DATE: May 25, 2021, revised September 2, 2021

ATTENTION: Town of Millbury

PREPARED BY: Elizabeth Ennis, P.E.

EMAIL: lennis@blcompanies.com

PROJECT NAME: Downtown Revitalization Project – Phase 2, Millbury,
Massachusetts

PROJECT NUMBER: 2001278

SUBJECT: Stormwater Management Summary

Purpose

This memorandum has been prepared to demonstrate compliance with the Massachusetts Department of Environmental Protection (MassDEP) Stormwater Management Standards, the Town of Millbury Warrant Articles (Article 32), and the Millbury Municipal Code Chapter 13.15 for Phase 2 of the Downtown Revitalization Project (the Project).

Project Description

The project is located along Elm Street from the intersection of Main Street to the intersection of River Street. The project includes the municipal parking lot between Elm Street and Grove Street. The Project's limit of disturbance is approximately 4.11 acres. The Town is proposing the following improvements: repave Elm Street from the municipal parking lot to River Street; improve pedestrian accessibility along Elm Street; upgrade the existing drainage system to incorporate rain gardens, porous pavers, and bioswales; and install new street trees and landscapes areas along the project site. According to the most current Zoning map, the Project is located in the Residential I district, the Business I district and the Industrial I district. The project lies within the Blackstone River Watershed. See Figure 1 for a Site Locus Plan of the project area. See Attachment B for the most current Zoning map.

Existing Hydrology Conditions:

Under the existing conditions, the site is primarily impervious consisting of streets, sidewalks, brick paving and buildings with few green spaces. See Figure 2 for the Existing Drainage Map showing runoff areas. Stormwater runoff from EDA 100, EDA 200, EDA 300, and EDA 400 is collected through a series of catch basins that flow to the existing municipal drainage system and ultimately discharges to the Blackstone River. The Natural Resources Conservation Service (NRCS) lists the on-site soils as Chatfield-Hollis-Rock (hydrology class B soil) and Merrimac fine sandy loam (hydrology class A soil). The project's existing stormwater discharge point is the Blackstone River.

The project is not subject to the Massachusetts Wetlands Protection Act (M.G.L. Chapter 131) as there are no MassDEP mapped wetlands in the proposed work area and there are no proposed improvements

within 100 feet of any wetland buffer. Per the FEMA Flood Insurance Rate Map the proposed work is not located within a flood zone. The site does not contain, nor is it tributary to any critical areas as defined by MassDEP Stormwater Management Handbook. MassDEP has issued a draft Total Maximum Daily Load (TMDL) for the Blackstone River Watershed. The potential sources of pollution include urban runoff, illicit sewer connection, trash/debris, and turbidity.

Proposed Hydrology Conditions

Under the proposed conditions, there will be approximately 3,100 sf of new porous pavers, 2,300 sf of new bioswales, and 4,600 sf of new rain gardens installed along Elm Street and in the municipal parking lot. The Project will result in a net reduction in impervious area of approximately 2,040 sf. Stormwater runoff from PDA 100, PDA 200, PDA 300, and PDA 400 will be collected through catch basins, porous pavers and rain gardens which will flow to the existing municipal drainage system and ultimately discharge to the Blackstone River. The project's existing stormwater discharge point is the Blackstone River. The porous pavers and rain gardens will provide groundwater recharge and treatment for the site's stormwater runoff. See Figure 3 for the Proposed Drainage Map.

Compliance with Massachusetts Stormwater Management Standards

As demonstrated below, the Project complies with the MassDEP Stormwater Management Standards.

Standard 1: No New Untreated Discharges

The Project has been designed to fully comply with Standard #1. There are no wetlands or wetland buffer zones onsite. The new stormwater management components will discharge to the existing closed drainage network.

Standard 2: Peak Rate Attention

The Project was designed to mitigate post-development peak discharge rates for the 2-, 10-, 25-, and 100-year, 24-hour storms thus decreasing the pre-development peak discharge rates. A HydroCAD model, using the TR-55 methodology, was used to evaluate the site's existing and proposed drainage conditions. Proposed porous pavers were conservatively modeled as an impervious surface with curve number of 98 in the hydrologic model. The rain gardens and bioswales were modeled as grass cover in the hydrologic model. The hydrologic model did not include any infiltration or groundwater recharge components for the rain gardens, bioswales and porous pavements. See attachment E for HydroCAD results. Table 1 below provides a summary of peak runoff rates.

Table 1: Pre- & Post-development Runoff Rate Comparison

Storm Event	2 Year		10 Year		25 Year		100 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Discharge Point -Blackstone River	9.62 cfs	9.38 cfs	18.60 cfs	18.28 cfs	25.17 cfs	24.80 cfs	38.42 cfs	37.97 cfs

Standard 3: Recharge

The Project has been designed to comply with Standard 3, to the maximum extent practicable. As stated above, there is a net decrease of impervious surfaces over the existing conditions, which improves the groundwater recharge. In addition, the rain gardens and porous pavers provide approximately 12,600 cf of recharge. This redevelopment project will significantly improve the groundwater recharge currently onsite and as a whole provides the required recharge volume (per MassDEP Stormwater Standards). Due to existing conditions site constraints, some areas of the site will be over recharged while other areas will not discharge to an infiltrative stormwater BMP. Supporting calculations can be found in Attachment F.

Standard 4: Water Quality

The Project has been designed to comply with Standard 4 to the maximum extent practicable. As stated above, there is a net decrease of impervious surfaces over the existing conditions, which improves the water quality and Total Suspended Solids (TSS) removal. The rain gardens and porous pavers provide approximately 12,600 cf of water quality treatment. The deep hooded sump catch basins, bioswales, rain gardens and porous pavers will also provide TSS. The Town plans to implement an intensive street sweeping program which will provide increase the TSS removal rates. The water quality treatment and TSS removal rates will be drastically improved as a result of this redevelopment project; however, due to the existing site constraints water quality treatment and TSS removal could not be provided for all of the site’s stormwater runoff. Supporting calculations are provided in Attachment F.

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

This Project is not considered a LUHPPL.

Standard 6: Critical Areas

The site will not discharge stormwater near or to a critical area.

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

The Project qualifies as a redevelopment project. It fully complies with all standards of the Stormwater Management Handbook, with the exception of Standard 3, Recharge and Standard 4, Water Quality, which have been met to the maximum extent practicable. See above for a complete description.

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

A Stormwater Pollution Prevention Plan will be developed prior to construction to comply with Section 3 of the NPDES Construction General Permit for Stormwater Discharges; therefore the Project complies with Standard 8.

Standard 9: Operation and Maintenance Plan

The Project has been designed to comply with Standard 9. An Operation and Maintenance Plan is included as Attachment G. The Operation and Maintenance complies with the Long-Term Pollution Prevention Plan (Standard 4) and the Long-Term Operation and Maintenance Plan (Standard 9) requirements of the MassDEP Stormwater Management Standards.

Standard 10: Prohibition of Illicit Discharges

The proposed stormwater management BMPs will discharge into the existing drainage system. No statement is made with regard to the drainage system in portions of the system not included in the redevelopment project area. The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges.

Compliance with Millbury Article 32 Design Standards

As demonstrated below, the proposed Project complies with the Millbury Article 32 Design Standards

Low Impact Design Practices

The proposed work incorporates low impact design practices such as reduction in impervious surfaces, limiting land disturbance during construction, promoting infiltration and the implementation of green infrastructure stormwater BMP. The Project includes the installation of 14 rain gardens, approximately 3,100 sf of porous pavers and 2,300 sf of bioswales.

Groundwater Recharge

As stated above, there is a net decrease in impervious surfaces over the existing conditions, which improves the groundwater recharge. As stated above, there is a net decrease of impervious surfaces over the existing conditions, which improves the groundwater recharge. In addition, the rain gardens and porous pavers provide approximately 12,600 cf of recharge. This redevelopment project will significantly improve the groundwater recharge currently onsite and as a whole provides the required recharge volume (per MassDEP Stormwater Standards). Due to existing conditions site constraints, some areas of the site will be over recharged while other areas will not discharge to an infiltrative stormwater BMP. Supporting calculations can be found in Attachment F.

Pollutant Removal

The Project is considered a Major Project on a redevelopment site and has been designed to meet the pollutant removal design requirements. The Town will be implementing an intensive street sweeping program which will improve the TSS removal rates. In addition, rain gardens, porous pavers, bioswales, and deep hooded sump catch basins will be installed for TSS removal. The required 80% TSS removal is provided for approximately 56% of the site. To improve the Total Phosphorous (TP) removal at the site bioswales, rain gardens, and porous pavers will be installed. The bioswales, rain gardens and porous pavers will remove 35% of the average annual TP load from the total post-construction impervious surfaces on the site. The rain gardens and porous pavement provide 12,600 cf of retention which is more than the total post-construction impervious surface area times 0.8 inches. See Attachment F for supporting calculations.

Higher Potential Pollutant Loads

As stated above, this Project is not considered a higher potential pollutant load.

Critical Area

As stated above, this Project is not located in a critical area.

Erosion and Sediment Controls

A Stormwater Pollution Prevention Plan will be developed prior to the construction to comply with Section 3 of the NPDES Construction General Permit for Stormwater Discharges and will comply with the latest edition of the *Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Area: A guide for Planners, Designers and Municipal Officials*.

Operation and Maintenance Plan

An Operation and Maintenance Plan is included as Attachment G.

Figures

- Figure 1 – Locus Map
- Figure 2 – Existing Drainage Map
- Figure 3 – Proposed Drainage Map
- Figure 4 – Rain Garden and Porous Paver Catchment Area

Attachments

- Attachment A – Millbury Stormwater Application; Submission of Stormwater Plan Review Checklist
- Attachment B - Zoning Map
- Attachment C – NRCS Soil Data
- Attachment D – NOAA Atlas Storm Data
- Attachment E – Pre-Development Hydrology Calculations; Post-Development Hydrology Calculations
- Attachment F – Water Quality Calculations; Recharge Calculations; TSS Removal Worksheets; Pollutant Removal Calculations
- Attachment G – Operation & Maintenance Plan
- Attachment H – Geotechnical Report
- Attachment I – Draft Stormwater Pollution Prevention Plan

ATTACHMENT A

MILLBURY STORMWATER APPLICATION

MILLBURY SUBMISSION OF STORMWATER PLAN REVIEW CHECKLIST

**TOWN OF MILLBURY
APPLICATON FOR STORMWATER PERMIT**

APPLICANT:

NAME Town of Millbury

STREET 127 Elm Street CITY/TOWN Millbury

STATE MA ZIP 02157 TELEPHONE 508-865-4754

NAME OF PROPERTY OWNER (if different from Applicant) Town of Millbury

Deed recorded in the Worcester District Registry of Deeds Book N/A Page _____

SITE INFORMATION: Elm Street from South Main Street to River Street
and the parking lot adjacent to the Millbury Baptist
STREET AND NUMBER Church

ZONING DISTRICT B1 & R1 ASSESSOR'S MAP/LOT #(S) 53-81

LOT SIZE N/A FRONTAGE N/A

CURRENT USE Public roads, parking lot and parks

PROJECT PLAN INFORMATION:

PLAN TITLE Town of Millbury Improvements to Millbury Downtown - Phase 2

PREPARED BY (name/address of PE/Architect) Nicholas Giardina PE
BL Companies, 100 Constitution Plaza, 10th Floor
Hartford, CT 06103

DATES May, 2021

USES FOR WHICH STORMWATER PERMIT IS SOUGHT
Reconstruction of municipal parking lot and roadway

CITE ALL APPROPRIATE SECTIONS OF THE GENERAL BYLAW WHICH
PERTAIN TO THIS APPLICATION; USE AND SITE: Chapter 13.15 Warrant 32

TO THE MILLBURY PLANNING BOARD:

The undersigned, being the Applicant named above, hereby applies for a Stormwater Permit to be granted by the Planning Board and certifies that, to the best of applicant's knowledge and belief, the information contained herein is correct and complete.

Applicant's Signature _____

Property Owner's Signature (if not Applicant) _____

CHECKLIST
Millbury Planning Board
Submission of Stormwater Plan Review

Plan Name: Millbury Downtown - Phase 2

Property Address: Elm St, Millbury Assessor's Map 53, Lot _____

Applicant's Name: Town of Millbury Address: 127 Elm St, Millbury, Ma Tel. No. 508-865-4754
(If the applicant is not the owner, a notarized statement authorizing the applicant to act on the owner's behalf and disclosing his interest shall be submitted)

Owner's Name: Town of Millbury Address: 127 Elm St, Millbury, Ma Tel. No. 508-865-4754

Engineering Firm: BL Companies Address: 220 Norwood Park, Norwood, MA Tel. No. 781-619-9500

Submission Checklist:

- 1) Submission Fee of \$ _____ and Technical Review Fee of \$ 6,000 made payable to the Town of Millbury
- 2) One original Stormwater Management Plan and ten (10) copies thereof showing:
 - a) Names, addresses and telephone numbers of the owner, applicant and person(s) or firm(s) preparing the plan
 - b) Name of project, property address, assessor's map and lot number, the date, north arrow, names of abutters and scale
 - c) A locus map
 - d) The existing zoning, and land use at the site
 - e) The proposed land use
 - f) The location(s) of existing and proposed easements
 - g) The location of existing and proposed utilities
 - h) The site's existing & proposed topography with contours at one (1) foot intervals
 - i) The existing site hydrology
 - j) A description and delineation of existing stormwater conveyances, impoundments, and wetlands on or adjacent to the site or into which stormwater flows
 - k) A delineation of 100 year flood plains, if applicable
 - l) Estimated seasonal high groundwater elevation (November to April) in areas to be used for stormwater retention, detention or infiltration
 - m) The existing and proposed vegetation and ground surfaces with runoff coefficient for each
 - n) A drainage area map showing pre and post construction watershed boundaries, drainage area and stormwater flow paths
 - o) A description and drawings of all components of the proposed drainage system, including:
 - Locations, cross sections and profiles of all brooks, streams, drainage swales and their method of stabilization
 - All measures for the detention, retention or infiltration of water
 - All measures for the protection of water quality
 - The structural details for all components of the proposed drainage systems and stormwater management facilities
 - Notes on drawings specifying materials to be used, construction specifications and typicals
 - Expected hydrology with supporting calculations
 - p) Proposed improvements including locations of buildings or other structures, impervious surfaces, and drainage facilities if applicable
 - q) Timing schedules and sequence of development including clearing, stripping, rough grading, construction, final grading and vegetative stabilization
 - r) A maintenance schedule for the period of construction
- 3) One original Operation and Maintenance Plan and ten (10) copies thereof showing:
 - a) The names(s) of the owners(s) for all components of the system
 - b) Maintenance agreements that specify:
 - The names and addresses of the person(s) responsible for operation and maintenance
 - The person(s) responsible for financing maintenance and emergency repairs
 - A maintenance schedule for all drainage structures, including swales and ponds
 - A list of easements with the purpose and location of each
 - The signature(s) of the owner(s)

Note: The Planning Board may waive any of the above listed requirements if it believes that said requirement is not necessary based on the size and scope of the project. The applicant may petition the Planning Board prior to making a formal application to request notification as to which sections (s) of the stormwater plan review by-law requirements are necessary. The Planning Board will then notify the applicant within thirty (30) days as to which sections relate to the proposed project based on the size and scope of the project.

The Millbury Planning Board has accepted the submission of the above Stormwater Plan. This document certifies that, as currently submitted, the Stormwater Plan meets the minimum submission guidelines as set forth by the Town of Millbury. This document certifies that the Stormwater Plan is officially accepted for Planning Board review and consideration. It does not constitute approval of the Stormwater Plan.

Town Planner/Planning Board Clerk Signature _____ Date _____

Stormwater Submission Checklist

1. See attached correspondence
2. See Stormwater memorandum and attachment
 - a. See title block on plan set
 - b. See title block on plan set
 - c. See Stormwater memorandum (Figure 1)
 - d. See Stormwater memorandum (Attachment B)
 - e. See Stormwater memorandum and Plan Set
 - f. See Existing Conditions Map
 - g. See Grading and Drainage Plan
 - h. See Grading and Drainage Plan
 - i. See Stormwater Memorandum (Figure 2 and Attachment E)
 - j. See Existing Conditions Map and Stormwater Memorandum
 - k. N/A
 - l. See Stormwater Memorandum (Attachment H)
 - m. See Stormwater Memorandum (Figures 2&3 and Attachment E)
 - n. See Stormwater Memorandum (Figures 2&3)
 - o. See Grading and Drainage Plan
 - N/A
 - See Grading and Drainage Plan; See Construction Details
 - See Grading and Drainage Plan; See Construction Details
 - See Stormwater Memorandum (Figure 3 and Attachment E)
 - p. See Grading and Drainage Plan
 - q. See Stormwater Memorandum
 - r. See Stormwater Memorandum
3. See Operation & Maintenance Manual found in Attachment G of the Stormwater Memorandum
 - See page 3
 - See page 3
 - See page 9
 - See page 4
 - See page 6

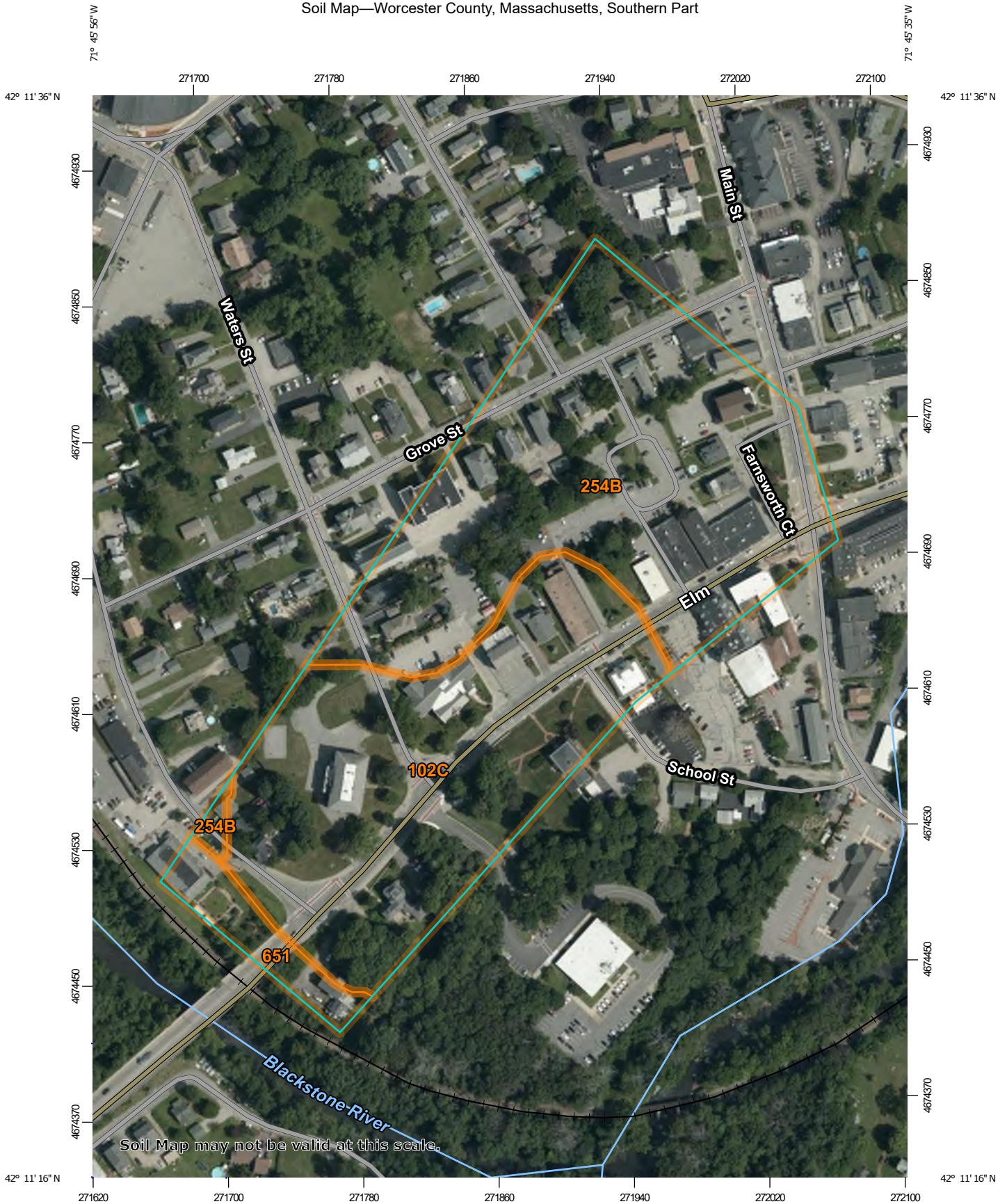
ATTACHMENT B

MILLBURY ZONING MAP

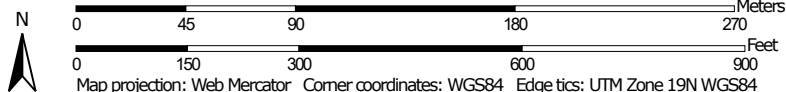
ATTACHMENT C

NRCS SOIL DATA

Soil Map—Worcester County, Massachusetts, Southern Part



Map Scale: 1:3,100 if printed on A portrait (8.5" x 11") sheet.



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



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils


-  Soil Map Unit Polygons
-  Soil Map Unit Lines
-  Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  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 1:25,000.

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

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

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

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

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

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

Soil Survey Area: Worcester County, Massachusetts, Southern Part
 Survey Area Data: Version 13, Jun 11, 2020

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

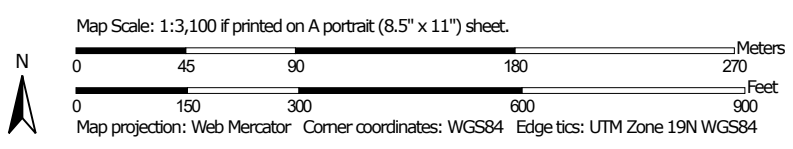
Date(s) aerial images were photographed: Jul 26, 2019—Oct 5, 2019

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
































Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
102C	Chatfield-Hollis-Rock outcrop complex, 0 to 15 percent slopes	8.6	44.0%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	10.0	51.4%
651	Udorthents, smoothed	0.9	4.5%
Totals for Area of Interest		19.5	100.0%

Hydrologic Soil Group—Worcester County, Massachusetts, Southern Part



MAP LEGEND

Area of Interest (AOI)		 C
Area of Interest (AOI)		 C/D
		 D
		 Not rated or not available
Soils		
Soil Rating Polygons		
 A		
 A/D		
 B		
 B/D		
 C		
 C/D		
 D		
 Not rated or not available		
Soil Rating Lines		
 A		
 A/D		
 B		
 B/D		
 C		
 C/D		
 D		
 Not rated or not available		
Soil Rating Points		
 A		
 A/D		
 B		
 B/D		
Water Features		
 Streams and Canals		
Transportation		
 Rails		
 Interstate Highways		
 US Routes		
 Major Roads		
 Local Roads		
Background		
 Aerial Photography		

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

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Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
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651	Udorthents, smoothed	A	0.9	4.5%
Totals for Area of Interest			19.5	100.0%

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

ATTACHMENT D

NOAA ATLAS STORM DATA

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	Massachusetts
Location	
Longitude	71.763 degrees West
Latitude	42.190 degrees North
Elevation	0 feet
Date/Time	Fri, 29 Jan 2021 09:10:41 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.70	0.88	1.11	1yr	0.76	1.07	1.28	1.63	2.08	2.66	2.91	1yr	2.35	2.80	3.20	3.88	4.46	1yr
2yr	0.35	0.54	0.67	0.88	1.11	1.40	2yr	0.96	1.28	1.62	2.04	2.58	3.25	3.53	2yr	2.88	3.39	3.90	4.61	5.24	2yr
5yr	0.41	0.64	0.80	1.08	1.38	1.76	5yr	1.19	1.59	2.04	2.58	3.26	4.11	4.48	5yr	3.64	4.31	4.95	5.78	6.50	5yr
10yr	0.46	0.73	0.92	1.25	1.62	2.09	10yr	1.40	1.87	2.44	3.09	3.90	4.91	5.38	10yr	4.34	5.17	5.93	6.87	7.65	10yr
25yr	0.55	0.87	1.10	1.52	2.02	2.62	25yr	1.74	2.31	3.07	3.91	4.94	6.20	6.85	25yr	5.49	6.59	7.54	8.62	9.49	25yr
50yr	0.61	0.98	1.26	1.76	2.38	3.13	50yr	2.05	2.73	3.68	4.70	5.92	7.41	8.23	50yr	6.56	7.91	9.04	10.25	11.18	50yr
100yr	0.70	1.13	1.46	2.07	2.81	3.71	100yr	2.43	3.22	4.39	5.61	7.08	8.87	9.89	100yr	7.85	9.51	10.85	12.18	13.17	100yr
200yr	0.79	1.29	1.68	2.40	3.32	4.42	200yr	2.87	3.79	5.24	6.71	8.48	10.60	11.90	200yr	9.38	11.44	13.02	14.48	15.51	200yr
500yr	0.95	1.56	2.04	2.96	4.15	5.57	500yr	3.58	4.72	6.62	8.50	10.75	13.45	15.20	500yr	11.90	14.61	16.59	18.22	19.29	500yr

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.22	0.33	0.41	0.55	0.67	0.95	1yr	0.58	0.93	1.12	1.46	1.91	2.32	2.54	1yr	2.05	2.45	2.85	3.50	4.14	1yr
2yr	0.34	0.53	0.65	0.88	1.08	1.27	2yr	0.93	1.24	1.45	1.90	2.45	3.11	3.41	2yr	2.76	3.28	3.73	4.43	5.04	2yr
5yr	0.39	0.59	0.74	1.01	1.29	1.51	5yr	1.11	1.47	1.72	2.25	2.87	3.80	4.16	5yr	3.37	4.00	4.58	5.27	5.88	5yr
10yr	0.43	0.66	0.81	1.14	1.47	1.72	10yr	1.27	1.68	1.95	2.55	3.24	4.38	4.82	10yr	3.87	4.64	5.30	5.98	6.59	10yr
25yr	0.50	0.75	0.94	1.34	1.76	2.04	25yr	1.52	2.00	2.30	3.03	3.81	5.30	5.87	25yr	4.69	5.64	6.44	7.06	7.67	25yr
50yr	0.55	0.84	1.05	1.50	2.02	2.32	50yr	1.75	2.27	2.62	3.44	4.30	6.13	6.84	50yr	5.42	6.58	7.49	8.00	8.61	50yr
100yr	0.62	0.94	1.18	1.70	2.33	2.65	100yr	2.01	2.59	2.98	3.91	4.87	7.10	8.00	100yr	6.28	7.70	8.74	9.09	9.64	100yr
200yr	0.70	1.05	1.33	1.92	2.68	3.03	200yr	2.31	2.96	3.40	4.47	5.52	8.24	9.37	200yr	7.29	9.01	10.21	10.30	10.78	200yr
500yr	0.82	1.22	1.57	2.27	3.23	3.62	500yr	2.79	3.54	4.04	5.34	6.53	10.07	11.60	500yr	8.92	11.16	12.57	12.14	12.47	500yr

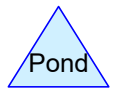
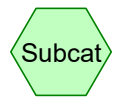
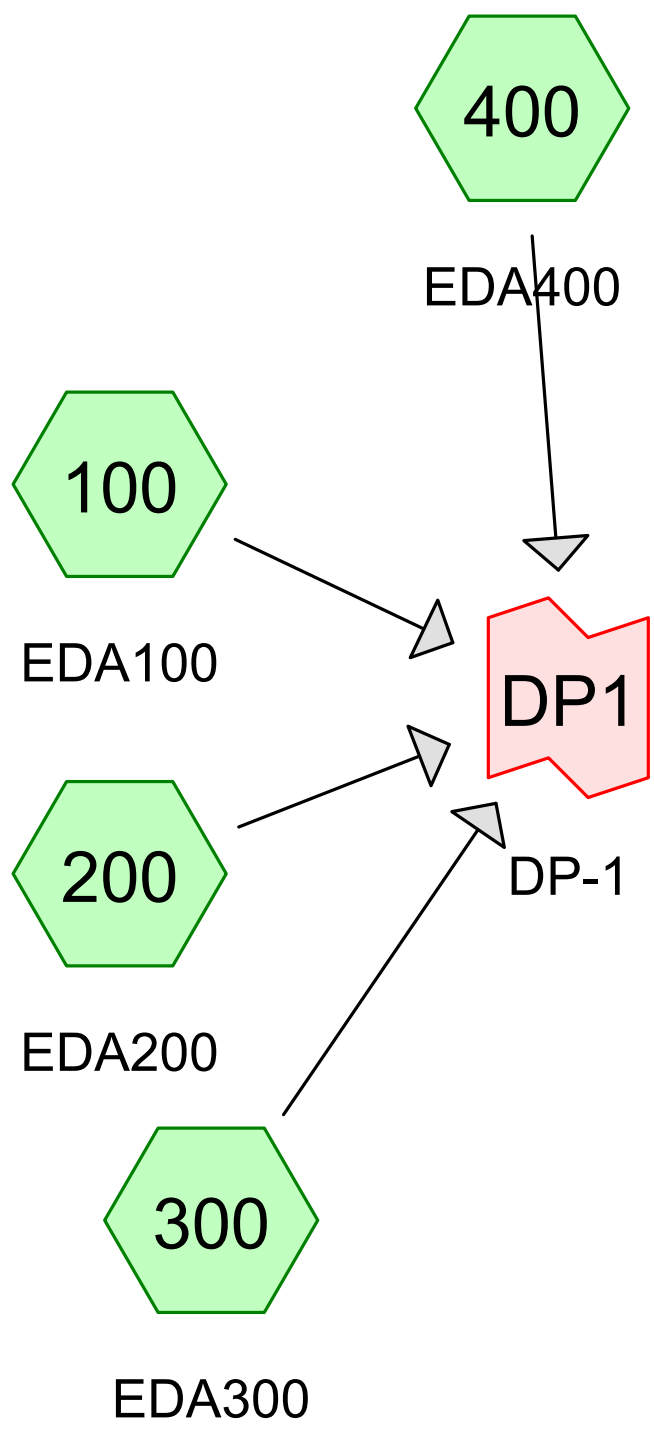
Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.31	0.48	0.59	0.79	0.97	1.20	1yr	0.84	1.17	1.38	1.77	2.32	3.02	3.26	1yr	2.67	3.14	3.61	4.21	4.82	1yr
2yr	0.36	0.56	0.69	0.93	1.15	1.35	2yr	0.99	1.32	1.55	2.02	2.59	3.41	3.69	2yr	3.02	3.55	4.10	4.84	5.50	2yr
5yr	0.44	0.68	0.84	1.16	1.47	1.76	5yr	1.27	1.72	2.01	2.59	3.26	4.41	4.84	5yr	3.91	4.65	5.33	6.32	7.22	5yr
10yr	0.52	0.79	0.98	1.37	1.77	2.14	10yr	1.53	2.09	2.45	3.12	3.88	5.41	5.99	10yr	4.78	5.76	6.56	7.79	8.87	10yr
25yr	0.64	0.98	1.21	1.73	2.28	2.78	25yr	1.97	2.72	3.17	3.97	4.90	7.08	7.92	25yr	6.27	7.62	8.63	10.29	11.67	25yr
50yr	0.75	1.15	1.43	2.05	2.76	3.40	50yr	2.38	3.32	3.87	4.78	5.83	8.67	9.77	50yr	7.68	9.40	10.62	12.70	14.38	50yr
100yr	0.89	1.35	1.69	2.44	3.35	4.15	100yr	2.89	4.05	4.72	5.76	6.96	10.61	12.07	100yr	9.39	11.61	13.08	15.67	17.75	100yr
200yr	1.05	1.58	2.01	2.91	4.05	5.07	200yr	3.50	4.96	5.77	6.93	8.28	12.99	14.89	200yr	11.50	14.32	16.07	19.36	21.90	200yr
500yr	1.32	1.96	2.53	3.67	5.22	6.62	500yr	4.50	6.47	7.50	8.85	10.43	16.97	19.63	500yr	15.02	18.88	21.09	25.62	28.95	500yr

ATTACHMENT E

PRE-DEVELOPMENT HYDROLOGY CALCULATIONS

POST-DEVELOPMENT HYDROLOGY CALCULATIONS



Routing Diagram for C-DAT-2001487-PreConstruction
 Prepared by BL Companies, Printed 7/6/2021
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C-DAT-2001487-PreConstruction

Type III 24-hr 2YR Rainfall=3.20"

Prepared by BL Companies

Printed 9/2/2021

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 100: EDA100

Runoff Area=133,174 sf 59.13% Impervious Runoff Depth=1.61"
Flow Length=322' Tc=7.8 min CN=83 Runoff=5.41 cfs 0.410 af

Subcatchment 200: EDA200

Runoff Area=37,320 sf 77.64% Impervious Runoff Depth=2.08"
Tc=5.0 min CN=89 Runoff=2.15 cfs 0.149 af

Subcatchment 300: EDA300

Runoff Area=71,652 sf 61.18% Impervious Runoff Depth=1.21"
Flow Length=191' Tc=8.1 min CN=77 Runoff=2.11 cfs 0.166 af

Subcatchment 400: EDA400

Runoff Area=5,336 sf 65.18% Impervious Runoff Depth=1.21"
Tc=5.0 min CN=77 Runoff=0.18 cfs 0.012 af

Link DP1: DP-1

Inflow=9.62 cfs 0.737 af
Primary=9.62 cfs 0.737 af

Total Runoff Area = 5.681 ac Runoff Volume = 0.737 af Average Runoff Depth = 1.56"
37.36% Pervious = 2.122 ac 62.64% Impervious = 3.559 ac

Summary for Subcatchment 100: EDA100

Runoff = 5.41 cfs @ 12.11 hrs, Volume= 0.410 af, Depth= 1.61"

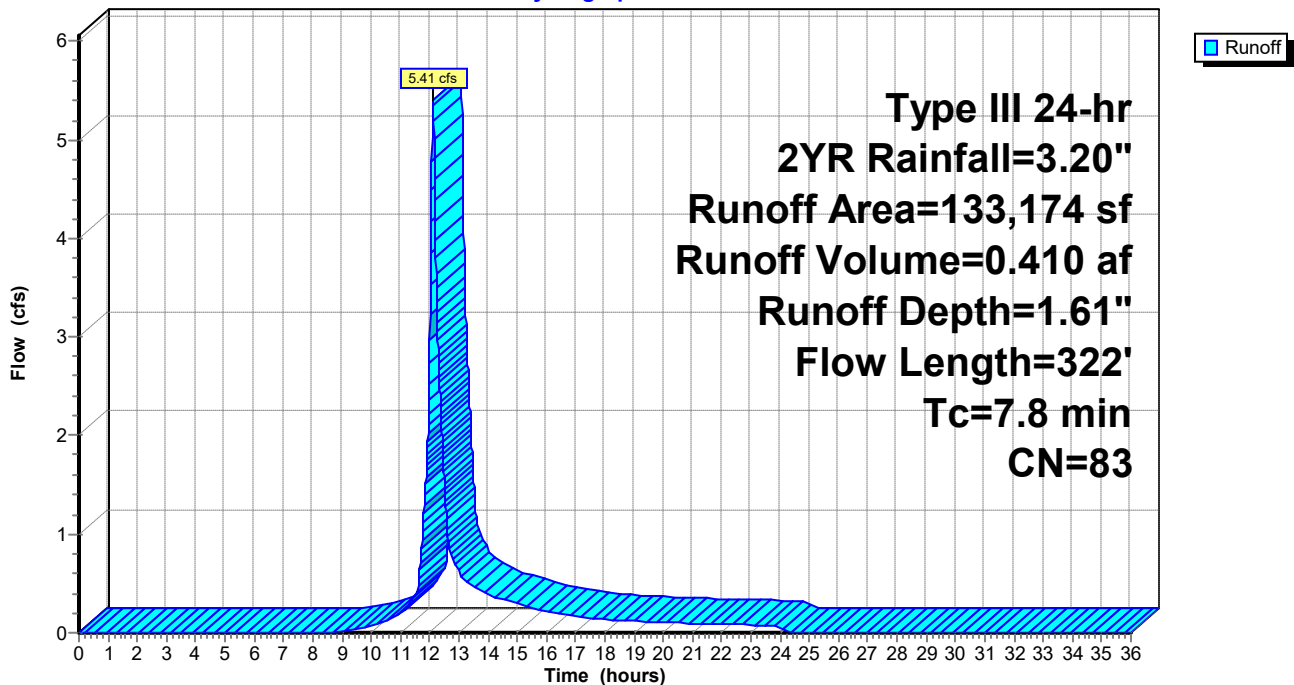
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

Area (sf)	CN	Description
54,429	61	>75% Grass cover, Good, HSG B
78,745	98	Paved parking, HSG B
133,174	83	Weighted Average
54,429		40.87% Pervious Area
78,745		59.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.0980	0.13		Sheet Flow, Grass: Bermuda n= 0.410 P2= 3.41"
0.4	52	0.0980	2.19		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	12	0.4580	13.74		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.9	208	0.0360	3.85		Shallow Concentrated Flow, Paved Kv= 20.3 fps
7.8	322	Total			

Subcatchment 100: EDA100

Hydrograph



Summary for Subcatchment 200: EDA200

Runoff = 2.15 cfs @ 12.07 hrs, Volume= 0.149 af, Depth= 2.08"

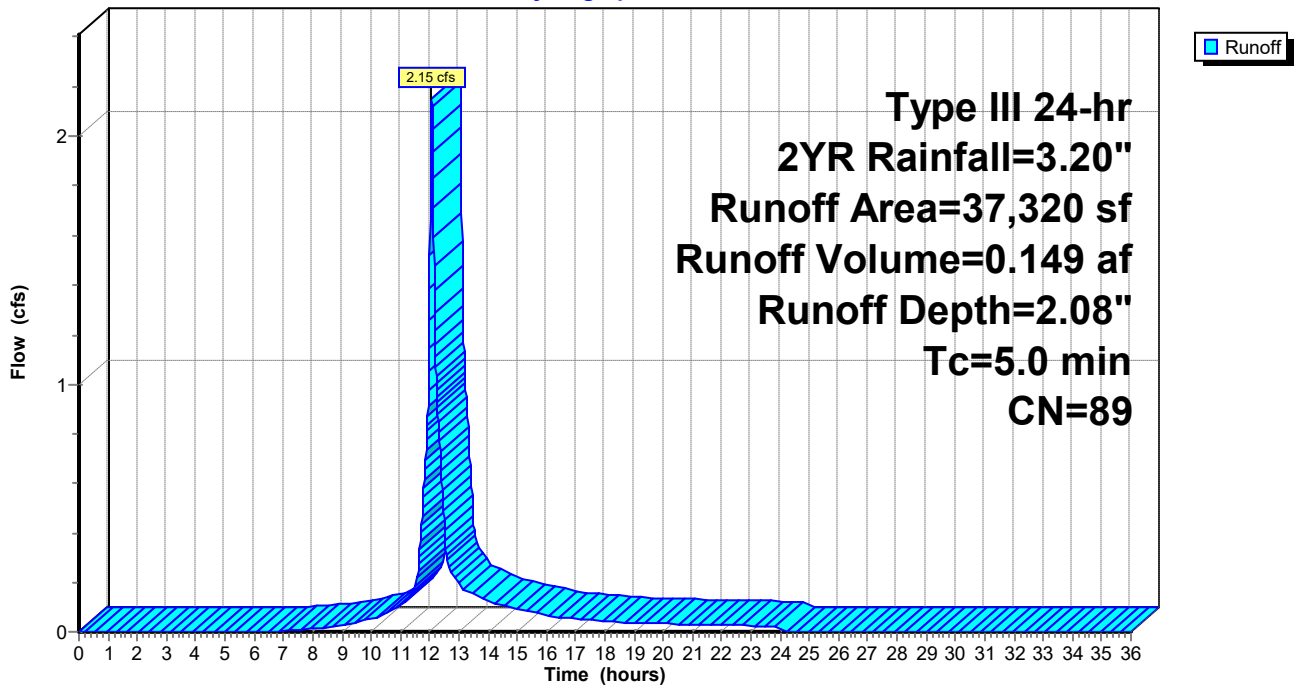
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

Area (sf)	CN	Description
1,659	39	>75% Grass cover, Good, HSG A
6,687	61	>75% Grass cover, Good, HSG B
13,654	98	Paved parking, HSG A
15,320	98	Paved parking, HSG B
37,320	89	Weighted Average
8,346		22.36% Pervious Area
28,974		77.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 200: EDA200

Hydrograph



C-DAT-2001487-PreConstruction

Type III 24-hr 2YR Rainfall=3.20"

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Summary for Subcatchment 300: EDA300

Runoff = 2.11 cfs @ 12.12 hrs, Volume= 0.166 af, Depth= 1.21"

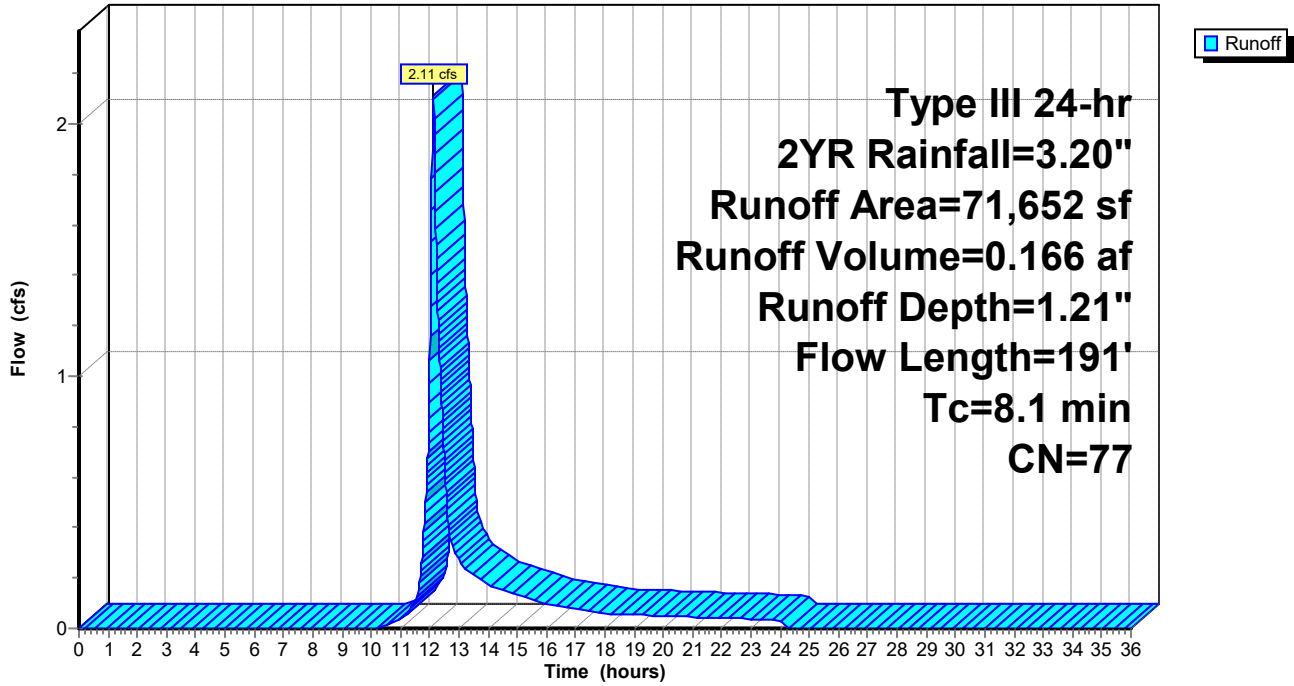
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

Area (sf)	CN	Description
21,669	39	>75% Grass cover, Good, HSG A
6,146	61	>75% Grass cover, Good, HSG B
40,646	98	Paved parking, HSG A
3,191	98	Paved parking, HSG B
71,652	77	Weighted Average
27,815		38.82% Pervious Area
43,837		61.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.0174	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.41"
0.4	29	0.0344	1.30		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.6	69	0.0112	0.74		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	20	0.0112	2.15		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	23	0.0330	3.69		Shallow Concentrated Flow, Paved Kv= 20.3 fps
8.1	191	Total			

Subcatchment 300: EDA300

Hydrograph



Summary for Subcatchment 400: EDA400

Runoff = 0.18 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 1.21"

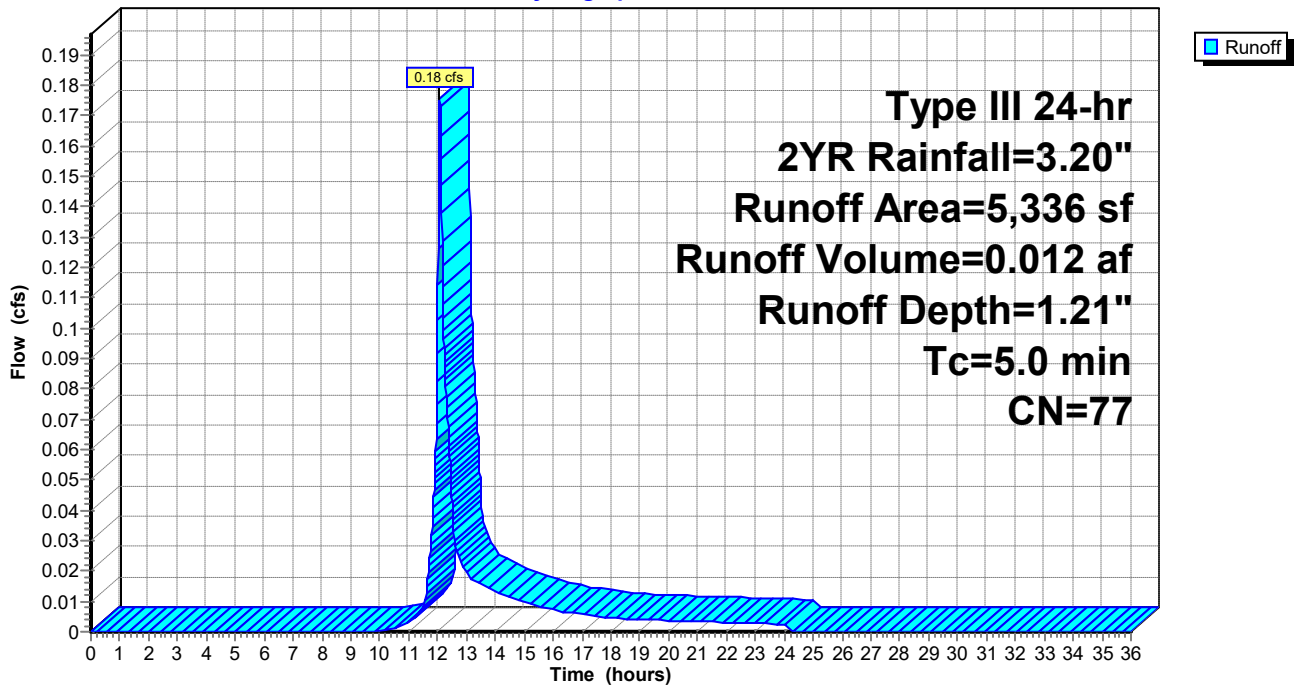
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

Area (sf)	CN	Description
1,858	39	>75% Grass cover, Good, HSG A
3,478	98	Paved parking, HSG A
5,336	77	Weighted Average
1,858		34.82% Pervious Area
3,478		65.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 400: EDA400

Hydrograph



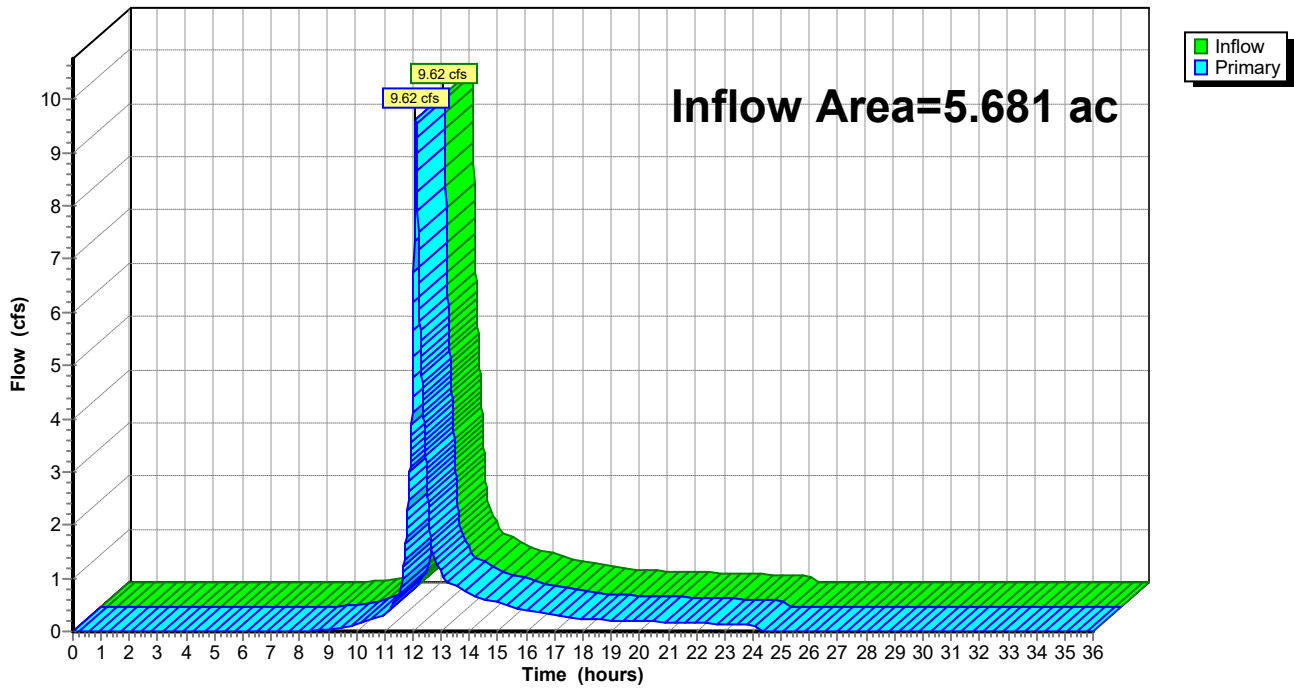
Summary for Link DP1: DP-1

Inflow Area = 5.681 ac, 62.64% Impervious, Inflow Depth = 1.56" for 2YR event
Inflow = 9.62 cfs @ 12.11 hrs, Volume= 0.737 af
Primary = 9.62 cfs @ 12.11 hrs, Volume= 0.737 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link DP1: DP-1

Hydrograph



C-DAT-2001487-PreConstruction

Type III 24-hr 10YR Rainfall=4.90"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 100: EDA100

Runoff Area=133,174 sf 59.13% Impervious Runoff Depth=3.08"
Flow Length=322' Tc=7.8 min CN=83 Runoff=10.35 cfs 0.786 af

Subcatchment 200: EDA200

Runoff Area=37,320 sf 77.64% Impervious Runoff Depth=3.68"
Tc=5.0 min CN=89 Runoff=3.72 cfs 0.262 af

Subcatchment 300: EDA300

Runoff Area=71,652 sf 61.18% Impervious Runoff Depth=2.54"
Flow Length=191' Tc=8.1 min CN=77 Runoff=4.55 cfs 0.348 af

Subcatchment 400: EDA400

Runoff Area=5,336 sf 65.18% Impervious Runoff Depth=2.54"
Tc=5.0 min CN=77 Runoff=0.38 cfs 0.026 af

Link DP1: DP-1

Inflow=18.60 cfs 1.422 af
Primary=18.60 cfs 1.422 af

Total Runoff Area = 5.681 ac Runoff Volume = 1.422 af Average Runoff Depth = 3.00"
37.36% Pervious = 2.122 ac 62.64% Impervious = 3.559 ac

Summary for Subcatchment 100: EDA100

Runoff = 10.35 cfs @ 12.11 hrs, Volume= 0.786 af, Depth= 3.08"

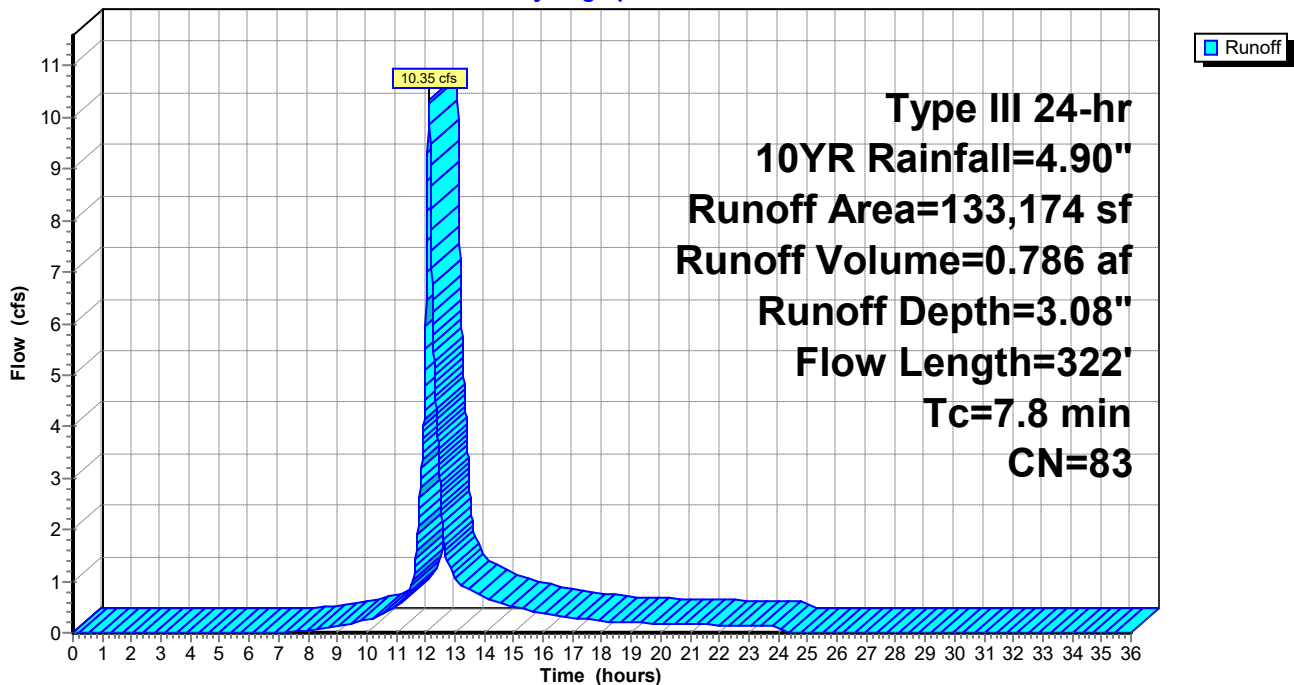
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR Rainfall=4.90"

Area (sf)	CN	Description
54,429	61	>75% Grass cover, Good, HSG B
78,745	98	Paved parking, HSG B
133,174	83	Weighted Average
54,429		40.87% Pervious Area
78,745		59.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.0980	0.13		Sheet Flow, Grass: Bermuda n= 0.410 P2= 3.41"
0.4	52	0.0980	2.19		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	12	0.4580	13.74		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.9	208	0.0360	3.85		Shallow Concentrated Flow, Paved Kv= 20.3 fps
7.8	322	Total			

Subcatchment 100: EDA100

Hydrograph



Summary for Subcatchment 200: EDA200

Runoff = 3.72 cfs @ 12.07 hrs, Volume= 0.262 af, Depth= 3.68"

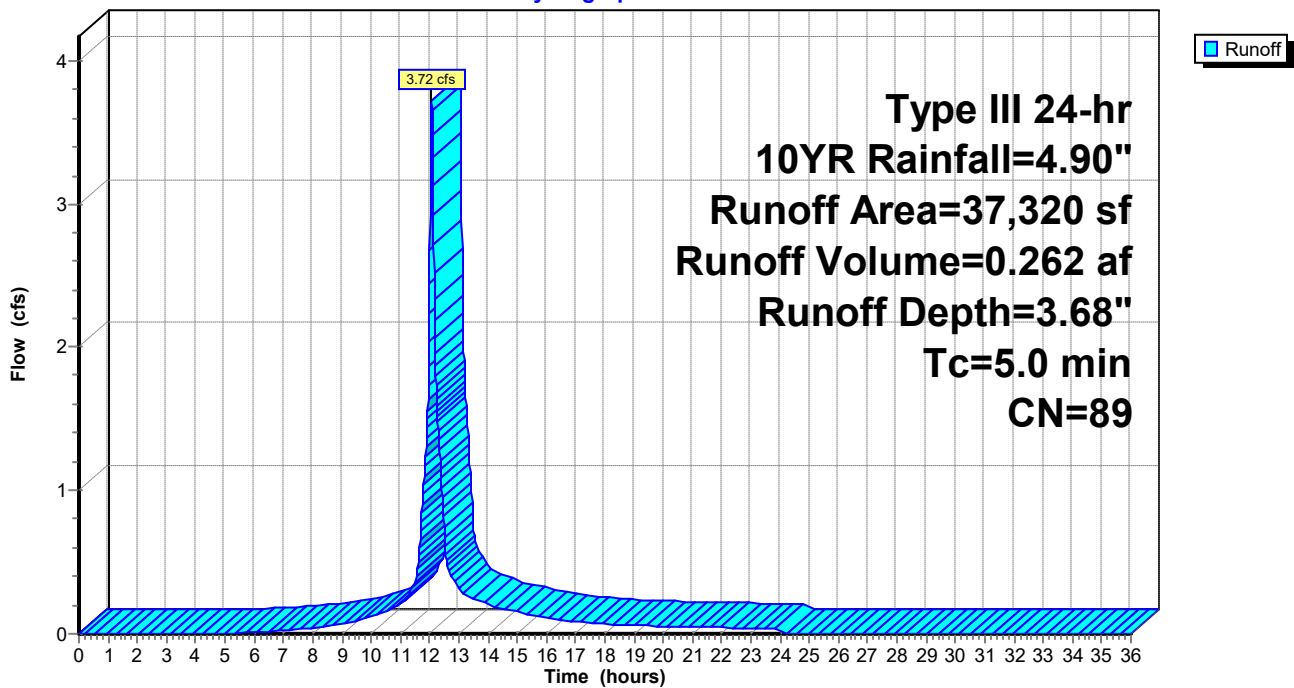
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10YR Rainfall=4.90"

Area (sf)	CN	Description
1,659	39	>75% Grass cover, Good, HSG A
6,687	61	>75% Grass cover, Good, HSG B
13,654	98	Paved parking, HSG A
15,320	98	Paved parking, HSG B
37,320	89	Weighted Average
8,346		22.36% Pervious Area
28,974		77.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 200: EDA200

Hydrograph



C-DAT-2001487-PreConstruction

Type III 24-hr 10YR Rainfall=4.90"

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Summary for Subcatchment 300: EDA300

Runoff = 4.55 cfs @ 12.12 hrs, Volume= 0.348 af, Depth= 2.54"

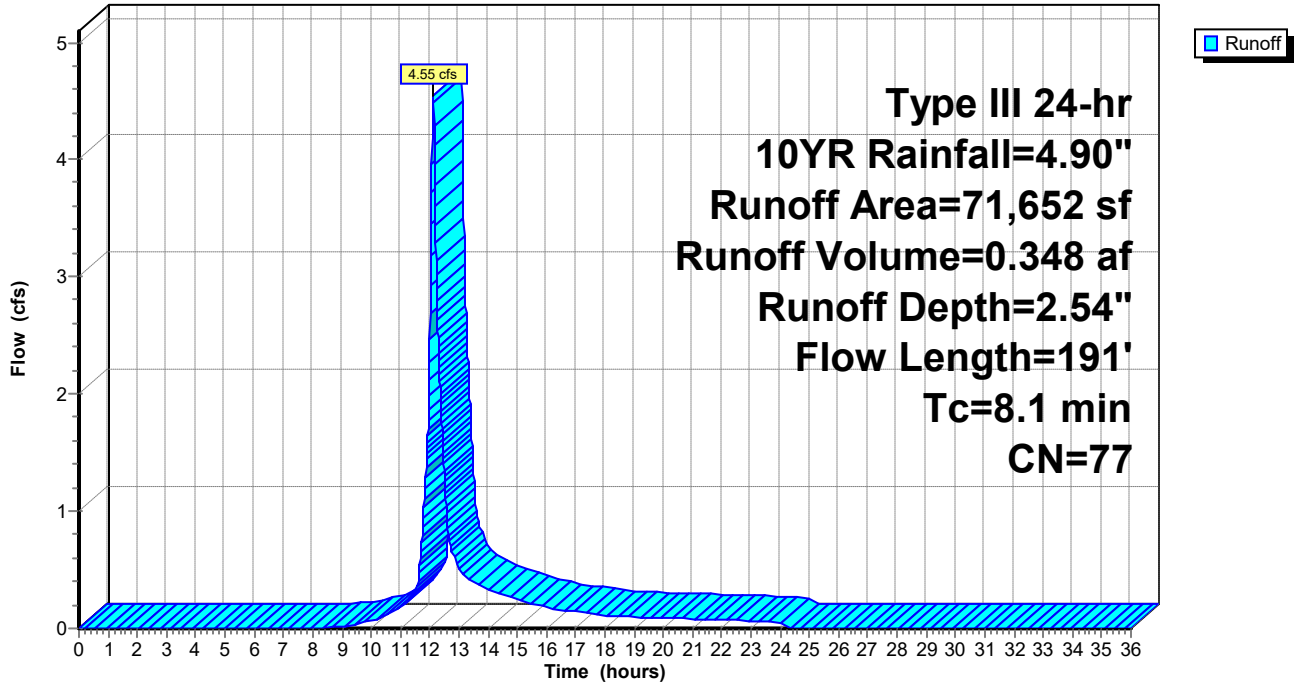
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10YR Rainfall=4.90"

Area (sf)	CN	Description
21,669	39	>75% Grass cover, Good, HSG A
6,146	61	>75% Grass cover, Good, HSG B
40,646	98	Paved parking, HSG A
3,191	98	Paved parking, HSG B
71,652	77	Weighted Average
27,815		38.82% Pervious Area
43,837		61.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.0174	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.41"
0.4	29	0.0344	1.30		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.6	69	0.0112	0.74		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	20	0.0112	2.15		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	23	0.0330	3.69		Shallow Concentrated Flow, Paved Kv= 20.3 fps
8.1	191	Total			

Subcatchment 300: EDA300

Hydrograph



Summary for Subcatchment 400: EDA400

Runoff = 0.38 cfs @ 12.08 hrs, Volume= 0.026 af, Depth= 2.54"

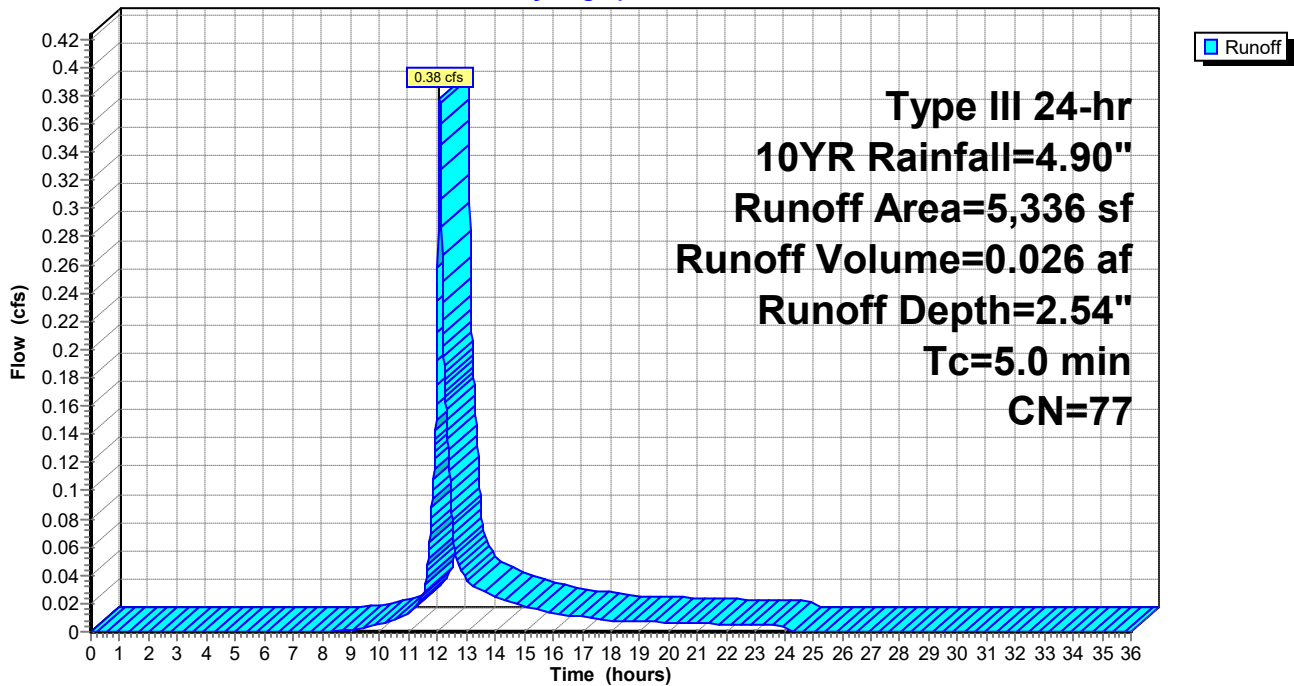
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10YR Rainfall=4.90"

Area (sf)	CN	Description
1,858	39	>75% Grass cover, Good, HSG A
3,478	98	Paved parking, HSG A
5,336	77	Weighted Average
1,858		34.82% Pervious Area
3,478		65.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 400: EDA400

Hydrograph



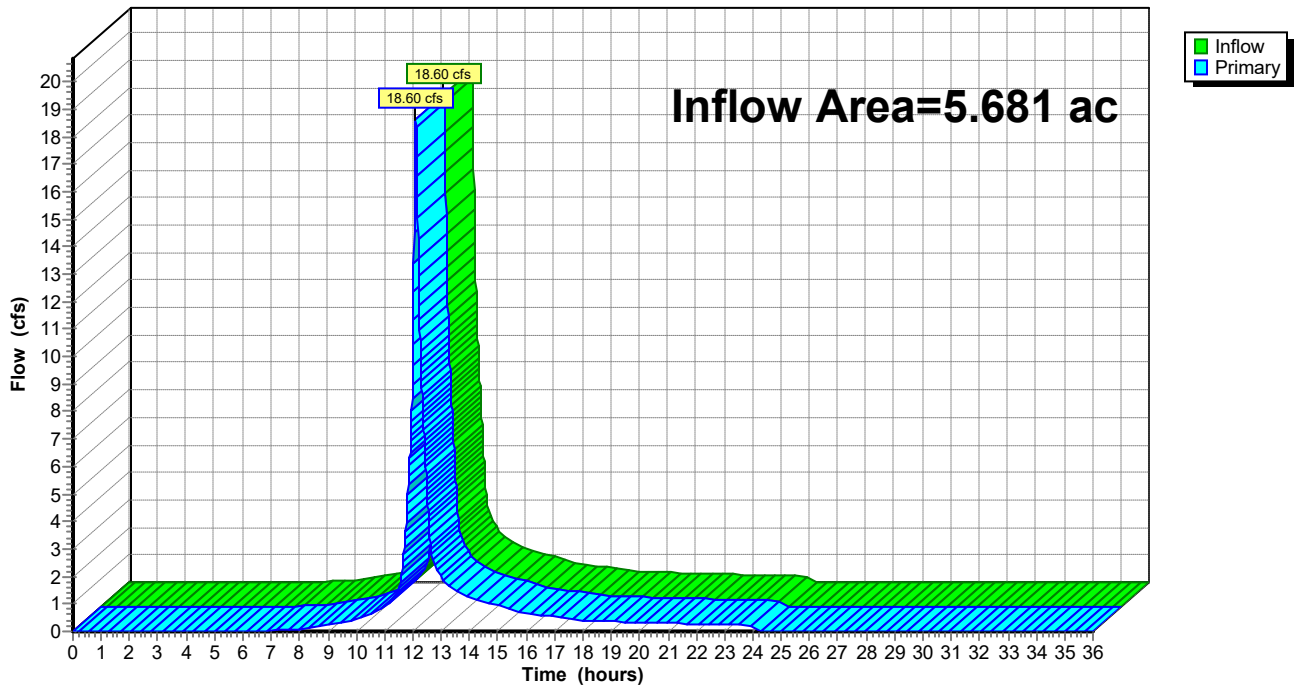
Summary for Link DP1: DP-1

Inflow Area = 5.681 ac, 62.64% Impervious, Inflow Depth = 3.00" for 10YR event
Inflow = 18.60 cfs @ 12.10 hrs, Volume= 1.422 af
Primary = 18.60 cfs @ 12.10 hrs, Volume= 1.422 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link DP1: DP-1

Hydrograph



C-DAT-2001487-PreConstruction

Type III 24-hr 25YR Rainfall=6.10"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 100: EDA100

Runoff Area=133,174 sf 59.13% Impervious Runoff Depth=4.18"
Flow Length=322' Tc=7.8 min CN=83 Runoff=13.93 cfs 1.066 af

Subcatchment 200: EDA200

Runoff Area=37,320 sf 77.64% Impervious Runoff Depth=4.83"
Tc=5.0 min CN=89 Runoff=4.82 cfs 0.345 af

Subcatchment 300: EDA300

Runoff Area=71,652 sf 61.18% Impervious Runoff Depth=3.57"
Flow Length=191' Tc=8.1 min CN=77 Runoff=6.40 cfs 0.489 af

Subcatchment 400: EDA400

Runoff Area=5,336 sf 65.18% Impervious Runoff Depth=3.57"
Tc=5.0 min CN=77 Runoff=0.53 cfs 0.036 af

Link DP1: DP-1

Inflow=25.17 cfs 1.936 af
Primary=25.17 cfs 1.936 af

Total Runoff Area = 5.681 ac Runoff Volume = 1.936 af Average Runoff Depth = 4.09"
37.36% Pervious = 2.122 ac 62.64% Impervious = 3.559 ac

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Type III 24-hr 25YR Rainfall=6.10"

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Summary for Subcatchment 100: EDA100

Runoff = 13.93 cfs @ 12.11 hrs, Volume= 1.066 af, Depth= 4.18"

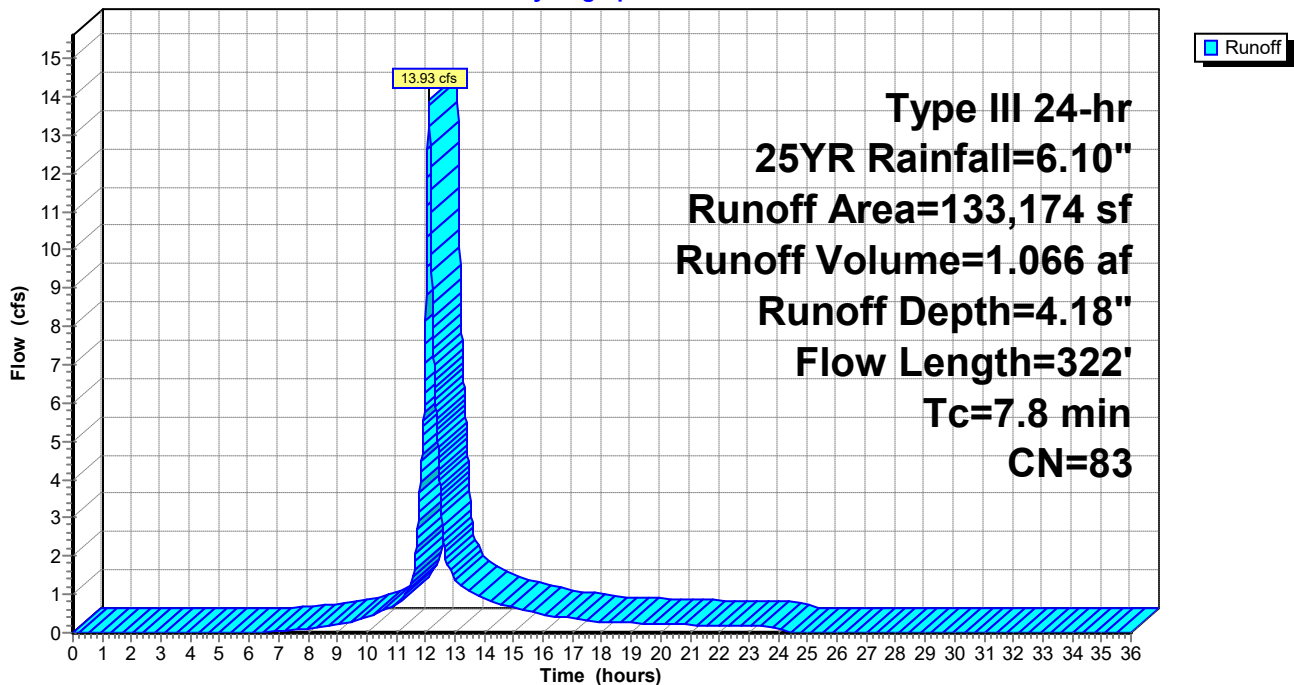
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=6.10"

Area (sf)	CN	Description
54,429	61	>75% Grass cover, Good, HSG B
78,745	98	Paved parking, HSG B
133,174	83	Weighted Average
54,429		40.87% Pervious Area
78,745		59.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.0980	0.13		Sheet Flow, Grass: Bermuda n= 0.410 P2= 3.41"
0.4	52	0.0980	2.19		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	12	0.4580	13.74		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.9	208	0.0360	3.85		Shallow Concentrated Flow, Paved Kv= 20.3 fps
7.8	322	Total			

Subcatchment 100: EDA100

Hydrograph



Summary for Subcatchment 200: EDA200

Runoff = 4.82 cfs @ 12.07 hrs, Volume= 0.345 af, Depth= 4.83"

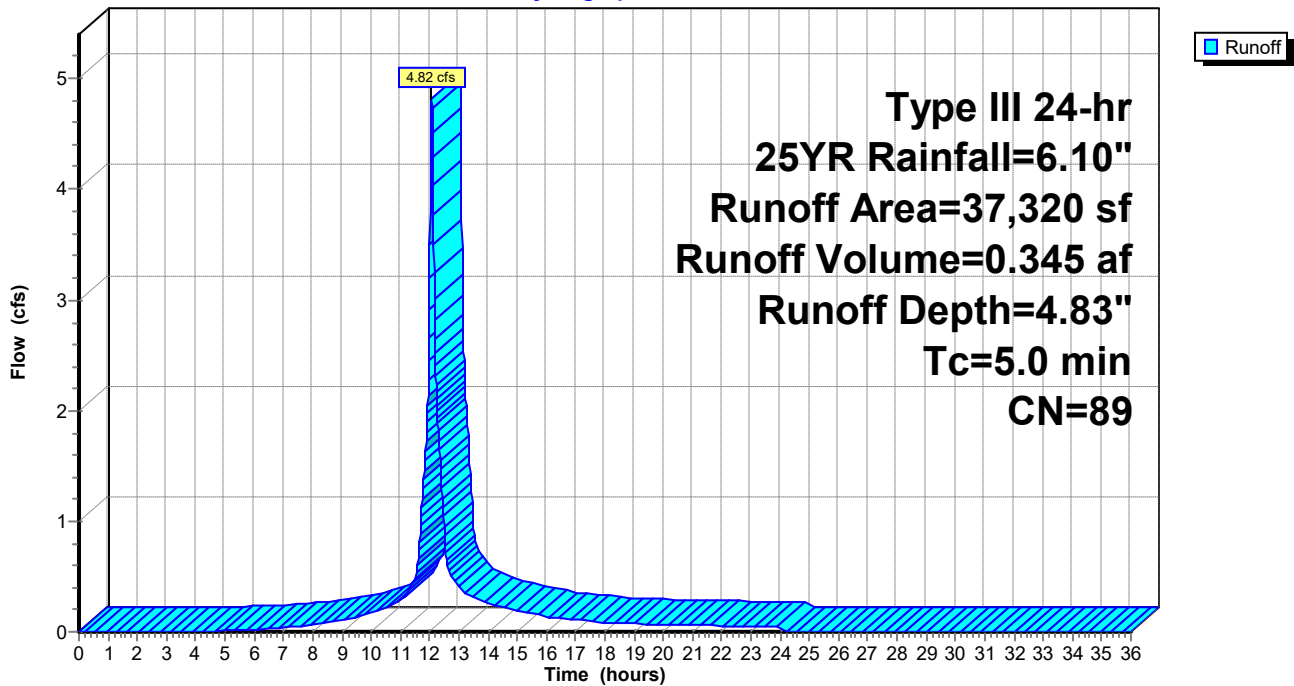
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=6.10"

Area (sf)	CN	Description
1,659	39	>75% Grass cover, Good, HSG A
6,687	61	>75% Grass cover, Good, HSG B
13,654	98	Paved parking, HSG A
15,320	98	Paved parking, HSG B
37,320	89	Weighted Average
8,346		22.36% Pervious Area
28,974		77.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 200: EDA200

Hydrograph



C-DAT-2001487-PreConstruction

Type III 24-hr 25YR Rainfall=6.10"

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Printed 7/6/2021

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Summary for Subcatchment 300: EDA300

Runoff = 6.40 cfs @ 12.12 hrs, Volume= 0.489 af, Depth= 3.57"

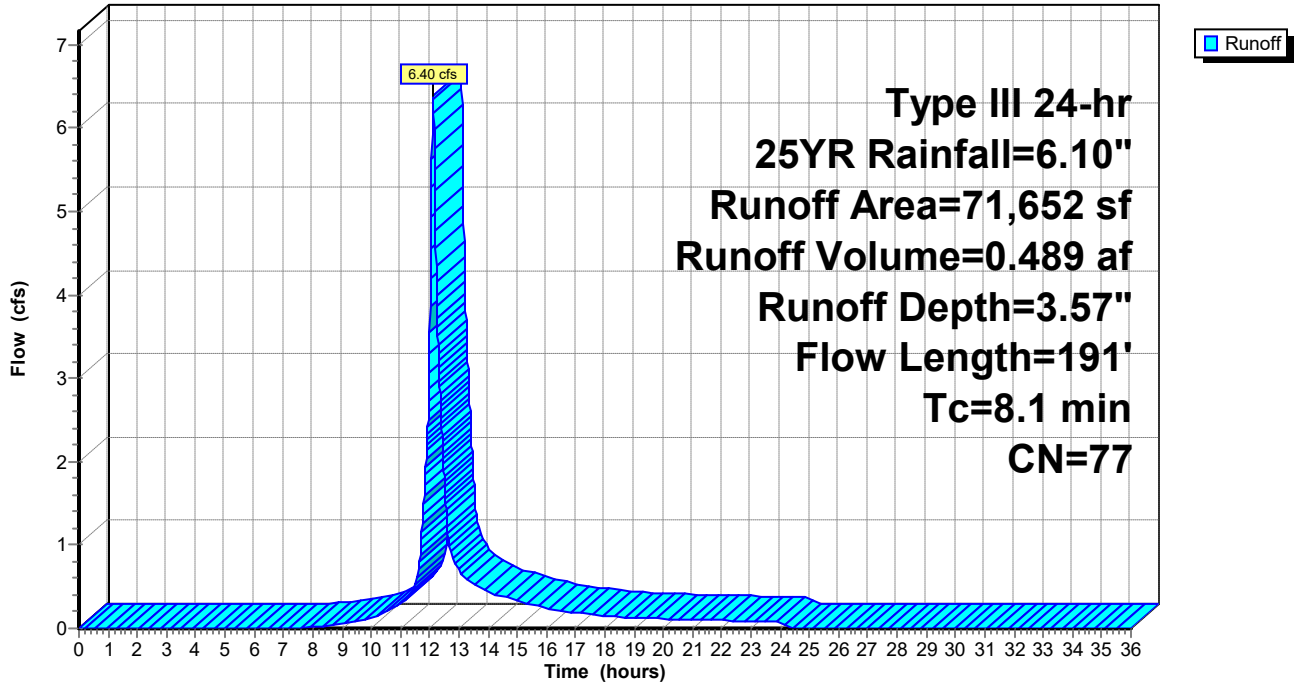
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25YR Rainfall=6.10"

Area (sf)	CN	Description
21,669	39	>75% Grass cover, Good, HSG A
6,146	61	>75% Grass cover, Good, HSG B
40,646	98	Paved parking, HSG A
3,191	98	Paved parking, HSG B
71,652	77	Weighted Average
27,815		38.82% Pervious Area
43,837		61.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.0174	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.41"
0.4	29	0.0344	1.30		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.6	69	0.0112	0.74		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	20	0.0112	2.15		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	23	0.0330	3.69		Shallow Concentrated Flow, Paved Kv= 20.3 fps
8.1	191	Total			

Subcatchment 300: EDA300

Hydrograph



C-DAT-2001487-PreConstruction

Prepared by BL Companies

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Type III 24-hr 25YR Rainfall=6.10"

Printed 7/6/2021

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Summary for Subcatchment 400: EDA400

Runoff = 0.53 cfs @ 12.07 hrs, Volume= 0.036 af, Depth= 3.57"

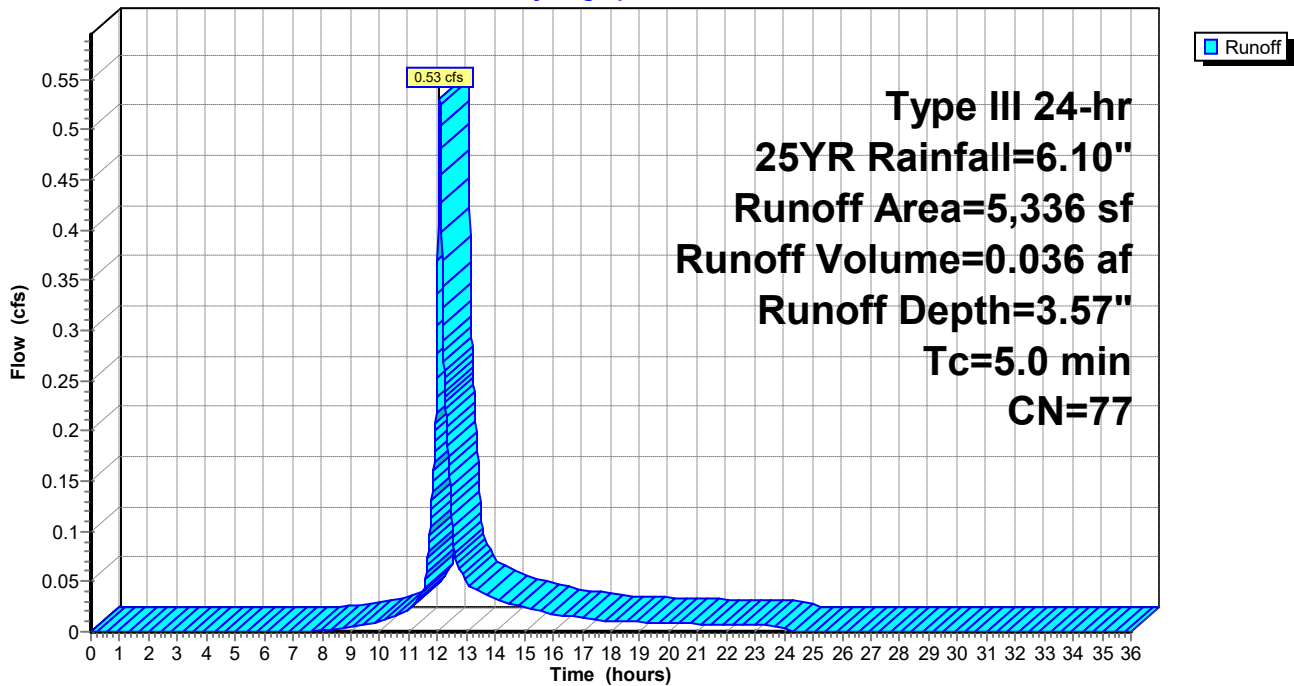
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=6.10"

Area (sf)	CN	Description
1,858	39	>75% Grass cover, Good, HSG A
3,478	98	Paved parking, HSG A
5,336	77	Weighted Average
1,858		34.82% Pervious Area
3,478		65.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 400: EDA400

Hydrograph



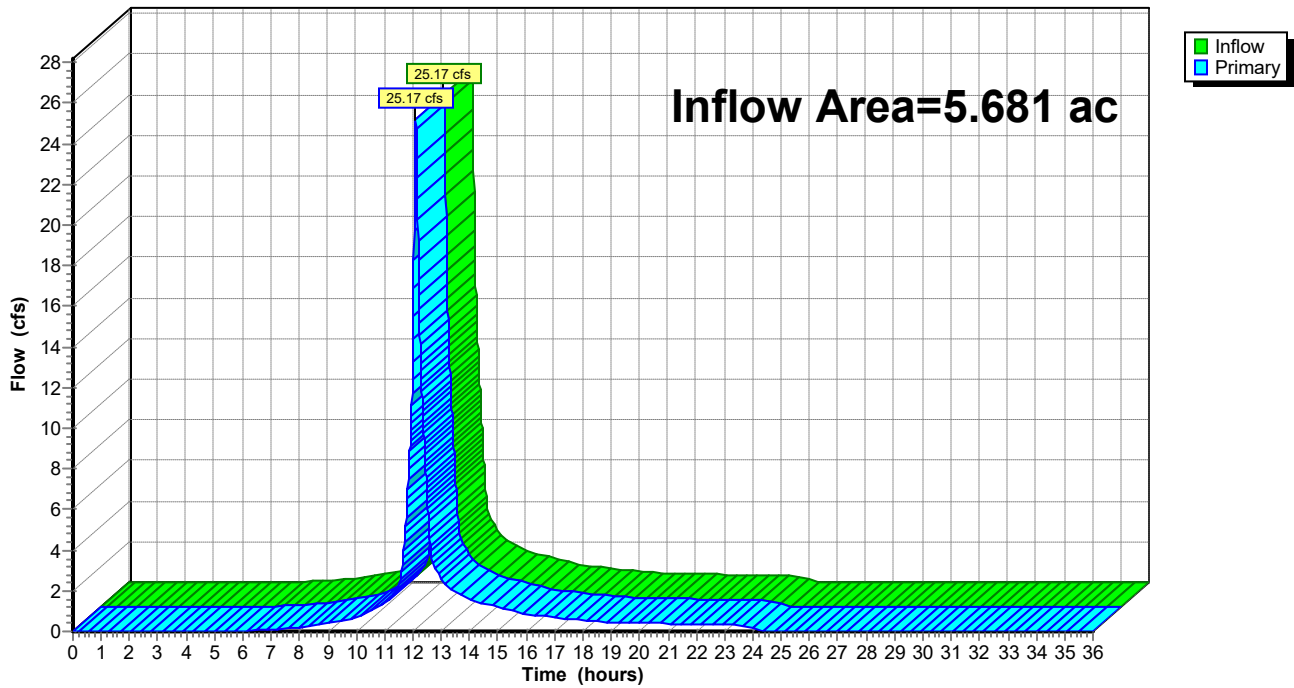
Summary for Link DP1: DP-1

Inflow Area = 5.681 ac, 62.64% Impervious, Inflow Depth = 4.09" for 25YR event
Inflow = 25.17 cfs @ 12.10 hrs, Volume= 1.936 af
Primary = 25.17 cfs @ 12.10 hrs, Volume= 1.936 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link DP1: DP-1

Hydrograph



C-DAT-2001487-PreConstruction

Type III 24-hr 100YR Rainfall=8.50"

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Printed 9/2/2021

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 100: EDA100

Runoff Area=133,174 sf 59.13% Impervious Runoff Depth=6.46"
Flow Length=322' Tc=7.8 min CN=83 Runoff=21.11 cfs 1.645 af

Subcatchment 200: EDA200

Runoff Area=37,320 sf 77.64% Impervious Runoff Depth=7.18"
Tc=5.0 min CN=89 Runoff=7.01 cfs 0.512 af

Subcatchment 300: EDA300

Runoff Area=71,652 sf 61.18% Impervious Runoff Depth=5.73"
Flow Length=191' Tc=8.1 min CN=77 Runoff=10.19 cfs 0.786 af

Subcatchment 400: EDA400

Runoff Area=5,336 sf 65.18% Impervious Runoff Depth=5.73"
Tc=5.0 min CN=77 Runoff=0.84 cfs 0.059 af

Link DP1: DP-1

Inflow=38.42 cfs 3.002 af
Primary=38.42 cfs 3.002 af

Total Runoff Area = 5.681 ac Runoff Volume = 3.002 af Average Runoff Depth = 6.34"
37.36% Pervious = 2.122 ac 62.64% Impervious = 3.559 ac

Summary for Subcatchment 100: EDA100

Runoff = 21.11 cfs @ 12.11 hrs, Volume= 1.645 af, Depth= 6.46"

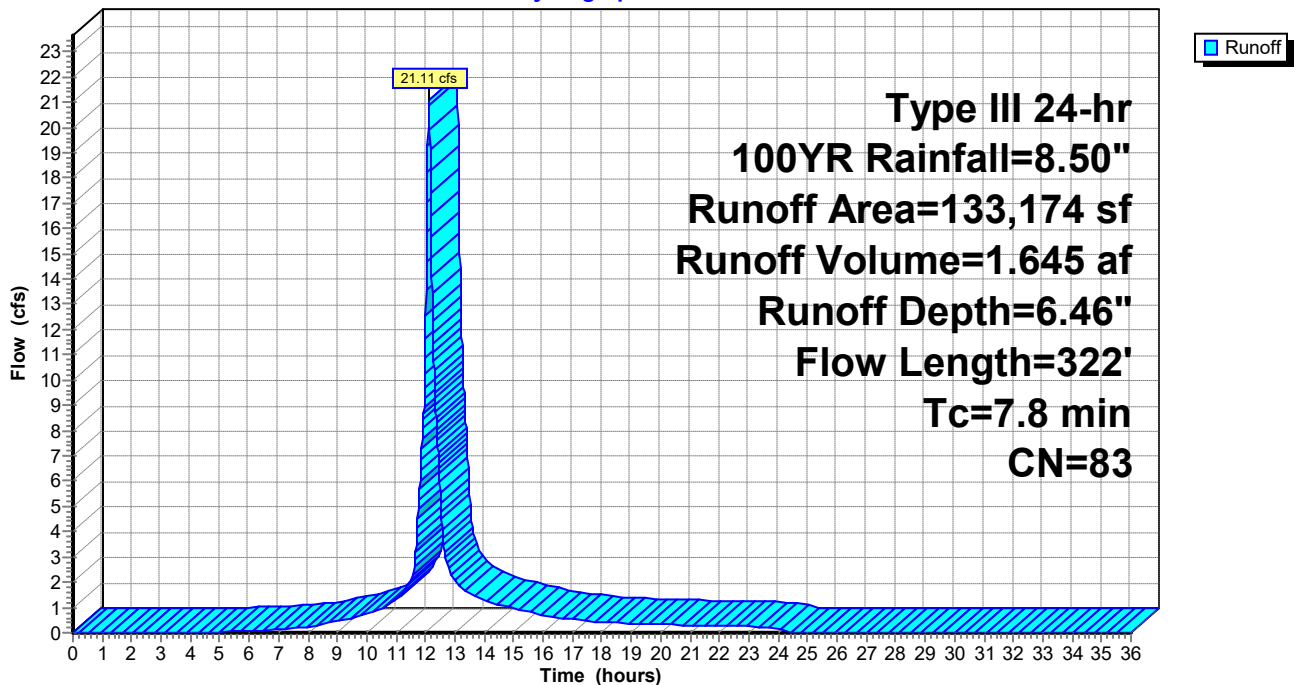
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR Rainfall=8.50"

Area (sf)	CN	Description
54,429	61	>75% Grass cover, Good, HSG B
78,745	98	Paved parking, HSG B
133,174	83	Weighted Average
54,429		40.87% Pervious Area
78,745		59.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.0980	0.13		Sheet Flow, Grass: Bermuda n= 0.410 P2= 3.41"
0.4	52	0.0980	2.19		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	12	0.4580	13.74		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.9	208	0.0360	3.85		Shallow Concentrated Flow, Paved Kv= 20.3 fps
7.8	322	Total			

Subcatchment 100: EDA100

Hydrograph



Summary for Subcatchment 200: EDA200

Runoff = 7.01 cfs @ 12.07 hrs, Volume= 0.512 af, Depth= 7.18"

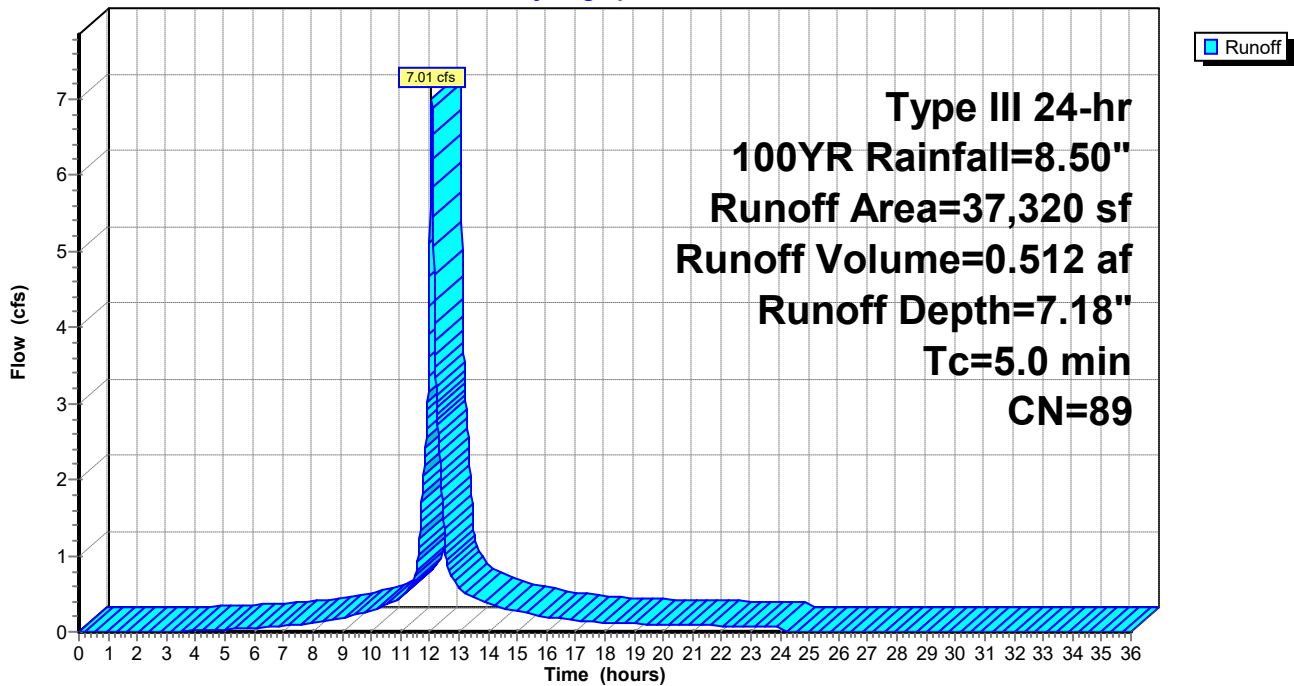
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR Rainfall=8.50"

Area (sf)	CN	Description
1,659	39	>75% Grass cover, Good, HSG A
6,687	61	>75% Grass cover, Good, HSG B
13,654	98	Paved parking, HSG A
15,320	98	Paved parking, HSG B
37,320	89	Weighted Average
8,346		22.36% Pervious Area
28,974		77.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 200: EDA200

Hydrograph



Summary for Subcatchment 300: EDA300

Runoff = 10.19 cfs @ 12.11 hrs, Volume= 0.786 af, Depth= 5.73"

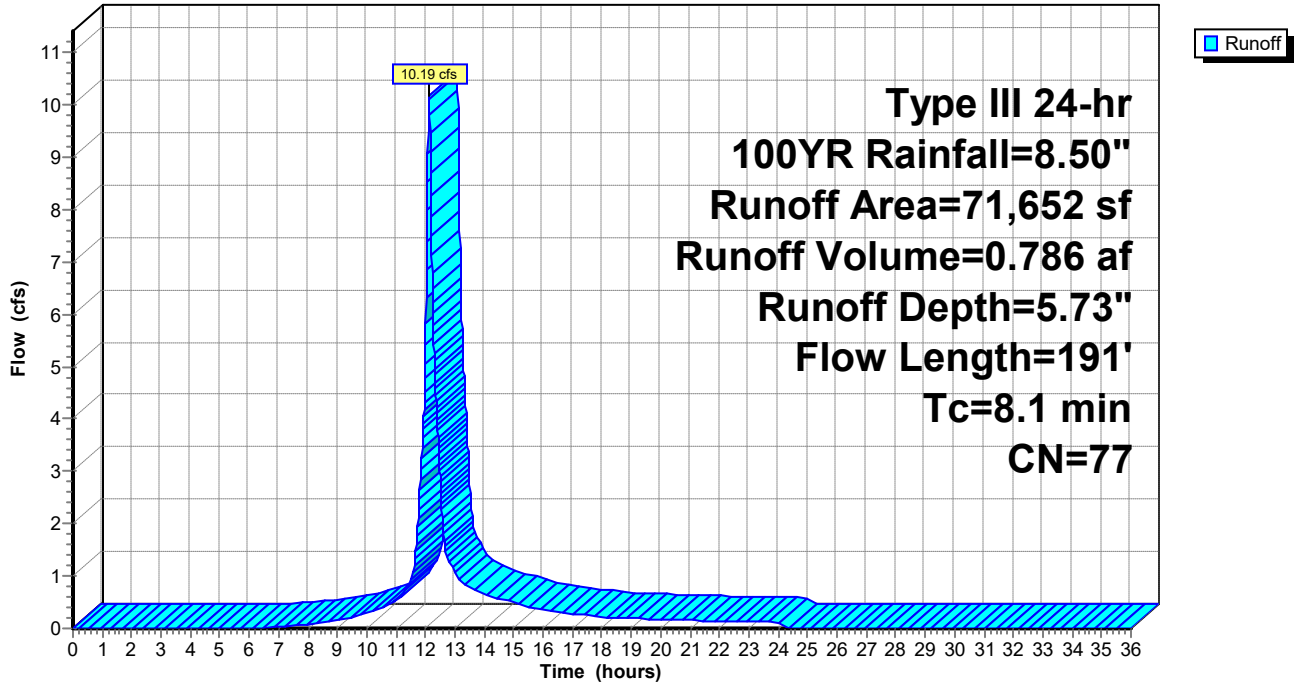
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR Rainfall=8.50"

Area (sf)	CN	Description
21,669	39	>75% Grass cover, Good, HSG A
6,146	61	>75% Grass cover, Good, HSG B
40,646	98	Paved parking, HSG A
3,191	98	Paved parking, HSG B
71,652	77	Weighted Average
27,815		38.82% Pervious Area
43,837		61.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.0174	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.41"
0.4	29	0.0344	1.30		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.6	69	0.0112	0.74		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	20	0.0112	2.15		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.1	23	0.0330	3.69		Shallow Concentrated Flow, Paved Kv= 20.3 fps
8.1	191	Total			

Subcatchment 300: EDA300

Hydrograph



Summary for Subcatchment 400: EDA400

Runoff = 0.84 cfs @ 12.07 hrs, Volume= 0.059 af, Depth= 5.73"

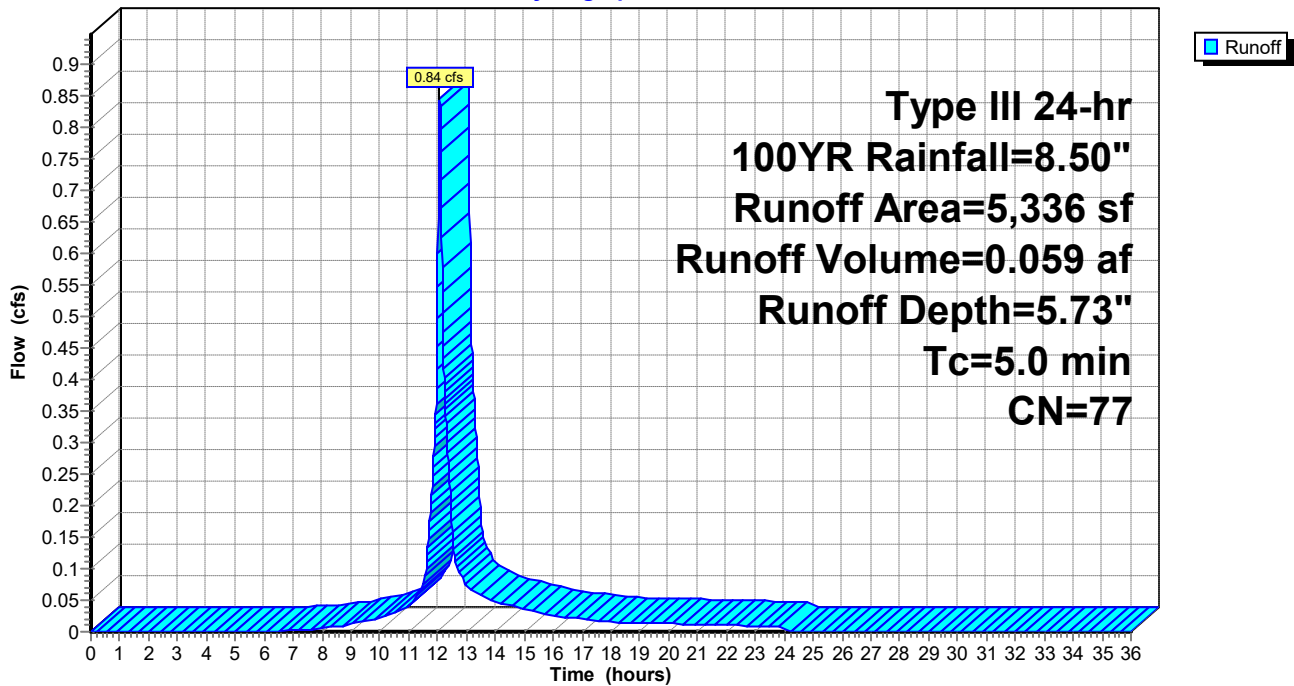
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR Rainfall=8.50"

Area (sf)	CN	Description
1,858	39	>75% Grass cover, Good, HSG A
3,478	98	Paved parking, HSG A
5,336	77	Weighted Average
1,858		34.82% Pervious Area
3,478		65.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 400: EDA400

Hydrograph



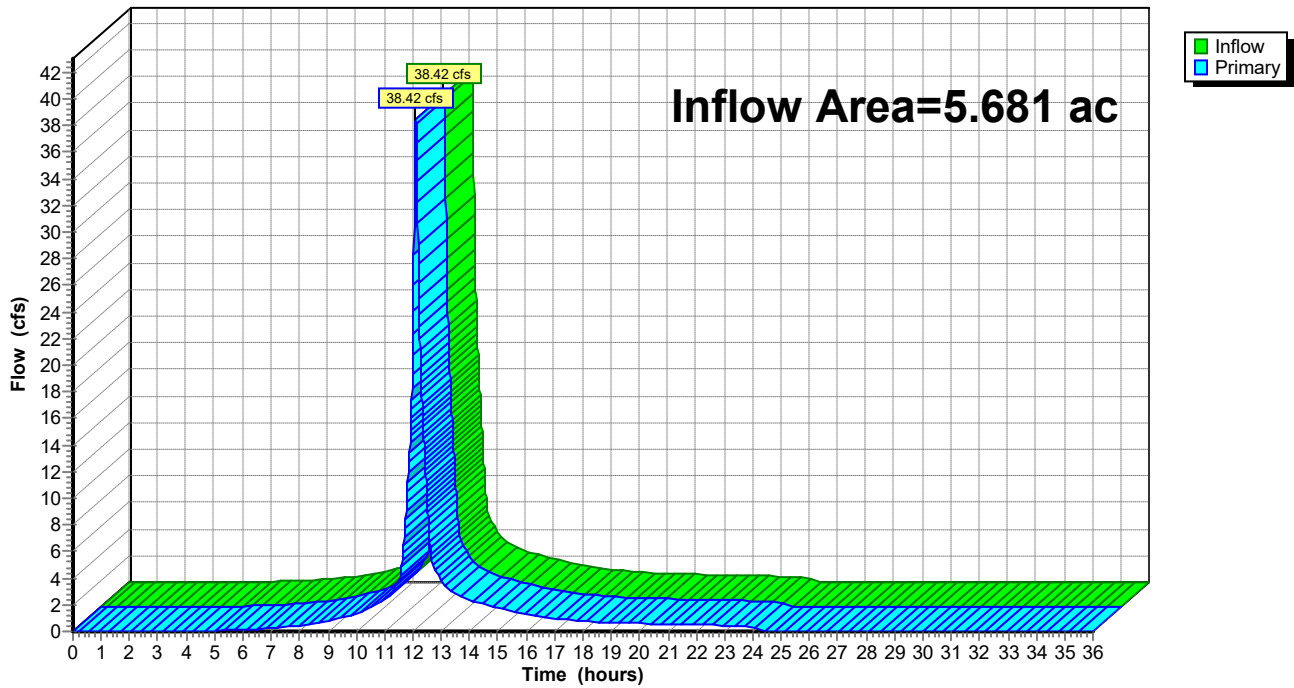
Summary for Link DP1: DP-1

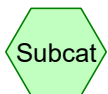
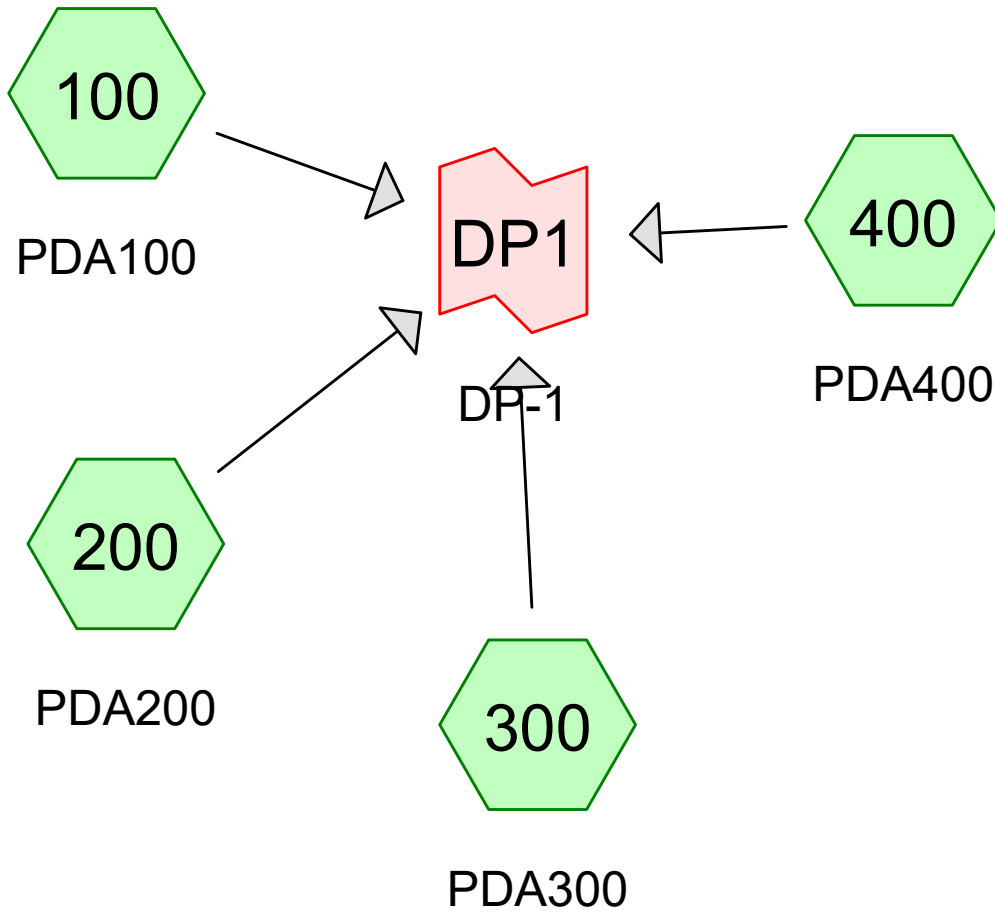
Inflow Area = 5.681 ac, 62.64% Impervious, Inflow Depth = 6.34" for 100YR event
Inflow = 38.42 cfs @ 12.10 hrs, Volume= 3.002 af
Primary = 38.42 cfs @ 12.10 hrs, Volume= 3.002 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link DP1: DP-1

Hydrograph

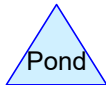




Subcat



Reach



Pond



Link

Routing Diagram for C-DAT-2001487-PostConstruction
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C-DAT-2001487-PostConstruction

Type III 24-hr 2YR Rainfall=3.20"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 100: PDA100

Runoff Area=133,288 sf 59.12% Impervious Runoff Depth=1.61"
Flow Length=322' Tc=7.8 min CN=83 Runoff=5.41 cfs 0.410 af

Subcatchment 200: PDA200

Runoff Area=37,217 sf 75.02% Impervious Runoff Depth=2.00"
Tc=5.0 min CN=88 Runoff=2.07 cfs 0.142 af

Subcatchment 300: PDA300

Runoff Area=71,641 sf 59.59% Impervious Runoff Depth=1.15"
Flow Length=278' Tc=8.5 min CN=76 Runoff=1.96 cfs 0.158 af

Subcatchment 400: PDA400

Runoff Area=5,336 sf 66.62% Impervious Runoff Depth=1.27"
Tc=5.0 min CN=78 Runoff=0.19 cfs 0.013 af

Link DP1: DP-1

Inflow=9.38 cfs 0.723 af
Primary=9.38 cfs 0.723 af

Total Runoff Area = 5.681 ac Runoff Volume = 0.723 af Average Runoff Depth = 1.53"
38.19% Pervious = 2.170 ac 61.81% Impervious = 3.512 ac

C-DAT-2001487-PostConstruction

Type III 24-hr 2YR Rainfall=3.20"

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Summary for Subcatchment 100: PDA100

Runoff = 5.41 cfs @ 12.11 hrs, Volume= 0.410 af, Depth= 1.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

Area (sf)	CN	Description
54,491	61	>75% Grass cover, Good, HSG B
78,797	98	Paved parking, HSG B
133,288	83	Weighted Average
54,491		40.88% Pervious Area
78,797		59.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.0980	0.13		Sheet Flow, Grass: Bermuda n= 0.410 P2= 3.41"
0.4	52	0.0980	2.19		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	12	0.4580	13.74		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.9	208	0.0360	3.85		Shallow Concentrated Flow, Paved Kv= 20.3 fps
7.8	322	Total			

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Type III 24-hr 2YR Rainfall=3.20"

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Summary for Subcatchment 200: PDA200

Runoff = 2.07 cfs @ 12.07 hrs, Volume= 0.142 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

Area (sf)	CN	Description
1,923	39	>75% Grass cover, Good, HSG A
7,375	61	>75% Grass cover, Good, HSG B
13,347	98	Paved parking, HSG A
14,572	98	Paved parking, HSG B
37,217	88	Weighted Average
9,298		24.98% Pervious Area
27,919		75.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

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Type III 24-hr 2YR Rainfall=3.20"

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Summary for Subcatchment 300: PDA300

Runoff = 1.96 cfs @ 12.13 hrs, Volume= 0.158 af, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

Area (sf)	CN	Description
22,322	39	>75% Grass cover, Good, HSG A
6,628	61	>75% Grass cover, Good, HSG B
40,043	98	Paved parking, HSG A
2,648	98	Paved parking, HSG B
71,641	76	Weighted Average
28,950		40.41% Pervious Area
42,691		59.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.0174	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.41"
0.4	29	0.0344	1.30		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.6	69	0.0112	0.74		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	20	0.0112	2.15		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	110	0.0330	3.69		Shallow Concentrated Flow, Paved Kv= 20.3 fps
8.5	278	Total			

C-DAT-2001487-PostConstruction

Type III 24-hr 2YR Rainfall=3.20"

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Summary for Subcatchment 400: PDA400

Runoff = 0.19 cfs @ 12.08 hrs, Volume= 0.013 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

Area (sf)	CN	Description
1,781	39	>75% Grass cover, Good, HSG A
3,555	98	Paved parking, HSG A
5,336	78	Weighted Average
1,781		33.38% Pervious Area
3,555		66.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Link DP1: DP-1

Inflow Area = 5.681 ac, 61.81% Impervious, Inflow Depth = 1.53" for 2YR event
Inflow = 9.38 cfs @ 12.11 hrs, Volume= 0.723 af
Primary = 9.38 cfs @ 12.11 hrs, Volume= 0.723 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

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Type III 24-hr 10YR Rainfall=4.90"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 100: PDA100

Runoff Area=133,288 sf 59.12% Impervious Runoff Depth=3.08"
Flow Length=322' Tc=7.8 min CN=83 Runoff=10.36 cfs 0.786 af

Subcatchment 200: PDA200

Runoff Area=37,217 sf 75.02% Impervious Runoff Depth=3.57"
Tc=5.0 min CN=88 Runoff=3.63 cfs 0.254 af

Subcatchment 300: PDA300

Runoff Area=71,641 sf 59.59% Impervious Runoff Depth=2.45"
Flow Length=278' Tc=8.5 min CN=76 Runoff=4.33 cfs 0.336 af

Subcatchment 400: PDA400

Runoff Area=5,336 sf 66.62% Impervious Runoff Depth=2.63"
Tc=5.0 min CN=78 Runoff=0.39 cfs 0.027 af

Link DP1: DP-1

Inflow=18.28 cfs 1.404 af
Primary=18.28 cfs 1.404 af

Total Runoff Area = 5.681 ac Runoff Volume = 1.404 af Average Runoff Depth = 2.97"
38.19% Pervious = 2.170 ac 61.81% Impervious = 3.512 ac

C-DAT-2001487-PostConstruction

Type III 24-hr 10YR Rainfall=4.90"

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Summary for Subcatchment 100: PDA100

Runoff = 10.36 cfs @ 12.11 hrs, Volume= 0.786 af, Depth= 3.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR Rainfall=4.90"

Area (sf)	CN	Description
54,491	61	>75% Grass cover, Good, HSG B
78,797	98	Paved parking, HSG B
133,288	83	Weighted Average
54,491		40.88% Pervious Area
78,797		59.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.0980	0.13		Sheet Flow, Grass: Bermuda n= 0.410 P2= 3.41"
0.4	52	0.0980	2.19		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	12	0.4580	13.74		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.9	208	0.0360	3.85		Shallow Concentrated Flow, Paved Kv= 20.3 fps
7.8	322	Total			

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Type III 24-hr 10YR Rainfall=4.90"

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Summary for Subcatchment 200: PDA200

Runoff = 3.63 cfs @ 12.07 hrs, Volume= 0.254 af, Depth= 3.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR Rainfall=4.90"

Area (sf)	CN	Description
1,923	39	>75% Grass cover, Good, HSG A
7,375	61	>75% Grass cover, Good, HSG B
13,347	98	Paved parking, HSG A
14,572	98	Paved parking, HSG B
37,217	88	Weighted Average
9,298		24.98% Pervious Area
27,919		75.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

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Type III 24-hr 10YR Rainfall=4.90"

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Summary for Subcatchment 300: PDA300

Runoff = 4.33 cfs @ 12.12 hrs, Volume= 0.336 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR Rainfall=4.90"

Area (sf)	CN	Description
22,322	39	>75% Grass cover, Good, HSG A
6,628	61	>75% Grass cover, Good, HSG B
40,043	98	Paved parking, HSG A
2,648	98	Paved parking, HSG B
71,641	76	Weighted Average
28,950		40.41% Pervious Area
42,691		59.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.0174	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.41"
0.4	29	0.0344	1.30		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.6	69	0.0112	0.74		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	20	0.0112	2.15		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	110	0.0330	3.69		Shallow Concentrated Flow, Paved Kv= 20.3 fps
8.5	278	Total			

C-DAT-2001487-PostConstruction

Type III 24-hr 10YR Rainfall=4.90"

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Summary for Subcatchment 400: PDA400

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.027 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR Rainfall=4.90"

Area (sf)	CN	Description
1,781	39	>75% Grass cover, Good, HSG A
3,555	98	Paved parking, HSG A
5,336	78	Weighted Average
1,781		33.38% Pervious Area
3,555		66.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Link DP1: DP-1

Inflow Area = 5.681 ac, 61.81% Impervious, Inflow Depth = 2.97" for 10YR event
Inflow = 18.28 cfs @ 12.10 hrs, Volume= 1.404 af
Primary = 18.28 cfs @ 12.10 hrs, Volume= 1.404 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

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Type III 24-hr 25YR Rainfall=6.10"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 100: PDA100

Runoff Area=133,288 sf 59.12% Impervious Runoff Depth=4.18"
Flow Length=322' Tc=7.8 min CN=83 Runoff=13.94 cfs 1.067 af

Subcatchment 200: PDA200

Runoff Area=37,217 sf 75.02% Impervious Runoff Depth=4.72"
Tc=5.0 min CN=88 Runoff=4.73 cfs 0.336 af

Subcatchment 300: PDA300

Runoff Area=71,641 sf 59.59% Impervious Runoff Depth=3.47"
Flow Length=278' Tc=8.5 min CN=76 Runoff=6.14 cfs 0.475 af

Subcatchment 400: PDA400

Runoff Area=5,336 sf 66.62% Impervious Runoff Depth=3.67"
Tc=5.0 min CN=78 Runoff=0.55 cfs 0.037 af

Link DP1: DP-1

Inflow=24.80 cfs 1.916 af
Primary=24.80 cfs 1.916 af

Total Runoff Area = 5.681 ac Runoff Volume = 1.916 af Average Runoff Depth = 4.05"
38.19% Pervious = 2.170 ac 61.81% Impervious = 3.512 ac

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Type III 24-hr 25YR Rainfall=6.10"

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Summary for Subcatchment 100: PDA100

Runoff = 13.94 cfs @ 12.11 hrs, Volume= 1.067 af, Depth= 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=6.10"

Area (sf)	CN	Description
54,491	61	>75% Grass cover, Good, HSG B
78,797	98	Paved parking, HSG B
133,288	83	Weighted Average
54,491		40.88% Pervious Area
78,797		59.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.0980	0.13		Sheet Flow, Grass: Bermuda n= 0.410 P2= 3.41"
0.4	52	0.0980	2.19		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	12	0.4580	13.74		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.9	208	0.0360	3.85		Shallow Concentrated Flow, Paved Kv= 20.3 fps
7.8	322	Total			

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Type III 24-hr 25YR Rainfall=6.10"

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Summary for Subcatchment 200: PDA200

Runoff = 4.73 cfs @ 12.07 hrs, Volume= 0.336 af, Depth= 4.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=6.10"

Area (sf)	CN	Description
1,923	39	>75% Grass cover, Good, HSG A
7,375	61	>75% Grass cover, Good, HSG B
13,347	98	Paved parking, HSG A
14,572	98	Paved parking, HSG B
37,217	88	Weighted Average
9,298		24.98% Pervious Area
27,919		75.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

C-DAT-2001487-PostConstruction

Type III 24-hr 25YR Rainfall=6.10"

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Summary for Subcatchment 300: PDA300

Runoff = 6.14 cfs @ 12.12 hrs, Volume= 0.475 af, Depth= 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25YR Rainfall=6.10"

Area (sf)	CN	Description
22,322	39	>75% Grass cover, Good, HSG A
6,628	61	>75% Grass cover, Good, HSG B
40,043	98	Paved parking, HSG A
2,648	98	Paved parking, HSG B
71,641	76	Weighted Average
28,950		40.41% Pervious Area
42,691		59.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.0174	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.41"
0.4	29	0.0344	1.30		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.6	69	0.0112	0.74		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	20	0.0112	2.15		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	110	0.0330	3.69		Shallow Concentrated Flow, Paved Kv= 20.3 fps
8.5	278	Total			

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Type III 24-hr 25YR Rainfall=6.10"

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Summary for Subcatchment 400: PDA400

Runoff = 0.55 cfs @ 12.07 hrs, Volume= 0.037 af, Depth= 3.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=6.10"

Area (sf)	CN	Description
1,781	39	>75% Grass cover, Good, HSG A
3,555	98	Paved parking, HSG A
5,336	78	Weighted Average
1,781		33.38% Pervious Area
3,555		66.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Link DP1: DP-1

Inflow Area = 5.681 ac, 61.81% Impervious, Inflow Depth = 4.05" for 25YR event
Inflow = 24.80 cfs @ 12.10 hrs, Volume= 1.916 af
Primary = 24.80 cfs @ 12.10 hrs, Volume= 1.916 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

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Type III 24-hr 100YR Rainfall=8.50"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 100: PDA100

Runoff Area=133,288 sf 59.12% Impervious Runoff Depth=6.46"
Flow Length=322' Tc=7.8 min CN=83 Runoff=21.13 cfs 1.646 af

Subcatchment 200: PDA200

Runoff Area=37,217 sf 75.02% Impervious Runoff Depth=7.06"
Tc=5.0 min CN=88 Runoff=6.91 cfs 0.502 af

Subcatchment 300: PDA300

Runoff Area=71,641 sf 59.59% Impervious Runoff Depth=5.61"
Flow Length=278' Tc=8.5 min CN=76 Runoff=9.87 cfs 0.770 af

Subcatchment 400: PDA400

Runoff Area=5,336 sf 66.62% Impervious Runoff Depth=5.85"
Tc=5.0 min CN=78 Runoff=0.86 cfs 0.060 af

Link DP1: DP-1

Inflow=37.97 cfs 2.978 af
Primary=37.97 cfs 2.978 af

Total Runoff Area = 5.681 ac Runoff Volume = 2.978 af Average Runoff Depth = 6.29"
38.19% Pervious = 2.170 ac 61.81% Impervious = 3.512 ac

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Type III 24-hr 100YR Rainfall=8.50"

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Summary for Subcatchment 100: PDA100

Runoff = 21.13 cfs @ 12.11 hrs, Volume= 1.646 af, Depth= 6.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100YR Rainfall=8.50"

Area (sf)	CN	Description
54,491	61	>75% Grass cover, Good, HSG B
78,797	98	Paved parking, HSG B
133,288	83	Weighted Average
54,491		40.88% Pervious Area
78,797		59.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	50	0.0980	0.13		Sheet Flow, Grass: Bermuda n= 0.410 P2= 3.41"
0.4	52	0.0980	2.19		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.0	12	0.4580	13.74		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.9	208	0.0360	3.85		Shallow Concentrated Flow, Paved Kv= 20.3 fps
7.8	322	Total			

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Type III 24-hr 100YR Rainfall=8.50"

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Summary for Subcatchment 200: PDA200

Runoff = 6.91 cfs @ 12.07 hrs, Volume= 0.502 af, Depth= 7.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR Rainfall=8.50"

Area (sf)	CN	Description
1,923	39	>75% Grass cover, Good, HSG A
7,375	61	>75% Grass cover, Good, HSG B
13,347	98	Paved parking, HSG A
14,572	98	Paved parking, HSG B
37,217	88	Weighted Average
9,298		24.98% Pervious Area
27,919		75.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

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Type III 24-hr 100YR Rainfall=8.50"

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Summary for Subcatchment 300: PDA300

Runoff = 9.87 cfs @ 12.12 hrs, Volume= 0.770 af, Depth= 5.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100YR Rainfall=8.50"

Area (sf)	CN	Description
22,322	39	>75% Grass cover, Good, HSG A
6,628	61	>75% Grass cover, Good, HSG B
40,043	98	Paved parking, HSG A
2,648	98	Paved parking, HSG B
71,641	76	Weighted Average
28,950		40.41% Pervious Area
42,691		59.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	50	0.0174	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.41"
0.4	29	0.0344	1.30		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.6	69	0.0112	0.74		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	20	0.0112	2.15		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.5	110	0.0330	3.69		Shallow Concentrated Flow, Paved Kv= 20.3 fps
8.5	278	Total			

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Type III 24-hr 100YR Rainfall=8.50"

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Summary for Subcatchment 400: PDA400

Runoff = 0.86 cfs @ 12.07 hrs, Volume= 0.060 af, Depth= 5.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR Rainfall=8.50"

Area (sf)	CN	Description
1,781	39	>75% Grass cover, Good, HSG A
3,555	98	Paved parking, HSG A
5,336	78	Weighted Average
1,781		33.38% Pervious Area
3,555		66.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Link DP1: DP-1

Inflow Area = 5.681 ac, 61.81% Impervious, Inflow Depth = 6.29" for 100YR event
Inflow = 37.97 cfs @ 12.10 hrs, Volume= 2.978 af
Primary = 37.97 cfs @ 12.10 hrs, Volume= 2.978 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

ATTACHMENT F

WATER QUALITY CALCULATIONS

RECHARGE CALCULATIONS

TSS REMOVAL WORKSHEETS

Pollutant Removal Calculations

Prepared for:
Downtown Redevelopment Project
Elm Street
Millbury, Massachusetts

Prepared by:
BL Companies
220 Norwood Park
Norwood, MA

Pollutant Loading Factors - Commercial Land Use

Loading Factor	
TSS (lb/ac/yr)	377.39
TN (lb/ac/yr)	15.08
TP (lb/ac/yr)	1.78

BMP	TSS Removal Rate	TP Removal Rate	TN Removal Rate
Bioswale	0.70	0.55	0.50
Rain Garden	0.90	0.60	0.40
Porous Paver	0.80	0.60	0.40
Deep Hooded Sump Catch Basin	0.35	--	--

Discharge Location	Drainage Area (sf)	Impervious Area (sf)	Water Quality Volume Required (CF)	Water Quality Volume Provided (CF)	Incoming TSS (lb)	Incoming TN (lb)	Incoming TP (lb)
Bioswale	26,288	12,973	1,081	0	112.39	4.49	0.53
Rain Garden	95,522	63,841	5,320	7,479	553.10	22.10	2.61
Porous Paver	42,855	13,825	1,152	4,704	119.78	4.79	0.56
Deep Hooded Sump Catch Basin	19,872	12,172	1,014	0	105.45	4.21	0.50
Existing System	61,537	49,774	4,148	0	431.23	17.23	2.03

BMP	Incoming TSS (lb)	TSS Removal (lb)	Incoming TP (lb)	TP Removal (lb)	Incoming TN (lb)	TN Removal (lb)
Bioswale	112.39	78.68	0.53	0.29	4.49	2.25
Rain Garden	553.10	497.79	2.61	1.57	22.10	8.84
Porous Paver	119.78	95.82	0.56	0.34	4.79	1.91
Deep Hooded Sump Catch Basin	105.45	36.91	0.50	--	4.21	--
Existing System	431.23	--	2.03	--	17.23	--

Pollutant Removal Summary

Value	lb/yr (cf for Water Quality Volume)	Removal Percentage
TSS Removal	709.19	0.54
TN Removal	13.00	0.25
TP Removal	2.20	0.35
Water Quality Volume Required	12,715	
Water Quality Volume Provided	13,502	

1. Loading Factors for TSS, TN and TP are based on values accepted by EPA in the MS4 Permit.
2. Removal rates obtained from MassDEP Stormwater Handbook
3. Water Quality Volume was calculated by multiplying 1 in times the impervious cover.
4. Google earth and the Town of Millbury GIS system was used to supplement the survey to determine existing land use cover and existing topography
5. Project is considered a redevelopment project, therefore pretreatment is not required to meet TSS removal rates

Green Infrastructure BMPs

BMP	Catchment Size (sf)	Impervious Area Draining to BMP (sf)	BMP Surface Area (sf)	Surface Volume (cf)	Subsurface Volume (cf)	Total Volume (cf)	Required Water Quality Volume (cf)	TSS Removal Rate	Meets Min. Size Requirement
RG-1	3,763	2,268	777	389	1,036	1,425	189	80%	Yes
RG-2	3,740	2,399	705	353	940	1,293	200	80%	Yes
RG-3	3,692	2,053	149	75	199	273	171	80%	No
RG-4	2,780	2,544	137	69	183	251	212	80%	No
RG-5	2,650	2,126	175	88	233	321	177	80%	Yes
RG-6	10,890	9,912	174	87	232	319	826	80%	No
RG-7	15,659	7,787	460	230	613	843	649	80%	No
RG-8	4,402	3,516	80	40	107	147	293	80%	No
RG-9	6,478	4,878	272	136	363	499	407	80%	No
RG-10	24,318	16,319	145	73	193	266	1,360	80%	No
RG-11	5,937	263	745	373	993	1,366	22	80%	Yes
RG-12	2,880	2,299	478	239	637	876	192	80%	Yes
RG-13	7,070	6,312	230	115	307	422	526	80%	No
RG-14	3,270	3,172	115	58	153	211	264	80%	No
Pavers-1	1,718	539	157	0	209	209	45	80%	Yes
Pavers-2	3,849	2,131	152	0	203	203	178	80%	Yes
Pavers-4	2,903	867	111	0	148	148	72	80%	Yes
Pavers-5	6,433	1,548	161	0	215	215	129	80%	Yes
Pavers-6	698	698	157	0	209	209	58	80%	Yes
Pavers-7	15,188	3,022	265	0	353	353	252	80%	Yes
Paver-11	7,172	2,096	489	0	652	652	175	80%	Yes
Pavers-12	1,927	1,063	558	0	744	744	89	80%	Yes
Pavers-13	1,064	845	816	0	1,088	1,088	70	80%	Yes
Pavers-15	1,872	985	136	0	181	181	82	80%	Yes
Pavers-16	486	486	60	0	80	80	41	80%	Yes

Notes:

1. To calculate surface volume rain gardens were assumed to have an open ponding depth of 6" (MassDEP Stormwater Standard)
2. Rain Gardens have a subsurface depth of 40 inches
3. Porous Pavers have a subsurface depth of 27 inches
4. Assume subsurface depth is 40% voids
5. Required Water Quality Volume is 1 inches times the impervious area
6. Per MassDEP Stormwater Handbook, porous pavers provide 80% TSS removal if BMP is sized to hold the required Water Quality Volume
7. Redevelopment projects do not need to provide pretreatment for TSS removal
8. Per MassDEP Stormwater Handbook, rain garden surface area shall be a min. 5% of the area draining to them

Pollutant Removal Retention Requirement

Post Construction Impervious Area (sf)	Rainfall (inch)	Required Retention Volume (cf)	Provided Retention Volume (cf)
157,260	0.80	10,484	12,593

Water Quality Volume Summary

$$V_{WQ} = (D_{WQ} / 12 \text{ in/ft}) \times (A_{IMP}) \text{ where:}$$

V_{WQ} = Required Water Quality Volume [CF]

D_{WQ} = Water Quality Depth : 1-inch for discharges within a Zone II or Interim Wellhead Protection Area, to or near critical areas, runoff from LUHPPL, or exfiltration to soil with infiltration rate 2.4 in/hr or greater; ½-inch for discharges to other areas.

A_{IMP} = Post-development Impervious Area; may exclude roof top areas [Ac]

Required Water Quality Volume:

Drainage Area/ Treatment Train	A_{IMP} [SF]	D_{WQ} [in]	V_{WQ} Required [CF]	Water Quality Volume Provided [CF]
Rain Garden 1	2,268	1	189	1,425
Rain Garden 2	2,399	1	200	1,293
Rain Garden 3	2,053	1	171	273
Rain Garden 4	2,544	1	212	251
Rain Garden 5	2,126	1	177	321
Rain Garden 6	9,912	1	826	319
Rain Garden 7	7,787	1	649	843
Rain Garden 8	3,516	1	293	147
Rain Garden 9	4,878	1	407	499
Rain Garden 10	16,319	1	1,360	266
Rain Garden 11	263	1	22	1,366
Rain Garden 12	2,299	1	192	876
Rain Garden 13	4,305	1	359	422
Rain Garden 14	3,172	1	264	211
Porous Paver 1	539	1	45	209
Porous Paver 2	2,131	1	178	203
Porous Paver 4	867	1	72	148
Porous Paver 5	1,548	1	129	215
Porous Paver 6	698	1	58	209
Porous Paver 7	3,022	1	252	353
Porous Paver 11	2,096	1	175	652
Porous Paver 12	608	1	51	744
Porous Paver 13	845	1	70	1,088
Porous Paver 15	985	1	82	181
Porous Paver 16	486	1	41	80
Area not Draining to BMP	74,919	1	6,243	
Total Required Water Quality Volume (cf):			12,715	
Total Provided Water Quality Volume (CF):				12,593

Groundwater Recharge Requirement

Groundwater Recharge Volume Required:

$R_v = F \times \text{Impervious Area}$, where:

R_v = Required Recharge Volume [Ac-ft]

F = Target Depth Factor associated with each Hydrologic Soil Group (HSG) [in]

Impervious Area = Total Pavement and Rooftop Area under Post-development Conditions [Ac]

			Impervious Area (sf)	Required Recharge Volume (cf)
HSG "A", use F =	0.6	in	58,232	2,912
HSG "B", use F =	0.35	in	99,028	2,888
HSG "C", use F =	0.25	in		0
HSG "D", use F =	0.1	in		0
Total Required Recharge Volume (Rv) =				<u>5,800</u> cf

Capture Area Adjustment: (Ref: DEP Handbook V.3 Ch.1 P.27-28)

Total Site Impervious Area (Total)= 152,585 SF

Impervious Area Draining to Infiltrative BMPs (infil) = 77,666

Percent Imp. Area Draining to Infiltrative BMPs = 50.9%

Less than 66% of the Site drains to an infiltrative BMP - Project Does not comply with the standard

Capture Area Adjustment Factor = (Total)/(Infil) = Ca = 1.96

Adjusted Required Recharge Volume = Ca x Rv **11,395** cf

Groundwater Recharge Volume Provided :

BMP	Provided Recharge Volume (cf)	Impervious Area Draining to Infiltrative BMP (sf)
Rain Garden 1	1,425	2,268
Rain Garden 2	1,293	2,399
Rain Garden 3	273	2,053
Rain Garden 4	251	2,544
Rain Garden 5	321	2,126
Rain Garden 6	319	9,912
Rain Garden 7	843	7,787
Rain Garden 8	147	3,516
Rain Garden 9	499	4,878
Rain Garden 10	266	16,319
Rain Garden 11	1,366	263
Rain Garden 12	876	2,299
Rain Garden 13	422	6,312
Rain Garden 14	211	3,172
Porous Paver 1	209	539
Porous Paver 2	203	2,131
Porous Paver 4	148	867
Porous Paver 5	215	1,548
Porous Paver 6	209	698
Porous Paver 7	353	3,022
Porous Paver 11	652	2,096
Porous Paver 12	744	1,063
Porous Paver 13	1,088	845
Porous Paver 15	181	985
Porous Paver 16	80	486
Total Provided Recharge Volume (sf)=	12,593	
Total Impervious Area Draining to Infiltrative BMP (sf) =		80,128

DrawDown Time

$$\text{Drawdown Time} = \frac{\text{Rv}}{\text{(K) (Bottom Area)}}$$

where:

Rv = Storage Volume Below Outlet [cf]

K= Infiltration Rate [in/hr]

Bottom Area= Bottom Area of Recharge System [sf]

Stormwater BMP	Rv (cf)	K (in/hr)	Bottom Area (sf)	Drawdown Time (hr)
Rain Garden 1	1,425	2.41	777	0.76
Rain Garden 2	1,293	2.41	705	0.76
Rain Garden 3	273	2.41	149	0.76
Rain Garden 4	251	1.02	137	1.80
Rain Garden 5	321	1.02	175	1.80
Rain Garden 6	319	1.02	174	1.80
Rain Garden 7	843	1.02	460	1.80
Rain Garden 8	147	1.02	80	1.80
Rain Garden 9	499	1.02	272	1.80
Rain Garden 10	266	1.02	145	1.80
Rain Garden 11	1,366	1.02	745	1.80
Rain Garden 12	876	1.02	478	1.80
Rain Garden 13	422	1.02	230	1.80
Rain Garden 14	211	2.41	115	0.76
Porous Paver 1	209	1.02	157	1.31
Porous Paver 2	203	1.02	152	1.31
Porous Paver 4	148	1.02	111	1.31
Porous Paver 5	215	1.02	161	1.31
Porous Paver 6	209	1.02	157	1.31
Porous Paver 7	353	1.02	265	1.31
Porous Paver 11	652	1.02	489	1.31
Porous Paver 12	744	1.02	558	1.31
Porous Paver 13	1,088	1.02	816	1.31
Porous Paver 15	181	1.02	136	1.31
Porous Paver 16	80	1.02	60	1.31

INSTRUCTIONS:

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

Version 1, Automated: Mar. 4, 2008

Location:

	B	C	D	E	F
	BMP ¹	TSS Removal Rate ¹	Starting TSS Load*	Amount Removed (C*D)	Remaining Load (D-E)
TSS Removal Calculation Worksheet	Street Sweeping - 10%	0.10	1.00	0.10	0.90
	Water Quality Swale - Wet	0.70	0.90	0.63	0.27
		0.00	0.27	0.00	0.27
		0.00	0.27	0.00	0.27
		0.00	0.27	0.00	0.27

Total TSS Removal =

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

Project:
 Prepared By:
 Date:

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

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed
 1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

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

Version 1, Automated: Mar. 4, 2008

Location:

	B	C	D	E	F
	BMP ¹	TSS Removal Rate ¹	Starting TSS Load*	Amount Removed (C*D)	Remaining Load (D-E)
TSS Removal Calculation Worksheet	Street Sweeping - 10%	0.10	1.00	0.10	0.90
	Porous Pavement	0.80	0.90	0.72	0.18
		0.00	0.18	0.00	0.18
		0.00	0.18	0.00	0.18
		0.00	0.18	0.00	0.18

Total TSS Removal =

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

Project:
 Prepared By:
 Date:

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

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed
 1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

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

Version 1, Automated: Mar. 4, 2008

Location:

	B	C	D	E	F
	BMP ¹	TSS Removal Rate ¹	Starting TSS Load*	Amount Removed (C*D)	Remaining Load (D-E)
TSS Removal Calculation Worksheet	Street Sweeping - 10%	0.10	1.00	0.10	0.90
	Rain Garden	0.90	0.90	0.81	0.09
		0.00	0.09	0.00	0.09
		0.00	0.09	0.00	0.09
		0.00	0.09	0.00	0.09

Total TSS Removal =

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

Project:
 Prepared By:
 Date:

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

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed
 1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

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

Version 1, Automated: Mar. 4, 2008

Location:

	B	C	D	E	F
	BMP ¹	TSS Removal Rate ¹	Starting TSS Load*	Amount Removed (C*D)	Remaining Load (D-E)
TSS Removal Calculation Worksheet	Street Sweeping - 10%	0.10	1.00	0.10	0.90
	Deep Sump and Hooded Catch Basin	0.25	0.90	0.23	0.68
		0.00	0.68	0.00	0.68
		0.00	0.68	0.00	0.68
		0.00	0.68	0.00	0.68

Total TSS Removal =

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

Project:
 Prepared By:
 Date:

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

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed
 1. From MassDEP Stormwater Handbook Vol. 1

ATTACHMENT G

OPERATION & MAINTENANCE PLAN

Operation and Maintenance Manual

For the Proposed:

Downtown Revitalization Project – Phase 2

Located at:

**Elm Street
Millbury, Massachusetts**

Prepared for Submission to:

Town of Millbury, MA

May 17, 2021

Prepared for:

Town of Millbury

Prepared by:

BL Companies

220 Norwood Park South, Suite 201

Norwood, MA 02062

Phone: (781) 619-9500

Fax: (203) 630-2615

BL Project Number: 2001478

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General Overview

The subject site is located along Elm Street from the intersection of Main Street to the intersection of River Street in Millbury, MA. The project site also includes the municipal parking lot adjacent to the Millbury Baptist Church.

The purpose of the Project is to revitalize the downtown Millbury area and municipal parking lot as well as improvement the existing stormwater management treatment components along the project area.

The following Operations and Maintenance Plan was prepared specifically for the Downtown Revitalization Project – Phase 2 in Millbury, Massachusetts. The Plan was developed to satisfy the Massachusetts DEP and Town of Millbury requirements.

Purpose & Goals

The purpose of this Operations and Maintenance Plan is to ensure that the facility is operated in accordance with all approvals and permits. The primary goal is to inform the Town about how the system operates and what maintenance items are necessary to protect downstream watercourses. The secondary goal is to provide a practical, efficient means of maintenance planning and record keeping verifying permit compliance.

Site Owner

Site Owner: The Town of Millbury
 127 Elm Street
 Millbury, MA 01527

Responsible Party: The Town of Millbury

The Town of Millbury shall maintain ownership of the stormwater management system as well as the responsibility for operation and maintenance during the post-development stages of the project. The site has been inspected for erosion and appropriate measures have been taken to permanently stabilize any eroded areas. All aspects of the stormwater BMPs have been inspected for damage, wear and malfunction, and appropriate steps have been taken to repair or replace the system or portions of the system so that the stormwater at the site may be managed in accordance with the Stormwater Management Standards.

Responsible Parties

The Town of Millbury will be responsible for implementing the Plan on the subject site. The Town of Millbury may retain a management company to oversee the maintenance of the site.

Easements

There are no Stormwater Maintenance Easements. The stormwater management system is the Elm Street right-of-way and the municipal parking lot.

Maintenance Logs and Checklists

The Town will maintain a log of all inspections and maintenance activities performed in the past three years. The Operation and Maintenance Log includes information related to inspections, repairs, and disposal of the project's stormwater management system. Copies of inspection reports and maintenance records shall be kept at the Town of Millbury Department of Public Work's office. The Log is located at the end of this manual.

The Operation and Maintenance Log shall be made available to the Conservation Commission and MassDEP. The Conservation Commission and MassDEP shall be allowed to enter and inspect the premises to evaluate and ensure that the responsible party complies with the maintenance requirements for each BMP.

Forms

The following forms will be developed for annual maintenance. Copies of the forms will be kept on-site as part of the Storm Water Management Plan.

- Annual Checklist
- Semi-Annual Checklist
- Monthly Checklist

Employee Training

The Town will have an employee-training program, with annual updates, to ensure that the employees charged with maintaining the site are educated in the general concepts of stormwater management. The Operation and Maintenance Manual will be reviewed with the appropriate employees. The employees will be trained on the proper course of action for specific events expected to be incurred during routine maintenance or emergency situations. All sub-contractors will be informed of special requirements and responsibilities.

Town and Contractor Information

The names of the Town and any maintenance contractors are to be provided below when known.

Owner	Name:
	Responsible Person:
	Phone:
	Email:
	Address:
Person(s) Responsible for Financing Maintenance and Emergency Repairs	Name:
	Responsible Person:
	Phone:
	Email:
	Address:
Contractor	Name:
	Responsible Person:
	Phone:
	Email:
	Address:

Owner:

I have read this Operation and Maintenance manual and understand the maintenance and inspection procedures and schedule.

Signature Date

Printed Name: _____

Responsible Person:

I have read this Operation and Maintenance manual and am the responsible party for implementing maintenance and inspection procedures and schedule.

Signature Date

Printed Name: _____

Person(s) Responsible for Financing Maintenance and Emergency Repairs:

I have read this Operation and Maintenance manual and am the responsible party for financing maintenance and emergency repairs.

Signature Date

Printed Name: _____

Long Term Pollution Prevention Plan

This section has been designed to comply with Standard 4 of the 2008 MassDEP Stormwater Management Handbook, this section outlines source control and pollution prevention measures to be employed on-site after construction

Storage of Materials and Waste

The site shall be kept clear of trash and debris. Certain materials and waste will be stored inside or outside upon an impervious surface and covered, as required by local/state law.

Vehicle Washing

No commercial vehicle washing shall take place on site.

Routine Inspections and Maintenance of Stormwater BMPS

Stormwater BMPs shall be routinely maintained in accordance with this manual.

Spill Prevention

A contingency plan shall be implemented to address the spill or release of petroleum products and hazardous materials. The plan will include these components:

- Equipment to quickly address accidental spills/leaks will be stored onsite in a safe location. Such equipment will include: goggles, gloves, safety boots, fire extinguishers, sand, shovels, absorbent materials, storage containers and first aid equipment.
- Spills/leaks shall be treated appropriately according to the material, volume and location of spill. Mitigation shall include prevention of further spilling, containing the spill, removing the spilled material, and remediation if necessary.
- In the case of a large spills Massachusetts DEP Hazardous Waste Incident Response Group will be contacted and an emergency response contractor will be consulted.

Maintenance of Landscaped Areas

Landscaped areas will be maintained regularly by the Town. Landscaped stormwater BMPs will be maintained in accordance with this manual.

Storage and Use of Fertilizers and Pesticides

All fertilizers and pesticides shall be stored in accordance with applicable local, state and/or federal law. The rate and use of fertilizers and pesticides will not exceed local, state and/or federal specifications.

Snow and Deicing Management

Snow removal and use of deicing materials at the site will comply with following guidelines:

- Plowed snow shall be placed in the areas designated outside the stormwater BMPs and any wetland. The following measures will be followed at all snow disposal sites:
 - Trash and debris will be removed from the area before using it for snow disposal.
 - Trash, debris, and accumulated sediments will be removed from the stormwater BMP areas at the end of the season (no later than May 15).
 - Per MGL, Chapter 85, Section 7A, salt and de-icing chemicals will be stored indoors. Salt and deicing chemicals will be stored per MGL.
 - Sand piles will be contained and steps will be taken to prevent sand from entering any wetlands/water bodies, and covered if possible.
 - The rate of salt usage on proposed parking will not exceed state/local requirements.

Trash Collection

All trash will be contained in litter/recyclable receptacles or dumpster enclosures. Trash will be collected on a regular basis and disposed of legally off-site.

Maintaining Native Vegetation

Existing vegetation around the perimeter of the project site will be maintained in its native condition. No clearing, grading, stockpiling, storage, or development will occur in these areas. from sidewalk and parking areas as soon as practical during and after winter storms.

Dumping

No dumping of any kind, solid or liquid, either onsite or into the adjacent Stream/wetland systems is allowed.

Illicit Discharge

Discharging any substance or creating any connection to the existing or proposed stormwater management system other than those as shown on the design plans provided with this operation and maintenance plan is strictly prohibited.

Storm Water Management

System Components

The storm water management system has several components that are shown on the Operation & Maintenance Plan (OM-1), and they perform various functions in treating storm water runoff. Stormwater management updates proposed as part of this project include approximately 4,600 sf rain gardens, 3,100 sf of porous pavers, 2,300 sf of bioswales and 6 new catch basins with deep hooded sumps. Maintained properly, these BMPs will promote infiltration and improve water quality.

Porous Pavers

Frequent cleaning and maintenance of pervious pavers/pavement is critical to prevent clogging. The required operation and maintenance measures include the following:

- No winter sanding shall be conducted on the porous asphalt.
- Salt use during winter months shall be minimized.
- Adjacent landscaped areas shall be well maintained to prevent soil from being transported onto pavement.
- Surface of pervious pavers/pavement shall be cleaned using vacuum sweeping machines monthly.
- Pervious pavers/pavement shall be monitored regularly to ensure proper drainage after storm events.
- Pervious pavers/pavement shall never be resealed or repaved with impermeable materials.
- Surface shall be inspected annually for deterioration.
- Pervious pavers/pavement area shall be inspected annually for evidence of ponding. If ponding is observed, the area shall be graded to induce sheet flow conditions.

Catch Basins, and Manholes

The Town is responsible for cleaning the catch basins and manholes associated with this project. A Massachusetts licensed hauler shall clean the sumps and dispose of removed sand legally. The road sand may be reused for winter sanding. As part of the hauling contract, the hauler shall notify the Town in writing where the material is being disposed.

Each catch basin, and manhole shall be inspected every four months, with one inspection occurring during the month of April. Any debris occurring within one foot from the bottom of each sump by Vacuum "Vactor" type of maintenance equipment.

During the inspection of each of the catch basin sumps, the hoods on each of the outlet pipes shall also be observed. In the event that a hood is damaged or off the hanger, it shall be reset or repaired.

Rain Gardens

Rain gardens are shallow depressions filled with sandy soil, topped with a thick layer of mulch, and planted with dense native vegetation. There proposed rain gardens are exfiltration rain gardens and are designed to recharge groundwater in addition to acting as a filter.

This operating and maintenance procedure shall apply to proposed rain gardens within the project area. Annual maintenance of all rain garden components, including plants, soil, and mulch, shall be performed to ensure the overall success. Specific maintenance activities and their required frequency are outlined in the table below.

Maintenance Schedule: Rain Gardens

Activity	Time of Year	Frequency
Inspect for soil erosion and repair	Year round	Monthly
Inspect for invasive species and remove if present	Year round	Monthly
Remove trash	Year round	Monthly
Mulch Void Areas	Spring	Annually
Remove dead vegetation	Fall and spring	Bi-annually
Replace dead vegetation	Spring	Annually
Prune	Spring or fall	Annually
Replace all media and vegetation	Late spring/early summer	As needed

When failure is discovered, excavate the rain garden area, scarify the bottom and sides, replace the filter fabric and soil, replant vegetation, and mulch the surface.

Never store snow within a rain garden. This would prevent the recharge and water quality treatment of ground water.

Bioswales

The maintenance and inspection schedule should take into consideration the effectiveness of the bioswale. Inspect the bioswale the first few months after construction to make sure that there is no filling or gullyng, and that vegetation in the channels is adequate. Thereafter inspect the bioswale twice a year for slope integrity, soil moisture, vegetative health, soil stability, soil compaction, soil erosion, ponding and sediment accumulation.

Specific maintenance activities and their required frequency are outlined in the table below.

Maintenance Schedule: Bioswales

Activity	Frequency
Inspect bioswale to make sure vegetation is adequate and for signs of rilling and gullyng. Repair any rills or gullies. Replace dead vegetation	The first few months after construction and twice a year thereafter
Mow	As necessary. Grass heigh shall not exceed 6 inches
Remove sediment and debris manually	At least once a year
Reseed	As necessary. Use of road salt or other deicers during the winter will necessitate yearly reseeding in the spring.

Street/Parking Lot Sweeping

Street sweeping has significant impacts on the function of drainage infrastructure and receiving water quality. For this reason, it is included as necessary operation and maintenance activities related to drainage improvements for this project. Street sweeping shall be conducted bi-annually and shall at a minimum include sweeping or vacuuming paved surfaces and properly dispose of cleanings. Streets and sidewalks should be swept once in the Spring when snowfall events have ceased, and once in the fall following leaf collection.

Operations and Maintenance Log Form

Inspection Type	Inspection Date	Inspector Initials
Rain Garden	_____ _____ _____	_____ _____ _____
Permeable Pavers/Pavement	_____ _____ _____	_____ _____ _____
Catch Basins, Manholes	_____ _____ _____	_____ _____ _____
Landscaping	_____ _____ _____	_____ _____ _____

ATTACHMENT H
GEOTECHNICAL REPORT



Consulting
Engineers and
Scientists

July 9, 2021
Project 2102401

Mr. Michael Moonan, RLA
BL Companies
2346 Post Road, Suite, 100
Warwick, Rhode Island 02886

Dear Mr. Moonan:

Re: **Results of Test Pits and Laboratory Testing
Proposed Stormwater Improvements
Millbury Downtown Revitalization Project
Millbury, Massachusetts**

This letter presents the results of test pits and laboratory testing performed to support the design of a proposed stormwater improvements as part of the Millbury Downtown Revitalization Project in Millbury, Massachusetts.

Scope of Work

Our scope of work consisted of the following:

- Observed four test pits excavated by the Town of Millbury Department Public Works.
- Performed combined mechanical sieve and hydrometer analyses on nine soil samples collected from the test pits to evaluate their suitability for stormwater infiltration.
- Determined the hydrologic soil groups based on the laboratory testing of the soils and made observations of probable high groundwater levels for use in designing the infiltration systems.
- Prepared this letter presenting the results of the explorations and the laboratory testing.

Exploration Program

The Town of Millbury Department of Public Works excavated four test pits (TP1 through TP4) at the site on June 24, 2021. A GEI representative observed and documented the test pits. Test pit logs are provided in Appendix A. Test Pit locations are shown in Figure 1.

The test pits were excavated in the general areas of proposed stormwater improvements. The test pits were located by measuring offsets from visible topographic features. Ground surface elevations at the test pit locations were estimated from existing elevation contours shown on a site plan provided by BL Companies.

Subsurface Conditions

In general, the test pits encountered 0.5 to 1.25 feet of silty sand topsoil overlying about 2.5 to 3.5 feet of silty sand fill overlying natural silty sand with gravel. All the test pits were terminated in the natural silty sand with gravel at depths of 7 to 7.5 feet.

Groundwater Levels

Groundwater was not encountered in the test pits. In addition, no soil mottling (indicative of previous seasonal high groundwater levels) was observed in TP2. Soil mottling indicative of previous seasonal high groundwater was observed in TP1, TP3 and TP4 at depths of 5.5 feet, 5.5 feet and 6.0 feet, respectively.

Laboratory Testing

We performed nine mechanical sieve and hydrometer analyses on soil samples collected from the test pits. The results of the laboratory tests are provided in Appendix B.

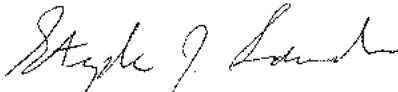
Soil Descriptions and Infiltration Rates at the Stormwater Infiltration Basin Test Pits

Soil descriptions on the test pit logs (Appendix A) and on the individual grain-size distribution reports (Appendix B) are based on the Unified Soil Classification System (USCS). Also included in Appendix B is a figure that provides the results of the grain-size analyses based on the United States Department of Agriculture (USDA) Soil Description System. The USDA soil descriptions were used to determine soil texture class, National Resource Conservation Services (NRCS) hydrologic soil group, and estimated infiltration rates (Rawls Rate), as described in the Massachusetts Stormwater Handbook. The soil texture class, hydrologic soil group, and Rawls Rates are provided in Table 1.

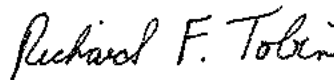
Please call Steve Sarandis at 781-264-8905 if you have any questions.

Sincerely,

GEI CONSULTANTS, INC.



Stephen J. Sarandis, P.E.
Geotechnical Engineer



Richard F. Tobin, P.E.
Senior Project Manager

SJS/RFT:jam

B:\Working\BL COMPANIES\2102401 Millbury Stormwater Improvements\06_Letter\Stormwater Results Ltr.docx

Attachments:

Table 1 – Exploration Data and Infiltration Rates

Figure 1 – Test Pit Location Plan

Appendix A – Test Pit Logs

Appendix B – Mechanical Sieve and Hydrometer Analyses Results for Stormwater Design

Table

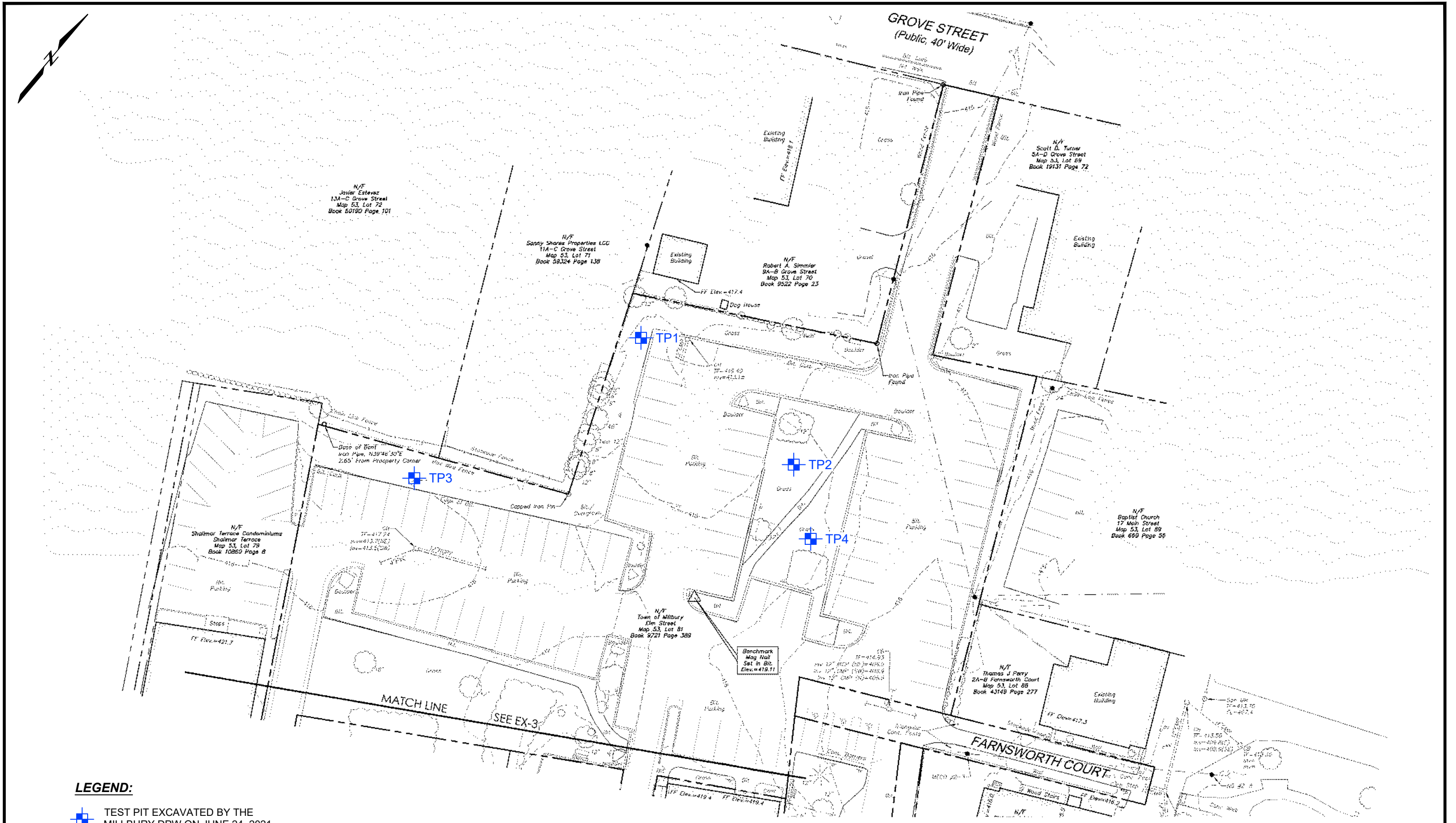
Table 1. Exploration Data and Infiltration Rates
Proposed Stormwater Improvements
Millbury Downtown Revitalization
Millbury, Massachusetts

Test Pit Number	Approx. Ground Surface Elevation ^{1,2}	Bottom of Test pit		Layer Depth	Field Description of Soil	Soil Horizon	USDA Soil Texture ³	NRCS Hydrologic Soil Group	Infiltration Rate ⁴	Est. Depth to Probable High Water ⁵
	(ft)	Depth (ft)	EI. (ft)	(ft)					(in/hr)	(ft)
TP1	417.0	7.5	409.5	0.0 - 1.0	SILTY SAND(SM) <Top Soil>	(Fill)	NA	NA	--	5.5
				1.0 - 3.5	SILTY SAND WITH GRAVEL (SM); 61.1% fine to coarse sand, 25.0% fine to coarse gravel, 13.9% non plastic fines, occ. brick fragments, trace organics, cobbles and boulders up to 18", Dk. Brown. <Fill>	(Fill)	Loamy Sand	A	2.41	
				3.5 - >7.5	90" SILTY SAND (SM); 46.4% mostly fine to medium sand, 41.7% slightly plastic fines, 11.9% fine to coarse gravel, cobbles up to 10", Tan- Gray. Mottling observed at 5.5'	C	Sandy Loam	B	1.02	
TP2	418.0	7.0	411.0	0.0 - 0.5	SILTY SAND(SM) <Top Soil>	(Fill)	NA	NA	--	>7.0
				0.5 - 4.0	SILTY SAND WITH GRAVEL (SM); 47.1% mostly fine to medium sand, 26.0% fine to coarse gravel, 26.9% non plastic fines, cobbles and boulders up to 18", Dk. Brown with a orange brown layer from 2.5' to 3.5'. <Fill>	(Fill)	Sandy Loam	B	1.02	
				4.0 - >7.0	SILTY SAND WITH GRAVEL (SM); 42.7% mostly fine to medium sand, 28.3% slightly plastic fines, 29.0% fine to coarse gravel, cobbles up to 24", Gray - Brown. No mottling observed.	C	Sandy Loam	B	1.02	
TP3	418.0	7.0	411.0	0.0 - 0.5	SILTY SAND(SM) <Top Soil>	(Fill)	NA	NA	--	5.5
				0.5 - 3.0	NARROWLY GRADED SAND WITH GRAVEL (SP); 49.6% mostly medium to coarse sand, 45.6% fine to coarse gravel, 4.9% non plastic fines, cobbles and boulders up to 12", Gray- Brown. <Fill>	(Fill)	Sand	A	8.27	
				3.0 - 4.5	SILTY SAND (SM); 74.0% mostly fine to medium sand, 19.3% slightly plastic fines, 6.7% fine to coarse gravel, Orange - Brown.	C	Sand	A	8.27	
				4.5 - >7.0	SILTY SAND (SM); 51.0% mostly fine to medium sand, 44.4% slightly plastic fines, 4.6% fine gravel, Tan- Gray. Mottling observed at 5.5'	C	Sandy Loam	B	1.02	
TP4	418.0	7.0	411.0	0.0 - 1.25	SILTY SAND(SM) <Top Soil>	(Fill)	NA	NA	--	6.0
				1.25 - 4.0	SILTY SAND WITH GRAVEL(SM); 52.6% fine to coarse sand, 31.6% non plastic fines, 15.8% fine gravel, trace organics, cobbles, one granite post. Dk. Brown. <Fill>	B	Sandy Loam	B	1.02	
				4.0 - 7.0	SILTY SAND (SM); 50.7% mostly fine to medium sand, 38.6% slightly plastic fines, 10.7% mostly fine gravel, cobbles up to 10", Gray - Brown. Mottles observed at six feet.	C	Sandy Loam	B	1.02	

Notes:

1. Elevation datum is the North American Vertical Datum (NAVD) of 1988.
2. Ground surface elevations were estimated from topographic plan provided by BL Companies, Inc.
3. USDA soil texture is derived from Fig. 2.3.2, of the Massachusetts Stormwater Handbook (Vol 3, Ch. 1) using the results of grain size tests performed on soil samples obtained from the borings.
4. Infiltration rate is derived from Table 2.3.3, of the Massachusetts Stormwater Handbook (Vol. 3, Ch.1) using the results of grain size tests performed on soil samples obtained from the test pits.
5. Estimated depths to Probable High Water is based on visual observations of test pits and signs of mottling in the soils exposed on the sidewalls of the test pit.

Figure

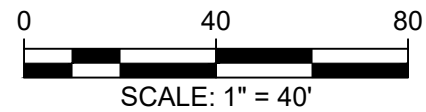


LEGEND:

 TEST PIT EXCAVATED BY THE MILLBURY DPW ON JUNE 24, 2021

NOTES:

1. BASE PLAN FROM "MILLBURY DOWNTOWN PHASE 2, ELM STREET, MILLBURY, MASSACHUSETTS, EXISTING CONDITIONS MAP," SHEET EX-4 PREPARED BY BL COMPANIES, DATED 01/08/2021.



Proposed Stormwater Improvements
Millbury Downtown Revitalization
Millbury, Massachusetts

BL Companies, Inc.
Warwick, Rhode Island



Project 2102401

TEST PIT LOCATION PLAN

July 2021


Fig. 1

Appendix A

Test Pit Logs

TEST PIT LOG		TP1	
Project	<u>Proposed Stormwater Improvements</u>	PG.	<u>1</u> OF <u>1</u>
City/Town	<u>Millbury Massachusetts</u>	Location	<u>See Plan</u>
Client	<u>BL Companies, Inc.</u>		
Contractor	<u>Millbury Department of Public Works</u>	Ground El.	<u>~417</u>
Equipment/Reach	<u>Cat 430 F Backhoe/ 10 feet</u>	Datum	<u>NAVD88</u>
Operator	<u>Scott</u> GEI Rep <u>S. Sarandis</u>	GEI Proj. No.	<u>2102401</u>
Weather	<u>Sunny 70's</u>	Date	<u>6/24/2021</u>

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1	S1 (bag)	3'	0 -12" Grass/ Top Soil - Silty Sand (SM)
2			12" - 42" SILTY SAND WITH GRAVEL(SM); 61.1% fine to coarse sand, 25.0% fine to coarse gravel, 13,9% non plastic fines, occ. brick fragments, trace organics, cobbles and boulders up to 18", Dk. Brown. (Grain Size Test)
3			<Fill>
4	S2 (bag)	5.5'	42" - 90" SILTY SAND (SM); 46.4% mostly fine to medium sand, 41.7% slightly plastic fines, 11.9% fine to coarse gravel, cobbles up to 10", Tan- Gray. (Grain Size Test)
5			<Natural Soil>
6			
7			
8			Bottom of test pit at 7.5 ft.
9			Test pit dry at completion
10			Observed mottling in the natural soil at a depth of about 5.5 feet.
			Test pit backfilled with the excavated soil placed in lifts and tamped with the excavator bucket.


Notes:	Pit Dimensions (ft)		
	length	<u>9</u>	
	width	<u>3</u>	
	depth	<u>7.5</u>	



Test Pit 1 - Excavated soil pile

TEST PIT LOG		TP2	
Project	<u>Proposed Stormwater Improvements</u>	PG.	<u>1</u> OF <u>1</u>
City/Town	<u>Millbury Massachusetts</u>	Location	<u>See Plan</u>
Client	<u>BL Companies, Inc.</u>	Ground El.	<u>~418</u>
Contractor	<u>Millbury Department of Public Works</u>	Datum	<u>NAVD88</u>
Equipment/Reach	<u>Cat 430 F Backhoe/ 10 feet</u>	GEI Proj. No.	<u>2102401</u>
Operator	<u>Scott</u> GEI Rep <u>S. Sarandis</u>	Date	<u>6/24/2021</u>
Weather	<u>Sunny 70's</u>		

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1			0 - 6" Grass/Topsoil. SILTY SAND (SM)
2			6" - 48" SILTY SAND WITH GRAVEL(SM); 47.1% mostly fine to medium sand, 26.0% fine to coarse gravel, 26.9% non plastic fines, cobbles and boulders up to 18", Dk. Brown with a orange brown layer from 2.5' to 3.5'. (Grain Size Test) <Fill>
3	S1 (bag)	3' - 4'	
4			48" - 84" SILTY SAND WITH GRAVEL (SM); 42.7% mostly fine to medium sand, 28.3% slightly plastic fines, 29.0% fine to coarse gravel, cobbles up to 24", Gray - Brown. (Grain Size Test) <Natural Soil>
5	S2 (bag)	5' - 6'	
6			Bottom of test pit at 7.0 ft. Test pit dry at completion Did not observe any mottles. Test pit backfilled with the excavated soil placed in lifts and tamped with the excavator bucket.
7			
8			
9			
10			

Notes:	Pit Dimensions (ft)		
	length	<u>8</u>	
	width	<u>3.5</u>	
	depth	<u>7</u>	



Test Pit 2 - Excavation Stockpile

TEST PIT LOG		TP3	
Project	<u>Proposed Stormwater Improvements</u>	PG.	<u>1</u> OF <u>1</u>
City/Town	<u>Millbury Massachusetts</u>	Location	<u>See Plan</u>
Client	<u>BL Companies, Inc.</u>	Ground El.	<u>~418</u>
Contractor	<u>Millbury Department of Public Works</u>	Datum	<u>NAVD88</u>
Equipment/Reach	<u>Cat 430 F Backhoe/ 10 feet</u>	GEI Proj. No.	<u>2102401</u>
Operator	<u>Scott</u> GEI Rep <u>S. Sarandis</u>	Date	<u>6/24/2021</u>
Weather	<u>Sunny 70's</u>		

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1	S1(bag)	2.5'	0 - 6" Topsoil; SILTY SAND (SM)
2			6" - 36" NARROWLY GRADED SAND WITH GRAVEL (SP); 49.6% mostly medium to coarse sand, 45.6% fine to coarse gravel, 4.9% non plastic fines, cobbles and boulders up to 12", Gray- Brown. (Grain Size Test)
3			<Fill>
4	S2 (bag)	4.0'	36" - 54" SILTY SAND (SM); 74.0% mostly fine to medium sand, 19.3% slightly plastic fines, 6.7% fine to coarse gravel, Orange - Brown. (Grain Size Test)
5	S3 (bag)	5.5'	<Natural Soil>
6			54" - 84" SILTY SAND (SM); 51.0% mostly fine to medium sand, 44.4% slightly plastic fines, 4.6% fine gravel, Tan- Gray. (Grain Size Test)
7			<Natural Soil>
8			Bottom of test pit at 7.0 ft.
9			Test pit dry at completion
10			Observed mottling in the soil at ~5.5'.
			Test pit backfilled with the excavated soil placed in lifts and tamped with the excavator bucket.

Notes:	Pit Dimensions (ft)		
	length	<u>8</u>	
	width	<u>4</u>	
	depth	<u>7</u>	



Test Pit 3. - Excavation Stockpile.

TEST PIT LOG

TP4

Project Proposed Stormwater Improvements
City/Town Millbury Massachusetts
Client BL Companies, Inc.
Contractor Millbury Department of Public Works
Equipment/Reach Cat 430 F Backhoe/ 10 feet
Operator Scott **GEI Rep** S. Sarandis
Weather Sunny 70's

PG. 1 **OF** 1
Location See Plan
Ground El. ~418
Datum NAVD88
GEI Proj. No. 2102401
Date 6/24/2021

Depth	Sample No. and Type	Sample Depth (ft)	Soil Description
1	S1 (bag)	2.5'	0 - 15" Grass/Topsoil. SILTY SAND (SM)
2			15" - 48" SILTY SAND WITH GRAVEL(SM); 52.6% fine to coarse sand, 31.6% non plastic fines, 15.8% fine gravel, trace organics, cobbles, one granite post. Dk. Brown. (Grain Size Test)
3			<Fill>
4	S2(bag)	5.5' - 6.0'	48" - 84" SILTY SAND (SM); 50.7% mostly fine to medium sand, 38.6% slightly plastic fines, 10.7% mostly fine gravel, cobbles up to 10", Gray - Brown. (Grain Size Test)
5			<Natural Soil>
6			
7			Bottom of test pit at 7.0 ft.
8			Test pit dry at completion
9			Mottling observed from 6' to 7'.
10			Test pit backfilled with the excavated soil placed in lifts and tamped with the excavator bucket.

Notes:

Pit Dimensions (ft)

length 9

width 3

depth 7



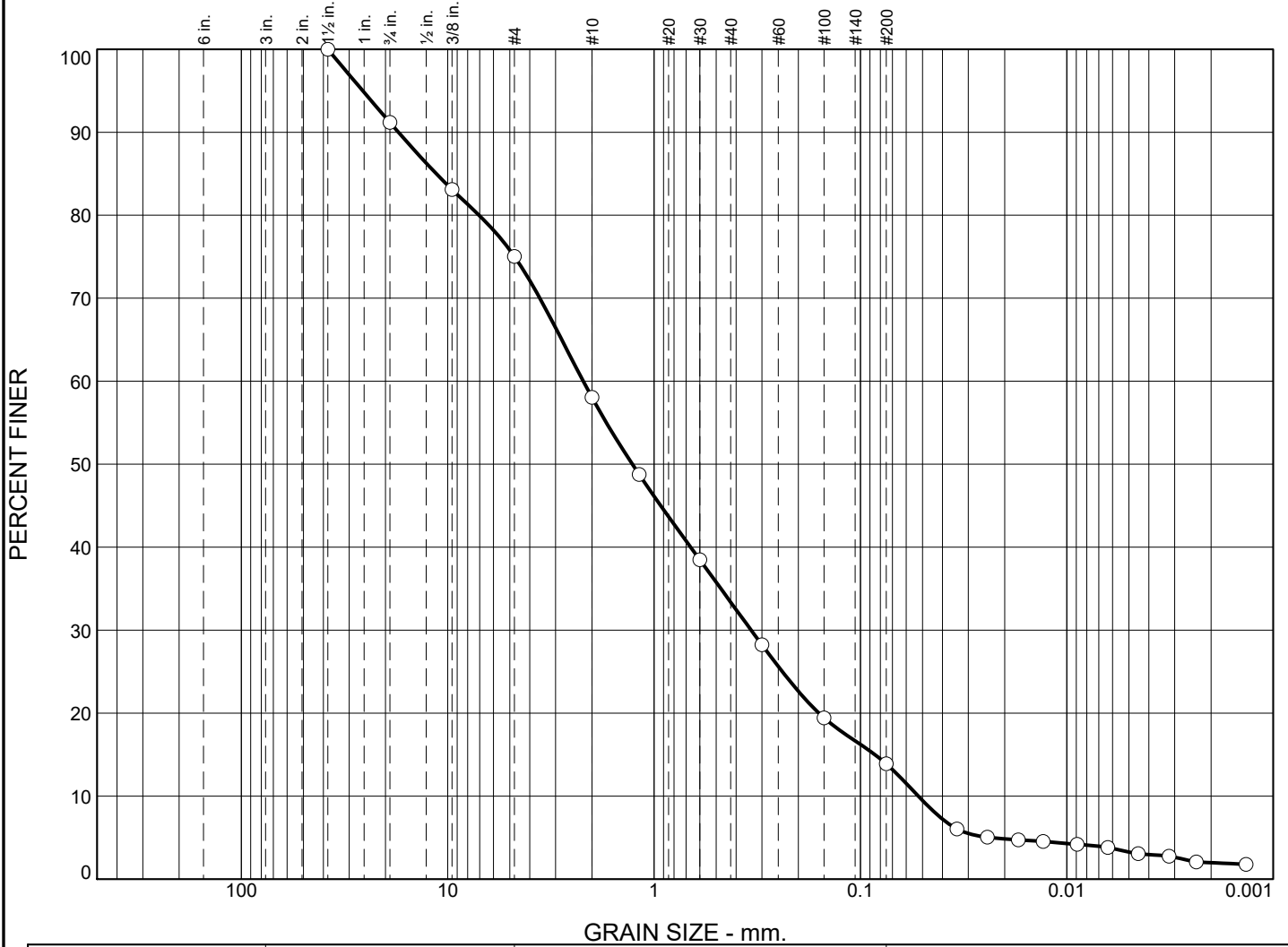


Test Pit 4 - Excavation Stockpile.

Appendix B

Mechanical Sieve and Hydrometer Analyses Results for Stormwater Design

Particle Size Distribution Report



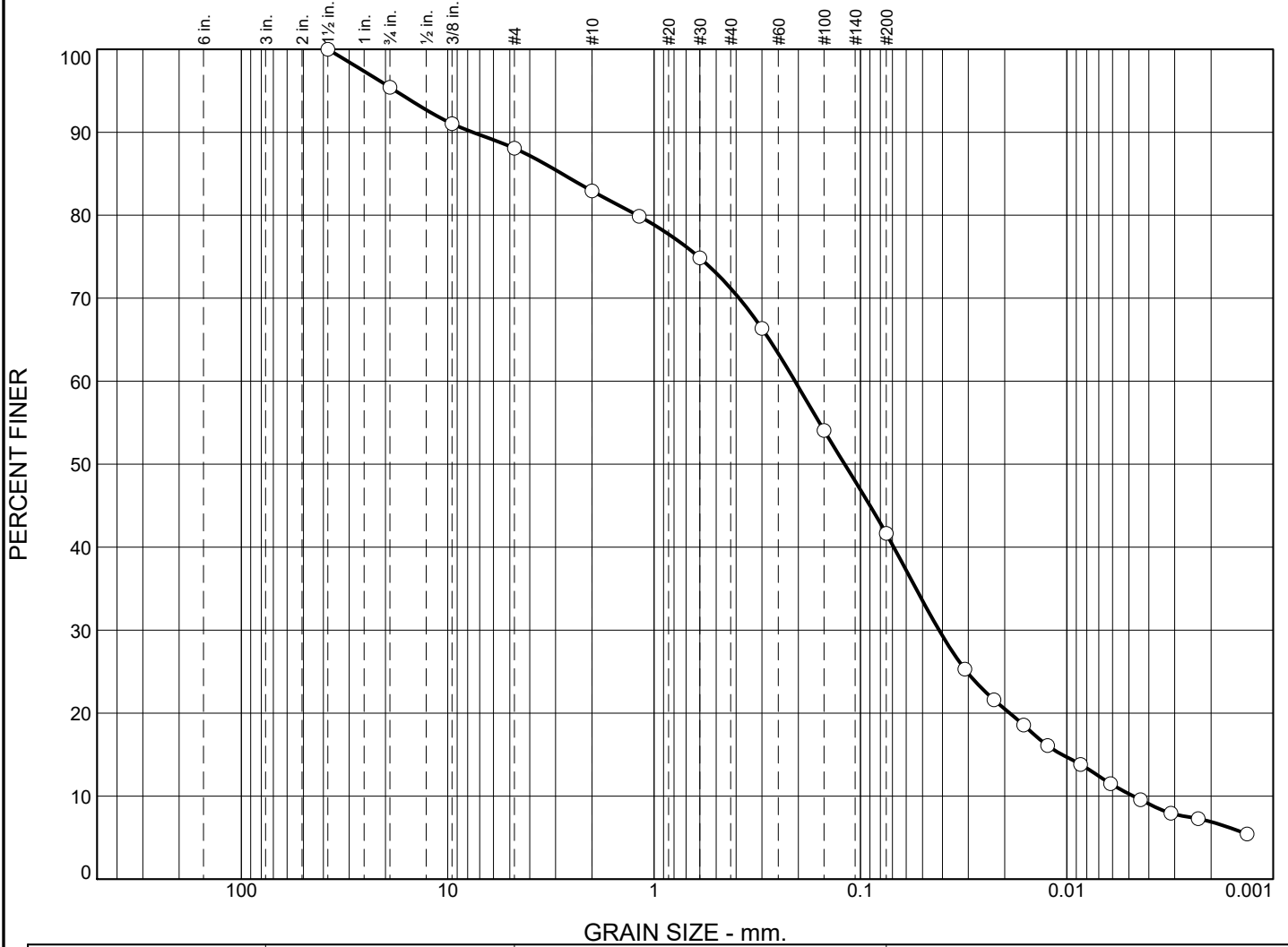
%	+3"	% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0	8.8	16.2	16.9	24.7	19.5	10.6	3.3		
⊗	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
○			11.3517	2.2031	1.2741	0.3383	0.0850	0.0524	0.99	42.05

Material Description	USCS	AASHTO
○ Silty SAND with Gravel	SM	

<p>Project No. 2102401 Client: BL Companies, Inc.</p> <p>Project: Millbury - Phase II Revitalization</p> <p>○ Source of Sample: TP1 Depth: 3 ft Sample Number: S1</p>	<p>Remarks:</p> <p>○ As Received WC=11.6%</p> <p>Fines classified visually</p>
<p>GEI Consultants, Inc. 400 Unicorn Park Drive Woburn, MA 01801</p>	

Figure

Particle Size Distribution Report

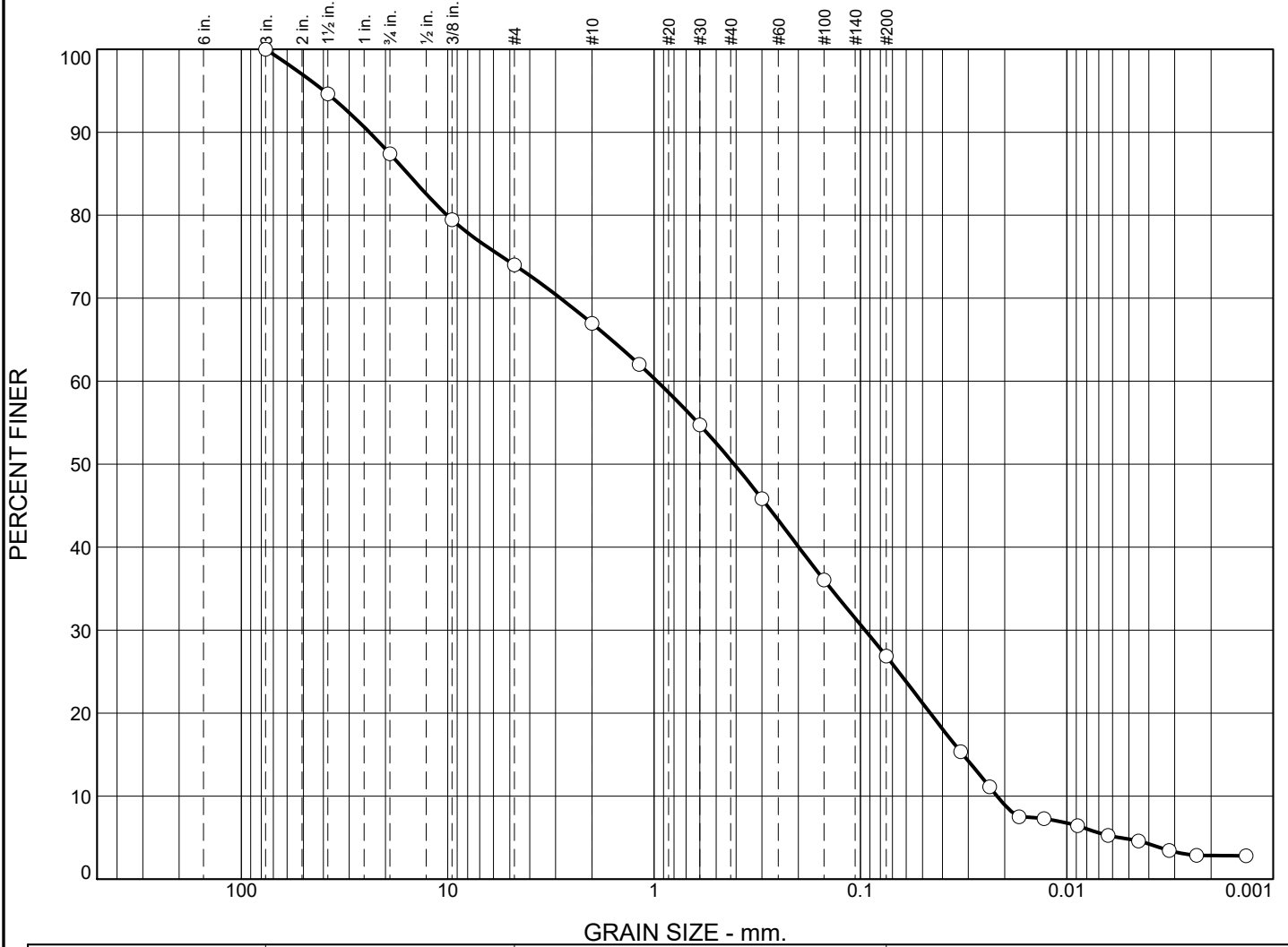


%	+3"	% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0	4.6	7.3	5.2	11.7	29.5	31.4	10.3		
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○			2.7905	0.2074	0.1192	0.0416	0.0105	0.0048	1.75	43.61

Material Description	USCS	AASHTO
○ Silty SAND	SM	

<p>Project No. 2102401 Client: BL Companies, Inc.</p> <p>Project: Millbury - Phase II Revitalization</p> <p>○ Source of Sample: TP1 Depth: 5.5 ft Sample Number: S2</p>	<p>Remarks:</p> <p>○ As Received WC=12.5%</p> <p>Fines classified visually</p>
<p>GEI Consultants, Inc. 400 Unicorn Park Drive Woburn, MA 01801</p>	
<p>Figure</p>	

Particle Size Distribution Report



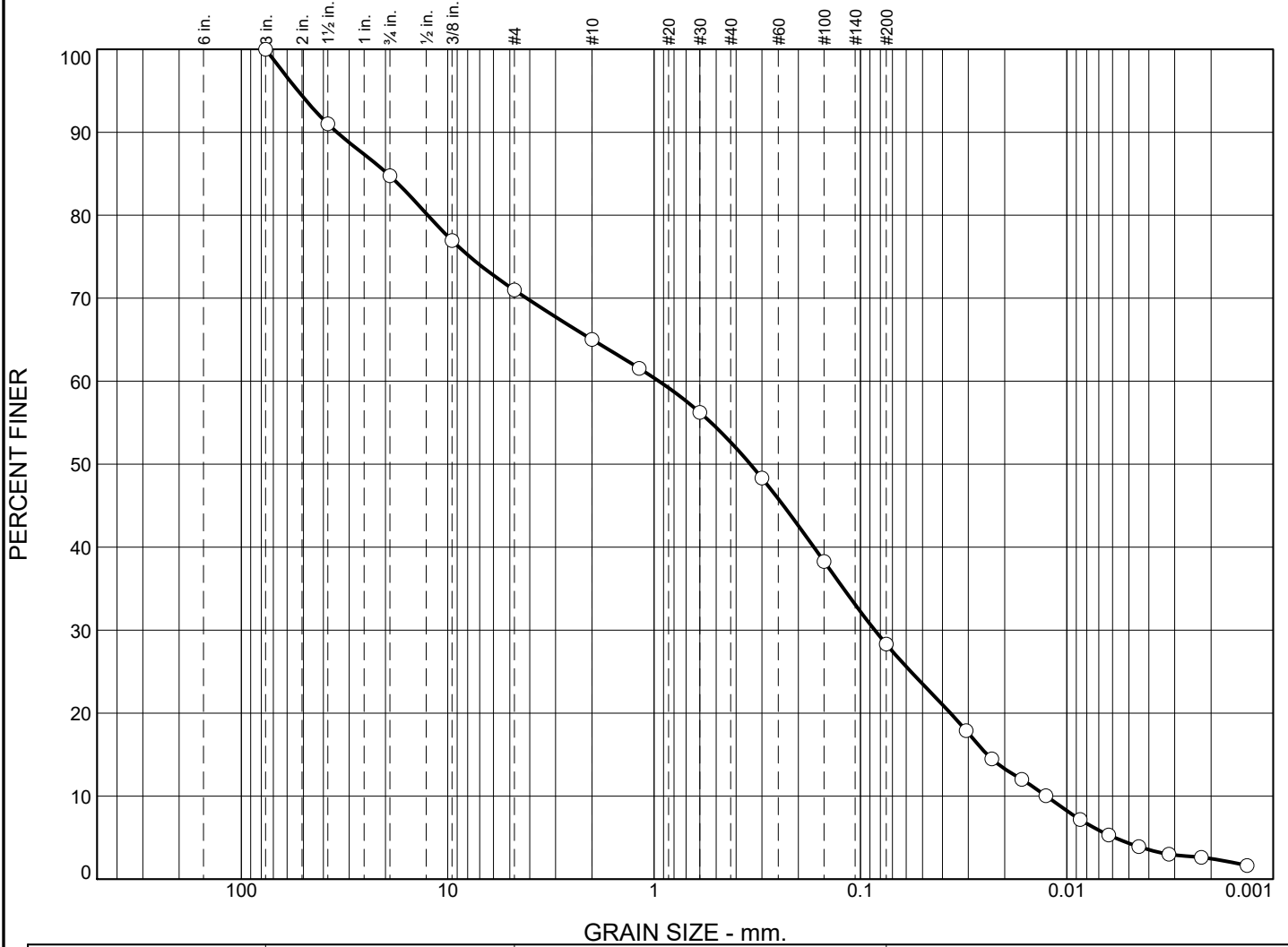
	% +3"	% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0	12.6	13.4	7.0	16.5	23.6	22.1	4.8		
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○			15.5808	0.9671	0.4092	0.0950	0.0318	0.0218	0.43	44.46

Material Description	USCS	AASHTO
○ Silty SAND with Gravel	SM	

<p>Project No. 2102401 Client: BL Companies, Inc.</p> <p>Project: Millbury - Phase II Revitalization</p> <p>○ Source of Sample: TP2 Depth: 3-4 ft Sample Number: S1</p>	<p>Remarks:</p> <p>○ As Received WC=10.9%</p> <p>Fines classified visually</p>
<p>GEI Consultants, Inc. 400 Unicorn Park Drive Woburn, MA 01801</p>	

Figure

Particle Size Distribution Report



%	+3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	15.2	13.8	6.0	12.4	24.3	24.0	4.3

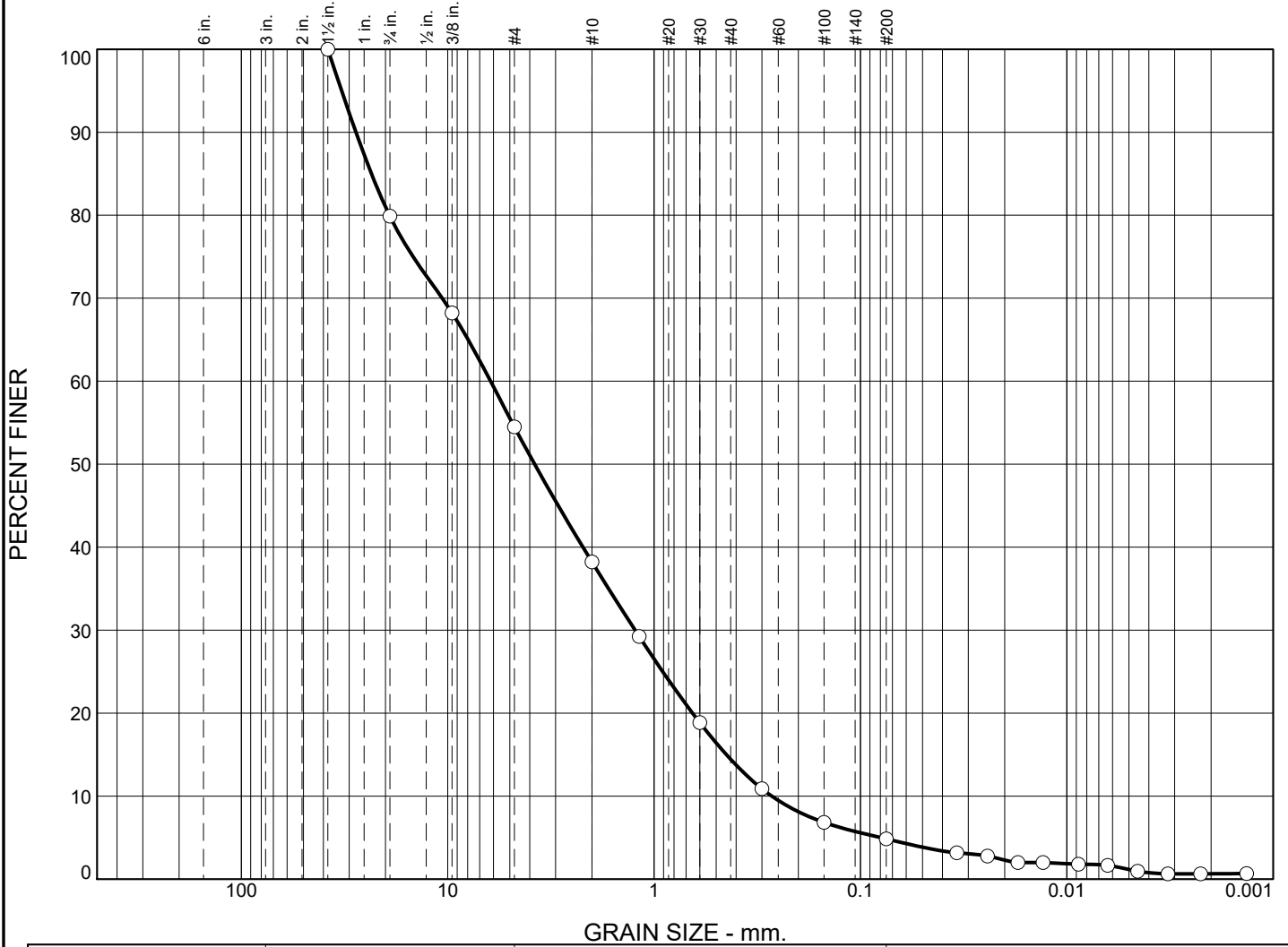
X	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○			19.5398	0.9469	0.3413	0.0852	0.0243	0.0126	0.61	75.40

Material Description	USCS	AASHTO
○ Silty SAND with Gravel	SM	

<p>Project No. 2102401 Client: BL Companies, Inc.</p> <p>Project: Millbury - Phase II Revitalization</p> <p>○ Source of Sample: TP2 Depth: 5-6 ft Sample Number: S2</p>	<p>Remarks:</p> <p>○ As Received WC=10.2%</p> <p>Fines classified visually</p>
<p>GEI Consultants, Inc. 400 Unicorn Park Drive Woburn, MA 01801</p>	

Figure

Particle Size Distribution Report



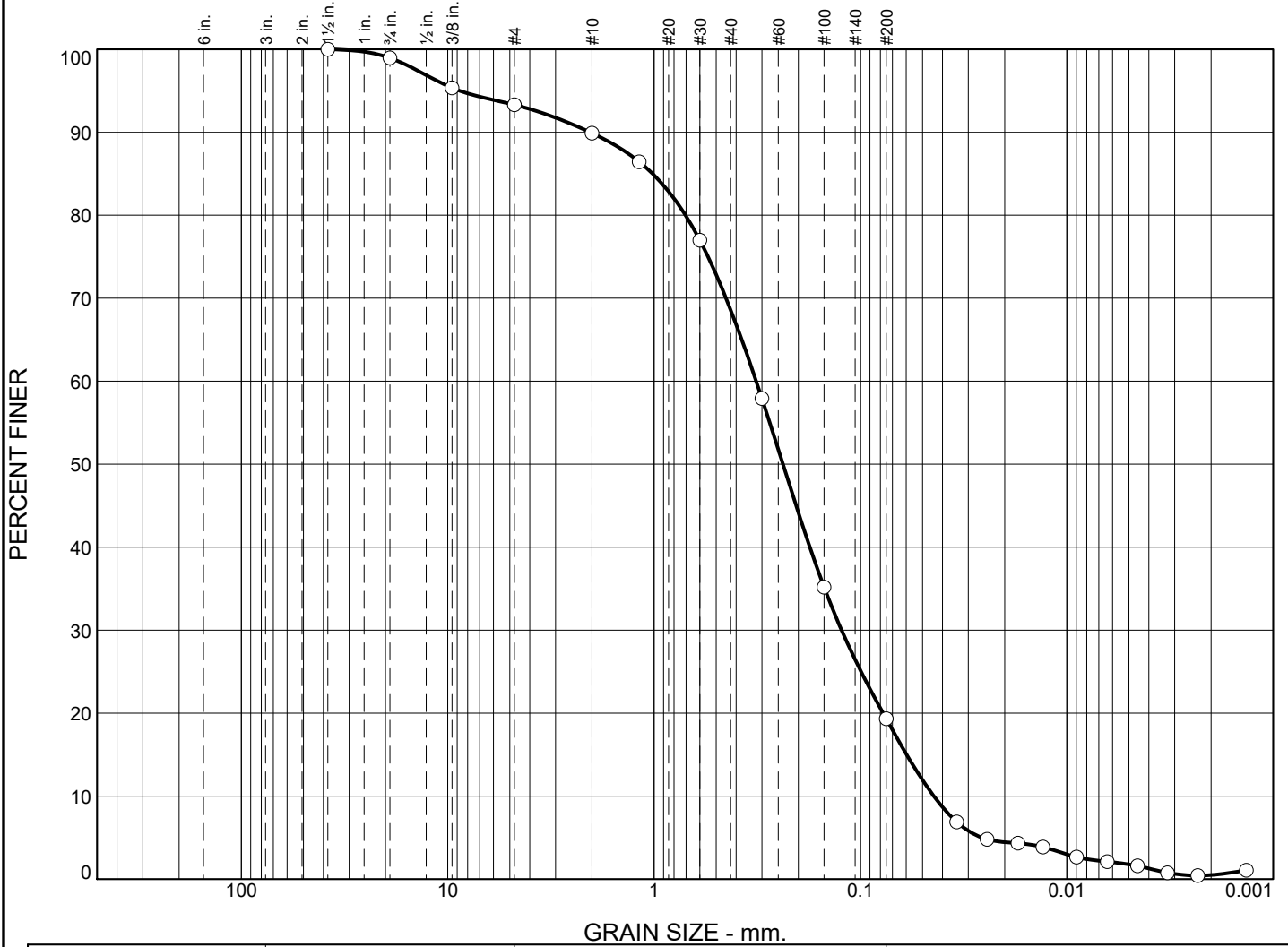
%	+3"	% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0	20.1	25.4	16.3	23.8	9.5	3.7	1.2		
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○			23.4046	6.1972	3.7905	1.2357	0.4460	0.2688	0.92	23.06

Material Description	USCS	AASHTO
○ Narrowly Graded SAND with Gravel	SP	

<p>Project No. 2102401 Client: BL Companies, Inc.</p> <p>Project: Millbury - Phase II Revitalization</p> <p>○ Source of Sample: TP3 Depth: 2.5 ft Sample Number: S1</p>	<p>Remarks:</p> <p>○ As Received WC=3.4%</p>
<p>GEI Consultants, Inc. 400 Unicorn Park Drive Woburn, MA 01801</p>	

Figure

Particle Size Distribution Report



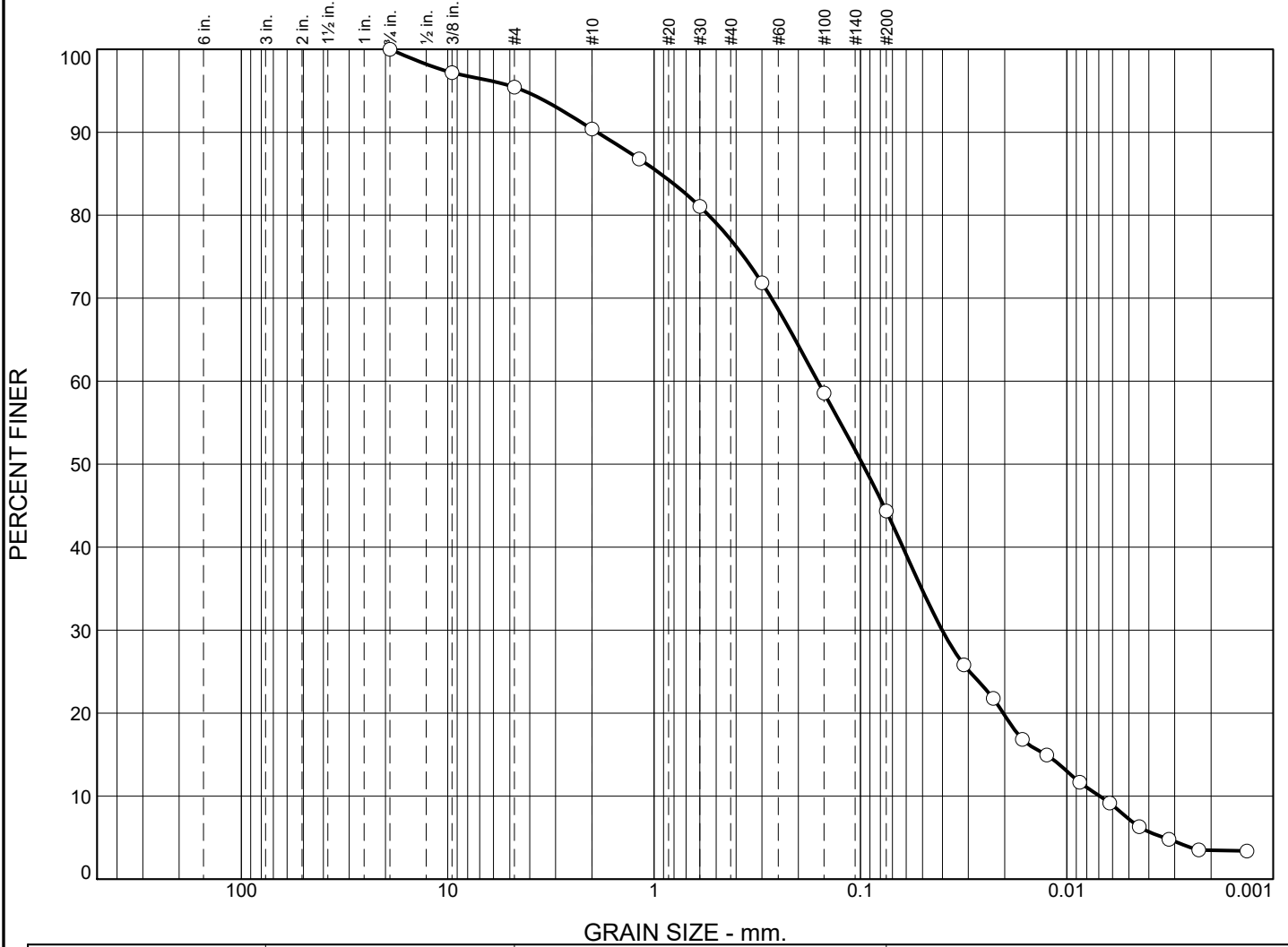
	% +3"	% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0	1.0	5.7	3.4	21.3	49.3	17.5	1.8		
×	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
○			1.0161	0.3199	0.2373	0.1234	0.0597	0.0441	1.08	7.25

Material Description	USCS	AASHTO
○ Silty SAND	SM	

<p>Project No. 2102401 Client: BL Companies, Inc.</p> <p>Project: Millbury - Phase II Revitalization</p> <p>○ Source of Sample: TP3 Depth: 4 ft Sample Number: S2</p>	<p>Remarks:</p> <p>○ As Received WC=13.9%</p> <p>Fines classified visually</p>
<p>GEI Consultants, Inc. 400 Unicorn Park Drive Woburn, MA 01801</p>	

Figure

Particle Size Distribution Report

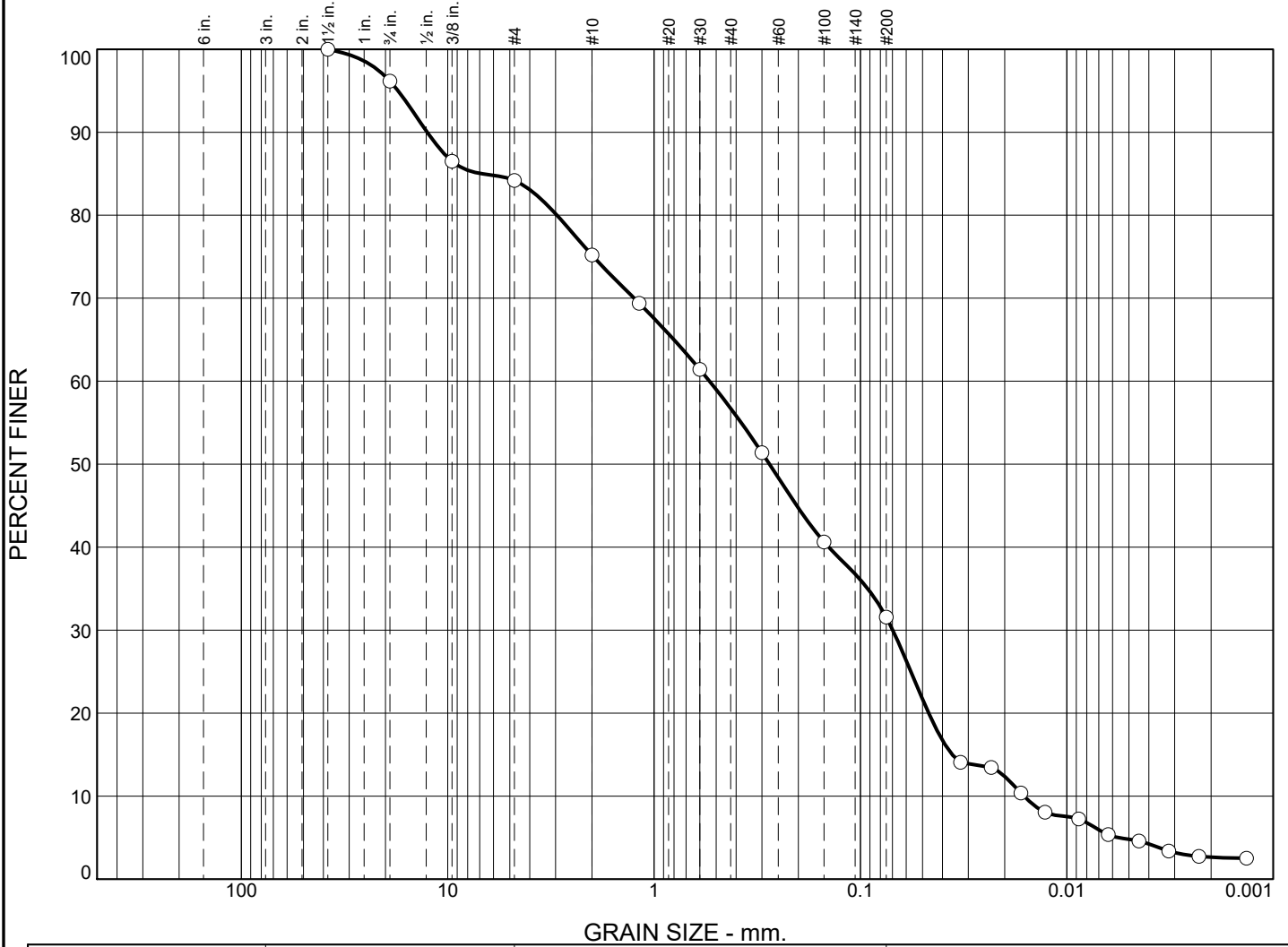


	% +3"	% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0	0.0	4.6	5.0	13.4	32.6	37.2	7.2		
×	LL	PL	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
○			0.9308	0.1612	0.0975	0.0402	0.0126	0.0069	1.45	23.33

Material Description	USCS	AASHTO
○ Silty SAND	SM	

<p>Project No. 2102401 Client: BL Companies, Inc.</p> <p>Project: Millbury - Phase II Revitalization</p> <p>○ Source of Sample: TP3 Depth: 5.5 ft Sample Number: S3</p>	<p>Remarks:</p> <p>○ As Received WC=11.9%</p> <p>Fines classified visually</p>
<p>GEI Consultants, Inc. 400 Unicorn Park Drive Woburn, MA 01801</p>	
<p>Figure</p>	

Particle Size Distribution Report

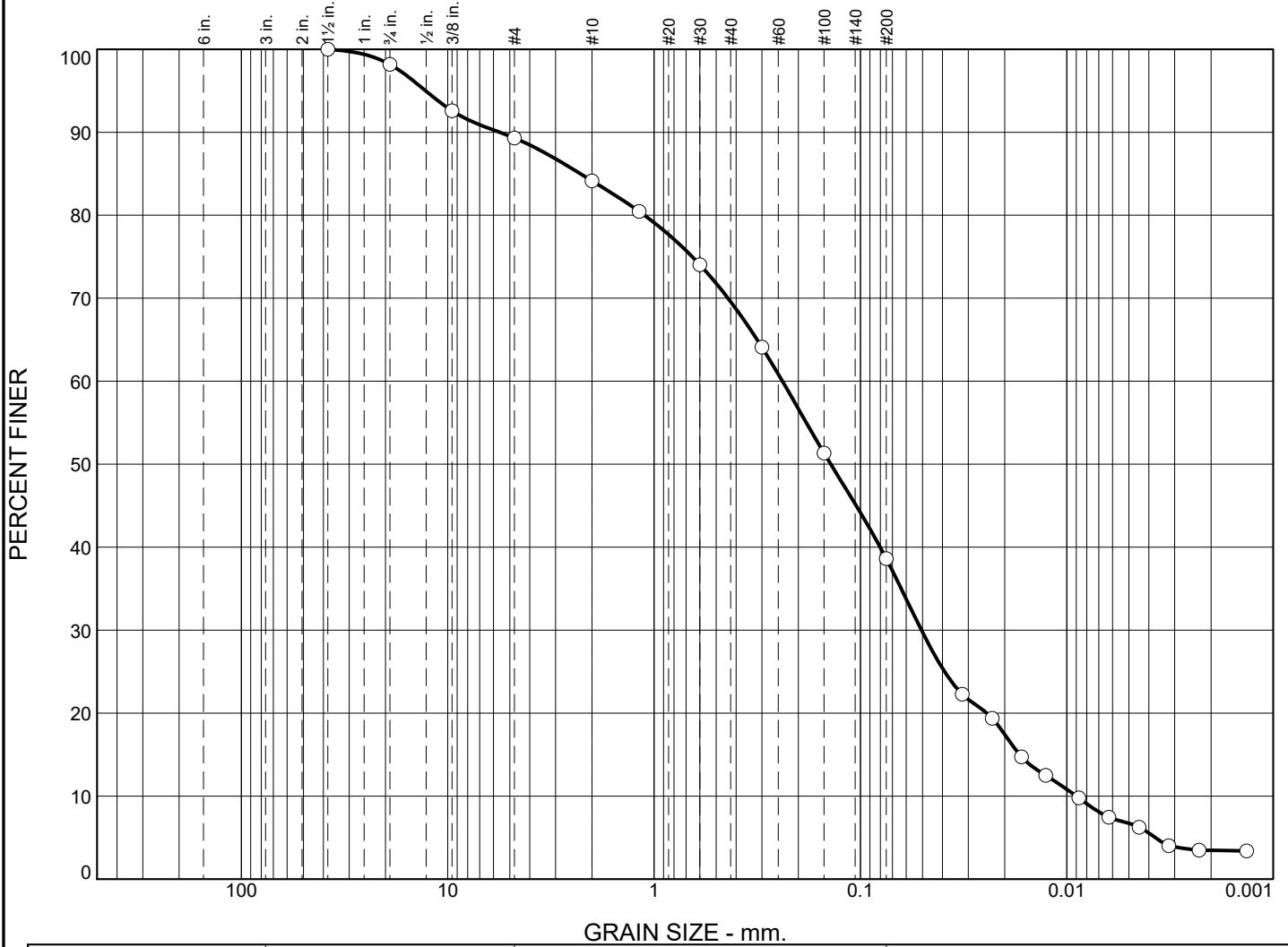


	% +3"	% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0	3.8	12.0	9.0	18.5	25.1	26.8	4.8		
⊗	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
○			6.8345	0.5387	0.2756	0.0697	0.0359	0.0161	0.56	33.41

Material Description	USCS	AASHTO
○ Silty SAND with Gravel	SM	

<p>Project No. 2102401 Client: BL Companies, Inc.</p> <p>Project: Millbury - Phase II Revitalization</p> <p>○ Source of Sample: TP4 Depth: 2.5 ft Sample Number: S1</p>	<p>Remarks:</p> <p>○ As Received WC=13.7%</p> <p>Fines classified visually</p>
<p>GEI Consultants, Inc. 400 Unicorn Park Drive Woburn, MA 01801</p>	
<p>Figure</p>	

Particle Size Distribution Report

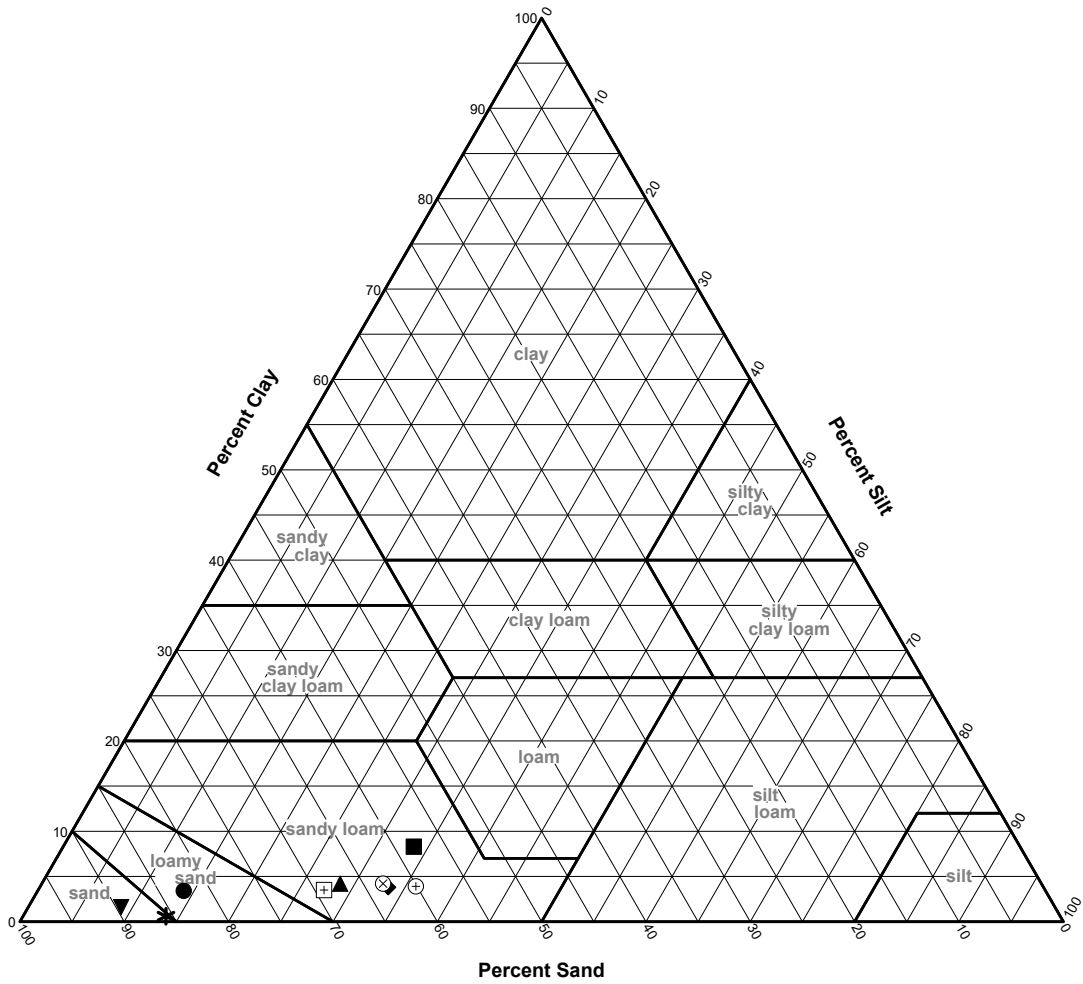


%	+3"	% Gravel		% Sand			% Fines			
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay		
○	0.0	1.8	8.9	5.2	14.5	31.0	31.9	6.7		
⊗	LL	PL	D85	D60	D50	D30	D15	D10	Cc	Cu
○			2.2743	0.2387	0.1392	0.0506	0.0169	0.0090	1.19	26.58

Material Description	USCS	AASHTO
○ Silty SAND	SM	

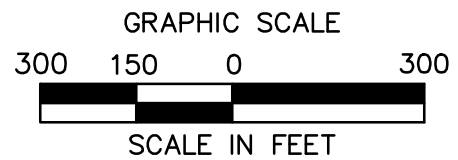
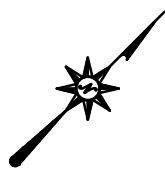
<p>Project No. 2102401 Client: BL Companies, Inc.</p> <p>Project: Millbury - Phase II Revitalization</p> <p>○ Source of Sample: TP4 Depth: 5.5-6 ft Sample Number: S2</p>	<p>Remarks:</p> <p>○ As Received WC=11.9%</p> <p>Fines classified visually</p>
<p>GEI Consultants, Inc. 400 Unicorn Park Drive Woburn, MA 01801</p>	
<p>Figure</p>	

USDA Soil Classification



SOIL DATA

	Source	Sample No.	Depth	Percentages From Material Passing a #10 Sieve			Classification
				Sand	Silt	Clay	
●	TP1	S1	3 ft	82.6	13.9	3.4	Loamy sand
■	TP1	S2	5.5 ft	58.1	33.5	8.3	Sandy loam
▲	TP2	S1	3-4 ft	67.2	28.7	4.2	Sandy loam
◆	TP2	S2	5-6 ft	62.8	33.4	3.8	Sandy loam
▼	TP3	S1	2.5 ft	89.5	8.9	1.6	Sand
*	TP3	S2	4 ft	85.7	13.8	0.6	Sand
⊕	TP3	S3	5.5 ft	60.1	36.1	3.9	Sandy loam
⊞	TP4	S1	2.5 ft	69.1	27.4	3.5	Sandy loam
⊗	TP4	S2	5.5-6 ft	63.1	32.7	4.2	Sandy loam



BL
Companies
 ARCHITECTURE
 ENGINEERING
 ENVIRONMENTAL
 LAND SURVEYING

**DOWNTOWN
 REVITALIZATION PROJECT**
 ELM STREET
 MILLBURY, MASSACHUSETTS

Designed
 Drawn
 Checked
 Approved
 Scale
 Project No.
 Date
 CAD File

E.A.E.
 E.A.E.
 1"=1,000'
 200147801
 4/14/2021
 (RText) (RText)

FIGURE 1
 LOCUS PLAN

ATTACHMENT I

DRAFT STORMWATER POLLUTION PREVENTION PLAN

Stormwater Pollution Prevention Plan (SWPPP)

For Construction Activities At:

Downtown Improvement Project Phase 2
Elm Street
Millbury, MA 1527

SWPPP Prepared For:

TBD

SWPPP Prepared By:

BL Companies
220 Norwood Park South
Suite 201
Norwood, MA 02062
Contact:
Elizabeth Ennis
781-619-9521
lennis@blcompanies.com

SWPPP Preparation Date:

07/12/2021

Estimated Project Dates:

Project Start Date: TBD

Project Completion Date: TBD

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DRAFT

SECTION 1: CONTACT INFORMATION/RESPONSIBLE PARTIES

1.1 Operator(s) / Subcontractor(s)

Operator(s):

TBD

Subcontractor(s):

TBD

Emergency 24-Hour Contact:

TBD

DRAFT

1.2 Stormwater Team

Stormwater Team		
Name and/or position, and contact	Responsibilities	I Have Read the CGP and Understand the Applicable Requirements
Elizabeth Ennis BL Companies (781) 619-9521 lennis@blcompanies.com	Develop SWPPP / Inspection	<input checked="" type="checkbox"/> Yes Date: 7/12/2021
TBD	Finalize the SWPPP Implement the SWPPP Oversee maintenance practices identified as BMPs in the SWPPP Conduct or provide inspection and monitoring activities Identify other potential pollutant sources and make sure that they are added to the plan Identify amendments to the SWPPP necessitated by field conditions and make sure they are implemented Ensure that any design changes during construction are addressed in the SWPPP	<input type="checkbox"/> Yes Date: Click here to enter a date.

SECTION 2: SITE EVALUATION, ASSESSMENT, AND PLANNING

2.1 Project/Site Information

Project Name and Address

Project/Site Name: Downtown Improvement Project Phase 2
Project Street/Location: Elm Street
City: Milly
State: MA
ZIP Code: 01527
County or Similar Subdivision: Worcester

Business days and hours for the project: Monday-Friday, 7am – 7pm

Project Latitude/Longitude

Latitude: 42.1906° N
(decimal degrees) Longitude: 71.7619° W
(decimal degrees)

Latitude/longitude data source:

Map GPS Other (please specify): Google Earth

Horizontal Reference Datum:

NAD 27 NAD 83 WGS 84

Additional Project Information

Are you requesting permit coverage as a “federal operator” as defined in [Appendix A](#) of the 2017 CGP? Yes No

Is the project/site located on Indian country lands, or located on a property of religious or cultural significance to an Indian tribe? Yes No

If yes, provide the name of the Indian tribe associated with the area of Indian country (including the name of Indian reservation if applicable), or if not in Indian country, provide the name of the Indian tribe associated with the property: Insert Text Here

If you are conducting earth-disturbing activities in response to a public emergency, document the cause of the public emergency (e.g., *natural disaster, extreme flooding conditions*), information substantiating its occurrence (e.g., *state disaster declaration*), and a description of the construction necessary to reestablish effective public services:

2.2 Discharge Information

Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)? Yes No

Are there any waters of the U.S. within 50 feet of your project's earth disturbances? Yes No

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For each point of discharge, provide a point of discharge ID (a unique 3-digit ID, e.g., 001, 002), the name of the first water of the U.S. that receives stormwater directly from the point of discharge and/or from the MS4 that the point of discharge discharges to, and the following receiving water information, if applicable:

Point of Discharge ID	Name of receiving water:	Is the receiving water impaired (on the CWA 303(d) list)?	If yes, list the pollutants that are causing the impairment:	Has a TMDL been completed for this receiving waterbody?	If yes, list TMDL Name and ID:	Pollutant(s) for which there is a TMDL:	Is this receiving water designated as a Tier 2, Tier 2.5, or Tier 3 water?	If yes, specify which Tier (2, 2.5, or 3)?
[001]	Blackstone River	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Pathogens	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Draft Pathogen TMDL for the Blackstone River Watershed	Fecal coliform, E. Coli, and enterococcus bacteria	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	[INSERT "Tier 2", "Tier 2.5", or "Tier 3"]

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2.3 Nature of the Construction Activities

General Description of Project

Provide a general description of the nature of your construction activities, including the age dates of past renovations for structures that are undergoing demolition:

The project is located along Elm Street from the intersection of Main Street to the intersection of River Street. The project includes the municipal parking lot between Elm Street and Grove Street. The Project's limit of disturbance is approximately 4.11 acres. The Town is proposing the following improvements: repave Elm Street from the municipal parking lot to River Street; improve pedestrian accessibility along Elm Street; upgrade the existing drainage system to incorporate rain gardens, porous pavers, and bioswales; and install new street trees and landscapes areas along the project site

Size of Construction Site

Size of Property	
Total Area Expected to be Disturbed by Construction Activities	±4.11 acres
Maximum Area Expected to be Disturbed at Any One Time	±4.11 acres

[Repeat as necessary for individual project phases.]

Type of Construction Site (check all that apply):

- Single-Family Residential
 Multi-Family Residential
 Commercial
 Industrial
 Institutional
 Highway or Road
 Utility
 Other _____

Will there be demolition of any structure built or renovated before January 1, 1980? Yes No

If yes, do any of the structures being demolished have at least 10,000 square feet of floor space? Yes No N/A

Was the pre-development land use used for agriculture (see Appendix A for definition of "agricultural land")? Yes No

Pollutant-Generating Activities

List and describe all pollutant-generating activities and indicate for each activity the type of pollutant that will be generated. Take into account where potential spills and leaks could occur that contribute pollutants to stormwater discharges, and any known hazardous or toxic substances, such as PCBs and asbestos, that will be disturbed during construction.

Pollutant-Generating Activity	Pollutants or Pollutant Constituents
(e.g., paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering operations)	(e.g., sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels)
Paving Operations	Asphalt emulsions
Grading and site excavations	Sediment, vehicle fluids

Concrete	Sediments
Paint washout and waste disposal	Paints, sealants
Solid waste storage and disposal	Bacteria, parasites, virus
Dewatering operations	Sediment
Landscaping Operations	Fertilizers, Herbicides, Pesticides

Construction Support Activities *(only provide if applicable)*

Describe any construction support activities for the project (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas):

There are no onsite or offsite construction support activities planned for the Project.

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2.4 Sequence and Estimated Dates of Construction Activities

Phased construction is not proposed for the Project. To minimize erosion during grading activities, grading and site work shall be conducted after snowmelt and during periods of predicted dry weather. The areas of the site that will remain vegetated after construction shall be graded first and stabilized with hydromulch or seeding immediately after grading activities are completed. All other areas of the construction site shall be stabilized if site work is not planned for more than 14 days. To minimize potential erosion from the site, only areas necessary to construct the grass drainage channels, sediment basin, and construction entrances/exits shall be disturbed initially. These areas shall be stabilized immediately after construction but no later than 14 days after construction ceases. Overall grubbing, clearing, grading shall be conducted over a 2-week period to limit erosion from the site. Areas graded during this time period shall be stabilized with hydromulch immediately after construction but no later than 14 days after construction ceases.

Estimated Start Date of Construction Activities	TBD
Estimated End Date of Construction Activities	TBD
Estimated Date(s) of Application of Stabilization Measures for Areas of the Site Required to be Stabilized	TBD
Estimated Date(s) when Stormwater Controls will be Removed	TBD

2.5 Authorized Non-Stormwater Discharges

List of Authorized Non-Stormwater Discharges Present at the Site

Type of Authorized Non-Stormwater Discharge	Likely to be Present at Your Site?
Discharges from emergency fire-fighting activities	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Fire hydrant flushings	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Landscape irrigation	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Waters used to wash vehicles and equipment	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Water used to control dust	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Potable water including uncontaminated water line flushings	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
External building washdown (soaps/solvents are not used and external surfaces do not contain hazardous substances)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Pavement wash waters	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Uncontaminated air conditioning or compressor condensate	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Uncontaminated, non-turbid discharges of ground water or spring water	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Foundation or footing drains	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Construction dewatering water	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

2.6 *Site Maps*

Please refer to the SWPPP attachments located in Attachment A.

- Site Location Map
- Site LOD Map
- USGS Soil Map
- FEMA Flood Insurance Rate Map
- Mass DEP Water Supply Protection Mapping
- Mass DEP TMDL Mapping
- Existing Conditions Plan
- Grading and Drainage Plans (GD-1 to GD-3)
- Existing Drainage Area Map (ED-1)
- Proposed Drainage Area Map (PD-1)
- Site Preparation Plans

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SECTION 3: DOCUMENTATION OF COMPLIANCE WITH OTHER FEDERAL REQUIREMENTS

3.1 Endangered Species Protection

Eligibility Criterion

Under which criterion listed in [Appendix D](#) are you eligible for coverage under this permit?

- Criterion A:** No ESA-listed species and/or designated critical habitat present in action area.

Using the process outlined in Appendix D of this permit, you certify that ESA-listed species and designated critical habitat(s) under the jurisdiction of the USFWS or NMFS are not likely to occur in your site's "action area" as defined in Appendix A of this permit.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion A should identify the USFWS and NMFS information sources used. Attaching aerial image(s) of the site to your NOI is helpful to EPA, USFWS, and NMFS in confirming eligibility under this criterion. Please Note: NMFS' jurisdiction includes ESA-listed marine and estuarine species that spawn in inland rivers. Check the applicable source(s) of information you relied upon:

- Specific communication with staff of the USFWS and/or NMFS. INSERT DATE OF COMMUNICATION AND WHO YOU SPOKE WITH
- Species list from USFWS and/or NMFS. See the [CGP ESA webpage, Step 2](#) for available websites. See Resource List in Appendix K

- Criterion B:** Eligibility requirements met by another operator under the 2017 CGP. The construction site's discharges and discharge-related activities were already addressed in another operator's valid certification of eligibility for your "action area" under eligibility Criterion A, C, D, E, or F of the 2017 CGP and you have confirmed that no additional ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS not considered in the that certification may be present or located in the "action area." To certify your eligibility under this criterion, there must be no lapse of NPDES permit coverage in the other CGP operator's certification. By certifying eligibility under this criterion, you agree to comply with any conditions upon which the other CGP operator's certification was based. You must include in your NOI the NPDES ID from the other 2017CGP operator's notification of authorization under this permit. If your certification is based on another 2017 CGP operator's certification under criterion C, you must provide EPA with the relevant supporting information required of existing dischargers in criterion C in your NOI form.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion B should identify the eligibility criterion of the other CGP NOI, the authorization date, and confirmation that the authorization is effective.

- ✓ Provide the 9-digit NPDES ID number from the other operator's NOI under the 2017 CGP:
- ✓ Authorization date of the other 2017 CGP operator: INSERT AUTHORIZATION DATE OF OTHER OPERATOR
- ✓ Eligibility criterion of the other 2017 CGP operator: A C D E F
- ✓ Provide a brief summary of the basis the other operator used for selecting criterion A, C, D, E, or F:

- Criterion C:** Discharges not likely to adversely affect ESA-listed species and/or designated critical habitat. ESA-listed species and/or designated critical habitat(s) under the jurisdiction of the USFWS and/or NMFS are likely to occur in or near your site's "action area," and you certify to EPA that your site's discharges and discharge-related activities are not likely to adversely affect ESA-listed threatened or endangered species and/or designated critical habitat. This certification may include consideration of any stormwater controls and/or management practices you will adopt to ensure that your discharges and discharge-related activities are not likely to adversely affect ESA-listed species and/or designated critical habitat. To certify your eligibility under this criterion, indicate 1) the ESA-listed species and/or designated habitat located in your "action area" using the process outlined in Appendix D of this permit; 2) the distance between the site and the listed species and/or designated critical habitat in the action area (in miles); and 3) a rationale describing specifically how adverse effects to ESA-listed species will be avoided from the discharges and discharge-related activities. You must also include a copy of your site map from your SWPPP showing the upland and in-water extent of your "action area" with this NOI.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion C should identify the information resources and expertise (e.g., state or federal biologists) used to arrive at this conclusion. Any supporting documentation should explicitly state that both ESA-listed species and designated critical habitat under the jurisdiction of the USFWS and/or NMFS were considered in the evaluation.

- ✓ Resources used to make determination:
- ✓ ESA-listed Species/Critical Habitat in action area:
- ✓ Distance between site and ESA-listed Species/Critical Habitat:
- ✓ How adverse effects will be avoided:

-
- Criterion D:** Coordination with USFWS and/or NMFS has successfully concluded. Coordination between you and the USFWS and/or NMFS has concluded. The coordination must have addressed the effects of your site's discharges and discharge-related activities on ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS, and resulted in a written concurrence from USFWS and/or NMFS that your site's discharges and discharge-related activities are not likely to adversely affect listed species and/or critical habitat. You must include copies of the correspondence with the participating agencies in your SWPPP and this NOI.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion D should identify whether USFWS or NMFS or both agencies participated in coordination, the field office/regional office(s) providing that coordination, and the date that coordination concluded.

- ✓ Agency coordinated with: USFWS NMFS
- ✓ Field/regional office(s) providing coordination:
- ✓ Date coordination concluded:
- ✓ Attach copies of any letters or other communication between you and the U.S. Fish & Wildlife Service or National Marine Fisheries Service concluding coordination activities.

-
- Criterion E:** ESA Section 7 consultation has successfully concluded. Consultation between a Federal Agency and the USFWS and/or NMFS under section 7 of the ESA has concluded.

The consultation must have addressed the effects of the construction site's discharges and discharge-related activities on ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS. To certify eligibility under this criterion, Indicate the result of the consultation:

- Biological opinion from USFWS and/or NMFS that concludes that the action in question (taking into account the effects of your site's discharges and discharge-related activities) is not likely to jeopardize the continued existence of listed species, nor the destruction or adverse modification of critical habitat; or
- Written concurrence from USFWS and/or NMFS with a finding that the site's discharges and discharge-related activities are not likely to adversely affect ESA-listed species and/or designated critical habitat. You must include copies of the correspondence between yourself and the USFWS and/or NMFS in your SWPPP and this NOI.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion E should identify the federal action agency(ies) involved, the field office/regional office(s) providing that consultation, any tracking numbers of identifiers associated with that consultation (e.g., IPaC number, PCTS number), and the date the consultation was completed.

- ✓ Federal agency(ies) involved:
 - ✓ Field/regional office(s) providing consultation:
 - ✓ Tracking numbers associated with consultation:
 - ✓ Date consultation completed:
 - ✓ Attach copies of any letters or other communication between you and the U.S. Fish & Wildlife Service or National Marine Fisheries Service concluding consultation.
-

- Criterion F: Issuance of section 10 permit.** Potential take is authorized through the issuance of a permit under section 10 of the ESA by the USFWS and/or NMFS, and this authorization addresses the effects of the site's discharges and discharge-related activities on ESA-listed species and designated critical habitat. You must include copies of the correspondence between yourself and the participating agencies in your SWPPP and your NOI.

Basis statement content/Supporting documentation: A basis statement supporting the selection of Criterion F should identify whether USFWS or NMFS or both agencies provided a section 10 permit, the field office/regional office(s) providing permit(s), any tracking numbers of identifiers associated with that consultation (e.g., IPaC number, PCTS number), and the date the permit was granted.

- ✓ Agency providing section 10 permit: USFWS NMFS
- ✓ Field/regional office(s) providing permit:
- ✓ Tracking numbers associated with consultation:
- ✓ Date permit granted:
- ✓ Attach copies of any letters or other communication between you and the U.S. Fish & Wildlife Service or National Marine Fisheries Service.

3.2 Historic Preservation

Appendix E, Step 1

Do you plan on installing any of the following stormwater controls at your site? Check all that apply below, and proceed to Appendix E, Step 2.

- Dike
- Berm
- Catch Basin
- Pond
- Stormwater Conveyance Channel (e.g., ditch, trench, perimeter drain, swale, etc.)
- Culvert
- Other type of ground-disturbing stormwater control: Subsurface stormwater management chambers

Appendix E, Step 2

If you answered yes in Step 1, have prior surveys or evaluations conducted on the site already determined that historic properties do not exist, or that prior disturbances at the site have precluded the existence of historic properties? YES NO

- If yes, no further documentation is required for Section 3.2 of the Template.
- If no, proceed to Appendix E, Step 3.

Appendix E, Step 3

If you answered no in Step 2, have you determined that your installation of subsurface earth-disturbing stormwater controls will have no effect on historic properties? YES NO

If yes, provide documentation of the basis for your determination. See Appendix L for the results of the listing of all historic sites located within Millbury, MA (Source: Massachusetts Cultural Resource Information System).

If no, proceed to Appendix E, Step 4.

Appendix E, Step 4

If you answered no in Step 3, did the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Office (THPO), or other tribal representative (whichever applies) respond to you within 15 calendar days to indicate whether the subsurface earth disturbances caused by the installation of stormwater controls affect historic properties? YES NO

If no, no further documentation is required for Section 3.2 of the Template.

If yes, describe the nature of their response:

- Written indication that no historic properties will be affected by the installation of stormwater controls.
- Written indication that adverse effects to historic properties from the installation of stormwater controls can be mitigated by agreed upon actions.
- No agreement has been reached regarding measures to mitigate effects to historic properties from the installation of stormwater controls.
- Other:

3.3 Safe Drinking Water Act Underground Injection Control Requirements

Do you plan to install any of the following controls? Check all that apply below.

- Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)
- Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow
- Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

SECTION 4: EROSION AND SEDIMENT CONTROLS

4.1 Natural Buffers or Equivalent Sediment Controls

Buffer Compliance Alternatives

Are there any waters of the U.S. within 50 feet of your project's earth disturbances? YES NO

Check the compliance alternative that you have chosen:

- (i) I will provide and maintain a 50-foot undisturbed natural buffer.
- (ii) I will provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by additional erosion and sediment controls, which in combination achieves the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.
- (iii) It is infeasible to provide and maintain an undisturbed natural buffer of any size, therefore I will implement erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.
- I qualify for one of the exceptions in Part 2.2.1.b. (If you have checked this box, provide information on the applicable buffer exception that applies, below.)

Buffer Exceptions

Which of the following exceptions to the buffer requirements applies to your site?

- There is no discharge of stormwater to the water of the U.S. that is located 50 feet from my construction disturbances.
- No natural buffer exists due to preexisting development disturbances that occurred prior to the initiation of planning for this project.
- For a "linear construction sites" (defined in Appendix A), site constraints (e.g., limited right-of-way) make it infeasible to meet any of the CGP Part 2.2.1.a compliance alternatives.
- The project qualifies as "small residential lot" construction (defined in Appendix A) (see Appendix G, Part G.3.2).
 - For Alternative 1:
 - For Alternative 2:
- Buffer disturbances are authorized under a CWA Section 404 permit.
- Buffer disturbances will occur for the construction of a water-dependent structure or water access area (e.g., pier, boat ramp, and trail).

4.2 Perimeter Controls

General

- Install sediment controls along any perimeter area of the site that will receive pollutant discharges. Installation of perimeter controls must be completed prior to the commencement of earth-disturbing activities.

Specific Perimeter Controls

Erosion Control Barrier	
Description An erosion control barrier, consisting of entrenched straw bales, straw wattles, compost socks and siltation fencing, shall be installed along the downgradient side of the proposed project to decrease the velocity of sheet flows and intercept and detain small amounts of sediment from disturbed areas	
Installation	At initiation of construction activities
Maintenance Requirements	Erosion Control Barrier shall be inspected weekly, following storms, and daily during rainy periods. Damaged fencing shall be replaced. Concentrated flows shall be intercepted and rerouted. Sediment accumulations shall be removed when reaching a depth of 6-inches, or one-half of the above ground height of the barrier, whichever is less. Deteriorated fencing material shall be replaced. Used fencing shall be properly disposed of.
Design Specifications	Refer to details on sheet DN-3 and location included in the Site Preparation Plans in Appendix A.

Silt Fence	
Description Entrenched silt fence shall be installed to decrease the velocity of sheet flows and intercept and detain small amounts of sediment from disturbed areas.	
Installation	At initiation of construction activities
Maintenance Requirements	Silt fence shall be inspected weekly, following storms, and daily during rainy periods. Damaged fencing shall be replaced. Concentrated flows shall be intercepted and rerouted. Sediment accumulations shall be removed when reaching a depth of 6-inches. Deteriorated fencing material shall be replaced. Used fencing shall be properly disposed of.

4.3 Sediment Track-Out

General

- Install a construction entrance designed specifically to control sediment track at the access point to the area of site modifications being completed.

Specific Track-Out Controls

Construction Entrance	
Description: Temporary gravel or crushed stone construction entrances/exits or other means shall be used to minimize off-site movement of soil with vehicles. Construction access points shall be maintained to minimize tracking of soil onto public roads and existing parking lots to remain. If the rock entrance is not working to keep streets clean, then install wheel wash, sweep streets, or wash streets if wash water can be collected.	
Installation	At initiation of construction activities
Maintenance Requirements	Stabilized construction entrances shall be inspected daily. Gravel or crushed stone shall be added if the pad is no longer in accordance with the

	specifications. If the construction entrance/ exit is not working to keep streets clean, then install wheel wash, sweep streets, or wash streets if wash water can be collected. When sediment has been tracked off of the site, it shall be removed by the end of the same working day, or by the end of the next working day if track-out occurs on a non-work day. Remove sediment by sweeping, shoveling or vacuuming roadways were sediment has been tracked-out.
Design Specifications	Refer to "Construction" detail and location included in the Erosion and Sediment Control Plans in Appendix A.

[Repeat as needed for individual track-out controls.]

4.4 Stockpiled Sediment or Soil

General

- Any areas of exposed soil or stockpiles that will remain inactive for more than 7 days will be temporarily stabilized with vegetative or non-vegetative stabilization practices. The installation of stabilization measures will be completed as soon as practical, but no later than seven (7) calendar days after stabilization has been initiated. Silt fence shall be installed as a sediment barrier along all downgradient perimeter areas of the stockpiles to trap sediment transported by runoff prior to entering the drainage system and/or leaving the property. Piles shall be located outside of any natural buffers and away from any stormwater conveyances, drain inlets, and areas where stormwater flow is concentrated.

Specific Stockpile Controls

Stabilization of Stockpile	
Description: Topsoil stripped from the immediate construction area shall be stockpiled as identified on the Site Plans and Sitework Specifications or as approved by the SWPPP preparer. Stockpiles shall be located outside of any natural buffers and away from any stormwater conveyances, drain inlets, and areas where stormwater flow is concentrated.	
Installation	As needed during construction
Maintenance Requirements	The area shall be inspected weekly for erosion and immediately after storm events. Areas on or around the stockpile that have eroded shall be stabilized immediately with erosion controls. See following Silt Fence section for Maintenance and inspection procedures. Hosing down or sweeping soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance, storm drain inlet, or water of the U.S. is prohibited.
Design Specifications	Refer to "Materials Stockpile" detail and location included in the Erosion and Sediment Control Plans in Appendix A.

4.5 Minimize Dust

General

- When necessary during grading operations, larger areas of exposed soil will be wetted to prevent wind borne transport of fine-grained soils.

Specific Dust Controls

Soil Wetting

Description: Dust from the site shall be controlled by using a mobile pressure-type distributor truck to apply water to disturbed areas. The mobile unit shall apply water at a rate of 300 gallons per acre and minimized as necessary to prevent runoff and ponding.	
Installation	As needed during construction.
Maintenance Requirements	At least one mobile unit shall be available at all times to distribute water to control dust on the project area. Each mobile unit shall be equipped with a positive shutoff valve to prevent over watering of the disturbed area. Large areas of exposed soils will routinely be inspected to determine if soil wetting is required. Inspect daily during dry period of earthwork to ensure dust is not settling in or near the project site. Clean up any transported sediment and take necessary measures to prevent future dust accumulation
Design Specifications	

4.6 Minimize Steep Slope Disturbances

General

- The project is located on a flat urbanized site that is mostly impervious, covered by buildings and bituminous concrete pavement for parking areas. There are no slopes steeper than 3:1 proposed for this project. In the event that during construction slopes exceed 3:1 and are to be exposed an erosion control blanket shall be utilized.

Specific Steep Slope Controls

Erosion Control Blanket	
Description: Erosion control blankets shall be used to provide stabilization for the slopes in the grass drainage channels and sediment basins, and on slopes greater than 3:1 throughout the site.	
Installation	Once grading operations expose slopes greater than 3:1.
Maintenance Requirements	Erosion control blankets will be inspected weekly and after any rainfall. Inspection shall be in compliance with the inspection schedule specified in CGP Part 4.3 and maintained routinely throughout the duration of the project. Minimum maintenance and key items to check shall include torn or missing blanket or missing staples. Additionally, the slope under the blanket should be inspected for any erosion to ensure adequacy of installation.
Design Specifications	Refer to "Slope Stabilization" detail and location included in the Erosion and Sediment Control Plans in Appendix A.

4.7 Topsoil

General

- The project is located on an urbanized site that is almost entirely impervious, covered by buildings bituminous concrete parking lot and roadway. The affected area is mostly buildings, bituminous concrete parking lots and paved road. There is no topsoil present onsite to be preserved.

4.8 Soil Compaction

General

- The site is degraded and compacted, as it is almost entirely impervious and covered by a buildings, bituminous concrete parking, and paved road.

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4.9 Storm Drain Inlets

General

- Prior to any earth-disturbing activities, inlet protection measures will be installed that remove sediment from discharges prior to entry into any storm drain inlet that carries stormwater flow from the site to a water of the U.S.

Specific Storm Drain Inlet Controls

Filter Bag	
Description:	Filter bags manufactured specifically for controlling sediment flow into all storm drain inlets to prevent coarse sediment from entering drainage systems prior to permanent stabilization of the disturbed area.
Installation	At initiation of construction activities and as needed during construction.
Maintenance Requirements	Clean, or remove and replace the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.
Design Specifications	Refer to "Silt sack" detail and location included in the Erosion and Sediment Control Plans in Appendix A.

4.10 Temporary Sediment Basins

Specific Sediment Basin Controls

Temporary Sediment Basin	
Description:	Temporary sediment basins are located throughout the site between construction and wetland resource areas. These basins provide 3,600 cubic feet of storage per acre drained, as required by the EPA.
Installation	Temporary Sediment Basins shall be installed during grading activities
Maintenance Requirements	Temporary Sediment Basins shall be inspected weekly and following storms. Sediment shall be removed when it reaches a depth of one foot, or half the design capacity whichever is less. Damage to basin embankments and slopes shall be repaired.
Design Specifications	

4.11 Chemical Treatment

Soil Types

List all the soil types (including soil types expected to be found in fill material) that are expected to be exposed during construction in areas of the project that will drain to chemical treatment systems: Not Applicable

Treatment Chemicals

List all treatment chemicals that will be used at the site and explain why these chemicals are suited to the soil characteristics: Not Applicable

Describe the dosage of all treatment chemicals you will use at the site or the methodology you will use to determine dosage: Not Applicable

Provide information from any applicable Safety Data Sheets (SDS): Not Applicable

Describe how each of the chemicals will stored: Not Applicable

Include references to applicable state or local requirements affecting the use of treatment chemicals, and copies of applicable manufacturer's specifications regarding the use of your specific treatment chemicals and/or chemical treatment systems: Not Applicable

Special Controls for Cationic Treatment Chemicals (if applicable)

If the applicable EPA Regional Office authorized you to use cationic treatment chemicals, include the official EPA authorization letter or other communication, and identify the specific controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to an exceedance of water quality standards: Not Applicable

Schematic Drawings of Stormwater Controls/Chemical Treatment Systems

Provide schematic drawings of any chemically-enhanced stormwater controls or chemical treatment systems to be used for application of treatment chemicals: Not Applicable

Training

Describe the training that personnel who handle and apply chemicals have received prior to permit coverage, or will receive prior to the use of treatment chemicals: Not Applicable

4.12 Dewatering Practices

General

- If necessary, sediment-laden water that collects in trenches or excavated areas will be pumped into filter bags.

Specific Dewatering Practices

Dewatering Filter Bag	
Description: Dewatering filter bags to be placed on relatively flat terrain, free of brush and stumps, to avoid ruptures and punctures. Contractor to use a 10'x10' geotextile filter bag on any dewatering hoses. A maximum of one six-inch discharge hose will be allowed per filter bag.	
Installation	As needed during construction
Maintenance Requirements	With backwash water, either haul it away for disposal or return it to the beginning of the treatment process; and replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.
Design Specifications	

[Repeat as needed for individual dewatering practices.]

4.13 Site Stabilization

Total Amount of Land Disturbance Occurring at Any One Time

- Five Acres or less
 More than Five Acres

Use this template box if you are not located in an arid, semi-arid, or drought-stricken area

Seeding	
<input checked="" type="checkbox"/> <i>Vegetative</i> <input type="checkbox"/> <i>Non-Vegetative</i> <input type="checkbox"/> <i>Temporary</i> <input checked="" type="checkbox"/> <i>Permanent</i>	
Description: <ul style="list-style-type: none"> ▪ Stabilization of open 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 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. 	
Installation	TBD
Completion	Prior to completion of construction
Maintenance Requirements	Contractor will inspect vegetated areas after rain events until growth of vegetation has established
Design Specifications	

Mulching	
<input checked="" type="checkbox"/> <i>Vegetative</i> <input type="checkbox"/> <i>Non-Vegetative</i> <input type="checkbox"/> <i>Temporary</i> <input checked="" type="checkbox"/> <i>Permanent</i>	
Description: <ul style="list-style-type: none"> ▪ When construction will be temporarily or permanently ceased, mulching shall occur immediately over seeding, as required, for erosion control while vegetation is being established. Mulch will 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. 	
Installation	As needed during construction.
Completion	Prior to completion of construction.
Maintenance Requirements	Periodic inspections shall occur once a week and after every rainstorm 0.25 inches or greater.
Design Specifications	

SECTION 5: POLLUTION PREVENTION STANDARDS

5.1 Potential Sources of Pollution

Construction Site Pollutants

Pollutant-Generating Activity	Pollutants or Pollutant Constituents (that could be discharged if exposed to stormwater)	Location on Site (or reference SWPPP site map where this is shown)
Paving Operations	Concrete constituents	
Concrete	Concrete constituents	
Painting	Paints	
Vehicle/Building Cleaning	Cleaning solvents, detergents	
Landscape Plantings	Fertilizer	
Vehicle Maintenance	Petroleum-based products	
Refueling of Equipment	Petroleum-based products	
Solid Waste Disposal	Buildings, Bituminous concrete, old pipes and utility structures	

5.2 Spill Prevention and Response

A spill kit with containment berms and absorbent materials will be maintained onsite at all times during construction and the contractor will train employees in appropriate containment and cleanup procedures.

The following agencies should be contacted in case of a spill:

- Millbury Fire Department – (508) 865-5328
- Millbury Board of Health – (508) 865-4721
- Millbury Police Department – (508) 865-3521
- MassDEP Central Region – (508) 792-76500

Description	<ul style="list-style-type: none"> • Employee Training: All employees shall be trained as detailed in the Inspection and Maintenance section of this report. • Vehicle Maintenance: Vehicles and equipment shall be maintained off-site. All vehicles and equipment including subcontractor vehicles shall be checked for leaking oil and fluids. Vehicles leaking fluids shall not be allowed on-site. • Hazardous Material Storage: Hazardous materials shall be stored in accordance with this report and federal and municipal regulations. • Spill Kits: Spill kits shall be kept within the materials storage area. • Spills: All spills shall be cleaned up immediately upon discovery. Spent absorbent materials and rags shall be hauled off-site immediately after the spill is cleaned up for disposal at an approved landfill. Spills large enough to discharge to surface water shall be reported to the National Response Center at 1-800-424-8802 and MA DEP at 888-304-1133. • Material safety data sheets: A material inventory and emergency contact information shall be maintained at the on-site project trailer
Installation Schedule:	The spill prevention and control procedures shall be implemented once construction begins on-site.
Maintenance and Inspection:	All personnel shall be instructed on the correct procedures for spill prevention and control. Notices that state these practices shall be posted in the office trailer, and the individual who manages day-to-day site operations shall be responsible for seeing that these procedures are followed.

5.3 Fueling and Maintenance of Equipment or Vehicles

Specific Pollution Prevention Practices

Spill Kit
<p>Description: Several types of vehicles and equipment will likely be used on-site throughout the project, including graders, scrapers, excavators, loaders, paving equipment, rollers, trucks and trailers, backhoes, and forklifts. All major equipment/vehicle fueling and maintenance shall be performed outside of wetland buffer zones. When vehicle fueling must occur on-site, the fueling activity shall occur in the staging area. Only minor equipment maintenance shall occur on-site. All equipment fluids generated from maintenance activities shall be disposed of into designated</p>

drums stored on spill pallets. Absorbent, spill-cleanup materials and spill kits shall be available at the combined staging and materials storage area. Drip pans shall be placed under all equipment receiving maintenance and vehicles and equipment parked overnight.	
Installation Schedule:	BMPs implemented for equipment and vehicle maintenance and fueling activities shall begin at the start of the project.
Maintenance and Inspection:	Inspect equipment/vehicle storage areas weekly and after storm events. Vehicles and equipment shall be inspected on each day of use. Leaks shall be repaired immediately, using dry cleanup measures where possible and eliminating the source of the discharge. Problem vehicle(s) or equipment shall be removed from the project site. Keep ample supply of spill-cleanup materials on-site and immediately clean up spills and dispose of materials properly. Do not clean surfaces by hosing-down the area. The spill kit will be refurbished after each use.

5.4 Washing of Equipment and Vehicles

General

- As listed in CGP 2.3.2, the contractor must provide an effective means of minimizing discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of washing. Washing activities from vehicle and wheel washing will be located away from stormwater inlets. Concrete trucks will not be allowed to wash out or discharge surplus concrete or drum wash water on the site. Soaps, detergents, or solvents that are stored onsite in designated storage areas will be covered with plastic sheeting to prevent these materials from coming into contact with rainwater.

Specific Pollution Prevention Practices

Washing of Equipment and Vehicles	
Description:	Washing activities from vehicle and wheel washing will be located away from stormwater inlets. Soaps, detergents, or solvents that are stored onsite in designated storage areas will be covered with plastic sheeting to prevent these materials from coming into contact with rainwater.
Installation	At initiation of construction activities.
Maintenance Requirements	Contractor to inspect plastic sheeting for punctures to ensure rainwater is not coming in contact with the containers.
Design Specifications	

5.5 Storage, Handling, and Disposal of Building Products, Materials, and Wastes

5.5.1 Pesticides, Herbicides, Insecticides, Fertilizers, and Landscape Materials

General

- In accordance with CGP Part 2.3.3.b, the contractor will:
 - In storage areas, provide either a cover (e.g., plastic sheeting, temporary roofs) to minimize the exposure of these containers to precipitation and to stormwater or a similarly effective means designed to minimize the discharge of pollutants from these areas; and
 - Comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label.

Specific Pollution Prevention Practices

Plastic Sheeting Cover	
Description: Fertilizers and landscape materials will be covered with plastic sheeting to prevent these materials from coming into contact with rainwater.	
Installation	At initiation of construction activities.
Maintenance Requirements	Contractor to inspect plastic sheeting for punctures to ensure rainwater is not coming in contact with the containers. The contractor will comply with all application and disposal requirements included on the registered fertilizer label.
Design Specifications	

5.5.2 Diesel Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Other Chemicals

General

- In accordance with CGP Part 2.3.3.c, the contractor will:
 - Store chemicals in water-tight containers, and provide either a cover (e.g., plastic sheeting, temporary roofs) to minimize the exposure of these containers to precipitation and to stormwater or a similarly effective means designed to minimize the discharge of pollutants from these areas (e.g., having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill), or provide secondary containment (e.g., spill berms, decks, spill containment pallets); and
 - Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly. It is prohibited to clean surfaces or spills by hosing the area down. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.

Specific Pollution Prevention Practices

Water-tight Containers for Chemicals	
Description: Chemicals will be stored in water-tight containers and covered with plastic sheeting to prevent these containers from coming into contact with rainwater.	
Installation	At initiation of construction activities.
Maintenance Requirements	Contractor to inspect plastic sheeting for punctures to ensure rainwater is not coming in contact with the containers.
Design Specifications	

5.5.3 Hazardous or Toxic Waste

General

- In accordance with CGP Part 2.3.3.d, the contractor will:
 - Separate hazardous or toxic waste from construction and domestic waste;
 - Store waste in sealed containers, which are constructed of suitable materials to prevent leakage and corrosion, and which are labeled in accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable federal, state, tribal, or local requirements;
 - Store all outside containers within appropriately-sized secondary containment (e.g., spill berms, decks, spill containment pallets) to prevent spills from being discharged, or provide

- o a similarly effective means designed to prevent the discharge of pollutants from these areas (e.g., storing chemicals in covered area or having a spill kit available on site);
- o Dispose of hazardous or toxic waste in accordance with the manufacturer's recommended method of disposal and in compliance with federal, state, tribal, and local requirements; and
- o Clean up spills immediately, using dry clean-up methods, and dispose of used materials properly. It is prohibited to clean surfaces or spills by hosing the area down. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.
- o Follow all other federal, state, tribal, and local requirements regarding hazardous or toxic waste.

Specific Pollution Prevention Practices

Sealed Containers for Hazardous Waste Material	
Description: All hazardous waste materials will be stored in sealed containers and disposed in the manner specified by local and state regulation, or by the manufacturer.	
Installation	At initiation of construction activities.
Maintenance Requirements	Site personnel will be instructed of manufacturer, local, and state regulations for handling of hazardous waste materials. The site construction supervisor will be responsible for seeing that the procedures are followed.
Design Specifications	

5.5.4 Construction and Domestic Waste

General

- The contractor will provide waste containers (e.g., dumpster or trash receptacle).

Specific Pollution Prevention Practices

Waste Containers	
Description: The contractor will provide waste containers (e.g., dumpster or trash receptacle) of sufficient size and number to contain construction and domestic wastes. Daily loose trash removal will prevent litter, construction debris, and construction chemicals exposed to stormwater from becoming a pollutant source for stormwater discharges.	
Installation	At initiation of construction activities.
Maintenance Requirements	<p>Waste container lids shall be closed when not in use and at the end of the business day for those containers that are actively used throughout the day. For waste containers that do not have lids, contractor shall provide a cover or similarly effective means to minimize the discharge of the pollutants.</p> <p>The short-term storage will be removed weekly to appropriate off-site locations. Daily removal will be mandated for debris that may become windborne.</p> <p>On business days, clean up and dispose of waste in designated waste containers.</p> <p>Clean up immediately if containers overflow.</p>
Design Specifications	

5.5.5 Sanitary Waste

General

- The contractor will install portable toilets within the project site.

Specific Pollution Prevention Practices

Portable Toilets	
Description: Portable toilets will be positioned so that they are secure and will not be tipped or knocked over and located away from waters of the U.S. and stormwater inlets or conveyances. All sanitary waste will be collected from the portable units by a licensed contractor as required and disposed of in compliance with state and local regulations.	
Installation	At initiation of construction activities.
Maintenance Requirements	The units will be serviced by the provider of the portable toilet.
Design Specifications	

5.6 Washing of Applicators and Containers used for Paint, Concrete or Other Materials

General

- The contractor will provide an effective means of eliminating the discharge of water from the washout and cleanout of stucco, paint, concrete, form release oils, curing compounds, and other construction materials by using a leak-proof washout pit to handle washout and cleanout wastes. The washout pits will be located in designated areas and located as far away from stormwater inlets as possible.

Specific Pollution Prevention Practices

Leak-proof Washout Pits	
Description: Leak-proof washout pits will be used to handle washout and cleanout of wastes. These pits will be located in designated areas as indicated on the Erosion and Sedimentation Plan.	
Installation	At initiation of construction activities.
Maintenance Requirements	The cleanout pit will be inspected weekly to ensure that no overflows have or can occur. The contractor will remove accumulation from the pit as necessary in accordance with the CGP Part 2.3.4.
Design Specifications	

5.7 Fertilizers

General

- As included in CGP Part 2.3.5, the contractor must follow the requirements below when applying fertilizer products:
 - Apply at a rate and in amounts consistent with manufacturer's specifications, or document departures from the manufacturer specifications where appropriate in Part 7.2.6.b.ix;
 - Apply at the appropriate time of year for your location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth;

- Avoid applying before heavy rains that could cause excess nutrients to be discharged;
- Never apply to frozen ground;
- Never apply to stormwater conveyance channels; and
- Follow all other federal, state, tribal, and local requirements regarding fertilizer application.

Specific Pollution Prevention Practices

Slow-Release Fertilizers	
Description: The use of slow-release fertilizers in the landscaped areas will minimize discharges of fertilizers containing nitrogen or phosphorus that could enter the stormwater system. Fertilizer use will be reduced once the proposed landscaping is established.	
Installation	As needed for the establishment of landscaped areas.
Maintenance Requirements	None.
Design Specifications	

5.8 Other Pollution Prevention Practices

General

- Pavement sweeping may be performed daily or as needed, when track-out has occurred. The sweeping program will remove sediments and contaminants directly from paved surfaces before the release into stormwater runoff. Pavement sweeping has been demonstrated to be an effective initial treatment for reducing pollutant loading into stormwater.

Specific Pollution Prevention Practices

Pavement Sweeping	
Description: Pavement sweeping will minimize the release of sediments and contaminants from paved surfaces into the stormwater runoff.	
Installation	As needed to remove contaminant directly from paved surfaces.
Maintenance Requirements	None.
Design Specifications	

SECTION 6: INSPECTION, MAINTENANCE, AND CORRECTIVE ACTION

6.1 Inspection Personnel and Procedures

Personnel Responsible for Inspections

Inspections are to be performed by "qualified personnel" as defined in Part 4.1.1 of the Permit and shall include a person knowledgeable in the principles and practices of erosion and sediment controls and pollution prevention, who possesses the skills to assess conditions at the construction site that could impact stormwater quality, and the skills to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit. Inspections shall include all areas of the site disturbed by construction activity and areas used for materials storage that are exposed to precipitation. The Inspector must look for evidence of, or the potential for, pollutants entering the system, inspect the BMPs installed as part of the Plan, inspect the site egress points for tracking, and inspect material, waste, borrow, or equipment storage and maintenance areas. If, in the course of the inspection, the inspector identifies an eroded area or an area impacted by sedimentation, additional erosion and sedimentation controls will be implemented, the discharge will be documented, and the SWPPP will be revised to include these changes.

Inspection Personnel

Name: TBD
Title:

Inspection Schedule

Select the inspection frequency(ies) that applies, based on CGP Parts 4.2, 4.3, or 4.4

Standard Frequency:
<input type="checkbox"/> Every 7 days <input checked="" type="checkbox"/> Every 14 days and within 24 hours of a 0.25" rain or the occurrence of runoff from snowmelt sufficient to cause a discharge
Increased Frequency (if applicable):
For areas of sites discharging to sediment or nutrient-impaired waters or to waters designated as Tier 2, Tier 2.5, or Tier 3 <input type="checkbox"/> Every 7 days and within 24 hours of a 0.25" rain
Reduced Frequency (if applicable)
For stabilized areas <input checked="" type="checkbox"/> Twice during first month, no more than 14 calendar days apart; then once per month after first month;
For stabilized areas on "linear construction sites" <input type="checkbox"/> Twice during first month, no more than 14 calendar days apart; then once more within 24 hours of a 0.25" rain

Click or tap to enter a date.
For arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought <input type="checkbox"/> Once per month and within 24 hours of a 0.25" rain Insert beginning and ending dates of the seasonally-defined dry period for your area or the valid period of drought: <ul style="list-style-type: none">▪ Beginning date of seasonally dry period:▪ Ending date of seasonally dry period:
For frozen conditions where earth-disturbing activities are being conducted <input type="checkbox"/> Once per month Insert beginning and ending dates of frozen conditions on your site: <ul style="list-style-type: none">▪ Beginning date of frozen conditions:▪ Ending date of frozen condition:

Rain Gauge Location (if applicable)

To determine if a storm event of 0.25 inches or greater has occurred on the site, data will be obtained from the weather station at Worcester regional airport.

Inspection Report Forms

Site inspection forms are provided in Appendix D of this SWPPP.

6.2 Corrective Action

Personnel Responsible for Corrective Actions

TBD

Corrective Action Forms

INSERT A COPY OF ANY CORRECTIVE ACTION FORMS YOU WILL USE HERE OR IN APPENDIX E OF THIS SWPPP TEMPLATE

6.3 Delegation of Authority

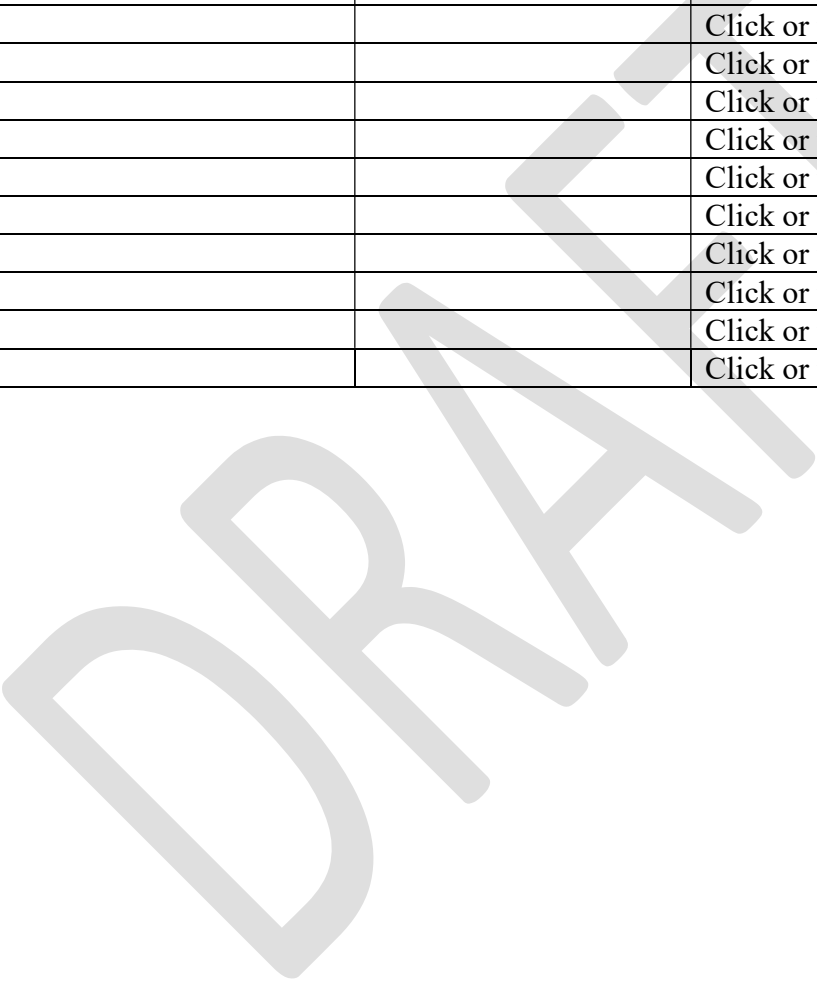
Duly Authorized Representative(s) or Position(s):

TBD

SECTION 7: TRAINING

Table 7-1: Documentation for Completion of Training

Name	Describe Training	Date Training Completed
		Click or tap to enter a date.
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SECTION 8: CERTIFICATION AND NOTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____ Title: _____

Signature: _____ Date: _____

DRAFT

SWPPP APPENDICES

Attach the following documentation to the SWPPP:

Appendix A – Site Maps

Appendix B – Copy of 2017 CGP

Appendix C – NOI and EPA Authorization Email

Appendix D – Inspection Form

Appendix E – Corrective Action Form

Appendix F – SWPPP Amendment Log

Appendix G – Subcontractor Certifications/Agreements

Appendix H – Grading and Stabilization Activities Log

Appendix I – Training Log

Appendix J – Delegation of Authority

Appendix K – Endangered Species Documentation

Appendix L – Historic Preservation Documentation

Appendix A – Site Maps

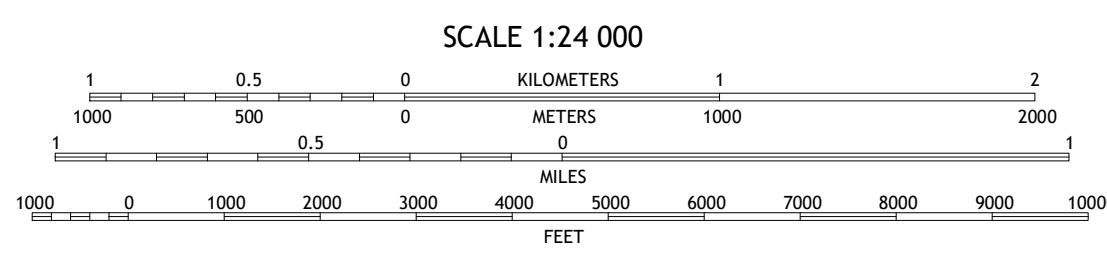
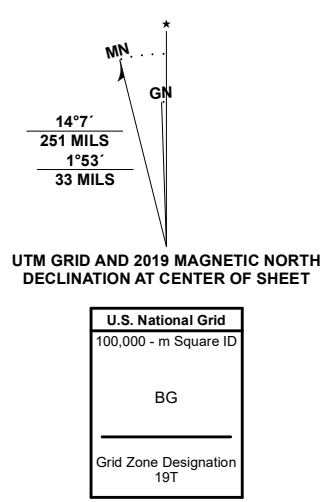
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Produced by the United States Geological Survey

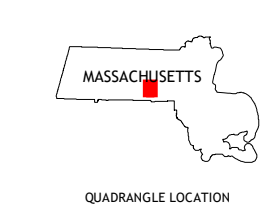
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid: Universal Transverse Mercator, Zone 17T
This map is not a legal document. Boundaries may be
generalized for this map scale. Private lands within government
reservations may not be shown. Obtain permission before
entering private lands.

Imagery: NAIP, July 2016 - September 2016
Roads: U.S. Census Bureau, 2018
Names: GNS, 1974-2018
Hydrography: National Hydrography Dataset, 2004
Contours: National Elevation Dataset, 1998-2012
Boundaries: Multiple sources; see metadata file 2016-2017
Wetlands: FWS National Wetlands Inventory, 2008



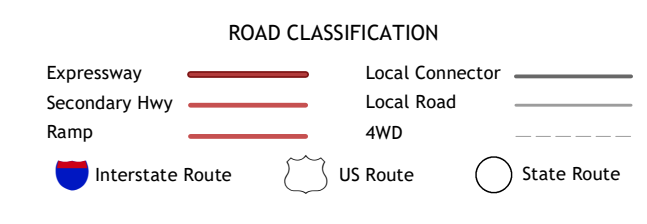
CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the
National Geospatial Program US Topo Product Standard.



1	2	3
4	5	6
7	8	

1 Paxton
2 Worcester North
3 Shrewsbury
4 Leicester
5 Grafton
6 Webster
7 Oxford
8 Uxbridge



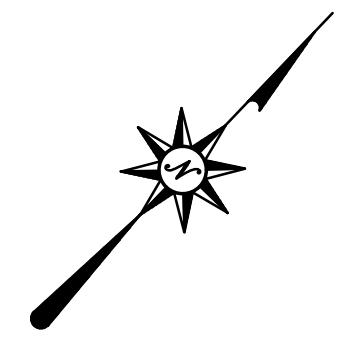
7643016369688
NSN 7540-01-6369688
NSA REF NO. USGS X 2.4 K 4.9 8 7.3

MILLBURY DOWNTOWN PHASE 2
ELM STREET
MILLBURY, MA

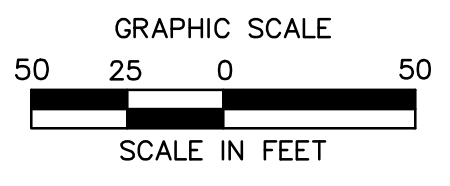
REVISIONS	
No.	Date

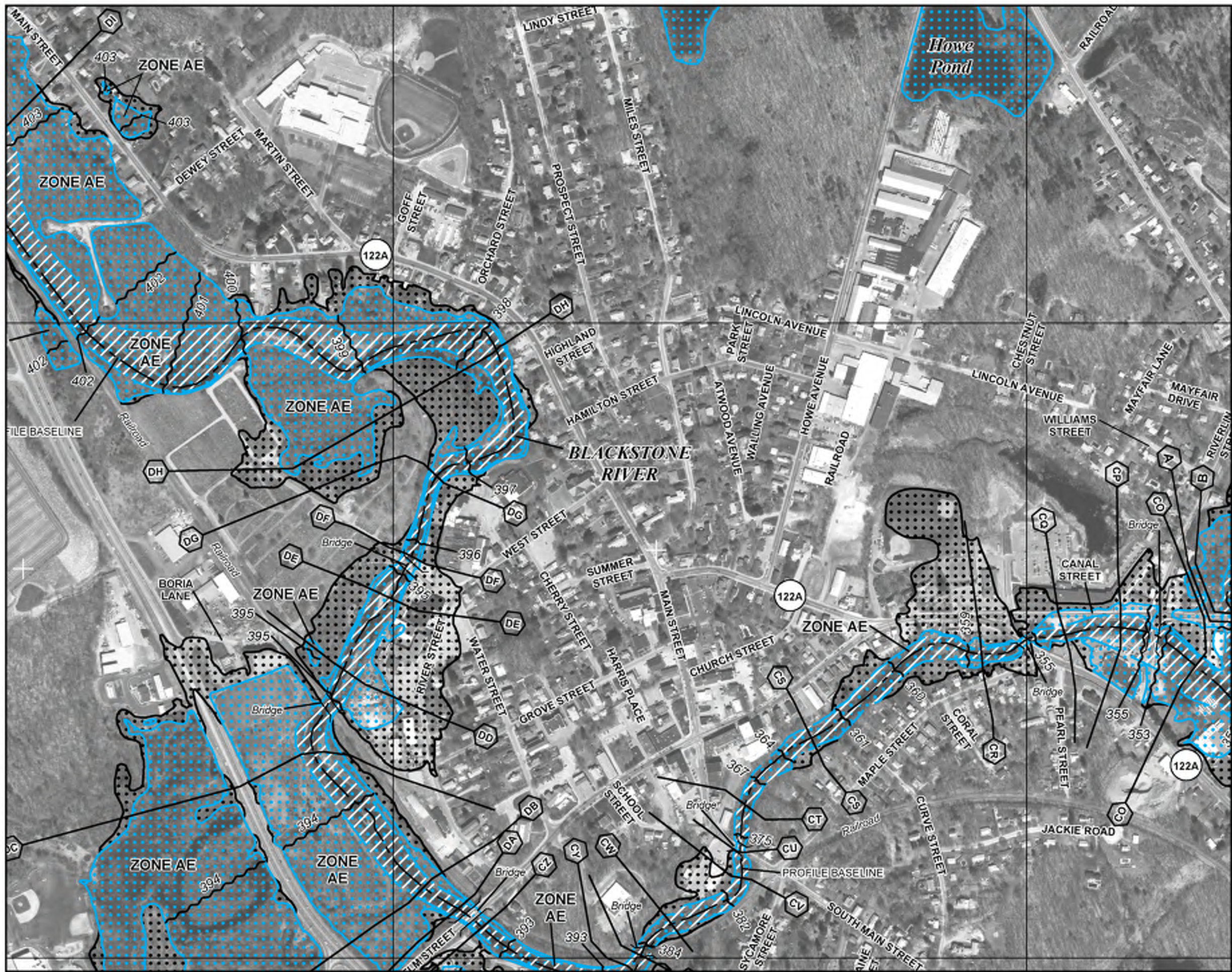
Designed E.A.E.
Drawn E.A.E.
Reviewed
Scale 1" = 50'
Project No. 2001478
Date JULY, 2021
CAD File: SK20047801

Sheet No.
LOD-1

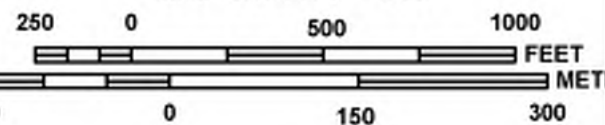


LEGEND





MAP SCALE 1" = 500'



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0809E

FIRM

FLOOD INSURANCE RATE MAP
 WORCESTER COUNTY,
 MASSACHUSETTS
 (ALL JURISDICTIONS)

PANEL 809 OF 1075
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
MILBURY TOWN OF	250378	0809	E
WORCESTER CITY OF	250349	0809	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER
 25027C0809E
 EFFECTIVE DATE
 JULY 4, 2011

Federal Emergency Management Agency

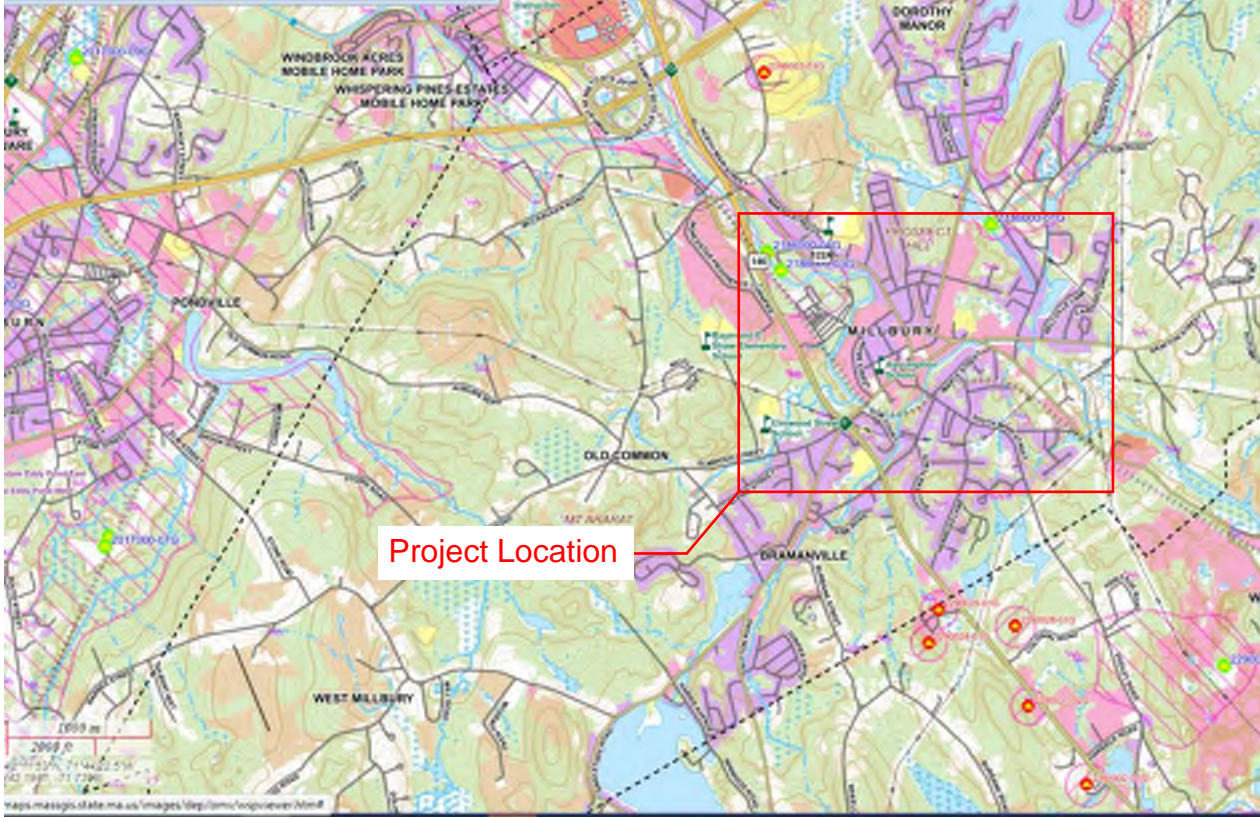
This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at <http://www.fema.gov>.

MassDEP Online Map Viewer Water Supply Protection Areas Map



Map Tools

Overview | Map Layers | Legend | Map Help | Contact



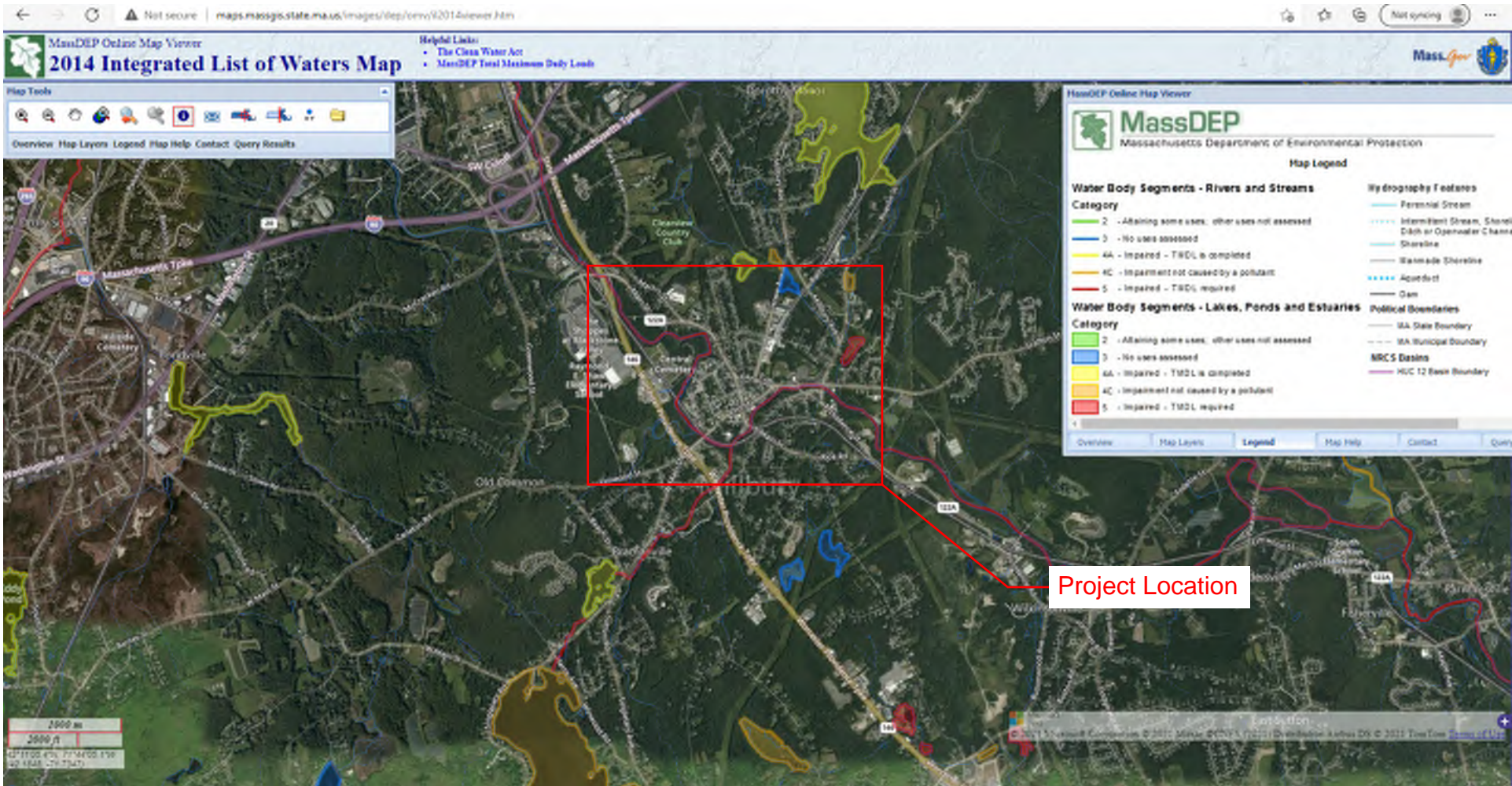
Project Location

MassDEP Massachusetts Department of Environmental Protection

Map Legend

WSPF Potential Wetland Pool	Town and State Boundary	Wetland Wetland Protection
WSPF Critical Wetland Pool	DEP Project Boundary	Approved Wetland Protection
Community Groundwater Well	Federal Stream or Shoreline	Solid Waste Landfill
Community Surface Water Intake	Intermittent Stream	Surface Water Supply Member
Emergency Surface Water Intake	Intermittent Shoreline	15 Meter Contour Interval
Non-Community Groundwater Well	Seasonal Shoreline	1 Meter Contour Interval
School	Ditch or Canal	Protected Open Space
Hospital	Airport	High and Medium Density Pk
Long Term Care Existence	Dam	Forested
Prison	Channel in Water	Commercial, Industrial and M
Pipeline	Open Water	Waste Disposal, Landfill
Powerline	Public Water Supply Reservoir	Recreation Area, Golf Course
WSP4 Blue Line	Tidal Flat	Agricultural Land, Orchard, M
WSP4 Green Line	Wetlands Area	
WSP4 Orange Line	Freshwater Wetland	
WSP4 Red Line	Cranberry Bog	
Active Rail Lines	Salt Water Wetland	
Major Highway - Limited Access	Surface Water Supply Protection Area (Zone A)	
Major Road - Not Limited Access	Surface Water Supply Protection Area (Zone B)	
Local Street or Road	Surface Water Supply Protection Area (Zone C)	

Overview | Map Layers | Legend | Map Help | Contact | Query Results



SURVEY BY: FELDMAN LAND SURVEYORS
 DATE: APRIL 3, 2021



355 Research Parkway
 Meriden, CT 06450
 (203) 630-1400
 (203) 630-0515 Fax

PROPOSED DELIVERY STATION
 WIDETT CIRCLE
 BOSTON, MASSACHUSETTS

Designed BY OTHERS
 Drawn BY OTHERS
 Reviewed S.M.K.
 Scale AS SHOWN
 Project No. 200194
 Date 07/02/2021
 CAD File: EX20019401
 Title
 EXISTING CONDITIONS PLAN

Sheet No. EX-1



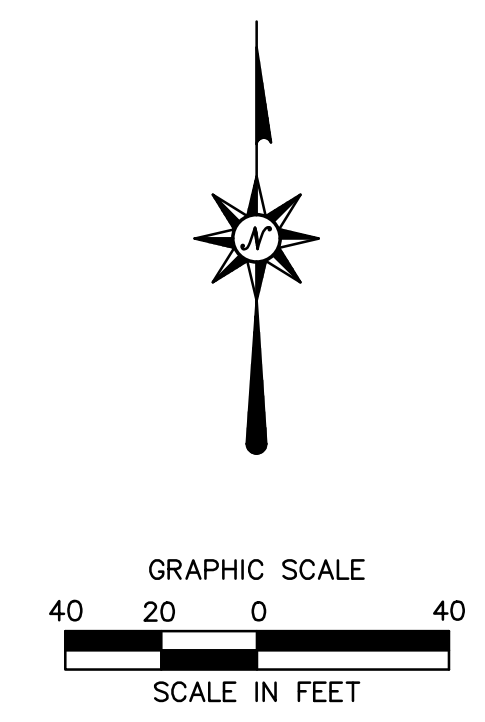
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SURVEY BY: FELDMAN LAND SURVEYORS
DATE: APRIL 3, 2021

FRONTAGE ROAD
STATE HIGHWAY LAYOUT No. 4611



Now or Formerly
COMMONWEALTH OF
MASSACHUSETTS HIGHWAYS
AREA = 2,021 SQ. FT.



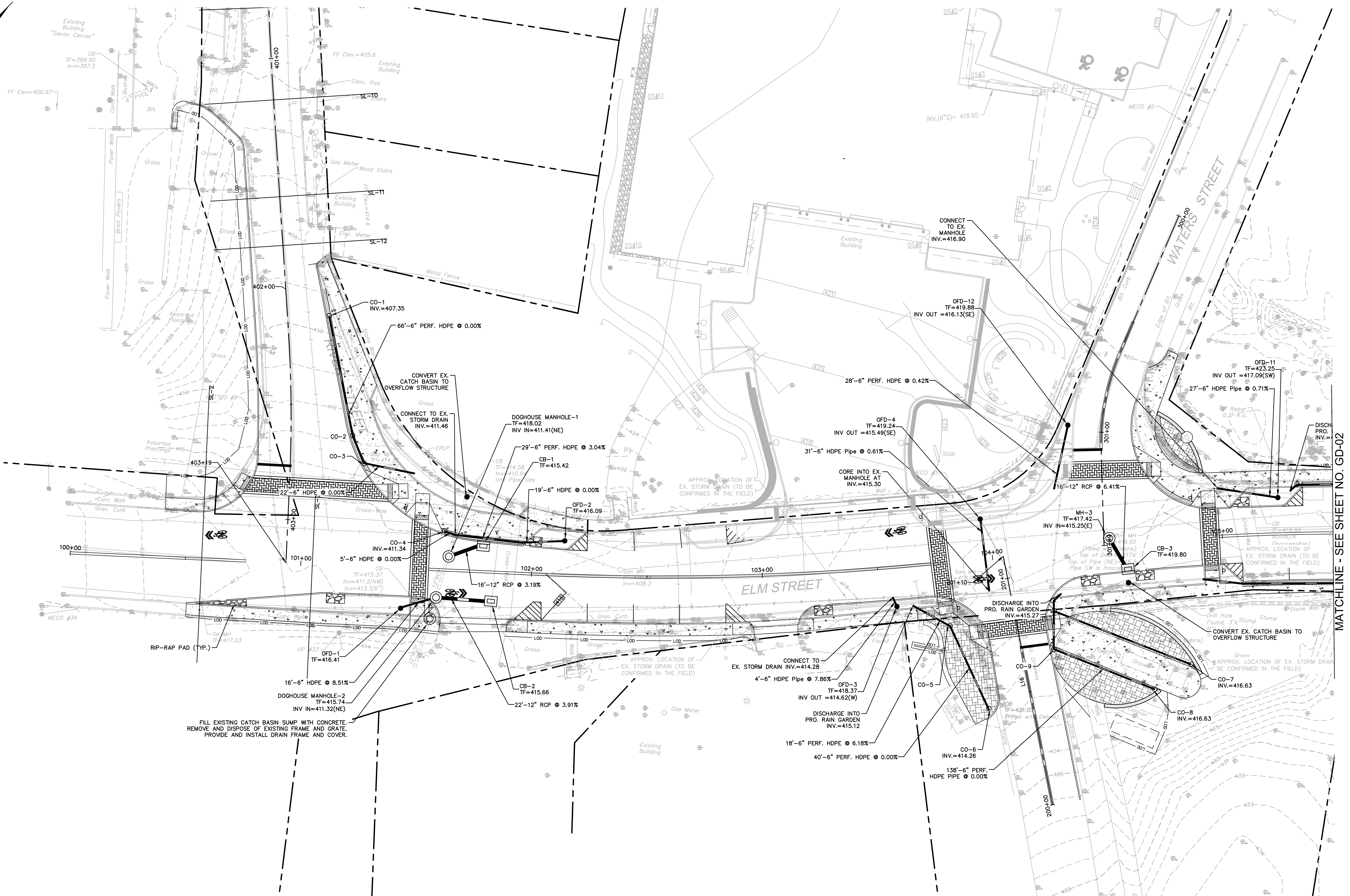
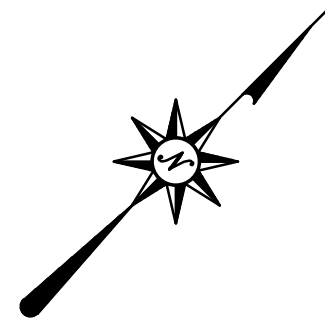
355 Research Parkway
Middletown, CT 06450
(203) 630-1406
(203) 630-0155 Fax

PROPOSED DELIVERY STATION
WIDETT CIRCLE
BOSTON, MASSACHUSETTS

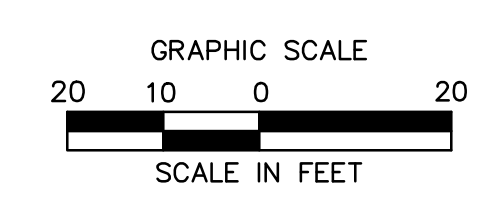
Des: _____
No. Date _____
Designed BY OTHERS
Drawn BY OTHERS
Reviewed S.M.K.
Scale AS SHOWN
Project No. 2001954
Date 07/02/2021
CAD File: EX200195401
Title
EXISTING
CONDITIONS
PLAN
Sheet No.

EX-2

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MATCHLINE - SEE SHEET NO. GD-02



Architecture
Engineering
Environmental
Land Surveying

220 Norwood Park South
Norwood, MA 02062
(781) 619-9500

MILLBURY DOWNTOWN PHASE 2
ELM STREET
MILLBURY, MA

REVISIONS	Desc.
No.	Date

Designed L.A.E.
 Drawn L.A.E.
 Reviewed XXX
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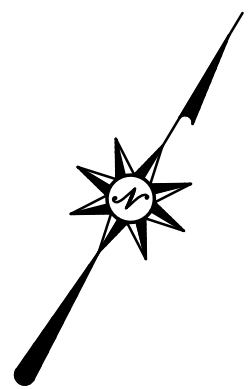
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GRADING AND DRAINAGE PLAN

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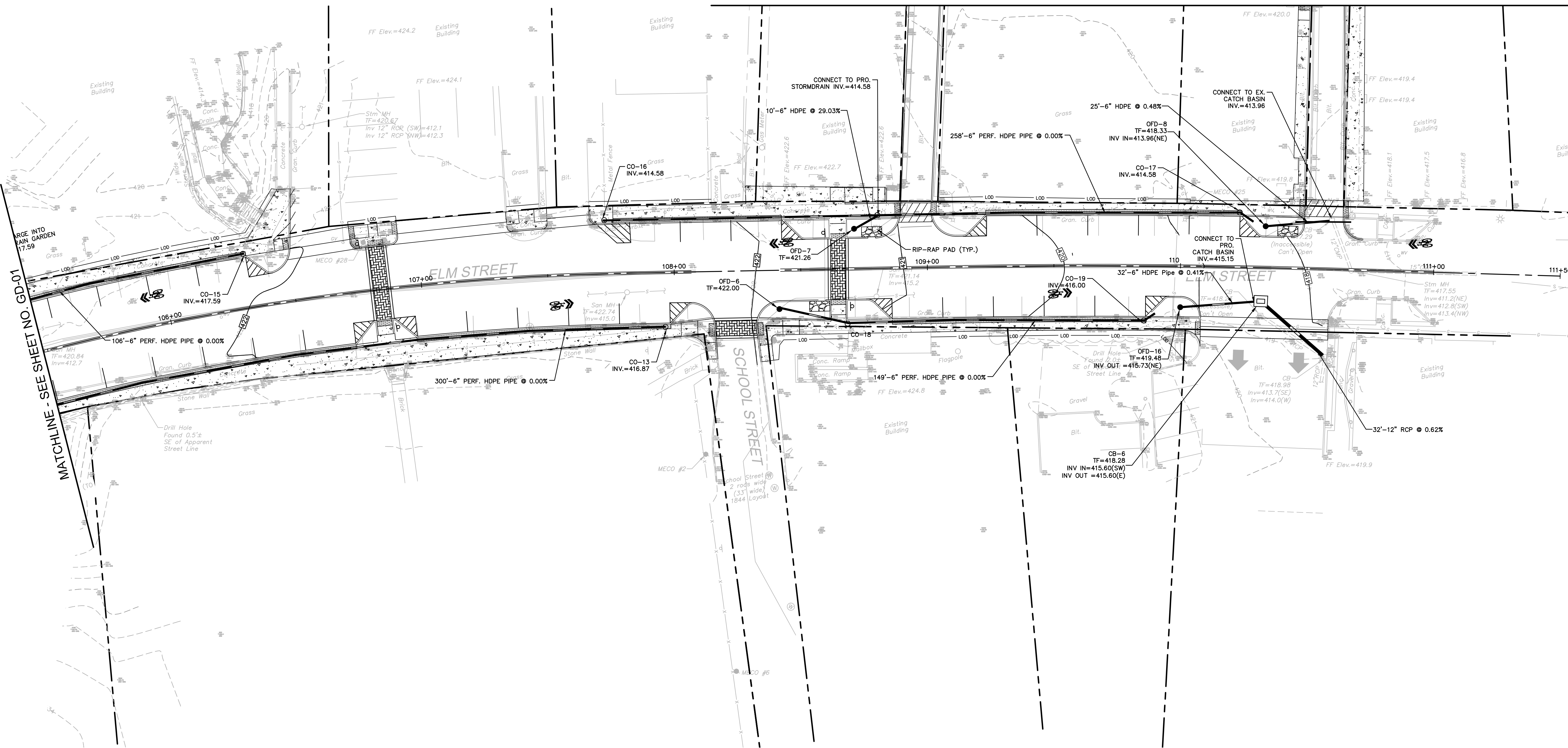
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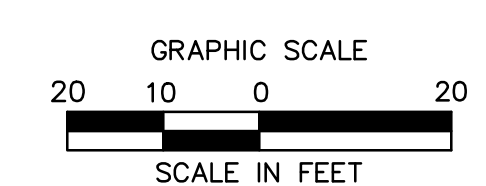
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MATCHLINE - SEE SHEET NO. GD-03



MATCHLINE - SEE SHEET NO. GD-01



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Norwood, MA 02062
(781) 619-9500

MILLBURY DOWNTOWN PHASE 2
ELM STREET
MILLBURY, MA

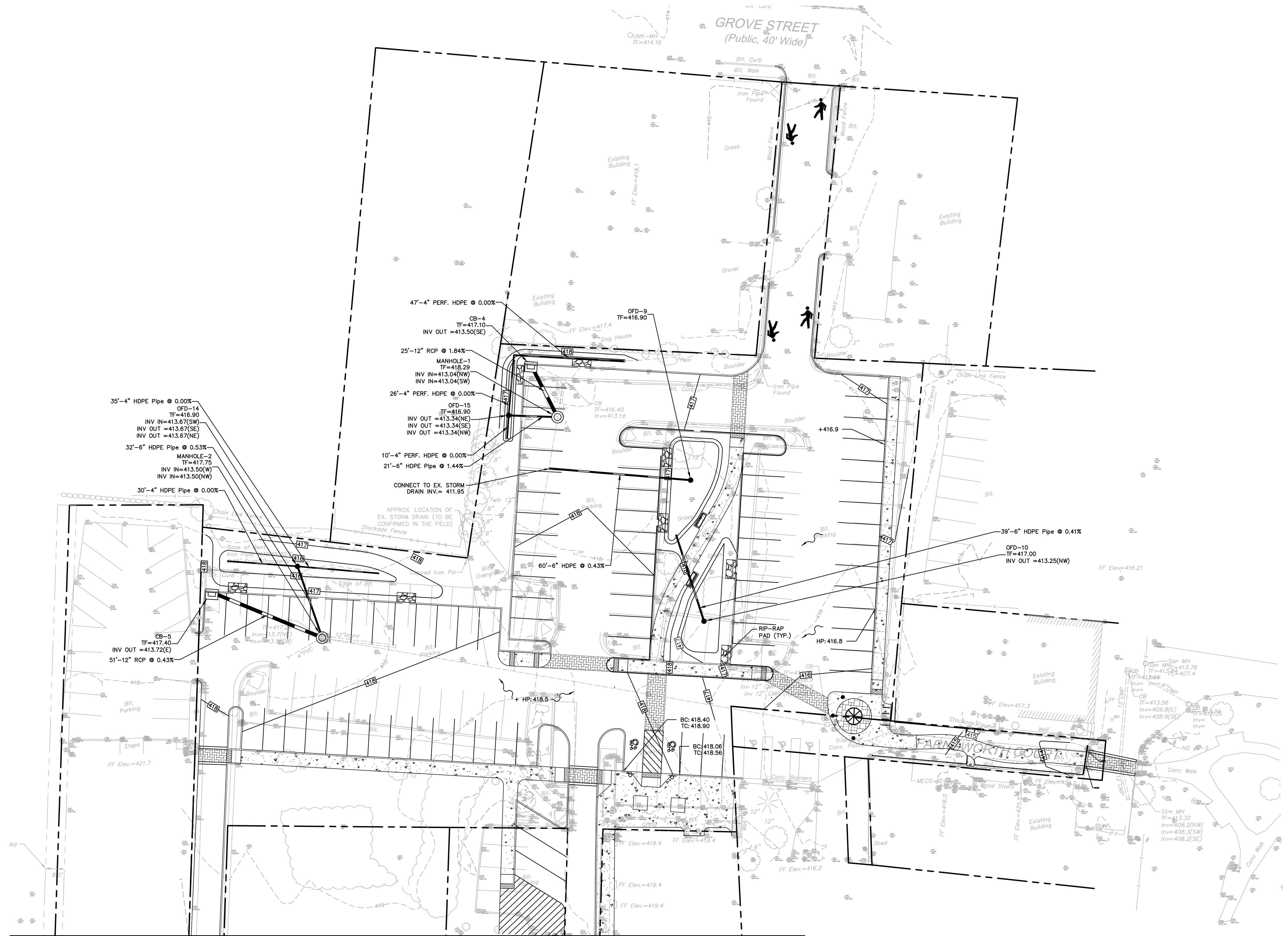
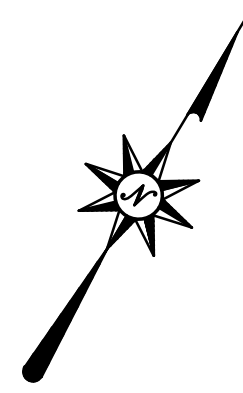
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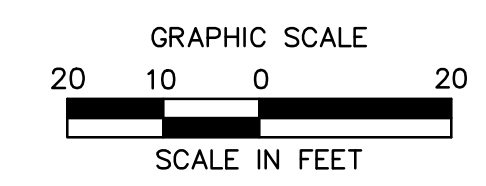
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GD-02



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MILLBURY DOWNTOWN PHASE 2
ELM STREET
MILLBURY, MA

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Sheet No.

GD-03

EXISTING HYDROLOGY

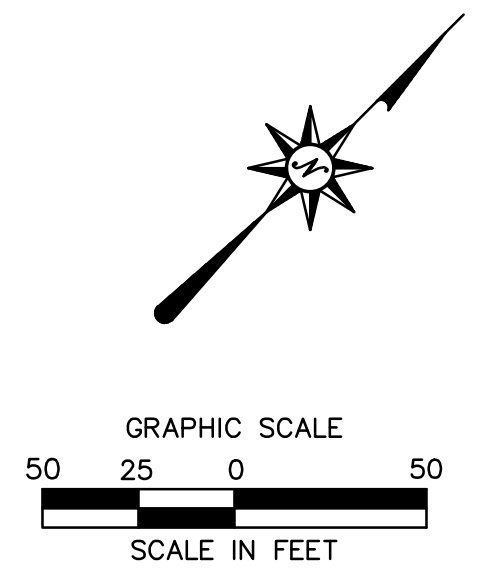
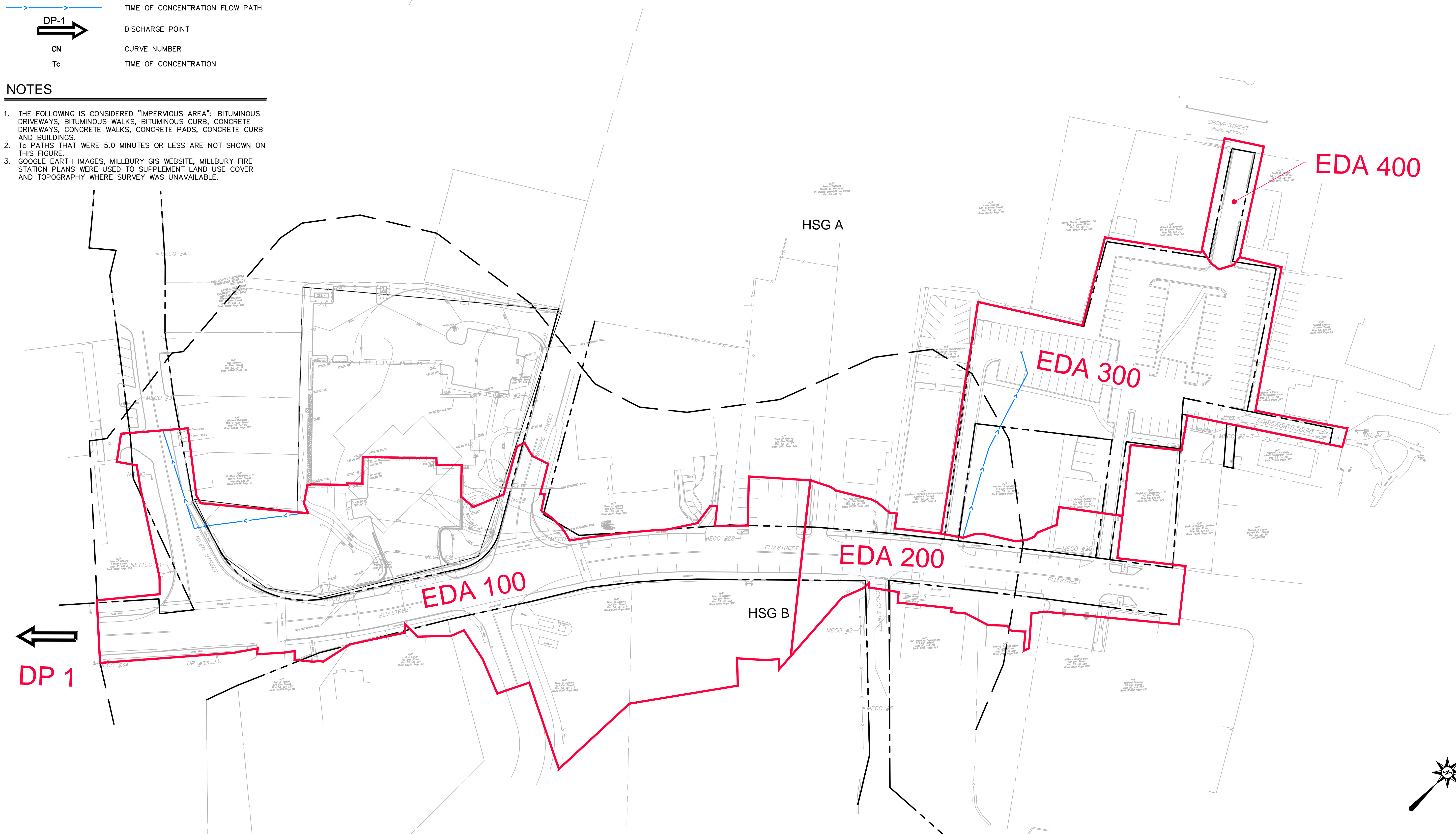
DRAINAGE AREA	TOTAL AREA (S.F.)	IMPERVIOUS AREA (S.F.)	PERVIOUS AREA (S.F.)	PERCENT IMPERVIOUS (%)	CN	Tc (MIN.)
EDA 100	133,174	78,316	54,429	58.9%	83	7.8
EDA 200	37,320	28,974	8,346	77.6%	89	5.0
EDA 300	71,652	43,837	27,815	61.2%	77	8.1
EDA400	5,336	3,478	1,858	65.2%	77	5.0

LEGEND

- PROPERTY LINE
- EXISTING DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW PATH
- DISCHARGE POINT
- CURVE NUMBER
- TIME OF CONCENTRATION

NOTES

1. THE FOLLOWING IS CONSIDERED "IMPERVIOUS AREA": BITUMINOUS DRIVEWAYS, BITUMINOUS WALKS, BITUMINOUS CURB, CONCRETE DRIVEWAYS, CONCRETE WALKS, CONCRETE PADS, CONCRETE CURB AND BUILDINGS.
2. Tc PATHS THAT WERE 5.0 MINUTES OR LESS ARE NOT SHOWN ON THIS FIGURE.
3. GOOGLE EARTH IMAGES, MILLBURY GIS WEBSITE, MILLBURY FIRE STATION PLANS WERE USED TO SUPPLEMENT LAND USE COVER AND TOPOGRAPHY WHERE SURVEY WAS UNAVAILABLE.



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Title
EXISTING DRAINAGE MAP

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PROPOSED HYDROLOGY

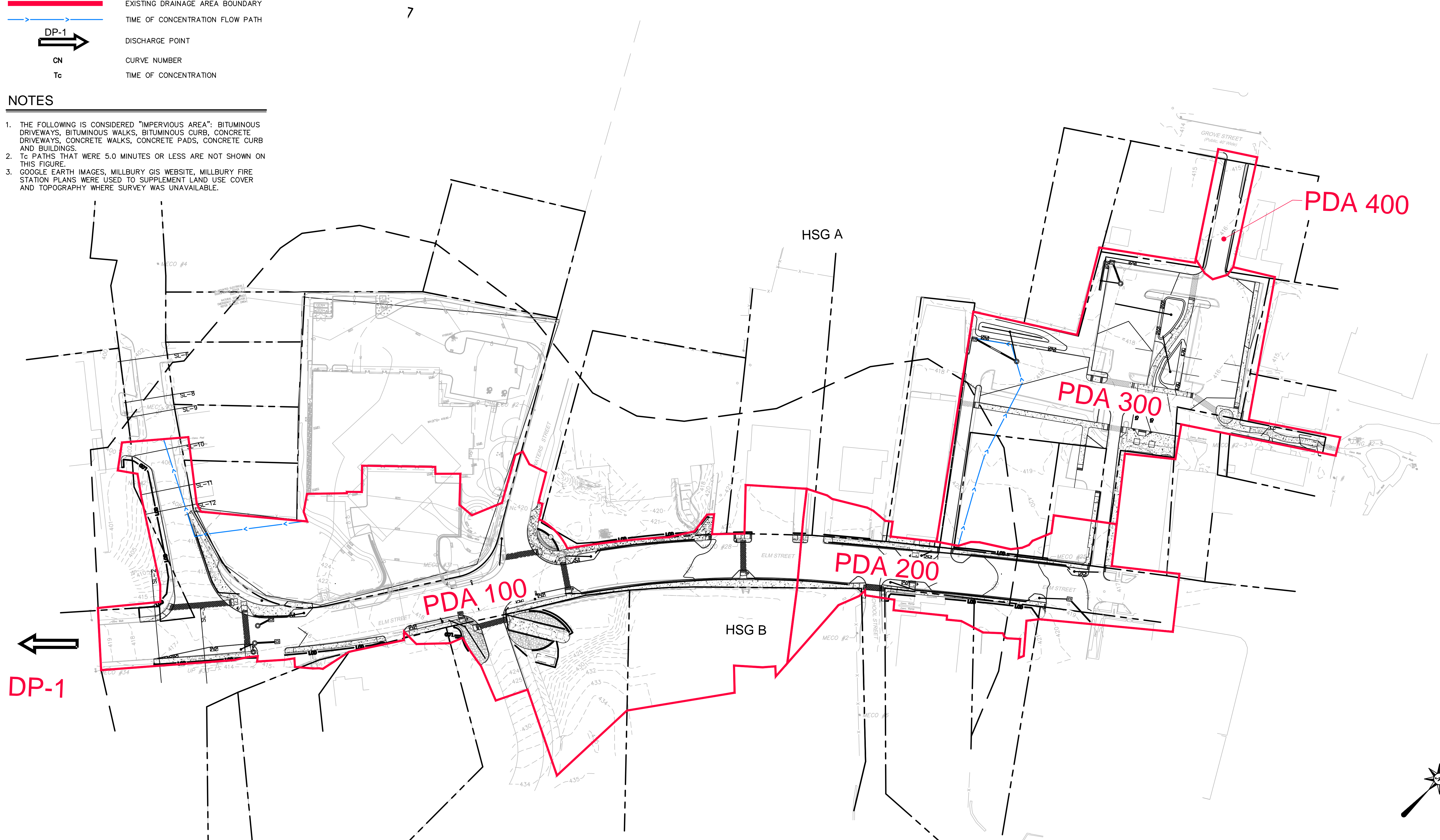
DRAINAGE AREA	TOTAL AREA (S.F.)	IMPERVIOUS AREA (S.F.)	PERVIOUS AREA (S.F.)	PERCENT IMPERVIOUS (%)	CN	Tc (MIN.)
PDA 100	133,288	78,797	54,491	59.1%	83	7.8
PDA 200	37,217	27,919	9,298	75.0%	88	5.0
PDA 300	71,643	42,691	28,950	59.6%	76	8.5
PDA 400	5,336	3,555	1,781	66.6%	78	5.0

LEGEND

- PROPERTY LINE
- EXISTING DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW PATH
- DISCHARGE POINT
- CURVE NUMBER
- TIME OF CONCENTRATION

NOTES

1. THE FOLLOWING IS CONSIDERED "IMPERVIOUS AREA": BITUMINOUS DRIVEWAYS, BITUMINOUS WALKS, BITUMINOUS CURB, CONCRETE DRIVEWAYS, CONCRETE WALKS, CONCRETE PADS, CONCRETE CURB AND BUILDINGS.
2. Tc PATHS THAT WERE 5.0 MINUTES OR LESS ARE NOT SHOWN ON THIS FIGURE.
3. GOOGLE EARTH IMAGES, MILLBURY GIS WEBSITE, MILLBURY FIRE STATION PLANS WERE USED TO SUPPLEMENT LAND USE COVER AND TOPOGRAPHY WHERE SURVEY WAS UNAVAILABLE.



DP-1

PDA 100

PDA 200

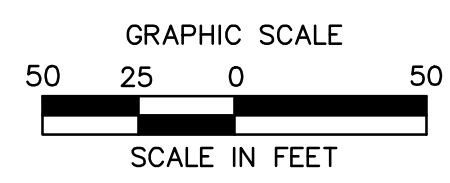
PDA 300

PDA 400

HSG A

HSG B

NOT FOR CONSTRUCTION



REVISIONS	No.	Date	Desc.

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Date	JULY, 2021
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Title
PROPOSED DRAINAGE MAP

Sheet No.

FIG.
3

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Appendix B – Copy of 2017 CGP

DRAFT

**National Pollutant Discharge Elimination System
General Permit for Discharges from
Construction Activities
(as modified)**

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 et. seq., (hereafter CWA), as amended by the Water Quality Act of 1987, P.L. 100-4, "operators" of construction activities (defined in Appendix A) that meet the requirements of Part 1.1 of this National Pollutant Discharge Elimination System (NPDES) general permit, are authorized to discharge pollutants in accordance with the effluent limitations and conditions set forth herein. Permit coverage is required from the "commencement of construction activities" (see Appendix A) until one of the conditions for terminating CGP coverage has been met (see Part 8.2).

This permit becomes effective on **June 27, 2019**.

This permit and the authorization to discharge expire at 11:59pm, **February 16, 2022**.

Signed and issued this 14th day of May 2019
Deborah Szaro,
Acting Regional Administrator, EPA Region 1.

Signed and issued this 14th day of May 2019
Charles W. Maguire,
Director, Water Division, EPA Region 6.

Signed and issued this 14th day of May 2019
Jeff Gratz,
Deputy Director, Water Division, EPA Region 2.

Signed and issued this 14th day of May 2019
Jeffery Robichaud,
Director, Water Division, EPA Region 7.

Signed and issued this 14th day of May 2019
Jose C. Font,
Acting Director, Caribbean Environmental
Protection Division, EPA Region 2.

Signed and issued this 14th day of May 2019
Darcy O'Connor,
Director, Water Division, EPA Region 8.

Signed and issued this 14th day of May 2019
Catharine McManus,
Deputy Director, Water Division, EPA Region 3.

Signed and issued this 14th day of May 2019
Tomás Torres,
Director, Water Division, EPA Region 9.

Signed and issued this 14th day of May 2019
Jeaneanne M. Gettle,
Director, Water Division, EPA Region 4.

Signed and issued this 14th day of May 2019
Daniel D. Opalski,
Director, Water Division, EPA Region 10.

Signed and issued this 14th day of May 2019
Joan M. Tanaka,
Acting Director, Water Division, EPA Region 5.

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1 HOW TO OBTAIN COVERAGE UNDER THE CONSTRUCTION GENERAL PERMIT (CGP)

To be covered under this permit, you must meet the eligibility conditions and follow the requirements for obtaining permit coverage in this Part.

1.1 ELIGIBILITY CONDITIONS

1.1.1 You are an “operator” of a construction site for which discharges will be covered under this permit. For the purposes of this permit and in the context of stormwater discharges associated with construction activity, an “operator” is any party associated with a construction project that meets either of the following two criteria:

- a. The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or
- b. The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Where there are multiple operators associated with the same project, all operators must obtain permit coverage.¹ Subcontractors generally are not considered operators for the purposes of this permit.

1.1.2 Your site's construction activities:

- a. Will disturb one or more acres of land, or will disturb less than one acre of land but are part of a common plan of development or sale that will ultimately disturb one or more acres of land; or
- b. Have been designated by EPA as needing permit coverage under 40 CFR 122.26(a)(1)(v) or 40 CFR 122.26(b)(15)(ii);

1.1.3 Your site is located in an area where EPA is the permitting authority (see Appendix B);

1.1.4 Discharges from your site are not:

- a. Already covered by a different NPDES permit for the same discharge; or
- b. In the process of having coverage under a different NPDES permit for the same discharge denied, terminated, or revoked.^{2, 3}

1.1.5 You are able to demonstrate that you meet one of the criteria listed in Appendix D with respect to the protection of species that are federally listed as endangered or threatened under the Endangered Species Act (ESA) and federally designated critical habitat;

1.1.6 You have completed the screening process in Appendix E relating to the protection of historic properties; and

¹ If the operator of a “construction support activity” (see Part 1.2.1c) is different than the operator of the main site, that operator must also obtain permit coverage. See Part 7.1 for clarification on the sharing of permit-related functions between and among operators on the same site and for conditions that apply to developing a SWPPP for multiple operators associated with the same site.

² Parts 1.1.4a and 1.1.4b do not include sites currently covered under the 2012 CGP that are in the process of obtaining coverage under this permit, nor sites covered under this permit that are transferring coverage to a different operator.

³ Notwithstanding a site being made ineligible for coverage under this permit because it falls under the description of Parts 1.1.4a or 1.1.4b, above, EPA may waive the applicable eligibility requirement after specific review if it determines that coverage under this permit is appropriate.

- 1.1.7** You have complied with all requirements in Part 9 imposed by the applicable state, Indian tribe, or territory in which your construction activities and/or discharge will occur.
- 1.1.8** For “new sources” (as defined in Appendix A) only:
- a. EPA has not, prior to authorization under this permit, determined that discharges from your site will cause, have the reasonable potential to cause, or contribute to an excursion above any applicable water quality standard. Where such a determination is made prior to authorization, EPA may notify you that an individual permit application is necessary. However, EPA may authorize your coverage under this permit after you have included appropriate controls and implementation procedures designed to bring your discharge into compliance with this permit, specifically the requirement to meet water quality standards. In the absence of information demonstrating otherwise, EPA expects that compliance with the requirements of this permit, including the requirements applicable to such discharges in Part 3, will result in discharges that will not cause, have the reasonable potential to cause, or contribute to an excursion above any applicable water quality standard.
 - b. Discharges from your site to a Tier 2, Tier 2.5, or Tier 3 water⁴ will not lower the water quality of the applicable water. In the absence of information demonstrating otherwise, EPA expects that compliance with the requirements of this permit, including the requirements applicable to such discharges in Part 3.2, will result in discharges that will not lower the water quality of such waters.
- 1.1.9** If you plan to add “cationic treatment chemicals” (as defined in Appendix A) to stormwater and/or authorized non-stormwater prior to discharge, you may not submit your Notice of Intent (NOI) unless and until you notify your applicable EPA Regional Office (see Appendix L) in advance and the EPA Regional Office authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to discharges that cause an exceedance of water quality standards.

1.2 TYPES OF DISCHARGES AUTHORIZED⁵

- 1.2.1** The following stormwater discharges are authorized under this permit provided that appropriate stormwater controls are designed, installed, and maintained (see Parts 2 and 3):
- a. Stormwater discharges, including stormwater runoff, snowmelt runoff, and surface runoff and drainage, associated with construction activity under 40 CFR 122.26(b)(14) or 122.26(b)(15)(i);
 - b. Stormwater discharges designated by EPA as needing a permit under 40 CFR 122.26(a)(1)(v) or 122.26(b)(15)(ii);

⁴ Note: Your site will be considered to discharge to a Tier 2, Tier 2.5, or Tier 3 water if the first water to which you discharge is identified by a state, tribe, or EPA as a Tier 2, Tier 2.5, or Tier 3 water. For discharges that enter a storm sewer system prior to discharge, the first water of the U.S. to which you discharge is the waterbody that receives the stormwater discharge from the storm sewer system. See list of Tier 2, Tier 2.5, and Tier 3 waters in Appendix F.

⁵ See “Discharge” as defined in Appendix A. Note: Any discharges not expressly authorized in this permit cannot become authorized or shielded from liability under CWA section 402(k) by disclosure to EPA, state, or local authorities after issuance of this permit via any means, including the Notice of Intent (NOI) to be covered by the permit, the SWPPP, or during an inspection.

- c. Stormwater discharges from construction support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) provided that:
 - i. The support activity is directly related to the construction site required to have permit coverage for stormwater discharges;
 - ii. The support activity is not a commercial operation, nor does it serve multiple unrelated construction sites;
 - iii. The support activity does not continue to operate beyond the completion of the construction activity at the site it supports; and
 - iv. Stormwater controls are implemented in accordance with Part 2 and Part 3 for discharges from the support activity areas.
- d. Stormwater discharges from earth-disturbing activities associated with the construction of staging areas and the construction of access roads conducted prior to active mining.

1.2.2 The following non-stormwater discharges associated with your construction activity are authorized under this permit provided that, with the exception of water used to control dust and to irrigate vegetation in stabilized areas, these discharges are not routed to areas of exposed soil on your site and you comply with any applicable requirements for these discharges in Parts 2 and 3:

- a. Discharges from emergency fire-fighting activities;
- b. Fire hydrant flushings;
- c. Landscape irrigation;
- d. Water used to wash vehicles and equipment, provided that there is no discharge of soaps, solvents, or detergents used for such purposes;
- e. Water used to control dust;
- f. Potable water including uncontaminated water line flushings;
- g. External building washdown, provided soaps, solvents, and detergents are not used, and external surfaces do not contain hazardous substances (as defined in Appendix A) (e.g., paint or caulk containing polychlorinated biphenyls (PCBs));
- h. Pavement wash waters, provided spills or leaks of toxic or hazardous substances have not occurred (unless all spill material has been removed) and where soaps, solvents, and detergents are not used. You are prohibited from directing pavement wash waters directly into any water of the U.S., storm drain inlet, or stormwater conveyance, unless the conveyance is connected to a sediment basin, sediment trap, or similarly effective control;
- i. Uncontaminated air conditioning or compressor condensate;
- j. Uncontaminated, non-turbid discharges of ground water or spring water;
- k. Foundation or footing drains where flows are not contaminated with process materials such as solvents or contaminated ground water; and
- l. Construction dewatering water discharged in accordance with Part 2.4.

1.2.3 Also authorized under this permit are discharges of stormwater listed above in Part 1.2.1, or authorized non-stormwater discharges listed above in Part 1.2.2, commingled with a

discharge authorized by a different NPDES permit and/or a discharge that does not require NPDES permit authorization.

1.3 PROHIBITED DISCHARGES⁶

- 1.3.1 Wastewater from washout of concrete, unless managed by an appropriate control as described in Part 2.3.4;
- 1.3.2 Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;
- 1.3.3 Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
- 1.3.4 Soaps, solvents, or detergents used in vehicle and equipment washing or external building washdown; and
- 1.3.5 Toxic or hazardous substances from a spill or other release.

To prevent the above-listed prohibited non-stormwater discharges, operators must comply with the applicable pollution prevention requirements in Part 2.3.

1.4 SUBMITTING YOUR NOTICE OF INTENT (NOI)

All “operators” (as defined in Appendix A) associated with your construction site, who meet the Part 1.1 eligibility requirements, and who seek coverage under this permit, must submit to EPA a complete and accurate NOI in accordance with the deadlines in **Table 1** prior to commencing construction activities.

Exception: If you are conducting construction activities in response to a public emergency (e.g., *mud slides, earthquake, extreme flooding conditions, widespread disruption in essential public services*), and the related work requires immediate authorization to avoid imminent endangerment to human health, public safety, or the environment, or to reestablish essential public services, you may discharge on the condition that a complete and accurate NOI is submitted within 30 calendar days after commencing construction activities (see Table 1) establishing that you are eligible for coverage under this permit. You must also provide documentation in your Stormwater Pollution Prevention Plan (SWPPP) to substantiate the occurrence of the public emergency.

1.4.1 Prerequisite for Submitting Your NOI

You must develop a SWPPP consistent with Part 7 before submitting your NOI for coverage under this permit.

1.4.2 How to Submit Your NOI

You must use EPA's NPDES eReporting Tool (NeT) to electronically prepare and submit your NOI for coverage under the 2017 CGP, unless you received a waiver from your EPA Regional Office.

To access NeT, go to <https://www.epa.gov/npdes/stormwater-discharges-construction-activities#ereporting>.

Waivers from electronic reporting may be granted based on one of the following conditions:

⁶ EPA includes these prohibited non-stormwater discharges here as a reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2. Any unauthorized non-stormwater discharges must be covered under an individual permit or alternative general permit.

- a. If your operational headquarters is physically located in a geographic area (*i.e.*, ZIP code or census tract) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission; or
- b. If you have limitations regarding available computer access or computer capability.

If the EPA Regional Office grants you approval to use a paper NOI, and you elect to use it, you must complete the form in Appendix J.

1.4.3 Deadlines for Submitting Your NOI and Your Official Date of Permit Coverage

Table 1 provides the deadlines for submitting your NOI and the official start date of your permit coverage, which differ depending on when you commence construction activities.

Table 1 NOI Submittal Deadlines and Official Start Date for Permit Coverage.

Type of Operator	NOI Submittal Deadline ⁷	Permit Authorization Date ⁸
Operator of a new site (<i>i.e.</i> , a site where construction activities commence on or after February 16, 2017)	At least 14 calendar days before commencing construction activities.	14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.
Operator of an existing site (<i>i.e.</i> , a site with 2012 CGP coverage where construction activities commenced prior to February 16, 2017)	No later than May 17, 2017 .	
New operator of a permitted site (<i>i.e.</i> , an operator that through transfer of ownership and/or operation replaces the operator of an already permitted construction site that is either a "new site" or an "existing site")	At least 14 calendar days before the date the transfer to the new operator will take place.	
Operator of an "emergency-related project" (<i>i.e.</i> , a project initiated in response to a public emergency (e.g., mud slides, earthquake, extreme flooding conditions, disruption in essential public services), for which the related work requires immediate authorization to avoid imminent endangerment to human health or the environment, or to reestablish essential public services)	No later than 30 calendar days after commencing construction activities.	You are considered provisionally covered under the terms and conditions of this permit immediately, and fully covered 14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.

1.4.4 Modifying your NOI

⁷ If you miss the deadline to submit your NOI, any and all discharges from your construction activities will continue to be unauthorized under the CWA until they are covered by this or a different NPDES permit. EPA may take enforcement action for any unpermitted discharges that occur between the commencement of construction activities and discharge authorization.

⁸ Discharges are not authorized if your NOI is incomplete or inaccurate or if you are not eligible for permit coverage.

If after submitting your NOI you need to correct or update any fields, you may do so by submitting a "Change NOI" form using NeT. Waivers from electronic reporting may be granted as specified in Part 1.4.1. If the EPA Regional Office has granted you approval to submit a paper NOI modification, you may indicate any NOI changes on the same NOI form in Appendix J.

When there is a change to the site's operator, the new operator must submit a new NOI, and the previous operator must submit a Notice of Termination (NOT) form as specified in Part 8.3.

1.4.5 Your Official End Date of Permit Coverage

Once covered under this permit, your coverage will last until the date that:

- a. You terminate permit coverage consistent with Part 8; or
- b. You receive permit coverage under a different NPDES permit or a reissued or replacement version of this permit after expiring on February 16, 2022; or
- c. You fail to submit an NOI for coverage under a revised or replacement version of this permit before the deadline for existing construction sites where construction activities continue after this permit has expired.

1.5 REQUIREMENT TO POST A NOTICE OF YOUR PERMIT COVERAGE

You must post a sign or other notice of your permit coverage at a safe, publicly accessible location in close proximity to the construction site. The notice must be located so that it is visible from the public road that is nearest to the active part of the construction site, and it must use a font large enough to be readily viewed from a public right-of-way.⁹ At a minimum, the notice must include:

- a. The NPDES ID (*i.e.*, *permit tracking number assigned to your NOI*);
- b. A contact name and phone number for obtaining additional construction site information;
- c. The Uniform Resource Locator (URL) for the SWPPP (if available), or the following statement: "If you would like to obtain a copy of the Stormwater Pollution Prevention Plan (SWPPP) for this site, contact the EPA Regional Office at [*include the appropriate CGP Regional Office contact information found at <https://www.epa.gov/npdes/contact-us-stormwater#regional>*];" and
- d. The following statement "If you observe indicators of stormwater pollutants in the discharge or in the receiving waterbody, contact the EPA through the following website: <https://www.epa.gov/enforcement/report-environmental-violations>."

2 TECHNOLOGY-BASED EFFLUENT LIMITATIONS

You must comply with the following technology-based effluent limitations in this Part for all authorized discharges.¹⁰

⁹ If the active part of the construction site is not visible from a public road, then place the notice of permit coverage in a position that is visible from the nearest public road and as close as possible to the construction site.

¹⁰ For each of the effluent limits in Part 2, as applicable to your site, you must include in your SWPPP (1) a description of the specific control(s) to be implemented to meet the effluent limit; (2) any applicable design specifications; (3) routine maintenance specifications; and (4) the projected schedule for its (their)

2.1 GENERAL STORMWATER CONTROL DESIGN, INSTALLATION, AND MAINTENANCE REQUIREMENTS

You must design, install, and maintain stormwater controls required in Parts 2.2 and 2.3 to minimize the discharge of pollutants in stormwater from construction activities. To meet this requirement, you must:

2.1.1 Account for the following factors in designing your stormwater controls:

- a. The expected amount, frequency, intensity, and duration of precipitation;
- b. The nature of stormwater runoff and run-on at the site, including factors such as expected flow from impervious surfaces, slopes, and site drainage features. You must design stormwater controls to control stormwater volume, velocity, and peak flow rates to minimize discharges of pollutants in stormwater and to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points; and
- c. The soil type and range of soil particle sizes expected to be present on the site.

2.1.2 Design and install all stormwater controls in accordance with good engineering practices, including applicable design specifications.¹¹

2.1.3 Complete installation of stormwater controls by the time each phase of construction activities has begun.

- a. By the time construction activity in any given portion of the site begins, install and make operational any downgradient sediment controls (*e.g., buffers, perimeter controls, exit point controls, storm drain inlet protection*) that control discharges from the initial site clearing, grading, excavating, and other earth-disturbing activities.¹²
- b. Following the installation of these initial controls, install and make operational all stormwater controls needed to control discharges prior to subsequent earth-disturbing activities.

2.1.4 Ensure that all stormwater controls are maintained and remain in effective operating condition during permit coverage and are protected from activities that would reduce their effectiveness.

- a. Comply with any specific maintenance requirements for the stormwater controls listed in this permit, as well as any recommended by the manufacturer.¹³
- b. If at any time you find that a stormwater control needs routine maintenance, you must immediately initiate the needed maintenance work, and complete such work by the close of the next business day.

installation/implementation. See Part 7.2.6.

¹¹ Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or ordinances. Any departures from such specifications must reflect good engineering practices and must be explained in your SWPPP. You must also comply with any additional design and installation requirements specified for the effluent limits in Parts 2.2 and 2.3.

¹² Note that the requirement to install stormwater controls prior to each phase of construction activities for the site does not apply to the earth disturbance associated with the actual installation of these controls. Operators should take all reasonable actions to minimize the discharges of pollutants during the installation of stormwater controls.

¹³ Any departures from such maintenance recommendations made by the manufacturer must reflect good engineering practices and must be explained in your SWPPP.

- c. If at any time you find that a stormwater control needs repair or replacement, you must comply with the corrective action requirements in Part 5.

2.2 EROSION AND SEDIMENT CONTROL REQUIREMENTS

You must implement erosion and sediment controls in accordance with the following requirements to minimize the discharge of pollutants in stormwater from construction activities.

2.2.1 Provide and maintain natural buffers and/or equivalent erosion and sediment controls when a water of the U.S. is located within 50 feet of the site's earth disturbances.

- a. **Compliance Alternatives.** For any discharges to waters of the U.S. located within 50 feet of your site's earth disturbances, you must comply with one of the following alternatives:
 - i. Provide and maintain a 50-foot undisturbed natural buffer; or
 - ii. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve, in combination, the sediment load reduction equivalent to a 50-foot undisturbed natural buffer; or
 - iii. If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

See Appendix G, Part G.2 for additional conditions applicable to each compliance alternative.

- b. **Exceptions.** See Appendix G, Part G.2 for exceptions to the compliance alternatives.

2.2.2 Direct stormwater to vegetated areas and maximize stormwater infiltration and filtering to reduce pollutant discharges, unless infeasible.

2.2.3 Install sediment controls along any perimeter areas of the site that will receive pollutant discharges.¹⁴

- a. Remove sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
- b. **Exception.** For areas at "linear construction sites" (as defined in Appendix A) where perimeter controls are infeasible (*e.g., due to a limited or restricted right-of-way*), implement other practices as necessary to minimize pollutant discharges to perimeter areas of the site.

2.2.4 Minimize sediment track-out.

- a. Restrict vehicle use to properly designated exit points;
- b. Use appropriate stabilization techniques¹⁵ at all points that exit onto paved roads.

¹⁴ Examples of perimeter controls include filter berms, silt fences, vegetative strips, and temporary diversion dikes.

¹⁵ Examples of appropriate stabilization techniques include the use of aggregate stone with an underlying geotextile or non-woven filter fabric, and turf mats.

- i. **Exception:** Stabilization is not required for exit points at linear utility construction sites that are used only episodically and for very short durations over the life of the project, provided other exit point controls¹⁶ are implemented to minimize sediment track-out;
- c. Implement additional track-out controls¹⁷ as necessary to ensure that sediment removal occurs prior to vehicle exit; and
- d. Where sediment has been tracked-out from your site onto paved roads, sidewalks, or other paved areas outside of your site, remove the deposited sediment by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day. Remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. You are prohibited from hosing or sweeping tracked-out sediment into any stormwater conveyance, storm drain inlet, or water of the U.S.¹⁸

2.2.5 Manage stockpiles or land clearing debris piles composed, in whole or in part, of sediment and/or soil:

- a. Locate the piles outside of any natural buffers established under Part 2.2.1 and away from any stormwater conveyances, drain inlets, and areas where stormwater flow is concentrated;
- b. Install a sediment barrier along all downgradient perimeter areas;¹⁹
- c. For piles that will be unused for 14 or more days, provide cover²⁰ or appropriate temporary stabilization (consistent with Part 2.2.14);
- d. You are prohibited from hosing down or sweeping soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance, storm drain inlet, or water of the U.S.

2.2.6 Minimize dust. On areas of exposed soil, minimize dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged in stormwater from the site.

2.2.7 Minimize steep slope disturbances. Minimize the disturbance of “steep slopes” (as defined in Appendix A).

¹⁶ Examples of other exit point controls include preventing the use of exit points during wet periods; minimizing exit point use by keeping vehicles on site to the extent possible; limiting exit point size to the width needed for vehicle and equipment usage; using scarifying and compaction techniques on the soil; and avoiding establishing exit points in environmentally sensitive areas (e.g., karst areas; steep slopes).

¹⁷ Examples of additional track-out controls include the use of wheel washing, rumble strips, and rattle plates.

¹⁸ Fine grains that remain visible (*i.e.*, staining) on the surfaces of off-site streets, other paved areas, and sidewalks after you have implemented sediment removal practices are not a violation of Part 2.2.4.

¹⁹ Examples of sediment barriers include berms, dikes, fiber rolls, silt fences, sandbags, gravel bags, or straw bale.

²⁰ Examples of cover include tarps, blown straw and hydroseeding.

2.2.8 Preserve native topsoil, unless infeasible.²¹

2.2.9 Minimize soil compaction.²² In areas of your site where final vegetative stabilization will occur or where infiltration practices will be installed:

- a. Restrict vehicle and equipment use in these locations to avoid soil compaction; and
- b. Before seeding or planting areas of exposed soil that have been compacted, use techniques that rehabilitate and condition the soils as necessary to support vegetative growth.

2.2.10 Protect storm drain inlets.

- a. Install inlet protection measures that remove sediment from discharges prior to entry into any storm drain inlet that carries stormwater flow from your site to a water of the U.S., provided you have authority to access the storm drain inlet;²³ and
- b. Clean, or remove and replace, the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.

2.2.11 Control stormwater discharges, including both peak flowrates and total stormwater volume, to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points. ²⁴.

2.2.12 If you install a sediment basin or similar impoundment:

- a. Situate the basin or impoundment outside of any water of the U.S. and any natural buffers established under Part 2.2.1;
- b. Design the basin or impoundment to avoid collecting water from wetlands;
- c. Design the basin or impoundment to provide storage for either:
 - i. The calculated volume of runoff from a 2-year, 24-hour storm (see Appendix H); or
 - ii. 3,600 cubic feet per acre drained.

²¹ Stockpiling topsoil at off-site locations, or transferring topsoil to other locations, is an example of a practice that is consistent with the requirements in Part 2.2.8. Preserving native topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed. For example, some sites may be designed to be highly impervious after construction, and therefore little or no vegetation is intended to remain, or may not have space to stockpile native topsoil on site for later use, in which case, it may not be feasible to preserve topsoil.

²² Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted.

²³ Inlet protection measures can be removed in the event of flood conditions or to prevent erosion.

²⁴ Examples of control measures that can be used to comply with this requirement include the use of erosion controls and/or velocity dissipation devices (e.g., check dams, sediment traps), within and along the length of a stormwater conveyance and at the outfall to slow down runoff.

- d. Utilize outlet structures that withdraw water from the surface of the sediment basin or similar impoundment, unless infeasible;²⁵
- e. Use erosion controls and velocity dissipation devices to prevent erosion at inlets and outlets; and
- f. Remove accumulated sediment to maintain at least one-half of the design capacity and conduct all other appropriate maintenance to ensure the basin or impoundment remains in effective operating condition.

2.2.13 If using treatment chemicals (e.g., polymers, flocculants, coagulants):

- a. **Use conventional erosion and sediment controls before and after the application of treatment chemicals.** Chemicals may only be applied where treated stormwater is directed to a sediment control (e.g., *sediment basin, perimeter control*) before discharge.
- b. **Select appropriate treatment chemicals.** Chemicals must be appropriately suited to the types of soils likely to be exposed during construction and present in the discharges being treated (i.e., *the expected turbidity, pH, and flow rate of stormwater flowing into the chemical treatment system or area*).
- c. **Minimize discharge risk from stored chemicals.** Store all treatment chemicals in leak-proof containers that are kept under storm-resistant cover and surrounded by secondary containment structures (e.g., *spill berms, decks, spill containment pallets*), or provide equivalent measures designed and maintained to minimize the potential discharge of treatment chemicals in stormwater or by any other means (e.g., *storing chemicals in a covered area, having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill*).
- d. **Comply with state/local requirements.** Comply with applicable state and local requirements regarding the use of treatment chemicals.
- e. **Use chemicals in accordance with good engineering practices and specifications of the chemical provider/supplier.** Use treatment chemicals and chemical treatment systems in accordance with good engineering practices, and with dosing specifications and sediment removal design specifications provided by the provider/supplier of the applicable chemicals, or document in your SWPPP specific departures from these specifications and how they reflect good engineering practice.
- f. **Ensure proper training.** Ensure that all persons who handle and use treatment chemicals at the construction site are provided with appropriate, product-specific training. Among other things, the training must cover proper dosing requirements.
- g. **Perform additional measures specified by the EPA Regional Office for the authorized use of cationic chemicals.** If you have been authorized to use cationic chemicals at your site pursuant to Part 1.1.9, you must perform all additional measures as conditioned by your authorization to ensure that the use of such chemicals will not cause an exceedance of water quality standards.

²⁵ The circumstances in which it is infeasible to design outlet structures in this manner are rare. Exceptions may include areas with extended cold weather, where using surface outlets may not be feasible during certain time periods (although they must be used during other periods). If you determine that it is infeasible to meet this requirement, you must provide documentation in your SWPPP to support your determination, including the specific conditions or time periods when this exception will apply.

2.2.14 Stabilize exposed portions of the site. Implement and maintain stabilization measures (e.g., seeding protected by erosion controls until vegetation is established, sodding, mulching, erosion control blankets, hydromulch, gravel) that minimize erosion from exposed portions of the site in accordance with Parts 2.2.14a and 2.2.14b.

a. Stabilization Deadlines:²⁶

Total Amount of Land Disturbance Occurring At Any One Time ²⁷	Deadline
<p>i. Five acres or less (≤5.0)</p> <p>Note: this includes sites disturbing more than five acres (>5.0) total over the course of a project, but that limit disturbance at any one time (i.e., phase the disturbance) to five acres or less (≤5.0)</p>	<ul style="list-style-type: none"> • Initiate the installation of stabilization measures immediately²⁸ in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days;²⁹ and • Complete the installation of stabilization measures as soon as practicable, but no later than 14 calendar days after stabilization has been initiated.³⁰

²⁶ EPA may determine, based on an inspection carried out under Part 4.8 and corrective actions required under Part 5.3, that the level of sediment discharge on the site makes it necessary to require a faster schedule for completing stabilization. For instance, if sediment discharges from an area of exposed soil that is required to be stabilized are compromising the performance of existing stormwater controls, EPA may require stabilization to correct this problem.

²⁷ Limiting disturbances to five (5) acres or less at any one time means that at no time during the project do the cumulative earth disturbances exceed five (5) acres. The following examples would qualify as limiting disturbances at any one time to five (5) acres or less:

1. The total area of disturbance for a project is five (5) acres or less.
2. The total area of disturbance for a project will exceed five (5) acres, but the operator ensures that no more than five (5) acres will be disturbed at any one time through implementation of stabilization measures. In this way, site stabilization can be used to “free up” land that can be disturbed without exceeding the five (5)-acre cap to qualify for the 14-day stabilization deadline. For instance, if an operator completes stabilization of two (2) acres of land on a five (5)-acre disturbance, then two (2) additional acres could be disturbed while still qualifying for the longer 14-day stabilization deadline.

²⁸ The following are examples of activities that would constitute the immediate initiation of stabilization:

1. Prepping the soil for vegetative or non-vegetative stabilization as long as seeding, planting, and/or installation of non-vegetative stabilization products takes place as soon as practicable, but no later than one (1) calendar day of completing soil preparation;
2. Applying mulch or other non-vegetative product to the exposed area;
3. Seeding or planting the exposed area;
4. Starting any of the activities in # 1 – 3 on a portion of the entire area that will be stabilized; and
5. Finalizing arrangements to have stabilization product fully installed in compliance with the deadlines for completing stabilization.

²⁹ The requirement to initiate stabilization immediately is triggered as soon as you know that construction work on a portion of the site is temporarily ceased and will not resume for 14 or more days, or as soon as you know that construction work is permanently ceased. In the context of this provision, “immediately” means as soon as practicable, but no later than the end of the next business day, following the day when the construction activities have temporarily or permanently ceased.

³⁰ If vegetative stabilization measures are being implemented, stabilization is considered “installed” when all activities necessary to seed or plant the area are completed. If non-vegetative stabilization measures are being implemented, stabilization is considered “installed” when all such measures are implemented or applied.

<p>ii. More than five acres (>5.0)</p>	<ul style="list-style-type: none"> • Initiate the installation of stabilization measures immediately³¹ in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days;³² and • Complete the installation of stabilization measures as soon as practicable, but no later than seven (7) calendar days after stabilization has been initiated.³³
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iii. **Exceptions:**

(a) Arid, semi-arid, and drought-stricken areas (as defined in Appendix A). If it is the seasonally dry period or a period in which drought is occurring, and vegetative stabilization measures are being used:

- (i) Immediately initiate and, within 14 calendar days of a temporary or permanent cessation of work in any portion of your site, complete the installation of temporary non-vegetative stabilization measures to the extent necessary to prevent erosion;
- (ii) As soon as practicable, given conditions or circumstances on the site, complete all activities necessary to seed or plant the area to be stabilized; and
- (iii) If construction is occurring during the seasonally dry period, indicate in your SWPPP the beginning and ending dates of the seasonally dry period and your site conditions. Also include the schedule you will follow for initiating and completing vegetative stabilization.

(b) Operators that are affected by unforeseen circumstances³⁴ that delay the initiation and/or completion of vegetative stabilization:

- (i) Immediately initiate and, within 14 calendar days, complete the installation of temporary non-vegetative stabilization measures to prevent erosion;
- (ii) Complete all soil conditioning, seeding, watering or irrigation installation, mulching, and other required activities related to the planting and initial establishment of vegetation as soon as conditions or circumstances allow it on your site; and
- (iii) Document in the SWPPP the circumstances that prevent you from meeting the deadlines in Part 2.2.14a and the schedule you will follow for initiating and completing stabilization.

(c) Discharges to a sediment- or nutrient-impaired water or to a water that is identified by your state, tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes. Complete stabilization as soon as

³¹ See footnote 27

³² See footnote 28

³³ See footnote 29

³⁴ Examples include problems with the supply of seed stock or with the availability of specialized equipment and unsuitability of soil conditions due to excessive precipitation and/or flooding.

practicable, but no later than seven (7) calendar days after stabilization has been initiated.

b. **Final Stabilization Criteria** (for any areas not covered by permanent structures):

- i. Establish uniform, perennial vegetation (*i.e., evenly distributed, without large bare areas*) that provides 70 percent or more of the cover that is provided by vegetation native to local undisturbed areas; and/or
- ii. Implement permanent non-vegetative stabilization measures³⁵ to provide effective cover.

iii. **Exceptions:**

- (a) **Arid, semi-arid, and drought-stricken areas** (as defined in Appendix A). Final stabilization is met if the area has been seeded or planted to establish vegetation that provides 70 percent or more of the cover that is provided by vegetation native to local undisturbed areas within three (3) years and, to the extent necessary to prevent erosion on the seeded or planted area, non-vegetative erosion controls have been applied that provide cover for at least three years without active maintenance.
- (b) **Disturbed areas on agricultural land that are restored to their preconstruction agricultural use.** The Part 2.2.14b final stabilization criteria does not apply.
- (c) **Areas that need to remain disturbed.** In limited circumstances, stabilization may not be required if the intended function of a specific area of the site necessitates that it remain disturbed, and only the minimum area needed remains disturbed (*e.g., dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, materials*).

2.3 POLLUTION PREVENTION REQUIREMENTS³⁶

You must implement pollution prevention controls in accordance with the following requirements to minimize the discharge of pollutants in stormwater and to prevent the discharge of pollutants from spilled or leaked materials from construction activities.

2.3.1 For equipment and vehicle fueling and maintenance:

- a. Provide an effective means of eliminating the discharge of spilled or leaked chemicals, including fuels and oils, from these activities;³⁷

³⁵ Examples of permanent non-vegetative stabilization measures include riprap, gravel, gabions, and geotextiles.

³⁶ Under this permit, you are not required to minimize exposure for any products or materials where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

³⁷ Examples of effective means include:

- Locating activities away from waters of the U.S. and stormwater inlets or conveyances so that stormwater coming into contact with these activities cannot reach waters of the U.S.;
- Providing secondary containment (*e.g., spill berms, decks, spill containment pallets*) and cover where appropriate; and
- Having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill.

- b. If applicable, comply with the Spill Prevention Control and Countermeasures (SPCC) requirements in 40 CFR part 112 and Section 311 of the CWA;
- c. Ensure adequate supplies are available at all times to handle spills, leaks, and disposal of used liquids;
- d. Use drip pans and absorbents under or around leaky vehicles;
- e. Dispose of or recycle oil and oily wastes in accordance with other federal, state, tribal, or local requirements; and
- f. Clean up spills or contaminated surfaces immediately, using dry clean up measures (do not clean contaminated surfaces by hosing the area down), and eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge.

2.3.2 For equipment and vehicle washing:

- a. Provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of wash waters;³⁸
- b. Ensure there is no discharge of soaps, solvents, or detergents in equipment and vehicle wash water; and
- c. For storage of soaps, detergents, or solvents, provide either (1) cover (e.g., plastic sheeting, temporary roofs) to minimize the exposure of these detergents to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.

2.3.3 For storage, handling, and disposal of building products, materials, and wastes:

- a. For building materials and building products³⁹, provide either (1) cover (e.g., plastic sheeting, temporary roofs) to minimize the exposure of these products to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.

Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

- b. For pesticides, herbicides, insecticides, fertilizers, and landscape materials:
 - i. In storage areas, provide either (1) cover (e.g., plastic sheeting, temporary roofs) to minimize the exposure of these chemicals to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas; and
 - ii. Comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label (see also Part 2.3.5).
- c. For diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals:

³⁸ Examples of effective means include locating activities away from waters of the U.S. and stormwater inlets or conveyances and directing wash waters to a sediment basin or sediment trap, using filtration devices, such as filter bags or sand filters, or using other similarly effective controls.

³⁹ Examples of building materials and building products typically present at construction sites include asphalt sealants, copper flashing, roofing materials, adhesives, concrete admixtures, and gravel and mulch stockpiles.

- i. Store chemicals in water-tight containers, and provide either (1) cover (e.g., plastic sheeting, temporary roofs) to minimize the exposure of these containers to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas (e.g., having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill), or provide secondary containment (e.g., spill berms, decks, spill containment pallets); and
 - ii. Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.
- d. *For hazardous or toxic wastes:*⁴⁰
- i. Separate hazardous or toxic waste from construction and domestic waste;
 - ii. Store waste in sealed containers, which are constructed of suitable materials to prevent leakage and corrosion, and which are labeled in accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable federal, state, tribal, or local requirements;
 - iii. Store all outside containers within appropriately-sized secondary containment (e.g., spill berms, decks, spill containment pallets) to prevent spills from being discharged, or provide a similarly effective means designed to prevent the discharge of pollutants from these areas (e.g., storing chemicals in a covered area, having a spill kit available on site);
 - iv. Dispose of hazardous or toxic waste in accordance with the manufacturer's recommended method of disposal and in compliance with federal, state, tribal, and local requirements;
 - v. Clean up spills immediately, using dry clean-up methods, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge; and
 - vi. Follow all other federal, state, tribal, and local requirements regarding hazardous or toxic waste.
- e. *For construction and domestic wastes:*⁴¹
- i. Provide waste containers (e.g., dumpster, trash receptacle) of sufficient size and number to contain construction and domestic wastes;
 - ii. Keep waste container lids closed when not in use and close lids at the end of the business day for those containers that are actively used throughout the day. For waste containers that do not have lids, provide either (1) cover (e.g., a tarp, plastic sheeting, temporary roof) to minimize exposure of wastes to precipitation,

⁴⁰ Examples of hazardous or toxic waste that may be present at construction sites include paints, caulks, sealants, fluorescent light ballasts, solvents, petroleum-based products, wood preservatives, additives, curing compounds, and acids.

⁴¹ Examples of construction and domestic waste include packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, concrete, demolition debris; and other trash or building materials.

or (2) a similarly effective means designed to minimize the discharge of pollutants (e.g., secondary containment);

- iii. On business days, clean up and dispose of waste in designated waste containers; and
 - iv. Clean up immediately if containers overflow.
- f. For sanitary waste, position portable toilets so that they are secure and will not be tipped or knocked over, and located away from waters of the U.S. and stormwater inlets or conveyances.

2.3.4 For washing applicators and containers used for stucco, paint, concrete, form release oils, curing compounds, or other materials:

- a. Direct wash water into a leak-proof container or leak-proof and lined pit designed so that no overflows can occur due to inadequate sizing or precipitation;
- b. Handle washout or cleanout wastes as follows:
 - i. Do not dump liquid wastes in storm sewers or waters of the U.S.;
 - ii. Dispose of liquid wastes in accordance with applicable requirements in Part 2.3.3; and
 - iii. Remove and dispose of hardened concrete waste consistent with your handling of other construction wastes in Part 2.3.3; and
- c. Locate any washout or cleanout activities as far away as possible from waters of the U.S. and stormwater inlets or conveyances, and, to the extent feasible, designate areas to be used for these activities and conduct such activities only in these areas.

2.3.5 For the application of fertilizers:

- a. Apply at a rate and in amounts consistent with manufacturer's specifications, or document in the SWPPP departures from the manufacturer specifications where appropriate in accordance with Part 7.2.6.b.ix;
- b. Apply at the appropriate time of year for your location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth;
- c. Avoid applying before heavy rains that could cause excess nutrients to be discharged;
- d. Never apply to frozen ground;
- e. Never apply to stormwater conveyance channels; and
- f. Follow all other federal, state, tribal, and local requirements regarding fertilizer application.

2.3.6 Emergency Spill Notification Requirements

Discharges of toxic or hazardous substances from a spill or other release are prohibited, consistent with Part 1.3.5. Where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR 110, 40 CFR 117, or 40 CFR 302 occurs during a 24-hour period, you must notify the National Response Center (NRC) at (800) 424-8802 or, in the Washington, DC metropolitan area, call (202) 267-2675 in accordance with the requirements of 40 CFR 110, 40 CFR 117, and 40 CFR 302 as soon as you have knowledge of the release. You must also, within seven (7) calendar days of knowledge of the release, provide a

description of the release, the circumstances leading to the release, and the date of the release. State, tribal, or local requirements may necessitate additional reporting of spills or discharges to local emergency response, public health, or drinking water supply agencies.

2.4 CONSTRUCTION DEWATERING REQUIREMENTS

Comply with the following requirements to minimize the discharge of pollutants in ground water or accumulated stormwater that is removed from excavations, trenches, foundations, vaults, or other similar points of accumulation, in accordance with Part 1.2.2.⁴²

- 2.4.1** Treat dewatering discharges with controls to minimize discharges of pollutants;⁴³
- 2.4.2** Do not discharge visible floating solids or foam;
- 2.4.3** Use an oil-water separator or suitable filtration device (such as a cartridge filter) that is designed to remove oil, grease, or other products if dewatering water is found to contain these materials;
- 2.4.4** To the extent feasible, use vegetated, upland areas of the site to infiltrate dewatering water before discharge. You are prohibited from using waters of the U.S. as part of the treatment area;
- 2.4.5** At all points where dewatering water is discharged, comply with the velocity dissipation requirements of Part 2.2.11;
- 2.4.6** With backwash water, either haul it away for disposal or return it to the beginning of the treatment process; and
- 2.4.7** Replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.

3 WATER QUALITY-BASED EFFLUENT LIMITATIONS

3.1 GENERAL EFFLUENT LIMITATION TO MEET APPLICABLE WATER QUALITY STANDARDS

Discharges must be controlled as necessary to meet applicable water quality standards. Discharges must also comply with any additional state or tribal requirements that are in Part 9.

In the absence of information demonstrating otherwise, EPA expects that compliance with the conditions in this permit will result in stormwater discharges being controlled as necessary to meet applicable water quality standards. If at any time you become aware, or EPA determines, that discharges are not being controlled as necessary to meet applicable water quality standards, you must take corrective action as required in Parts 5.1 and 5.2, and document the corrective actions as required in Part 5.4.

⁴² Uncontaminated, clear (non-turbid) dewatering water can be discharged without being routed to a control.

⁴³ Appropriate controls include sediment basins or sediment traps, sediment socks, dewatering tanks, tube settlers, weir tanks, filtration systems (e.g., *bag or sand filters*), and passive treatment systems that are designed to remove sediment. Appropriate controls to use downstream of dewatering controls to minimize erosion include vegetated buffers, check dams, riprap, and grouted riprap at outlets.

EPA may insist that you install additional controls (to meet the narrative water quality-based effluent limit above) on a site-specific basis, or require you to obtain coverage under an individual permit, if information in your NOI or from other sources indicates that your discharges are not controlled as necessary to meet applicable water quality standards. This includes situations where additional controls are necessary to comply with a wasteload allocation in an EPA-established or approved TMDL.

If during your coverage under a previous permit, you were required to install and maintain stormwater controls specifically to meet the assumptions and requirements of an EPA-approved or established TMDL (for any parameter) or to otherwise control your discharge to meet water quality standards, you must continue to implement such controls as part of your coverage under this permit.

3.2 DISCHARGE LIMITATIONS FOR SITES DISCHARGING TO SENSITIVE WATERS⁴⁴

For any portion of the site that discharges to a sediment or nutrient-impaired water or to a water that is identified by your state, tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes, you must comply with the inspection frequency specified in 4.3 and you must comply with the stabilization deadline specified in Part 2.2.14.a.iii.(c).⁴⁵

If you discharge to a water that is impaired for a parameter other than a sediment-related parameter or nutrients, EPA will inform you if any additional controls are necessary for your discharge to be controlled as necessary to meet water quality standards, including for it to be consistent with the assumptions of any available wasteload allocation in any applicable TMDL, or if coverage under an individual permit is necessary.

In addition, on a case-by-case basis, EPA may notify operators of new sites or operators of existing sites with increased discharges that additional analyses, stormwater controls, or other measures are necessary to comply with the applicable

⁴⁴ Sensitive waters include waters that are impaired and Tier 2, Tier 2.5, and Tier 3 waters.

"Impaired waters" are those waters identified by the state, tribe, or EPA as not meeting an applicable water quality standard and (1) requires development of a TMDL (pursuant to section 303(d) of the CWA; or (2) is addressed by an EPA-approved or established TMDL; or (3) is not in either of the above categories but the waterbody is covered by a pollution control program that meets the requirements of 40 CFR 130.7(b)(1). Your construction site will be considered to discharge to an impaired water if the first water of the U.S. to which you discharge is an impaired water for the pollutants contained in the discharge from your site. For discharges that enter a storm sewer system prior to discharge, the first water of the U.S. to which you discharge is the waterbody that receives the stormwater discharge from the storm sewer system. For assistance in determining whether your site discharges to impaired waters, EPA has developed a tool that is available both within the electronic NOI form in NeT, and at <https://water.epa.gov/polwaste/npdes/stormwater/discharge.cfm>.

Tiers 2, 2.5 and 3 refer to waters either identified by the state as high quality waters or Outstanding National Resource Waters under 40 CFR 131.12(a)(2) and (3). For the purposes of this permit, you are considered to discharge to a Tier 2, Tier 2.5, or Tier 3 water if the first water of the U.S. to which you discharge is identified by a state, tribe, or EPA as Tier 2, Tier 2.5, or Tier 3. For discharges that enter a storm sewer system prior to discharge, the water of the U.S. to which you discharge is the first water of the U.S. that receives the stormwater discharge from the storm sewer system. See list of Tier 2, Tier 2.5, and Tier 3 waters in Appendix F.

EPA may determine on a case-by-case basis that a site discharges to a sensitive water.

⁴⁵ If you qualify for any of the reduced inspection frequencies in Part 4.4, you may conduct inspections in accordance with Part 4.4 for any portion of your site that discharges to a sensitive water.

antidegradation requirements, or notify you that an individual permit application is necessary.

If you discharge to a water that is impaired for polychlorinated biphenyls (PCBs) and are engaging in demolition of any structure with at least 10,000 square feet of floor space built or renovated before January 1, 1980, you must:

- a. Implement controls⁴⁶ to minimize the exposure of PCB-containing building materials, including paint, caulk, and pre-1980 fluorescent lighting fixtures, to precipitation and to stormwater; and
- b. Ensure that disposal of such materials is performed in compliance with applicable state, federal, and local laws.

4 SITE INSPECTION REQUIREMENTS

4.1 PERSON(S) RESPONSIBLE FOR INSPECTING SITE

The person(s) inspecting your site may be a person on your staff or a third party you hire to conduct such inspections. You are responsible for ensuring that the person who conducts inspections is a "qualified person."⁴⁷

4.2 FREQUENCY OF INSPECTIONS.⁴⁸

At a minimum, you must conduct a site inspection in accordance with one of the two schedules listed below, unless you are subject to the Part 4.3 site inspection frequency for discharges to sensitive waters or qualify for a Part 4.4 reduction in the inspection frequency:

4.2.1 At least once every seven (7) calendar days; or

4.2.2 Once every 14 calendar days *and* within 24 hours of the occurrence of a storm event of 0.25 inches or greater, or the occurrence of runoff from snowmelt sufficient to cause a discharge.⁴⁹ To determine if a storm event of 0.25 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, you must record the total rainfall measured for that day in accordance with Part 4.7.1d.

⁴⁶ Examples of controls to minimize exposure of PCBs to precipitation and stormwater include separating work areas from non-work areas and selecting appropriate personal protective equipment and tools, constructing a containment area so that all dust or debris generated by the work remains within the protected area, using tools that minimize dust and heat (<212°F). For additional information, refer to Part 2.3.3 of the CGP Fact Sheet.

⁴⁷ A "qualified person" is a person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality, and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.

⁴⁸ Inspections are only required during the site's normal working hours.

⁴⁹ "Within 24 hours of the occurrence of a storm event" means that you must conduct an inspection within 24 hours once a storm event has produced 0.25 inches within a 24-hour period, even if the storm event is still continuing. Thus, if you have elected to inspect bi-weekly in accordance with Part 4.2.2 and there is a storm event at your site that continues for multiple days, and each day of the storm produces 0.25 inches or more of rain, you must conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm.

4.3 INCREASE IN INSPECTION FREQUENCY FOR SITES DISCHARGING TO SENSITIVE WATERS.

For any portion of the site that discharges to a sediment or nutrient-impaired water or to a water that is identified by your state, tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes (see Part 3.2), instead of the inspection frequency specified in Part 4.2, you must conduct inspections in accordance with the following inspection frequencies:

Once every seven (7) calendar days *and* within 24 hours of the occurrence of a storm event of 0.25 inches or greater, or the occurrence of runoff from snowmelt sufficient to cause a discharge. To determine if a storm event of 0.25 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, you must record the total rainfall measured for that day in accordance with Part 4.7.1d.

4.4 REDUCTIONS IN INSPECTION FREQUENCY

4.4.1 Stabilized areas.

- a. You may reduce the frequency of inspections to twice per month for the first month, no more than 14 calendar days apart, then once per month in any area of your site where the stabilization steps in 2.2.14a have been completed. If construction activity resumes in this portion of the site at a later date, the inspection frequency immediately increases to that required in Parts 4.2 and 4.3, as applicable. You must document the beginning and ending dates of this period in your SWPPP.
- b. **Exception.** For "linear construction sites" (as defined in Appendix A) where disturbed portions have undergone final stabilization at the same time active construction continues on others, you may reduce the frequency of inspections to twice per month for the first month, no more than 14 calendar days apart, in any area of your site where the stabilization steps in 2.2.14a have been completed. After the first month, inspect once more within 24 hours of the occurrence of a storm event of 0.25 inches or greater. If there are no issues or evidence of stabilization problems, you may suspend further inspections. If "wash-out" of stabilization materials and/or sediment is observed, following re-stabilization, inspections must resume at the inspection frequency required in Part 4.4.1a. Inspections must continue until final stabilization is visually confirmed following a storm event of 0.25 inches or greater.

4.4.2 Arid, semi-arid, or drought-stricken areas (as defined in Appendix A). If it is the seasonally dry period or a period in which drought is occurring, you may reduce the frequency of inspections to once per month and within 24 hours of the occurrence of a storm event of 0.25 inches or greater. You must document that you are using this reduced schedule and the beginning and ending dates of the seasonally dry period in your SWPPP. To determine if a storm event of 0.25 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, you must record the total rainfall measured for that day in accordance with Part 4.7.1d.

4.4.3 Frozen conditions:

- a. If you are suspending construction activities due to frozen conditions, you may temporarily suspend inspections on your site until thawing conditions (as defined in Appendix A) begin to occur if:

- i. Runoff is unlikely due to continuous frozen conditions that are likely to continue at your site for at least three (3) months based on historic seasonal averages. If unexpected weather conditions (such as above freezing temperatures or rain events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.2 and 4.3, as applicable;
 - ii. Land disturbances have been suspended; and
 - iii. All disturbed areas of the site have been stabilized in accordance with Part 2.2.14a.
- b. If you are still conducting construction activities during frozen conditions, you may reduce your inspection frequency to once per month if:
- i. Runoff is unlikely due to continuous frozen conditions that are likely to continue at your site for at least three (3) months based on historic seasonal averages. If unexpected weather conditions (such as above freezing temperatures or rain events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.2 and 4.3, as applicable; and
 - ii. Except for areas in which you are actively conducting construction activities, disturbed areas of the site have been stabilized in accordance with Part 2.2.14a.

You must document the beginning and ending dates of this period in your SWPPP.

4.5 AREAS THAT MUST BE INSPECTED

During your site inspection, you must at a minimum inspect the following areas of your site:

- 4.5.1** All areas that have been cleared, graded, or excavated and that have not yet completed stabilization consistent with Part 2.2.14a;
- 4.5.2** All stormwater controls (including pollution prevention controls) installed at the site to comply with this permit;⁵⁰
- 4.5.3** Material, waste, borrow, and equipment storage and maintenance areas that are covered by this permit;
- 4.5.4** All areas where stormwater typically flows within the site, including drainageways designed to divert, convey, and/or treat stormwater;
- 4.5.5** All points of discharge from the site; and
- 4.5.6** All locations where stabilization measures have been implemented.

You are not required to inspect areas that, at the time of the inspection, are considered unsafe to your inspection personnel.

4.6 REQUIREMENTS FOR INSPECTIONS

During your site inspection, you must at a minimum:

- 4.6.1** Check whether all stormwater controls (*i.e.*, *erosion and sediment controls and pollution prevention controls*) are properly installed, appear to be operational, and are working as intended to minimize pollutant discharges;

⁵⁰ This includes the requirement to inspect for sediment that has been tracked out from the site onto paved roads, sidewalks, or other paved areas consistent with Part 2.2.4.

- 4.6.2** Check for the presence of conditions that could lead to spills, leaks, or other accumulations of pollutants on the site;
- 4.6.3** Identify any locations where new or modified stormwater controls are necessary to meet the requirements of Parts 2 and/or 3;
- 4.6.4** Check for signs of visible erosion and sedimentation (*i.e., sediment deposits*) that have occurred and are attributable to your discharge at points of discharge and, if applicable, the banks of any waters of the U.S. flowing within or immediately adjacent to the site;
- 4.6.5** Identify any incidents of noncompliance observed;
- 4.6.6** If a discharge is occurring during your inspection:
 - a. Identify all discharge points at the site; and
 - b. Observe and document the visual quality of the discharge, and take note of the characteristics of the stormwater discharge, including color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of stormwater pollutants.
- 4.6.7** Based on the results of your inspection, complete any necessary maintenance under Part 2.1.4 and corrective action under Part 5.

4.7 INSPECTION REPORT

- 4.7.1** You must complete an inspection report within 24 hours of completing any site inspection. Each inspection report must include the following:
 - a. The inspection date;
 - b. Names and titles of personnel making the inspection;
 - c. A summary of your inspection findings, covering at a minimum the observations you made in accordance with Part 4.6, including any necessary maintenance or corrective actions;
 - d. If you are inspecting your site at the frequency specified in Part 4.2.2, Part 4.3, or Part 4.4.1b, and you conducted an inspection because of rainfall measuring 0.25 inches or greater, you must include the applicable rain gauge or weather station readings that triggered the inspection; and
 - e. If you determined that it is unsafe to inspect a portion of your site, you must describe the reason you found it to be unsafe and specify the locations to which this condition applies.
- 4.7.2** Each inspection report must be signed in accordance with Appendix I, Part I.11 of this permit.
- 4.7.3** You must keep a copy of all inspection reports at the site or at an easily accessible location, so that it can be made available at the time of an on-site inspection or upon request by EPA.
- 4.7.4** You must retain all inspection reports completed for this Part for at least three (3) years from the date that your permit coverage expires or is terminated.

4.8 INSPECTIONS BY EPA

You must allow EPA, or an authorized representative of EPA, to conduct the following activities at reasonable times. To the extent that you are utilizing shared controls that are

not on site to comply with this permit, you must make arrangements for EPA to have access at all reasonable times to those areas where the shared controls are located.

- 4.8.1** Enter onto all areas of the site, including any construction support activity areas covered by this permit, any off-site areas where shared controls are utilized to comply with this permit, discharge locations, adjoining waterbodies, and locations where records are kept under the conditions of this permit;
- 4.8.2** Access and copy any records that must be kept under the conditions of this permit;
- 4.8.3** Inspect your construction site, including any construction support activity areas covered by this permit (see Part 1.2.1c), any stormwater controls installed and maintained at the site, and any off-site shared controls utilized to comply with this permit; and
- 4.8.4** Sample or monitor for the purpose of ensuring compliance.

5 CORRECTIVE ACTIONS

5.1 CONDITIONS TRIGGERING CORRECTIVE ACTION.

You must take corrective action to address any of the following conditions identified at your site:

- 5.1.1** A stormwater control needs repair or replacement (beyond routine maintenance required under Part 2.1.4); or
- 5.1.2** A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly; or
- 5.1.3** Your discharges are causing an exceedance of applicable water quality standards; or
- 5.1.4** A prohibited discharge has occurred (see Part 1.3).

5.2 CORRECTIVE ACTION DEADLINES

For any corrective action triggering conditions in Part 5.1, you must:

- 5.2.1** Immediately take all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events;
- 5.2.2** When the problem does not require a new or replacement control or significant repair, the corrective action must be completed by the close of the next business day;
- 5.2.3** When the problem requires a new or replacement control or significant repair, install the new or modified control and make it operational, or complete the repair, by no later than seven (7) calendar days from the time of discovery. If it is infeasible to complete the installation or repair within seven (7) calendar days, you must document in your records why it is infeasible to complete the installation or repair within the 7-day timeframe and document your schedule for installing the stormwater control(s) and making it operational as soon as feasible after the 7-day timeframe. Where these actions result in changes to any of the stormwater controls or procedures documented in your SWPPP, you must modify your SWPPP accordingly within seven (7) calendar days of completing this work.

5.3 CORRECTIVE ACTION REQUIRED BY EPA

You must comply with any corrective actions required by EPA as a result of permit violations found during an inspection carried out under Part 4.8.

5.4 CORRECTIVE ACTION REPORT

For each corrective action taken in accordance with this Part, you must complete a report in accordance with the following:

- 5.4.1** Within 24 hours of identifying the corrective action condition, document the specific condition and the date and time it was identified.
- 5.4.2** Within 24 hours of completing the corrective action (in accordance with the deadlines in Part 5.2), document the actions taken to address the condition, including whether any SWPPP modifications are required.
- 5.4.3** Each corrective action report must be signed in accordance with Appendix I, Part I.11 of this permit.
- 5.4.4** You must keep a copy of all corrective action reports at the site or at an easily accessible location, so that it can be made available at the time of an on-site inspection or upon request by EPA.
- 5.4.5** You must retain all corrective action reports completed for this Part for at least three (3) years from the date that your permit coverage expires or is terminated.

6 STAFF TRAINING REQUIREMENTS

Each operator, or group of multiple operators, must assemble a “stormwater team” to carry out compliance activities associated with the requirements in this permit.

- 6.1** Prior to the commencement of construction activities, you must ensure that the following personnel⁵¹ on the stormwater team understand the requirements of this permit and their specific responsibilities with respect to those requirements:
 - a. Personnel who are responsible for the design, installation, maintenance, and/or repair of stormwater controls (including pollution prevention controls);
 - b. Personnel responsible for the application and storage of treatment chemicals (if applicable);
 - c. Personnel who are responsible for conducting inspections as required in Part 4.1; and
 - d. Personnel who are responsible for taking corrective actions as required in Part 5.
- 6.2** You are responsible for ensuring that all activities on the site comply with the requirements of this permit. You are not required to provide or document formal training for subcontractors or other outside service providers, but you must ensure that such personnel understand any requirements of this permit that may be affected by the work they are subcontracted to perform.

⁵¹ If the person requiring training is a new employee who starts after you commence construction activities, you must ensure that this person has the proper understanding as required above prior to assuming particular responsibilities related to compliance with this permit.

For emergency-related projects, the requirement to train personnel prior to commencement of construction activities does not apply, however, such personnel must have the required training prior to NOI submission.

- 6.3** At a minimum, members of the stormwater team must be trained to understand the following if related to the scope of their job duties (*e.g., only personnel responsible for conducting inspections need to understand how to conduct inspections*):
- a. The permit deadlines associated with installation, maintenance, and removal of stormwater controls and with stabilization;
 - b. The location of all stormwater controls on the site required by this permit and how they are to be maintained;
 - c. The proper procedures to follow with respect to the permit's pollution prevention requirements; and
 - d. When and how to conduct inspections, record applicable findings, and take corrective actions.
- 6.4** Each member of the stormwater team must have easy access to an electronic or paper copy of applicable portions of this permit, the most updated copy of your SWPPP, and other relevant documents or information that must be kept with the SWPPP.

7 STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

7.1 GENERAL REQUIREMENTS

All operators associated with a construction site under this permit must develop a SWPPP consistent with the requirements in Part 7 prior to their submittal of the NOI.^{52, 53} The SWPPP must be kept up-to-date throughout coverage under this permit.

If a SWPPP was prepared under a previous version of this permit, the operator must review and update the SWPPP to ensure that this permit's requirements are addressed prior to submitting an NOI for coverage under this permit.

7.2 SWPPP CONTENTS

At a minimum, the SWPPP must include the information specified in this Part and as specified in other parts of this permit.

- 7.2.1 All Site Operators.** Include a list of all other operators who will be engaged in construction activities at the site, and the areas of the site over which each operator has control.
- 7.2.2 Stormwater Team.** Identify the personnel (by name or position) that are part of the stormwater team, as well as their individual responsibilities, including which members are responsible for conducting inspections.

⁵² The SWPPP does not establish the effluent limits and other permit terms and conditions that apply to your site's discharges; these limits, terms, and conditions are established in this permit.

Where there are multiple operators associated with the same site, they may develop a group SWPPP instead of multiple individual SWPPPs. Regardless of whether there is a group SWPPP or multiple individual SWPPPs, each operator is responsible for compliance with the permit's terms and conditions. In other words, if Operator A relies on Operator B to satisfy its permit obligations, Operator A does not have to duplicate those permit-related functions if Operator B is implementing them for both operators to be in compliance with the permit. However, Operator A remains responsible for permit compliance if Operator B fails to implement any measures necessary for Operator A to comply with the permit. In addition, all operators must ensure, either directly or through coordination with other operators, that their activities do not compromise any other operators' controls and/or any shared controls.

7.2.3 Nature of Construction Activities.⁵⁴ Include the following:

- a. A description of the nature of your construction activities, including the age or dates of past renovations for structures that are undergoing demolition;
- b. The size of the property (in acres or length in miles if a linear construction site);
- c. The total area expected to be disturbed by the construction activities (to the nearest quarter acre or nearest quarter mile if a linear construction site);
- d. A description of any on-site and off-site construction support activity areas covered by this permit (see Part 1.2.1 c);
- e. The maximum area expected to be disturbed at any one time, including on-site and off-site construction support activity areas;
- f. A description and projected schedule for the following:
 - i. Commencement of construction activities in each portion of the site, including clearing and grubbing, mass grading, demolition activities, site preparation (*i.e., excavating, cutting and filling*), final grading, and creation of soil and vegetation stockpiles requiring stabilization;
 - ii. Temporary or permanent cessation of construction activities in each portion of the site;
 - iii. Temporary or final stabilization of exposed areas for each portion of the site; and
 - iv. Removal of temporary stormwater controls and construction equipment or vehicles, and the cessation of construction-related pollutant-generating activities.
- g. A list and description of all pollutant-generating activities⁵⁵ on the site. For each pollutant-generating activity, include an inventory of pollutants or pollutant constituents (*e.g., sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels*) associated with that activity, which could be discharged in stormwater from your construction site. You must take into account where potential spills and leaks could occur that contribute pollutants to stormwater discharges, and any known hazardous or toxic substances, such as PCBs and asbestos, that will be disturbed or removed during construction;
- h. Business days and hours for the project;
- i. If you are conducting construction activities in response to a public emergency (see Part 1.4), a description of the cause of the public emergency (*e.g., mud slides, earthquake, extreme flooding conditions, widespread disruption in essential public services*), information substantiating its occurrence (*e.g., state disaster declaration or similar state or local declaration*), and a description of the construction necessary to reestablish affected public services.

7.2.4 Site Map. Include a legible map, or series of maps, showing the following features of the site:

- a. Boundaries of the property;

⁵⁴ If plans change due to unforeseen circumstances or for other reasons, the requirement to describe the sequence and estimated dates of construction activities is not meant to "lock in" the operator to meeting these dates. When departures from initial projections are necessary, this should be documented in the SWPPP itself, or in associated records, as appropriate.

⁵⁵ Examples of pollutant-generating activities include paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering operations.

- b. Locations where construction activities will occur, including:
 - i. Locations where earth-disturbing activities will occur (note any phasing), including any demolition activities;
 - ii. Approximate slopes before and after major grading activities (note any steep slopes (as defined in Appendix A));
 - iii. Locations where sediment, soil, or other construction materials will be stockpiled;
 - iv. Any water of the U.S. crossings;
 - v. Designated points where vehicles will exit onto paved roads;
 - vi. Locations of structures and other impervious surfaces upon completion of construction; and
 - vii. Locations of on-site and off-site construction support activity areas covered by this permit (see Part 1.2.1c).
- c. Locations of all waters of the U.S. within and one mile downstream of the site's discharge point. Also identify if any are listed as impaired, or are identified as a Tier 2, Tier 2.5, or Tier 3 water;
- d. Areas of federally listed critical habitat within the site and/or at discharge locations;
- e. Type and extent of pre-construction cover on the site (e.g., vegetative cover, forest, pasture, pavement, structures);
- f. Drainage patterns of stormwater and authorized non-stormwater before and after major grading activities;
- g. Stormwater and authorized non-stormwater discharge locations, including:
 - i. Locations where stormwater and/or authorized non-stormwater will be discharged to storm drain inlets;⁵⁶ and
 - ii. Locations where stormwater or authorized non-stormwater will be discharged directly to waters of the U.S.
- h. Locations of all potential pollutant-generating activities identified in Part 7.2.3g;
- i. Locations of stormwater controls, including natural buffer areas and any shared controls utilized to comply with this permit; and
- j. Locations where polymers, flocculants, or other treatment chemicals will be used and stored.

7.2.5 Non-Stormwater Discharges. Identify all authorized non-stormwater discharges in Part 1.2.2 that will or may occur.

7.2.6 Description of Stormwater Controls.

- a. For each of the Part 2.2 erosion and sediment control effluent limits, Part 2.3 pollution prevention effluent limits, and Part 2.4 construction dewatering effluent limits, as applicable to your site, you must include the following:
 - i. A description of the specific control(s) to be implemented to meet the effluent limit;

⁵⁶ The requirement to show storm drain inlets in the immediate vicinity of the site on your site map only applies to those inlets that are easily identifiable from your site or from a publicly accessible area immediately adjacent to your site.

- ii. Any applicable stormwater control design specifications (including references to any manufacturer specifications and/or erosion and sediment control manuals/ordinances relied upon);⁵⁷
 - iii. Routine stormwater control maintenance specifications; and
 - iv. The projected schedule for stormwater control installation/implementation.
- b. You must also include any of the following additional information as applicable.
- i. **Natural buffers and/or equivalent sediment controls** (see Part 2.2.1 and Appendix G). You must include the following:
 - (a) The compliance alternative to be implemented;
 - (b) If complying with alternative 2, the width of natural buffer retained;
 - (c) If complying with alternative 2 or 3, the erosion and sediment control(s) you will use to achieve an equivalent sediment reduction, and any information you relied upon to demonstrate the equivalency;
 - (d) If complying with alternative 3, a description of why it is infeasible for you to provide and maintain an undisturbed natural buffer of any size;
 - (e) For "linear construction sites" where it is infeasible to implement compliance alternative 1, 2, or 3, a rationale for this determination, and a description of any buffer width retained and/or supplemental erosion and sediment controls installed; and
 - (f) A description of any disturbances that are exempt under Part 2.2.1 that occur within 50 feet of a water of the U.S.
 - ii. **Perimeter controls for a "linear construction site"** (see Part 2.2.3). For areas where perimeter controls are not feasible, include documentation to support this determination and a description of the other practices that will be implemented to minimize discharges of pollutants in stormwater associated with construction activities.

Note: Routine maintenance specifications for perimeter controls documented in the SWPPP must include the Part 2.2.3a requirement that sediment be removed before it has accumulated to one-half of the above-ground height of any perimeter control.
 - iii. **Sediment track-out controls** (see Parts 2.2.4b and 2.2.4c). Document the specific stabilization techniques and/or controls that will be implemented to remove sediment prior to vehicle exit.
 - iv. **Sediment basins** (see Part 2.2.12). In circumstances where it is infeasible to utilize outlet structures that withdraw water from the surface, include documentation to support this determination, including the specific conditions or time periods when this exception will apply.
 - v. **Treatment chemicals** (see Part 2.2.13), you must include the following:
 - (a) A listing of the soil types that are expected to be exposed during construction in areas of the project that will drain to chemical treatment systems. Also include a listing of soil types expected to be found in fill material to be used in these same areas, to the extent you have this information prior to construction;

⁵⁷ Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or ordinances. Any departures from such specifications must reflect good engineering practice and must be explained in the SWPPP.

- (b) A listing of all treatment chemicals to be used at the site and why the selection of these chemicals is suited to the soil characteristics of your site;
 - (c) If the applicable EPA Regional Office authorized you to use cationic treatment chemicals for sediment control, include the specific controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to an exceedance of water quality standards;
 - (d) The dosage of all treatment chemicals to be used at the site or the methodology to be used to determine dosage;
 - (e) Information from any applicable Safety Data Sheet (SDS);
 - (f) Schematic drawings of any chemically enhanced stormwater controls or chemical treatment systems to be used for application of the treatment chemicals;
 - (g) A description of how chemicals will be stored consistent with Part 2.2.13c;
 - (h) References to applicable state or local requirements affecting the use of treatment chemicals, and copies of applicable manufacturer's specifications regarding the use of your specific treatment chemicals and/or chemical treatment systems; and
 - (i) A description of the training that personnel who handle and apply chemicals have received prior to permit coverage, or will receive prior to use of the treatment chemicals at your site.
- vi. **Stabilization measures** (see Part 2.2.14). You must include the following:
- (a) The specific vegetative and/or non-vegetative practices that will be used;
 - (b) The stabilization deadline that will be met in accordance with Part 2.2.14.a.i-ii;
 - (c) If complying with the deadlines for sites in arid, semi-arid, or drought-stricken areas, the beginning and ending dates of the seasonally dry period and the schedule you will follow for initiating and completing vegetative stabilization; and
 - (d) If complying with deadlines for sites affected by unforeseen circumstances that delay the initiation and/or completion of vegetative stabilization, document the circumstances and the schedule for initiating and completing stabilization.
- vii. **Spill prevention and response procedures** (see Part 1.3.5 and Part 2.3). You must include the following:
- (a) Procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases. Identify the name or position of the employee(s) responsible for detection and response of spills or leaks; and
 - (b) Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity consistent with Part 2.3.6 and established under either 40 CFR 110, 40 CFR 117, or 40 CFR 302, occurs during a 24-hour period. Contact information must be in locations that are readily accessible and available to all employees.

You may also reference the existence of Spill Prevention Control and

Countermeasure (SPCC) plans developed for the construction activity under Part 311 of the CWA, or spill control programs otherwise required by an NPDES permit for the construction activity, provided that you keep a copy of that other plan on site.⁵⁸

- viii. **Waste management procedures** (see Part 2.3.3). Describe the procedures you will follow for handling, storing and disposing of all wastes generated at your site consistent with all applicable federal, state, tribal, and local requirements, including clearing and demolition debris, sediment removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste.
- ix. **Application of fertilizers** (see Part 2.3.5). Document any departures from the manufacturer specifications where appropriate.

7.2.7 Procedures for Inspection, Maintenance, and Corrective Action. Describe the procedures you will follow for maintaining your stormwater controls, conducting site inspections, and, where necessary, taking corrective actions, in accordance with Part 2.1.4, Part 4, and Part 5 of this permit. Also include:

- a. The inspection schedule you will follow, which is based on whether your site is subject to Part 4.2 or Part 4.3, or whether your site qualifies for any of the reduced inspection frequencies in Part 4.4;
- b. If you will be conducting inspections in accordance with the inspection schedule in Part 4.2.2, Part 4.3, or Part 4.4.1b, the location of the rain gauge or the address of the weather station you will be using to obtain rainfall data;
- c. If you will be reducing your inspection frequency in accordance with Part 4.4.1b, the beginning and ending dates of the seasonally defined arid period for your area or the valid period of drought;
- d. If you will be reducing your inspection frequency in accordance with Part 4.4.3, the beginning and ending dates of frozen conditions on your site; and
- e. Any maintenance or inspection checklists or other forms that will be used.

7.2.8 Staff Training. Include documentation that the required personnel were, or will be, trained in accordance with Part 6.

7.2.9 Compliance with Other Requirements.

- a. **Threatened and Endangered Species Protection.** Include documentation required in Appendix D supporting your eligibility with regard to the protection of threatened and endangered species and designated critical habitat.
- b. **Historic Properties.** Include documentation required in Appendix E supporting your eligibility with regard to the protection of historic properties.
- c. **Safe Drinking Water Act Underground Injection Control (UIC) Requirements for Certain Subsurface Stormwater Controls.** If you are using any of the following stormwater controls at your site, document any contact you have had with the applicable state agency⁵⁹ or EPA Regional Office responsible for implementing the requirements for underground injection wells in the Safe Drinking Water Act and EPA's implementing

⁵⁸ Even if you already have an SPCC or other spill prevention plan in existence, your plans will only be considered adequate if they meet all of the requirements of this Part, either as part of your existing plan or supplemented as part of the SWPPP.

⁵⁹ For state UIC program contacts, refer to the following EPA website: <https://www.epa.gov/uic>.

regulations at 40 CFR 144 -147. Such controls would generally be considered Class V UIC wells:

- i. Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system);
- ii. Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow; and
- iii. Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system).

7.2.10 SWPPP Certification. You must sign and date your SWPPP in accordance with Appendix I, Part I.11.

7.2.11 Post-Authorization Additions to the SWPPP. Once you are authorized for coverage under this permit, you must include the following documents as part of your SWPPP:

- a. A copy of your NOI submitted to EPA along with any correspondence exchanged between you and EPA related to coverage under this permit;
- b. A copy of the acknowledgment letter you receive from NeT assigning your NPDES ID (*i.e.*, *permit tracking number*);
- c. A copy of this permit (an electronic copy easily available to the stormwater team is also acceptable).

7.3 ON-SITE AVAILABILITY OF YOUR SWPPP

You must keep a current copy of your SWPPP at the site or at an easily accessible location so that it can be made available at the time of an on-site inspection or upon request by EPA; a state, tribal, or local agency approving stormwater management plans; the operator of a storm sewer system receiving discharges from the site; or representatives of the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS).

EPA may provide access to portions of your SWPPP to a member of the public upon request. Confidential Business Information (CBI) will be withheld from the public, but may not be withheld from EPA, USFWS, or NMFS.⁶⁰

If an on-site location is unavailable to keep the SWPPP when no personnel are present, notice of the plan's location must be posted near the main entrance of your construction site.

7.4 SWPPP MODIFICATIONS

⁶⁰ Information covered by a claim of confidentiality will be disclosed by EPA only to the extent of, and by means of, the procedures set forth in 40 CFR Part 2, Subpart B. In general, submitted information protected by a business confidentiality claim may be disclosed to other employees, officers, or authorized representatives of the United States concerned with implementing the CWA. The authorized representatives, including employees of other executive branch agencies, may review CBI during the course of reviewing draft regulations.

- 7.4.1** You must modify your SWPPP, including the site map(s), within seven (7) days of any of the following conditions:
- a. Whenever new operators become active in construction activities on your site, or you make changes to your construction plans, stormwater controls, or other activities at your site that are no longer accurately reflected in your SWPPP. This includes changes made in response to corrective actions triggered under Part 5. You do not need to modify your SWPPP if the estimated dates in Part 7.2.3f change during the course of construction;
 - b. To reflect areas on your site map where operational control has been transferred (and the date of transfer) since initiating permit coverage;
 - c. If inspections or investigations by EPA or its authorized representatives determine that SWPPP modifications are necessary for compliance with this permit;
 - d. Where EPA determines it is necessary to install and/or implement additional controls at your site in order to meet the requirements of this permit, the following must be included in your SWPPP:
 - i. A copy of any correspondence describing such measures and requirements; and
 - ii. A description of the controls that will be used to meet such requirements.
 - e. To reflect any revisions to applicable federal, state, tribal, or local requirements that affect the stormwater controls implemented at the site; and
 - f. If applicable, if a change in chemical treatment systems or chemically enhanced stormwater control is made, including use of a different treatment chemical, different dosage rate, or different area of application.
- 7.4.2** You must maintain records showing the dates of all SWPPP modifications. The records must include the name of the person authorizing each change (see Part 7.2.10 above) and a brief summary of all changes.
- 7.4.3** All modifications made to the SWPPP consistent with Part 7.4 must be authorized by a person identified in Appendix I, Part I.11.b.
- 7.4.4** Upon determining that a modification to your SWPPP is required, if there are multiple operators covered under this permit, you must immediately notify any operators who may be impacted by the change to the SWPPP.

8 HOW TO TERMINATE COVERAGE

Until you terminate coverage under this permit, you must comply with all conditions and effluent limitations in the permit. To terminate permit coverage, you must submit to EPA a complete and accurate Notice of Termination (NOT), which certifies that you have met the requirements for terminating in Part 8.

8.1 MINIMUM INFORMATION REQUIRED IN NOT

- 8.1.1** NPDES ID (*i.e.*, *permit tracking number*) provided by EPA when you received coverage under this permit;
- 8.1.2** Basis for submission of the NOT (see Part 8.2);
- 8.1.3** Operator contact information;
- 8.1.4** Name of site and address (or a description of location if no street address is available); and

8.1.5 NOT certification.

8.2 CONDITIONS FOR TERMINATING CGP COVERAGE

You must terminate CGP coverage only if one or more of the following conditions has occurred:

8.2.1 You have completed all construction activities at your site and, if applicable, construction support activities covered by this permit (see Part 1.2.1c), and you have met the following requirements:

- a. For any areas that (1) were disturbed during construction, (2) are not covered over by permanent structures, and (3) over which you had control during the construction activities, you have met the requirements for final vegetative or non-vegetative stabilization in Part 2.2.14b;
- b. You have removed and properly disposed of all construction materials, waste and waste handling devices, and have removed all equipment and vehicles that were used during construction, unless intended for long-term use following your termination of permit coverage;
- c. You have removed all stormwater controls that were installed and maintained during construction, except those that are intended for long-term use following your termination of permit coverage or those that are biodegradable; and
- d. You have removed all potential pollutants and pollutant-generating activities associated with construction, unless needed for long-term use following your termination of permit coverage; or

8.2.2 You have transferred control of all areas of the site for which you are responsible under this permit to another operator, and that operator has submitted an NOI and obtained coverage under this permit; or

8.2.3 Coverage under an individual or alternative general NPDES permit has been obtained.

8.3 HOW TO SUBMIT YOUR NOT

You must use EPA's NPDES eReporting Tool (NeT) to electronically prepare and submit your NOT for the 2017 CGP.

To access NeT, go to <https://www.epa.gov/npdes/stormwater-discharges-construction-activities#ereporting>.

Waivers from electronic reporting may be granted as specified in Part 1.4.1. If the EPA Regional Office grants you approval to use a paper NOT, and you elect to use it, you must complete the form in Appendix K.

8.4 DEADLINE FOR SUBMITTING THE NOT

You must submit your NOT within 30 calendar days after any one of the conditions in Part 8.2 occurs.

8.5 EFFECTIVE DATE OF TERMINATION OF COVERAGE

Your authorization to discharge under this permit terminates at midnight of the calendar day that a complete NOT is submitted to EPA.

9 PERMIT CONDITIONS APPLICABLE TO SPECIFIC STATES, INDIAN COUNTRY LANDS, OR TERRITORIES

The provisions in this Part provide modifications or additions to the applicable conditions of this permit to reflect specific additional conditions required as part of the state or tribal CWA Section 401 certification process, or the Coastal Zone Management Act (CZMA) certification process, or as otherwise established by the permitting authority. The specific additional revisions and requirements only apply to activities in those specific states, Indian country, and areas in certain states subject to construction projects by Federal Operators. States, Indian country, and areas subject to construction by Federal Operators not included in this Part do not have any modifications or additions to the applicable conditions of this permit.

9.1 EPA Region 1

9.1.1 NHR100000 State of New Hampshire

- a. If you disturb 100,000 square feet or more of contiguous area, you must also apply for an Alteration of Terrain (AoT) permit from DES pursuant to RSA 485- A:17 and Env-Wq 1500. This requirement also applies to a lower disturbance threshold of 50,000 square feet or more when construction occurs within the protected shoreline under the Shoreland Water Quality Protection Act (see RSA 483-B and Env-Wq 1400). A permit application must also be filed if your project disturbs an area of greater than 2,500 square feet, is within 50 feet of any surface water, and has a flow path of 50 feet or longer disturbing a grade of 25 percent or greater. Project sites with disturbances smaller than those discussed above, that have the potential to adversely affect state surface waters, are subject to the conditions of an AoT General Permit by Rule.
- b. You must determine that any excavation dewatering discharges are not contaminated before they will be authorized as an allowable non-stormwater discharge under this permit (see Part 1.2.2). The water is considered uncontaminated if there is no groundwater contamination within 1,000 feet of the groundwater dewatering location. Information on groundwater contamination can be generated over the Internet via the NHDES web site <http://des.nh.gov/> by using the One Stop Data Mapper at <http://des.nh.gov/onestop/gis.htm>. If it is determined that the groundwater to be dewatered is near a remediation or other waste site you must apply for the Remediation General Permit (see <https://www3.epa.gov/region1/npdes/rgp.html>.)
- c. You must treat any uncontaminated excavation dewatering discharges as necessary to remove suspended solids and turbidity. The discharges must be sampled at least once per week during weeks when discharges occur. Samples must be analyzed for total suspended solids (TSS) or turbidity and must meet monthly average and daily maximum limits of 50 milligrams per liter (mg/L) and 100 mg/L, respectively for TSS or 33 mg/l and 67 mg/l, respectively for turbidity. TSS (a.k.a. Residue, Nonfilterable) or turbidity sampling and analysis must be performed in accordance with Tables IB and II in 40 CFR 136.3 (http://www.ecfr.gov/cgi-bin/text-idx?SID=0243e3c4283cbd7d8257eb6afc7ce9a2&mc=true&node=se40.25.136_13&rgn=div8). Records of any sampling and analysis must be maintained and kept with the SWPPP for at least three years after final site stabilization.
- d. Construction site owners and operators must consider opportunities for post-construction groundwater recharge using infiltration best management practices

(BMPs) during site design and preparation of the SWPPP. If your construction site is in a town that is required to obtain coverage under the NPDES General Permit for discharges from Municipal Separate Storm Sewer Systems (MS4) you may be required to use such practices. The SWPPP must include a description of any on-site infiltration that will be installed as a post-construction stormwater management measure or reasons for not employing such measures such as 1) The facility is located in a wellhead protection area as defined in RSA 485- C:2; or 2) The facility is located in an area where groundwater has been reclassified to GAA, GAI or GA2 pursuant to RSA 485-C and Env-DW 901; or 3) Any areas that would be exempt from the groundwater recharge requirements contained in Env-Wq 1507.04, including all land uses or activities considered to be a "High-load Area" (see Env-Wq 1502.30). For design considerations for infiltration measures see Env-Wq 1508.06.

- e. Appendix F contains a list of Tier 2, or high quality waters. Although there is no official list of tier 2 waters, it can be assumed that all NH surface waters are tier 2 for turbidity unless 1) the surface water that you are proposing to discharge into is listed as impaired for turbidity in the states listing of impaired waters (see Surface Water Quality - Watershed Report Cards at http://des.nh.gov/organization/divisions/water/wmb/swqa/report_cards.htm) or 2) sampling upstream of the proposed discharge location shows turbidity values greater than 10 NTU. A single grab sample collected during dry weather (no precipitation within 48 hours) is acceptable.
- f. To ensure compliance with RSA 485-C, RSA 485-A, RSA 485-A:13, I(a), Env-Wq 1700 and Env-Wq 302, the following information may be requested by NHDES. This information must be kept on site unless you receive a written request from NHDES that it be sent to the address shown in Part 9.1.4 (g).
 - i. A site map required in Part 7.2.4, showing the type and location of all post-construction infiltration BMPs utilized at the facility or the reason(s) why none were installed;
 - ii. A list of all non-stormwater discharges that occur at the facility, including their source locations and the control measures being used (see Part 1.2.2).
 - iii. Records of sampling and analysis of TSS required for construction dewatering discharges (see Part 9.1.4 (c)).
- g. All required or requested documents must be sent to:

NH Department of Environmental Services, Wastewater Engineering Bureau,
Permits & Compliance Section
P.O. Box 95
Concord, NH 03302-0095

9.1.2 VTR10F000 Areas in the State of Vermont subject to construction by a Federal Operator

- a. Earth disturbance at any one time is limited to five acres.
- b. All areas of earth disturbance must have temporary or final stabilization within 14 days of the initial disturbance. After this time, disturbed areas must be temporarily or permanently stabilized in advance of any runoff producing event. A runoff producing event is an event that produces runoff from the construction site. Temporary stabilization is not required if the work is occurring in a self-contained

excavation (i.e. no outlet) with a depth of two feet or greater (e.g. house foundation excavation, utility trenches). Areas of a construction site that drain to sediment basins are not considered eligible for this exemption, and the exemption applies only to the excavated area itself.

- c. The use of the cationic polymers is prohibited unless approved under a site-specific plan.
- d. Site inspections on active construction sites shall be conducted daily during the period from October 15 – April 15.
- e. Any applicant under EPA's CGP shall allow authorized Agency representatives, at reasonable times and upon presentation of credentials, to enter upon the project site for purposes of inspecting the project and determining compliance with this Certification.
- f. The Agency may reopen and alter or amend the conditions of this Certification over the life of the project when such action is necessary to assure compliance with the VWQS.

9.2 EPA Region 3

9.2.1 DCR100000 District of Columbia

- a. The permittee must comply with the District of Columbia Water Pollution Control Act of 1984, as amended, (D.C. Official Code § 8-103.01 et seq.) and its implementing regulations in Title 21, Chapters 11 and 19 of the District of Columbia Municipal Regulations. Nothing in this permit will be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to District of Columbia laws and regulations.
- b. The permittee must comply with the District of Columbia Stormwater Management, and Soil Erosion and Sediment Control in Chapter 5 of Title 21 of the District of Columbia Municipal Regulations.
- c. The permittee must comply with District of Columbia Flood Management control in Chapter 31 of Title 20 of the District of Columbia Municipal Regulations.
- d. The Department may request a copy of the Stormwater Pollution Prevention Plan (SWPPP) and the permittee is required to submit the SWPPP to the Department within 14 days of such request. The Department may conduct an inspection of any facility covered by this permit to ensure compliance with District's law requirements, including water quality standards. The Department may enforce its certification conditions.
- e. The Department may require the permittee to perform water quality monitoring during the permit term if monitoring is necessary for the protection of public health or the environment as designated under the authority in Chapter 19 of Title 21 of the District of Columbia Municipal Regulations.
- f. The Department may require the permittee to provide measurable verification of the effectiveness of Best Management Practices (BMPs) and other control measures used in the stormwater management program, including water quality monitoring.
- g. The Department has determined that compliance with this permit does not protect the permittee from enforcement actions deemed necessary by the Department

under its associated regulations to address an imminent threat to public health or a significant adverse environmental impact which results in a violation of the District of Columbia Water Pollution Control Act of 1984, as amended, (D.C. Official Code § 8-103.01 et seq.) and its implementing regulations.

- h. The Department reserves the right to modify this Section 401 Water Quality Certification if any changes, modifications, or deletions are made to this general permit. In addition, the Department reserves the right to add and/or alter the terms and conditions of this Section 401 Water Quality Certification to carry out its responsibilities during the term of this general permit with respect to water quality, including any revisions to District of Columbia Water Quality Standards in Chapter 11 of Title 21 of the District of Columbia Municipal Regulations.
- i. Should any violation of the District's Water Quality Standards, or the conditions of this Section 401 Water Quality Certification occur, the Department will direct the permittee to correct the violation(s). The Department has the right to take any action as authorized by the District laws and regulations to address the violations of this permit or the Water Pollution Control Act and implementing regulations. Substantial civil and criminal penalties are authorized for discharging into District waters in violation of an order or permit issued by the Department. This Section 401 Water Quality Certification does not relieve the permittee of the duty to comply with other applicable District's statutes and regulations.
- j. The permittee must submit copies of Notice of Intent (NOI) and Notice of Termination to DOEE at the same time these documents are submitted to EPA.
- k. The permittee shall allow DOEE to inspect any facilities, equipment, practices, or operations regulated or required under this permit and to access records maintained under the conditions of this permit.
- l. All required or requested documents shall be signed and sent to the: Department of Energy & Environment, 1200 First Street, N.E., 5th Floor, Washington, DC 20002, Attention: Associate Director, Inspection and Enforcement Division.

9.2.2 DER10F000 Areas in the State of Delaware subject to construction by a Federal Operator

- a. Federal agencies engaging in construction activities must submit, to DNREC, a sediment and stormwater management (S&S) plan and obtain approval from DNREC in accordance with 7 Del. C. §4010, 7 DE Admin. Code 5101, and 7 DE Admin. Code 7201.
- b. Federal agencies engaging in construction activities must provide for construction review by a certified construction reviewer in accordance with 7 Del. C. §§4010 & 4013 and 7 DE Admin. Code 5101, subsection 6.1.6.
- c. Federal agencies engaging in construction activities must certify that all responsible personnel involved in the construction project will have attended the blue card training prior to initiation of any land disturbing activity – see 7 Del. C. §§ 4002 & 4014 and 7 DE Admin. Code 5101.

9.3 EPA Region 5

9.3.1 MNR10I000 Indian country within the State of Minnesota

9.3.1.1 Fond du Lac Band of Lake Superior Chippewa. The following conditions apply only to discharges on the Fond du Lac Band of Lake Superior Chippewa Reservation:

- a. A copy of the Stormwater Pollution Prevention Plan (SWPPP) must be submitted to the Office of Water Protection at least fifteen (15) days in advance of sending the Notice of Intent (NOI) to EPA. The SWPPP can be submitted electronically to richardgitar@FDLREZ.com or by hardcopy sent to:

Fond du Lac Reservation
Office of Water Protection
1720 Big Lake Road
Cloquet, MN 55720

CGP applicants are encouraged to work with the FDL Office of Water Protection in the identification of all proposed receiving.

- b. Copies of the Notice of Intent (NOI) and the Notice of Termination (NOT) must be sent to the Fond du Lac Office of Water Protection at the same time they are submitted to EPA.
- c. The turbidity limit shall NOT exceed 10% of natural background within the receiving water(s) as determined by Office of Water Protection staff.
- d. Turbidity sampling must take place within 24 hours of a ½-inch or greater rainfall event. The results of the sampling must be reported to the Office of Water Protection within 7 days of the sample collection. All sample reporting must include the date and time, location (GPS: UTM/Zone 15), and NTU. CGP applicants are encouraged to work with the Office of Water Protection in determining the most appropriate location(s) for sampling.
- e. Receiving waters with open water must be sampled for turbidity prior to any authorized discharge as determined by Office of Water Protection staff. This requirement only applies to receiving waters in which no ambient turbidity data exists.
- f. This Certification does not pertain to any new discharge to Outstanding Reservation Resource Waters (ORRW) as described in §105 b.3. of the Fond du Lac Water Quality Standards (Ordinance #12/98, as amended). Although additional waters may be designated in the future, currently Perch Lake, Rice Portage Lake, Miller Lake, Deadfish Lake, and Jaskari Lake are designated as ORRWs. New dischargers wishing to discharge to an ORRW must obtain an individual permit from EPA for stormwater discharges from large and small construction activities.
- g. All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in the Water Quality Standards of the Fond du Lac Reservation, Ordinance 12/98, as amended. This includes, but is not limited to, the prevention of any discharge that causes a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of water of the Fond du Lac Reservation for any of the uses designated in the Water Quality Standards of the Fond du Lac Reservation. These uses include wildlife, aquatic life, warm water fisheries, cold water fisheries, subsistence fishing (netting), primary contact recreation, secondary

contact recreation, cultural, wild rice areas, aesthetic waters, agriculture, navigation, and commercial.

- h. Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering waters of the Fond du Lac Reservation. All spills must be reported to the appropriate emergency management agency (National Response Center AND the State Duty Officer), and measures shall be taken immediately to prevent the pollution of waters of the Fond du Lac Reservation, including groundwater. The Fond du Lac Office of Water Protection must also be notified immediately of any spill regardless of size.
- i. This certification does not authorize impacts to cultural, historical, or archeological features or sites, or properties that may be eligible for such listing.

9.3.1.2 Grand Portage Band of Lake Superior Chippewa. The following conditions apply only to discharges on the Grand Portage Band of Lake Superior Chippewa Reservation:

- a. The CGP authorization is for construction activities that may occur within the exterior boundaries of the Grand Portage Reservation in accordance to the Grand Portage Land Use Ordinance. The CGP regulates stormwater discharges associated with construction sites of one acre or more in size. Only those activities specifically authorized by the CGP are authorized by this certification (the "Certification"). This Certification does not authorize impacts to cultural, historical, or archeological features or sites, or properties that may be eligible for listing as such.
- b. All construction stormwater discharges authorized by the CGP must comply with the Water Quality Standards and Water Resources Ordinance, as well as Applicable Federal Standards (as defined in the Water Resources Ordinance). As such, appropriate steps must be taken to ensure that petroleum products or other chemical pollutants are prevented from entering the Waters of the Reservation (as defined in the Water Resources Ordinance). All spills must be reported to the appropriate emergency-management agency, and measures must be taken to prevent the pollution of the Waters of the Reservation, including groundwater.
- c. The 2017 CGP requires inspections and monitoring reports of the construction site stormwater discharges by a qualified person. Monitoring and inspection reports must comply with the minimum requirements contained in the 2017 CGP. The monitoring plan must be prepared and incorporated into the Stormwater Pollution Prevention Plan (the "SWPPP"). A copy of the SWPPP must be submitted to the Board at least 30 days in advance of sending the requisite Notice of Intent to EPA. The SWPPP should be sent to:

Grand Portage Environmental Resources Board
P.O. Box 428
Grand Portage, MN 55605

Copies of the Notice of Intent and Notice of Termination required under the CGP must be submitted to the Board at the address above at the same time they are submitted to the EPA.

- d. If requested by the Grand Portage Environmental Department, the permittee must provide additional information necessary for a case-by-case eligibility determination to assure compliance with the Water Quality Standards and any Applicable Federal Standards.

- e. Discharges that the Board has determined to be or that may reasonably be expected to be contributing to a violation of Water Quality Standards or Applicable Federal Standards are not authorized by this Certification.
- f. The Board retains full authority provided by the Water Resources Ordinance to ensure compliance with and to enforce the provisions of the Water Resource Ordinance and Water Quality Standards, Applicable Federal Standards, and these Certification conditions.
- g. Appeals related to Board actions taken in accordance with any of the preceding conditions may be heard by the Grand Portage Tribal Court.

9.3.2 WIR101000 Indian country within the State of Wisconsin, except the Sokaogon Chippewa (Mole Lake) Community

9.3.2.1 Bad River Band of Lake Superior Tribe of Chippewa Indians: The following conditions apply only to discharges on the Bad River Band of the Lake Superior Tribe of Chippewa Indians Reservation:

- a. Only those activities specifically authorized by the CGP are authorized by this Certification. This Certification does not authorize impacts to cultural properties, or historical sites, or properties that may be eligible for listing as such.^{61, 62}
- b. All projects which are eligible for coverage under the CGP and are located within the exterior boundaries of the Bad River Reservation shall be implemented in such a manner that is consistent with the Tribe's Water Quality Standards (WQS) in order to protect Reservations waters that may be impacted by stormwater discharge including embankments, outlets, adjacent streambanks, slopes, and downstream waters.⁶³
- c. Operators are not eligible to obtain authorization under the CGP for all new discharges to an Outstanding Tribal Resource Water (or Tier 3 water).⁶⁴ Outstanding Tribal Resource Waters, or Tier 3 waters, include the following: Kakagon Slough and the lower wetland reaches of its tributaries that support wild rice, Kakagon River, Bad River Slough, Honest John Lake, Bog Lake, a portion of Bad River, from where it enters the Reservation through the confluence with the White River, and Potato River.⁶⁵
- d. An operator proposing to discharge to an Outstanding Resource Water (or Tier 2.5 water) under the CGP must comply with the antidegradation provisions of the Tribe's WQS. Outstanding Resource Waters, or Tier 2.5 waters, include the following: a portion of Bad River, from downstream the confluence with the White River to Lake Superior, White River, Marengo River, Graveyard Creek, Bear Trap Creek, Wood Creek, Brunsweller River, Tyler Forks, Bell Creek, and Vaughn Creek.⁶⁶ The antidegradation demonstration materials described in provision E.4.iii. must be submitted to the following address:

⁶¹ Bad River Band of Lake Superior Tribe of Chippewa Indians Water Quality Standards adopted by Resolution No. 7-6-11-441 (hereafter, Tribe's WQS).

⁶² 36 C.F.R. § 800.16(l)(2).

⁶³ See footnote 61.

⁶⁴ Tribe's WQS: See provisions E.3.ii. and E.4.iv.

⁶⁵ Tribe's WQS: See provision E.2.iii.

⁶⁶ Tribe's WQS: See provision E.2.ii.

Bad River Tribe's Natural Resources Department
Attn: Water Resources Specialist
P.O. Box 39
Odanah, WI 54861

- e. An operator proposing to discharge to an Exceptional Resource Water (or Tier 2 water) under the CGP must comply with the antidegradation provisions of the Tribe's WQS. Exceptional Resource Waters, or Tier 2 waters, include the following: any surface water within the exterior boundaries of the Reservation that is not specifically classified as an Outstanding Resource Water (Tier 2.5 water) or an Outstanding Tribal Resource Water (Tier 3 water).⁶⁷ The antidegradation demonstration materials described in provision E.4.ii. must be submitted to the following address:

Bad River Tribe's Natural Resources Department
Attn: Water Resources Specialist
P.O. Box 39
Odanah, WI 54861

- f. Projects utilizing cationic treatment chemicals⁶⁸ within the Bad River Reservation boundaries are not eligible for coverage under the CGP.⁶⁹
- g. A discharge to a surface water within the Bad River Reservation boundaries shall not cause or contribute to an exceedance of the turbidity criterion included in the Tribe's WQS, which states: Turbidity shall not exceed 5 NTU over natural background turbidity when the background turbidity is 50 NTU or less, or turbidity shall not increase more than 10% when the background turbidity is more than 50 NTU.⁷⁰
- h. All projects which are eligible for coverage under the CGP within the exterior boundaries of the Bad River Reservation must comply with the Bad River Reservation Wetland and Watercourse Protection Ordinance, or Chapter 323 of the Bad River Tribal Ordinances, including the erosion and sedimentation control, natural buffer, and stabilization requirements. Questions regarding Chapter 323 and requests for permit applications can be directed to the Wetlands Specialist in the Tribe's Natural Resources Department at (715) 682-7123 or wetlands@badriver-nsn.gov.
- i. An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must notify the Tribe prior to the commencing earth-disturbing activities.⁷¹ ⁷² The operator must submit a copy of the Notice of Intent (NOI) to the following addresses at the same time it is submitted to the U.S. EPA:

⁶⁷ Tribe's WQS: See provision E.2.i.

⁶⁸ See definition of cationic treatment chemicals in Appendix A of the CGP.

⁶⁹ Tribe's WQS: See provisions E.6.ii.a. and E.6.ii.c.

⁷⁰ Tribe's WQS: See provision E.7.iii.

⁷¹ See footnote 61.

⁷² See footnote 62.

Bad River Tribe's Natural Resources Department
Attn: Water Resources Specialist
P.O. Box 39
Odanah, WI 54861

Bad River Tribe's Natural Resources Department
Attn: Tribal Historic Preservation Officer (THPO)
P.O. Box 39
Odanah, WI 54861

The operator must also submit a copy of the Notice of Termination (NOT) to the above addresses at the same time it is submitted to the U.S. EPA.

- j. The Tribal Historic Preservation Officer (THPO) must be provided 30 days to comment on the project.⁷³
- k. The operator must obtain THPO concurrence in writing. This written concurrence will outline measures to be taken to prevent or mitigate effects to historic properties. For more information regarding the specifics of the cultural resources process, see 36 CFR Part 800. A best practice for an operator is to consult with the THPO during the planning stages of an undertaking.⁷⁴
- l. An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must submit a copy of the Stormwater Pollution Prevention Plan (SWPPP) to the following address at the same time as submitting the NOI:⁷⁵

Bad River Tribe's Natural Resources Department
Attn: Water Resources Specialist
P.O. Box 39
Odanah, WI 54861

- m. Any corrective action reports that are required under the CGP must be submitted to the following address within one (1) working day of the report completion:⁷⁶

Bad River Tribe's Natural Resources Department
P.O. Box 39
Odanah, WI 54861

- n. An operator shall be responsible for meeting any additional permit requirements imposed by the U.S. EPA necessary to comply with the Tribe's antidegradation policies if the discharge point is located upstream of waters designated by the Tribe.⁷⁷

⁷³ 36 C.F.R. § 800.3(c)(4).

⁷⁴ 36 C.F.R. § 800.3(b).

⁷⁵ See footnote 61.

⁷⁶ See footnote 61.

⁷⁷ See footnote 61.

9.3.2.2 Lac du Flambeau Band of Lake Superior Tribe of Chippewa Indians: The following conditions apply only to discharges on the Lac du Flambeau Band of the Lake Superior Tribe of Chippewa Indians Reservation:

- a. A copy of the Stormwater Pollution Prevention Plan must be submitted to the following office, for the Tribal environmental review process, at least thirty (30) days in advance of sending the Notice of Intent (NOI) to EPA:

Lac du Flambeau
Tribal Land Management
P.O. Box 279
Lac du Flambeau, WI 54538

CGP applicants are encouraged to work with the LdF Water Resources Program in the identification of all proposed receiving waters.

- b. Copies of the NOI and the Notice of Termination (NOT) must be sent to the LdF Water Resources Program at the same time they are submitted to EPA.
- c. All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in the Water Quality Standards of the Lac du Flambeau Reservation. This includes, but is not limited to, the prevention of any discharge that cause a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of water of the Lac du Flambeau Reservation for any of the uses designated in the Water Quality Standards of the Lac du Flambeau Reservation.
- d. Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering waters of the Lac du Flambeau Reservation. All spills must be reported to the appropriate emergency management agency, and measures shall be taken immediately to prevent the pollution of waters of the Lac du Flambeau reservation, including groundwater.
- e. This certification does not authorize impacts to cultural, historical, or archeological features or sites, or properties that may be eligible for such listing.
- f. Due to the significant ecological and cultural importance of the Lac du Flambeau Reservation, any operator requesting a permit for a point source discharge of pollutants (i.e., discharge) associated with the Stormwater Discharge will need a stormwater pollution prevention plan in place that does not violate Lac du Flambeau Water Quality Standards to protect Reservation Waters.

9.4 EPA Region 6

9.4.1 NMR100000 State of New Mexico, except Indian country

- a. If construction dewatering activities are anticipated at a site, permittees must complete the following steps:
 - i. Investigative information must be documented in the facility SWPPP.
 - ii. Refer to the GWQB Mapper at <https://gis.web.env.nm.gov/GWQB/> AND the PSTB Mapper (Go Mapper) at <https://gis.web.env.nm.gov/GoNM/>

and check if the following sources are located within the noted distance from your anticipated construct site groundwater dewatering activity:

Project Location Relative to a Source of Potential Groundwater Contamination	Constituents likely to be required for testing
<i>Within 0.5 mile of an open Leaking Underground Storage Tank (LUST) site</i>	<i>BTEX (Benzene, Toluene, Ethylbenzene, and Xylene) plus additional parameters depending on site conditions.*</i>
<i>Within 0.5 mile of an open Voluntary Remediation site</i>	<i>All parameters listed in Appendix A (or an alternate list approved by the NMED SWQB)**</i>
<i>Within 0.5 mile of an open RCRA Corrective Action Site</i>	
<i>Within 0.5 mile of an open Abatement Site</i>	
<i>Within 0.5 mile of an open Brownfield Site</i>	
<i>Within 1.0 mile or more of a Superfund site or National Priorities List (NPL) site with associated groundwater contamination.</i>	

**For further assistance determining whether dewatering may encounter impacted groundwater, the permittee may contact the NMED Ground Water Quality Bureau at: 505-827-2965.*

***EPA approved-sufficiently sensitive methods must be used - approved methods are listed in 40 CFR Part 136.3.*

- ii. Indicate on the NOI that dewatering activities are anticipated. Provide information on flow and potential to encounter impacted groundwater.
 - iii. Permittee must test the quality of the groundwater according to the chart above. Hardness and pH must also be measured.
 - iv. Permittee must send test result data to EPA Region 6 and the NMED Surface Water Quality Bureau. If the test data exceed standards, it cannot be discharged from the construction site into surface waters under this permit. Discharge to surface waters must be conducted under a separate NPDES individual permit to ensure proper treatment and disposal.
 - v. If disposal will be to the ground surface or in an unlined pond, the permittee must submit an NO/ to the NMED Ground Water Quality Bureau.
- b. Operators are not eligible to obtain authorization under this permit for all new and existing storm water discharges to outstanding national resource waters (ONRWs) (also referred to as "Tier 3" waters.)
- c. Operators who intend to obtain authorization under this permit for new and existing storm water discharges from construction sites must satisfy the following condition:
- i. The SWPPP must include site-specific interim and permanent stabilization, managerial, and structural solids, erosion and sediment control best management practices (BMPs) and/or other controls that are designed to prevent to the maximum extent practicable an increase in the sediment yield and flow velocity from pre-construction, pre-development conditions to assure that applicable standards in 20.6.4.NMAC, including the antidegradation policy, or TMDL waste load allocations (WLAs) are met. This requirement applies to discharges both during construction and after construction operations have been completed. The SWPPP must identify

and document the rationale for selecting these BMPs and/or other controls. The SWPPP must also describe design specifications, construction specifications, maintenance schedules (including a long term maintenance plan), criteria for inspections, and expected performance and longevity of these BMPs. For sites greater than 5 acres in size, BMP selection must be made based on the use of appropriate soil loss prediction models (i.e. SEDCAD, RUSLE, SEDIMOT, MULTISED, etc.) OR equivalent generally accepted (by professional erosion control specialists) soil loss prediction tools.

- ii. For all sites, the operator(s) must demonstrate, and include documentation in the SWPPP, that implementation of the site-specific practices will assure that the applicable standards or TMDL WLAs are met, and will result in sediment yields and flow velocities that, to the maximum extent practicable, will not be greater than the sediment yield levels and flow velocities from preconstruction, pre-development conditions.
 - iii. All SWPPPs must be prepared in accordance with good engineering practices by qualified (e.g. CPESC certified, engineers with appropriate training) erosion control specialists familiar with the use of soil loss prediction models and design of erosion and sediment control systems based on these models (or equivalent soil loss prediction tools). Qualifications of the preparer (e.g., professional certifications, description of appropriate training) must be documented in the SWPPP. The operator(s) must design, implement, and maintain BMPs in the manner specified in the SWPPP.
- d. Permittees can call 505-827-9329 for emergencies at any time and 505-476-6000 for non-emergencies during business hours from 5am-5pm, Monday through Friday.

9.4.2 NMR10I000 Indian country within the State of New Mexico, except Navajo Reservation Lands that are covered under Arizona permit AZR10I000 and Ute Mountain Reservation Lands that are covered under Colorado permit COR10I000.

9.4.2.1 Pueblo of Isleta. The following conditions apply only to discharges on the Pueblo of Isleta Reservation:

- a. CGP at 1.3 Prohibited discharges: Stormwater discharges associated with construction activity that EPA or the Pueblo of Isleta, prior to authorization under this permit, determines will cause, have the reasonable potential to cause, or may reasonably be expected to contribute to a violation or excursion of any applicable water quality standard, including the antidegradation policy, or the impairment of a designated use of receiving waters are not authorized by this permit.
- b. CGP at 1.4.1 How to Submit Your NOI: The operator shall provide a copy of the Notice of Intent ("NOI") to the Pueblo of Isleta at the same time it is submitted to the U.S. Environmental Protection Agency, for projects occurring within the exterior boundaries of the Pueblo of Isleta. The operator shall also notify the Pueblo of Isleta when it has submitted the Notice of Termination ("NOT"). The NOI and NOT shall be sent to the Pueblo of Isleta at the following address:

Water Quality Control Officer
Pueblo of Isleta
Environment Department
PO Box 1270

Isleta, NM 87022
(505) 869-9819
E-mail: POI36871@isletapueblo.com

Overnight/Express Mail Delivery
Pueblo of Isleta
Environment Department
6 Sagebrush St.
Albuquerque, NM 87105

- c. CGP at 1.5 Requirement to post a notice of your permit coverage: Amend to read: "You must post a sign or other notice of your permit coverage at a safe, publicly accessible location in close proximity to the construction site. The notice must be located so that it is visible from the public road or tribal road that is nearest to the active part of the construction site..."
- d. CGP at 7.2.6 Description of stormwater controls: The SWPPP will be considered to be incomplete if the operator has not coordinated requirements under this Part with the Pueblo of Isleta Environment Department.
- e. CGP I.12.6.1 at pg.1-6 of 8. The Pueblo of Isleta requests notification within 10 hours (rather than 24 hrs.) if health or the environment become endangered.
- f. CGP at I.12.2 Anticipated noncompliance: Amend to read: "You must give advance notice to EPA and the Pueblo of Isleta at the address indicated in 1.4.1(a) of any planned changes in the permitted facility or activity which may results in noncompliance with permit requirements."
- g. CGP at I.12.6.1: Any noncompliance for projects within the exterior boundaries of the Pueblo of Isleta which may endanger health or the environment shall be reported directly to the EPA Regional Office [(see contacts at <https://www2.epa.gov/national-pollutant-discharge-elimination-system-npdes/contact-us-stormwater#regional>)] and to the Pueblo of Isleta Water Quality Control Officer. Any information must be provided orally with n 12 hours of the time you become aware of the circumstances. Other requirements of this Part for a written submission apply. Electronic communication (E-mail) shall be provided as soon as practical. Verbal notice shall be provided to:

Water Quality Control Officer
Pueblo of Isleta
E-mail: POI36871@isletapueblo.com
(505) 869-9819
(505) 917-8346 mobile
(505) 869-3030 Police Dispatch

- h. CGP at 2.2 Erosion and sediment control requirements: Erosion and sediment controls shall be designed to retain sediment on-site.
- i. CGP at 2.2 Under Sediment control requirements, Standard Permit Condition Duty to Mitigate Volumes of sediment at or over (five) 5 cubic yards must be removed and placed for disposal within a tribally approved sediment Disposal Site, located on Pueblo of Isleta lands. CGP 2.2 at pg. 8.
- j. Under Minimize erosion, a permittee must secure permission from the Pueblo or affected Pueblo of Isleta land assignment owner if a dissipation device needs to

be placed up- or down- elevation of a given construction site. CGP 2.2.11 at pg. 11.

- k. CGP at 2.3.6 Emergency spill notification requirements: You must notify the Pueblo of Isleta Water Quality Control Officer and National Response Center (NRC) [at (800) 424-8802 or, in the Washington, DC metropolitan area, call (202) 267-2675 in accordance with the requirements of 40 CFR 110, 40 CFR 117, and 40 CFR 302] as soon as you have knowledge of the release. Verbal and electronic notice shall be provided as specified in I.12.6.1
- l. CGP at C.3 Equivalent analysis waiver: Parties wishing to apply for an Equivalent Analysis Waiver (see Appendix D, Section C) must provide a copy of the waiver analysis to the Pueblo of Isleta Water Quality Control Officer at the address indicated in 1.4.1 (a).

9.4.2.2 Pueblo of Sandia. The following conditions apply only to discharges on the Pueblo of Sandia Reservation:

- a. Only those activities specifically authorized by the CGP are authorized by the Pueblo of Sandia's Water Quality certification. The Pueblo of Sandia's Water Quality Certification does not authorize impact to cultural properties, historical sites or properties that may be eligible as such.
- b. Copies of all Notices of Intent (NOI) submitted to the EPA must also be sent concurrently to the Pueblo of Sandia at the following address. Discharges are not authorized by this permit unless an accurate and complete NOI has been submitted to the Pueblo of Sandia, either by mail or electronically.

Regular U.S. Delivery Mail:

Pueblo of Sandia Environment Department
Attention: Scott Bulgrin, Water Quality Manager
481 Sandia Loop
Bernalillo, New Mexico 87004

Electronically:

sbulgrin@sandiapueblo.nsn.us

- c. Any correspondences between the applicant and EPA related to analytical data, written reports, corrective action, enforcement, monitoring, or an adverse incident written reports should likewise be routed to the Pueblo of Sandia at the above address.
- d. The Stormwater Pollution Prevention Plan (SWPPP) must be available to the Pueblo of Sandia Environment Department either electronically or hard copy upon request for review. The SWPPP must be made available at least fourteen (14) days before construction begins. The fourteen (14) day period will give Pueblo staff time to become familiar with the project site, prepare for construction site inspections, and determine compliance with the Pueblo of Sandia Water Quality Standards. Failure to provide a SWPPP to the Pueblo of Sandia may result in the delay or denial of the construction project.
- e. If requested by the Pueblo of Sandia Environment Department, the permittee must provide additional information necessary for a case-by-case eligibility determination to assure compliance with the Pueblo of Sandia Water Quality Standards and/or applicable Federal Standards not authorized by this certification.
- f. An "Authorization to Proceed Letter" with site specific mitigation requirements may

be sent out to the permittee when a review of the NOI and SWPPP, on a case-by-case basis is completed by the Pueblo of Sandia Environment Department. This approval will allow the application to proceed if all mitigation requirements are met.

- g. The Pueblo of Sandia will not allow Small construction Waivers (Appendix C) or the Rainfall Erosivity Waiver (Appendix C.1) to be granted for any small construction activities.
- h. Before submitting a Notice of Termination (NOT) to the EPA, permittees must clearly demonstrate to the Pueblo of Sandia Environment Department through a site visit or documentation that requirements for site stabilization have been met and any temporary erosion control structures have been removed. A short letter stating the NOT is acceptable and all requirements have been met will be sent to the permittee to add to the permittee's NOT submission to EPA.
- i. Copies of all NOT submitted to the EPA must also be sent concurrently to the Pueblo of Sandia through the mail or electronically.

Regular U.S. Delivery Mail:

Pueblo of Sandia Environment Department
Attention: Scott Bulgrin, Water Quality Manager
481 Sandia Loop
Bernalillo, New Mexico 87004

Electronically:

sbulgrin@sandiapueblo.nsn.us

- j. The Pueblo of Sandia may require the permittee to perform water quality monitoring for pH, turbidity, and total suspended solids (TSS) during the permit term if the discharge is to a surface water leading to the Rio Grande for the protection of public health and the environment.

9.4.2.3 Pueblo of Santa Ana. The following conditions apply only to discharges on the Pueblo of Santa Ana Reservation:

- a. The permittee shall provide a copy of the Notice of Intent (NOI) to the Pueblo of Santa Ana (the Pueblo), at the same time it is submitted to the U.S. Environmental Protection Agency (EPA), for projects with discharges onto the lands of the Pueblo as defined in the Pueblo's antidegradation policy within the Pueblo of Santa Ana Water Quality Standards.
- b. The permittee shall provide a final copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo that is associated with any project identified in the NOI, at the same time that an NOI is submitted to the EPA. The SWPPP should include any projects with discharges onto the lands of the Pueblo as defined in

the antidegradation policy within the Pueblo of Santa Ana Water Quality Standards.

- c. The operator shall provide copies of inspections reports and of corrective action reports to the Pueblo at the address below for review, upon request.
- d. Upon completion of the project identified in the NOI, the permittee will submit a Notice of Termination (NOT) to the Pueblo.
- e. All required or requested permittee specific information identified above shall be submitted to the following address:

Pueblo of Santa Ana Department of Natural Resources,
Attention: Water Resources Division
2 Dove Road
Santa Ana Pueblo, NM 87004

- f. Discharges are not authorized by permittee unless an accurate and complete NOI and SWPPP have been submitted to the Pueblo. Failure to provide an accurate and complete NOI and SWPPP may result in a denial of the discharge permit or a delay in groundbreaking or construction.
- g. The permittee will not proceed with site work until authorized by the Pueblo. The Pueblo requires review of the complete and final SWPPP before authorization to proceed. The Pueblo will provide an "Authorization to Process" notice after review and approval of the SWPPP.
- h. The permittee could be required to perform water quality monitoring, sampling or analysis during the active permit dates for constituents determined by the Pueblo.
- i. Before submitting a NOT, permittees must certify to the Pueblo's Department of Natural Resources in writing that requirements for site stabilization have been met, and any temporary erosion control structures have been removed. Documentation of the Pueblo's review that such requirements have been reviewed and met will be provided for the permittee to add to the permittee's NOT submission to EPA. Copies of all NOT submitted to the EPA must also be sent to the Pueblo at the address provided above.

9.4.2.4 Pueblo of Santa Clara. The following conditions apply only to discharges on the Pueblo of Santa Clara Reservation:

- a. The operator must provide a copy of the Notice of Intent (NOI) and Notice of Termination (NOT) to the Santa Clara Pueblo Governor's Office at the same time it is provided to the US Environmental Protection Agency.
- b. A copy of the Storm water Pollution Prevention Plan shall be made available to the Pueblo of Santa Clara staff upon request.

9.4.2.5 Pueblo of Tesuque. The following conditions apply only to discharges on the Pueblo of Tesuque Reservation:

- a. Based on the Section 401 Certification provisions within the CWA, no discharges that will exceed or cause the exceedance of the Pueblo of Tesuque Water Quality Standards will be allowed within the boundaries of the Pueblo of Tesuque.
- b. The operator shall provide a copy of the Notice of Intent (NOI) to the Pueblo of Tesuque Governor's Office in care of the Department of Environmental and Natural Resources (DENR) at the same time it is submitted to the Environmental

Protection Agency, for projects occurring within the boundaries of Tesuque tribal lands. The operator shall also notify the Pueblo of Tesuque Governor's Office in care of the DENR when it submits the Notice of Termination (NOT), but not before the DENR post-construction inspection has been completed as described below. The NOI and NOT shall be sent to the following address:

Pueblo of Tesuque
Office of the Governor
Attn: DENR
20 TP828 Administration Bldg.
Santa Fe, NM 87506-5512

Alternatively, the operator may arrange with DENR to email the documents.

- c. The operator shall also provide a copy of the Stormwater Pollution Prevention Plan, copies of inspection reports, and copies of corrective action reports to the DENR.
- d. Construction requiring this permit will not commence until the above document submissions have been made and DENR provides the operator with notice to proceed. Operators will not demobilize until DENR personnel inspect the site for completion of stabilization. Once the inspection has taken place and all SWPPP-related work has been completed to the satisfaction of DENR, the operator will submit its NOT as described above and then demobilize.

9.4.2.6 Taos Pueblo. The following conditions apply only to discharges on the Taos Pueblo Reservation:

- a. The operator shall provide a copy of the Notice of Intent (NOI) to the Taos Pueblo Governor's Office, War Chief's Office and Environmental Office, at the same time it is submitted to the U.S. Environmental Protection Agency, for projects occurring within the exterior boundaries of Taos Pueblo. The operator shall also notify Taos Pueblo when it has submitted the Notice of Termination (NOT). The NOI and NOT shall be sent to the Taos Pueblo at the following addresses:
 - i. Taos Pueblo Governor's Office
P.O. Box 1846
Taos NM 87571
 - ii. Taos Pueblo War Chief's Office
P.O. Box 2596
Taos NM 87571
 - iii. Environmental Office
Attn: Program Manger
P.O. Box 1846
Taos NM 87571

- b. Taos Pueblo requests that in the event Indian artifacts or human remains are inadvertently discovered on projects occurring near or on Taos Pueblo lands that consultation with the tribal Governor's Office occur at the earliest possible time.
- c. The operator shall provide a copy of the Stormwater Pollution Prevention Plan, copies of inspections reports, and copies of corrective action reports to staff in the Taos Pueblo Environmental Office for review and copy, upon request.

9.4.2.7 Ohkay Owingeh. The following conditions apply only to discharges on the Ohkay Owingeh Reservation:

- a. Prior to commencement of any construction activity on Ohkay Owingeh Lands requiring permit coverage under EPA's Construction General Permit, the operator(s) shall submit to Ohkay Owingeh Office of Environmental Affairs, a copy of the electronic "Notice of Intent," submitted to the Environmental Protection Agency, immediately following EPA's electronic notification that the NOI has been received. A copy of the Stormwater Pollution Prevention Plan(s) must be made available to the Ohkay Owingeh Office of Environmental Affairs upon the tribe's request either electronically or hard copy. Operator(s) shall also submit to Ohkay Owingeh Office of Environmental Affairs a copy of the electronic Notice of Termination (NOT) submitted to the Environmental Protection Agency. Documents shall be submitted to Ohkay Owingeh at the following address:

Ohkay Owingeh Office of Environment Affairs
Attention: Environmental Programs Manager
P.O. Box 717
Ohkay Owingeh, New Mexico 87566
Office # 505.852.4212
Fax # 505.852.1432
Electronic mail: naomi.archuleta@ohkay.org

- b. Ohkay Owingeh will not allow the Rainfall Erosivity Waivers (see Appendix C) to be granted for any small construction activities.
- c. All vegetation used to prevent soil loss, seeding or planting of the disturbed area(s) to meet the vegetative stabilization requirements must utilize native seeds/vegetation commonly known to the area. All temporary erosion control structures, such as silt fences must be removed as soon as stabilization requirements are met.

9.4.2.8 Pueblo of Laguna. The following conditions apply only to discharges on the Pueblo of Laguna Reservation:

- a. The operator must provide a paper and electronic copy of the Notice of Intent (NOI) and Notice of Termination (NOT) to the Pueblo of Laguna at the same time it is provided to the U.S. Environmental Protection Agency. The NOI and NOT should be provided to the following address:

Pueblo of Laguna, Office of the Governor
Attn: Environmental & Natural Resources Department
P.O. Box 194
Laguna, NM 87026
Email: setter@pol-nsn.gov

- b. The operator must provide an electronic copy of the Storm Water Pollution

Prevention Plan to the Pueblo of Laguna Environmental Program at the same time the NOI is submitted to the above listed email addresses. Any correspondences between the applicant and EPA related to analytical data, written reports, corrective action, enforcement, monitoring, or an adverse incident written reports threshold likewise be routed to the Pueblo of Laguna Environmental Program.

- c. Immediate initiation of consultation with the Pueblo of Laguna is required should any human remains or artifacts be unearthed during the project that fall under the Native American Graves Protection and Repatriation Act guidelines. If human remains are unearthed, contact the Pueblo of Laguna Police Department at 505.552.6666. If artifacts are unearthed, contact the Pueblo of Laguna Tribal Historic Preservation Office at 505.552.5033.

9.4.2.9 Picuris Pueblo. The following conditions apply only to discharges on the Picuris Pueblo Reservation:

- a. The operator, landowner and construction operators doing earth-disturbance work must meet the definition of "operator" under the Construction General Permit (CGP), and must provide an electronic and paper copy of the Notice of Intent (NOI) and Notice of Termination (NOT) to **both** The Office of the Picuris Pueblo Governor and the Picuris Pueblo Environmental Department at the same time it is provided to the U.S. Environmental Protection Agency (USEPA). The NOI and NOT should be provided to the following address:

Picuris Pueblo
The Office of the Governor
PO BOX 127
Penasco, NM 87553
575-587-2519
575-587-1071 (Fax)
Governor: governor@picurispueblo.org

Picuris Pueblo Environmental Department
PO BOX 158
Penasco, NM 87553
575-587-0110
575-587-0223 (Fax)
Environmental Director: environment@picurispueblo.org

- b. The operator must provide an electronic copy of the Storm Water Pollution Prevention Plan to the Picuris Pueblo Environmental Department at least 30 days prior to submitting the NOI to USEPA and the Picuris Pueblo by email to Picuris Pueblo Environmental Department: environment@picurispueblo.org.

9.4.2.10 Pueblo of Pojoaque. The following conditions apply only to discharges on the Pueblo of Pojoaque Reservation:

- a. The operator, landowner and construction operators doing earth-disturbance work must meet the definition of "operator" under the CGP and must provide a copy of the Notice of Intent (NOI) to the Pueblo of Pojoaque Governor's Office and Environmental Department within 3 days following U.S. Environmental Protection Agency's electronic confirmation that the NOI was certified and submitted and is undergoing its 14-day review period. Additionally, a copy of the Notice of Termination (NOT) must be provided the same day electronic confirmation is

received from the U.S. Environmental Protection Agency that the NOT has been accepted. The NOI and NOT should be provided to the following address:

Pueblo of Pojoaque
Office of the Governor
78 Cities of Gold Road
Santa Fe, NM 87506

Pueblo of Pojoaque
Environmental Department
39 Camino Del Rincon
Santa Fe, NM 87506

- b. The operator must provide an electronic copy of the Stormwater Pollution Prevention Plans to the Pueblo of Pojoaque Environmental Department by email to Adam L Duran (aduran@pojoaque.org) at least 30 days prior to submitting the NOI to EPA and the Pueblo of Pojoaque.

9.4.2.11 Nambe Pueblo. The following conditions apply only to discharges on Nambe Pueblo:

- a. The operator must provide a copy of the Notice of Intent (NOI) and Notice of Termination (NOT) to the Nambe Pueblo Governor's Office at the same time it is provided to the US Environmental Protection Agency. The NOI and NOT should be provided to the following address:

Office of the Governor
Nambe Pueblo
15A NP102 WEST
Nambe Pueblo, NM 87506

- b. The operator must provide a copy of the Stormwater Pollution Prevention Plan to Nambe Pueblo at the same time it is submitted to the EPA, either by email to srydeen@nambepueblo.org or mailed to the above address.

9.4.3 OKR10I000 Indian country within the State of Oklahoma

9.4.3.1 Pawnee Nation. The following conditions apply only to discharges within Pawnee Indian country:

- a. Copies of the Notice of Intent (NOI) and Notice of Termination (NOT) must be provided to the Pawnee Nation at the same time it is submitted to the Environmental Protection Agency to the following address:

Pawnee Nation Department of Environmental Conservation and Safety
P.O. Box 470
Pawnee, OK 74058
Or email to mmatlock@pawneenation.org

- b. The Storm Water Pollution Prevention Plan must be available to Departmental inspectors upon request.
- c. The Department must be notified at 918-762-3655 immediately upon discovery of any noncompliance with any provision of the permit conditions.

9.4.4 OKR10F000 Discharges in the State of Oklahoma that are not under the authority of the Oklahoma Department of Environmental Quality, including activities associated with oil and gas exploration, drilling, operations, and pipelines (includes SIC Groups 13 and 46, and SIC codes 492 and 5171), and point source discharges associated with agricultural production, services, and silviculture (includes SIC Groups 01, 02, 07, 08, 09).

- a. For activities located within the watershed of any Oklahoma Scenic River, including the Illinois River, Flint Creek, Barren Fork Creek, Upper Mountain Fork, Little Lee Creek, and Lee Creek or any water or watershed designated "ORW" in Oklahoma's Water Quality Standards, this permit may only be used to authorize discharges from temporary construction activities. Certification is denied for any on-going activities such as sand and gravel mining or any other mineral mining.
- b. For activities located within the watershed of any Oklahoma Scenic River, including the Illinois River, Flint Creek, Barren Fork Creek, Upper Mountain Fork, Little Lee Creek, and Lee Creek or any water or watershed designated "ORW" in Oklahoma's Water Quality Standards, certification is denied for any discharges originating from support activities, including concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, or borrow areas.
- c. In order to comply with Oklahoma's Water Quality Standards, these conditions and restrictions also apply to any construction projects located wholly or partially on Indian Country lands within the State of Oklahoma.

9.5 EPA Region 8

9.5.1 COR10I000 Indian country within the State of Colorado, as well as the portion of the Ute Mountain Reservation located in New Mexico.

9.5.1.1 The Ute Mountain Ute Tribe. The following conditions apply only to discharges on the Ute Mountain Ute Reservation.

- a. Permittees must send the Stormwater Pollution Prevention Plan (SWPPP) to the Tribal Environmental Department for review and approval at least 30 days before construction starts.
- b. Before submitting the Notice of Termination (NOT), permittees must clearly demonstrate to the Tribal Environmental Department during an on-site inspection that requirements for site stabilization have been met.
- c. The permittee must send a copy of the Notice of Intent (NOI) and the Tribal Environmental Department.
- d. Permittees may submit their SWPPPs and NOI and NOT requests electronically to: clarrick@utemountain.org.
- e. Written NOIs, SWPPPs, and NOTs may be mailed to:

Colin Larrick, Water Quality Program Manager
Ute Mountain Ute Tribe
Environmental Department
P.O. Box 448
Towaoc, CO 81334

9.5.2 MTR10I000 Indian country within the State of Montana

9.5.2.1 The Confederated Salish and Kootenai Tribes of the Flathead Nation. The following conditions apply only to discharges on the Confederated Salish and Kootenai Tribes of the Flathead Nation Reservation:

- a. Permittees must submit the Stormwater Pollution Prevention Plan (SWPPP) to the Confederated Salish and Kootenai Tribes at least 30 days before construction starts.
- b. Before submitting the Notice of Termination (NOT), permittees must clearly demonstrate to an appointed Tribal staff person during an onsite inspection that requirements for site stabilization have been met.
- c. The permittee must send a copy of the Notice of Intent (NOI) and the NOT to CSKT.
- d. Permittees may submit their SWPPPs, NOIs and NOTs electronically to: clintf@cskt.org.
- e. Written SWPPPs, NOIs and NOTs may be mailed to:

Clint Folden, Water Quality Regulatory Specialist
Confederated Salish and Kootenai Tribes
Natural Resources Department
P.O. Box 278
Pablo, MT 59855

9.6 EPA Region 9

9.6.1 AZR10I000 Indian Country within the state of Arizona, as well as Navajo Nation lands in New Mexico and Utah

9.6.1.1 Navajo Nation. The following conditions apply only to discharges on the Navajo Nation reservation:

- a. Courtesy copies of Notice of Intents and stormwater pollution prevention plans shall be made available to Navajo EPA.
- b. Copies of all monitoring reports must be provided to Navajo EPA.
- c. Facilities covered under the CGP will be subject to compliance inspections by Navajo EPA staff with active Federal Inspector Credentials under the authority of the Clean Water Act.
- d. Specific awareness and adherence to Sections 201 – Anti-degradation Policy, 203 – Narrative WQS, and 207.H - Turbidity.

9.6.2 CAR10I000 Indian country within the State of California

9.6.2.1 Twenty-Nine Palms Band of Mission Indians. The following conditions apply only to discharges on the Twenty-Nine Palms Band of Mission Indians Reservation:

- a. At the time the applicant submits its Notice of Intent (NOI) to the EPA, the applicant must concurrently submit written notification of the NOI and a copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Twenty-Nine Palms Band of Mission Indians at the address below:

Tribal Environmental Coordinator
Twenty-Nine Palms Band of Mission Indians
46-200 Harrison Place

Coachella, CA 92236

- b. The applicant must also concurrently submit to the Tribal Environmental Coordinator written notification of any other forms or information submitted to the EPA, including waivers, reporting, and Notice of Termination (NOT).
- c. Permitted entities under the CGP must keep the Tribal EPA informed of authorized discharges under the CGP by submitting written information about the type, quantity, frequency and location, intended purpose, and potential human health and/or environmental effects of their activities. These requirements are pursuant to Section 4 of the Twenty-Nine Palms Band of Mission Indians Water Pollution Control Ordinance (022405A). This information may be submitted to Tribal EPA in the form of Stormwater Pollution Prevention Plans (SWPPPs), monitoring reports, or other reports as required under the CGP. Spills, leaks, or unpermitted discharges must be reported in writing to Tribal EPA within 24 hours of the incident.

9.6.2.2 Morongo Band of Mission Indians. The following conditions apply only to discharges on the Morongo Band of Mission Indians Reservation:

- a. This certification does not exempt, and is provisional upon compliance with, other applicable statutes and codes administered by federal and tribal agencies. Pursuant to the Morongo Band of Mission Indians Surface Water Quality Protection Ordinance (Ordinance 39), all unpermitted discharges must be reported to the Morongo Band of Mission Indians Environmental Protection Department (Morongo EPD) within 24 hours of the incident.
- b. Each operator shall submit a signed hard copy of the Notice of Intent (NOI) and stormwater pollution prevention plan (SWPPP) to the Morongo EPD at the same time it is submitted electronically to the EPA.
- c. The operator shall allow the Morongo EPD or its designee to inspect and sample at the construction site as needed.

Correspondence should be submitted to:

Morongo Band of Mission Indians
Environmental Protection Department
12700 Pumarra Road
Banning, CA 92220
Phone: (951) 755-5128
Email: epd@morongo-nsn.gov

9.6.3 GUR100000 Island of Guam. The following conditions apply only to discharges on the Island of Guam:

- a. Any earth-moving operations which require a permit must be obtained from the Department of Public Works (DPW) with clearance approval from various Government of Guam Agencies including Guam EPA prior to the start of any earth-moving activity.
- b. In the event that the construction sites are within the Guam Sole Source Aquifer, the construction site owner and operator must consider opportunities to facilitate groundwater recharge for construction and post-construction implementing infiltration Best Management Practices. Stormwater disposal systems shall be designed and operated within the boundaries of the project. Stormwater systems shall not be permitted within any Wellhead Protection Zone unless the discharge meets the Guam Water Quality Standards within the zone. Waters discharged

within the identified category G-2 recharge zone shall receive treatment to the degree required to protect the drinking water quality prior to it entering the category G-1 resource zone.

- c. All conditions and requirements set forth in the 22 Guam Administrative Rules and Regulations (GARR), Division II, Water Control, Chapter 10, Guam Soil Erosion and Sediment Control Regulations (GSESCR) that are more protective than the CGP regarding construction activities must be complied with.
- d. All standards and requirements set forth in the 22 GARR, Division II, Water Control, Chapter 5, *Guam Water Quality Standards (GWQS) 2001 Revisions*, must be complied with to include reporting GWQS exceedance to Guam EPA.
- e. All operators/owners of any property development or earth moving activities shall comply with the erosion control pre-construction and post-construction BMP design performance standards and criteria set forth in the 2006 CNMI and Guam Stormwater Management Manual.
- f. All conditions and requirements regarding dewatering activities set forth in 22 Guam Administrative Rules and Regulations Chapter 7, Water Resources Development and Operating Regulations must be complied with to include securing permits with Guam EPA prior to the start of any dewatering activities.
- g. If a project to be developed is covered under the Federal Stormwater Regulations (40 CFR Parts 122 & 123), a Notice of Intent (NOI) to discharge stormwater to the surface and marine waters of Guam must be submitted to the U.S. EPA and a copy furnished to Guam EPA, pursuant to Section 10, 104(B)(5)(d) 22GAR, Division II, Chapter 10.
- h. Guam EPA shall apply the Buffer Requirements listed in Appendix G of the CGP NPDES Permit for construction activities as it pertains to Waters of the U.S. in Guam. Guam EPA shall also apply the same buffer requirements for sinkholes in Guam.
- i. When Guam EPA, through its permit review process, identifies that the proposed construction activity is close proximity to marine waters, contractors and owners will be informed that any activity that may impair water quality are required to stop during peak coral spawning periods as per the Guam Coral Spawning Construction Moratoriums.
- j. The Proposed Construction General Permit must set appropriate measures and conditions to protect Guam's Threatened and Endangered Species and Outstanding Resource Waters of exceptional recreational or ecological significance as determined by the Guam EPA Administrator as per *Guam Water Quality Standards 2001 Revisions*, §5102, Categories of Waters, D. Outstanding Resource Waters.
- k. When Guam EPA through its permit review process identifies that proposed construction activity is in close proximity to any Section 303d impaired waters, which includes marine waters and surface waters, shall ensure that construction activity does not increase the impaired water's ambient parameters.
- l. When Rainfall Erosivity and TMDL Waivers reflected in the CGP, Appendix C, are submitted to the U.S. EPA, Guam EPA will review waivers on a project by project basis.
- m. Prior to submission of the Notice of Termination (NOT) to the U.S. EPA, permittees must clearly demonstrate to Guam EPA that the project site has met all soil

stabilization requirements and removal of any temporary erosion control as outlined in the GSESCR.

9.7 EPA Region 10

9.7.1 IDR100000 State of Idaho, except Indian country

a. Idaho's Antidegradation Policy. The WQS contain an antidegradation policy providing three levels of protection to water bodies in Idaho (IDAPA 58.01.02.051).

1. Tier I Protection. The first level of protection applies to all water bodies subject to Clean Water Act jurisdiction and ensures that existing uses of a water body and the level of water quality necessary to protect those existing uses will be maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). Additionally, a Tier 1 review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.05).
2. Tier II Protection. The second level of protection applies to those water bodies considered high quality and ensures that no lowering of water quality will be allowed unless deemed necessary to accommodate important economic or social development (IDAPA 58.01.02.051.02; 58.01.02.052.08).
3. Tier III Protection. The third level of protection applies to water bodies that have been designated outstanding resource waters and requires that activities not cause a lowering of water quality (IDAPA 58.01.02.051.03; 58.01.02.052.09).

DEQ is employing a water body by water body approach to implementing Idaho's antidegradation policy. This approach means that any water body fully supporting its beneficial uses will be considered high quality (IDAPA 58.01.02.052.05.a). Any water body not fully supporting its beneficial uses will be provided Tier I protection for that use, unless specific circumstances warranting Tier II protection are met (IDAPA 58.01.02.052.05.c). The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection (IDAPA 58.01.02.052.05).

b. Pollutants of Concern. The primary pollutants of concern associated with stormwater discharges from construction activities are sediment, typically measured as total suspended solids and turbidity. Other potential pollutants include the following: phosphorus, nitrogen, pesticides, organics, metals, PCBs, petroleum products, construction chemicals, and solid wastes.

c. Receiving Water Body Level of Protection. The CGP provides coverage to construction activities throughout the entire State of Idaho. Because of the statewide applicability, all of the jurisdictional waters within Idaho could potentially receive discharges either directly or indirectly from activities covered under the CGP. DEQ applies a water body by water body approach to determine the level of antidegradation a water body will receive.

All waters in Idaho that receive discharges from activities authorized under the CGP will receive, at minimum Tier I antidegradation protection because Idaho's antidegradation policy applies to all waters of the state. Water bodies that fully support their aquatic life or recreational uses are considered to be *high quality waters* and will receive Tier II antidegradation protection.

Although Idaho does not currently have any Tier III designated outstanding resource waters (ORWs) designated, it is possible for a water body to be designated as an ORW during the life of the CGP. Because of this potential, the antidegradation review also assesses whether the permit complies with the

outstanding resource water requirements of Idaho's antidegradation policy.

To determine the support status of the receiving water body, persons filing a Notice of Intent (NOI) for coverage under this general permit must use the most recent EPA-approved Integrated Report, available on Idaho DEQ's website:

<http://www.deq.idaho.gov/water-quality/surface-water/monitoring-assessment/integrated-report/>.

High quality waters are identified in Categories 1 and 2 of the Integrated Report. If a water body is in either Category 1 or 2, it is a Tier II water body.

Unassessed waters are identified as Category 3 of DEQ's Integrated Report. These waters require a case-by-case determination to be made by DEQ based on available information at the time of the application for permit coverage. If a water body is unassessed, the applicant is directed to contact DEQ for assistance in filing the NOI.

Impaired waters are identified in Categories 4 and 5 of the Integrated Report. Category 4(a) contains impaired waters for which a TMDL has been approved by EPA. Category 4(b) contains impaired waters for which controls other than a TMDL have been approved by EPA. Category 5 contains waters which have been identified as "impaired," for which a TMDL is needed. These waters are Tier I waters, for the use which is impaired. With the exception, if the aquatic life uses are impaired for any of these three pollutants—dissolved oxygen, pH, or temperature—and the biological or aquatic habitat parameters show a health, balanced biological community, then the water body shall receive Tier II protection, in addition to Tier I protection, for aquatic life uses (IDAPA 58.01.02.052.05.c.i.).

DEQ's webpage also has a link to the state's map-based Integrated Report which presents information from the Integrated Report in a searchable, map-based format: <http://www.deq.idaho.gov/assistance-resources/maps-data/>.

Water bodies can be in multiple categories for different causes. If assistance is needed in using these tools, or if additional information/clarification regarding the support status of the receiving water body is desired, the operator is directed to make contact with the appropriate DEQ regional office of the State office in the table below:

Regional and State Office	Address	Phone Number	Email
Boise	1445 N. Orchard Rd., Boise 83706	208-373-0550	Kati.carberry@deq.idaho.gov
Coeur d'Alene	2110 Ironwood Parkway, Coeur D'Alene 83814	208-769-1422	June.bergquist@deq.idaho.gov
Idaho Falls	900 N. Skyline, Suite B., Idaho Falls 83402	208-528-2650	Troy.saffle@deq.idaho.gov

Lewiston	1118 "F" St., Lewiston 83501	208-799- 4370	Mark.sellet@deq.idaho.gov
Pocatello	444 Hospital way, #300 Pocatello 83201	208-236- 6160	Lynn.vanevery@deq.idaho.gov
Twin Falls	650 Addison Ave., W., Suite 110, Twin Falls 83301	208-736- 2190	Balthasar.buhidar@deq.idaho.gov
State Office	1410 N. Hilton Rd., Boise 83706	208-373- 0502	Nicole.deinarowicz@deq.idaho.gov

- d. *Turbidity Monitoring.* The permittee must conduct turbidity monitoring during construction activities and thereafter on days where there is a direct discharge of pollutants from an unstabilized portion of the site which is causing a visible plume to a water of the U.S.

A properly and regularly calibrated turbidimeter is required for measurements analyzed in the field (preferred method), but grab samples may be collected and taken to a laboratory for analysis. If the permittee can demonstrate that there will be no direct discharge from the construction site, then turbidity monitoring is not required. When monitoring is required, a sample must be taken at an undisturbed area immediately upstream of the project area to establish background turbidity levels for the monitoring event. Background turbidity, location, date and time must be recorded prior to monitoring downstream of the project area. A sample must also be taken immediately downstream from any point of discharge and *within* any visible plume. The turbidity, location, date and time must be recorded. The downstream sample must be taken immediately following the upstream sample in order to obtain meaningful and representative results.

Results from the compliance point sampling or observation⁷⁸ must be compared to the background levels to determine whether project activities are causing an exceedance of state WQS. If the downstream turbidity is 50 NTUs or more than the upstream turbidity, then the project is causing an exceedance of WQS. *Any exceedance of the turbidity standard must be reporting to the appropriate DEQ regional office within 24 hours. The following six (6) steps should be followed to ensure compliance with the turbidity standard:*

1. If a visible plume is observed, quantify the plume by collecting turbidity measurements from within the plume and compare the results to Idaho's instantaneous numeric turbidity criterion (50 NTU over the background).

⁷⁸ A visual observation is only acceptable to determine whether BMPs are functioning properly. If a plume is observed, the project may be causing an exceedance of WQS and the permittee must collect turbidity data and inspect the condition of the projects BMPs. If the BMPs appear to be functioning to their fullest capability and the turbidity is 50 NTUs or more than the upstream turbidity, then the permittee must modify the activity or implement additional BMPs (this may also include modifying existing BMPs).

2. If turbidity is less than 50 NTU instantaneously over the background turbidity; continue monitoring as long as the plume is visible. If turbidity exceeds background turbidity by more than 50 NTU instantaneously then stop all earth disturbing construction activities and proceed to step 3.
3. Take immediate action to address the cause of the exceedance. That may include inspection the condition of project BMPs. If the BMPs are functioning to their fullest capability, then the permittee must modify project activities and/or BMPs to correct the exceedance.
4. Notify the appropriate DEQ regional office within 24 hours.
5. Possibly increase monitoring frequency until state water quality standards are met.
6. Continue earth disturbing construction activities once turbidity readings return to within 50 NTU instantaneously and 25 NTU for more than ten consecutive days over the background turbidity.

Copies of daily logs for turbidity monitoring must be available to DEQ upon request. The report must describe all exceedances and subsequent actions taken, including the effectiveness of the action.

- e. Reporting of Discharges Containing Hazardous Materials or Petroleum Products. All spills of hazardous material, deleterious material or petroleum products which may impact waters (ground and surface) of the state shall be immediately reported. Call 911 if immediate assistance is required to control, contain or clean up the spill. If no assistance is needed in cleaning up the spill, contact the appropriate DEQ regional office in the table below during normal working hours or Idaho State Communications Center after normal working hours. If the spilled volume is above federal reportable quantities, contact the National Repose Center.

For immediate assistance: Call 911

National Response Center: (800) 424-8802

Idaho State Communications Center: (208) 632-8000

Regional office	Toll Free Phone Number	Phone Number
Boise	888-800-3480	208-373-0321
Coeur d'Alene	877-370-0017	208-769-1422
Idaho Falls	800-232-4635	208-528-2650
Lewiston	977-547-3304	208-799-4370
Pocatello	888-655-6160	208-236-6160
Twin Falls	800-270-1663	208-736-2190

9.7.2 IDR10I000 Indian country within the State of Idaho, except Duck Valley Reservation lands (see Region 9)

9.7.2.1 Shoshone-Bannock Tribes. The following conditions apply only to discharges on the Shoshone-Bannock Reservation:

- f. Each operator shall submit a signed hard copy of the Notice of Intent (NOI) to the Shoshone-Bannock Tribes Water Resources Department at the same time it is

submitted electronically to the Environmental Protection Agency (EPA) and shall provide the Shoshone-Bannock Tribes Water Resources Department the acknowledgement of receipt of the NOI from the EPA within 7 calendar days of receipt from the EPA.

9.7.3 WAR10F000 Areas in the State of Washington, except those located on Indian country, subject to construction activity by a Federal Operator. The following conditions apply only to discharges on federal facilities in the State of Washington:

- a. Discharges shall not cause or contribute to a violation of surface water quality standards (Chapter 173-201A WAC), groundwater quality standards (Chapter 173-200 WAC), sediment management standards (Chapter 173-204 WAC), and human health-based criteria in the National Toxics Rule (40 CFR Part 131.36). Discharges that are not in compliance with these standards are not authorized.
- b. Prior to the discharge of stormwater and non-storm water to waters of the State, the Permittee must apply all known, available, and reasonable methods of prevention, control, and treatment (AKART). This includes the preparation and implementation of an adequate SWPPP, with all appropriate BMPs installed and maintained in accordance with the SWPPP and the terms and conditions of this permit.
- c. Permittees who discharge to segments of waterbodies listed as impaired by the State of Washington under Section 303(d) of the Clean Water Act for turbidity, fine sediment, phosphorus, or pH must comply with the following numeric effluent limits:

Parameter Identified in 303(d) Listing	Parameter Sampled	Unit	Analytical Method	Numeric Effluent Limit
<ul style="list-style-type: none"> • Turbidity • Fine Sediment • Phosphorus 	Turbidity	NTU	SM2130 or EPA 180.1	25 NTUs at the point where the stormwater is discharged from the site.
High pH	pH	Su	pH meter	In the range of 6.5 – 8.5

- d. All references and requirements associated with Section 303(d) of the Clean Water Act mean the most current EPA approved listing of impaired waters that exists on February 16, 2017, or the date when the operator's complete permit application is received by EPA, whichever is later.
- e. Discharges to waterbodies subject to an applicable Total Maximum Daily Load (TMDL) for turbidity, fine sediment, high pH, or phosphorus, shall be consistent with the assumptions and requirements of the TMDL.
 - i. Where an applicable TMDL sets specific waste load allocations or requirements for discharges covered by this permit, discharges shall be consistent with any specific waste load allocations or requirements establish by the applicable TMDL.
 - ii. Where an applicable TMDL has established a general waste load allocation for construction stormwater discharges, but no specific requirements have been identified, compliance with this permit will be assumed to be consistent with the approved TMDL.

- iii. Where an applicable TMDL has not specified a waste load allocation for construction stormwater discharges, but has not excluded these discharges, compliance with this permit will be assumed to be consistent with the approved TMDL.
- iv. Where an applicable TMDL specifically precludes or prohibits discharges from construction activity, the operator is not eligible for coverage under this permit.
- v. Applicable TMDL means a TMDL for turbidity, fine sediment, high pH, or phosphorus, which has been completed and approved by EPA prior to February 16, 2017, or prior to the date the operator's complete NOI is received by EPA, whichever is later.

9.7.4 WAR10I000 Indian country within the State of Washington

9.7.4.1 Confederated Tribes of the Colville Reservation. The following conditions apply only to discharges on the Colville Indian Reservation (CIR) and on other Tribal trust lands or allotments of the Confederated Tribes of the Colville Reservation:

- a. A copy of the Stormwater Pollution Prevention Plan must be submitted to the following office at least thirty (30) days in advance of sending the Notice of Intent (NOI) to EPA:

Environmental Trust Department
Confederated Tribes of the Colville Reservation
PO Box 150
Nesepalem, WA 99155

- b. Copies of the Notice of Intent (NOI) and Notice of Termination (NOT) must be sent to the ETD at the same time they are submitted to EPA.
- c. Discharges to Omak Creek, the Okanogan River, and Columbia River downstream of Chief Joseph Dam may affect threatened or endangered species, and shall only be permitted in adherence with Appendix D of the CGP.
- d. All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in Chapter 4-8 Water Quality Standards of the Colville Law and Order Code, as amended.
- e. Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering waters of the CIR. All spills must be reported to the appropriate emergency management agency and the ETD, and measures shall be taken immediately to prevent the pollution of waters of the CIR, including groundwater.
- f. Stormwater site inspections shall be conducted at least once every 7 calendar days, within 24-hours of the occurrence of a rain event of 0.25 inches or greater in a 24-hour period, and daily during periods of saturated ground surface or snowmelt with accompanying surface runoff.
- g. Results of discharge sampling must be reported to the ETD within 7 days of sample collection. All sample reporting must include the date and time, location, and individual performing the sampling.
- h. Any corrective action reports that are required under the CGP must be submitted to the ETD at the above address within one (1) working day of the report completion.

- i. This certification does not authorize impacts to cultural, historical, or archeological features or sites, or proprieties that may be eligible for such listing.

9.7.4.2 Lummi Nation. The following conditions apply only to discharges on the Lummi Reservation:

- a. The Lummi Nation reserves the right to modify this 401 certification if the final version of the NPDES General Permit for Storm Water Discharges Associated with Construction Activity (CGP) on tribal lands in the State of Washington (Permit No. WAR10I000) is substantively different than the draft version of the proposed permit that was made available for public comments during April 2016. The Lummi Nation will determine if the final version of the NPDES CGP is substantively different than the draft version following review of the final version once the EPA makes it available.
- b. This certification does not exempt and is provisional upon compliance with other applicable statutes and codes administered by federal and Lummi tribal agencies. Pursuant to Lummi Code of Laws (LCL) 17.05.020(a), the operator must also obtain a land use permit from the Lummi Planning Department as provided in Title 15 of the Lummi Code of Laws and regulations adopted thereunder.
- c. Pursuant to LCL 17.05.020(a), each operator shall develop and submit a Storm Water Pollution Prevention Plan to the Lummi Water Resources Division for review and approval by the Water Resources Manager prior to beginning any discharge activities.
- d. Pursuant to LCL Title 17, each operator shall be responsible for achieving compliance with the Water Quality Standards for Surface Waters of the Lummi Indian Reservation (Lummi Administrative Regulations [LAR] 17 LAR 07.010 through 17 LAR 07.210 together with supplements and amendments thereto).
- e. Each operator shall submit a signed hard copy of the Notice of Intent (NOI) to the Lummi Water Resources Division at the same time it is submitted electronically to the Environmental Protection Agency (EPA) and shall provide the Lummi Water Resources Division the acknowledgement of receipt of the NOI from the EPA and the associated NPDES tracking number provided by the EPA within 7 calendar days of receipt from the EPA.
- f. Each operator shall submit a signed hard copy of the Notice of Termination (NOT) to the Lummi Water Resources Division at the same time it is submitted electronically to the EPA and shall provide the Lummi Water Resources Division the EPA acknowledgement of receipt of the NOT.
- g. Storm Water Pollution Prevention Plans, Notice of Intent, Notice of Termination and associated correspondence with the EPA shall be submitted to:

Lummi Natural Resources Department
ATTN: Water Resources Manager
2665 Kwina Road
Bellingham, WA 98226-9298

9.7.4.3 Makah Tribe. The following conditions apply only to discharges on the Makah Reservation:

- a. The operator shall be responsible for achieving compliance with the Makah Tribe's Water Quality Standards.

- b. The operator shall submit a Storm Water Pollution Prevention Plan to the Makah Tribe Water Quality Program and Makah Fisheries Habitat Division for review and approval at least thirty (30) days prior to beginning any discharge activities.
- c. The operator shall submit a copy of the Notice of Intent to the Makah Tribe Water Quality Program and Makah Fisheries Habitat Division at the same time it is submitted to EPA.
- d. Storm Water Pollution Prevention Plans and Notices of Intent shall be submitted to:

Aaron Parker
Makah Fisheries Management Water Quality Specialist
(360) 645-3162
Cell 206-356-0319
Aaron.parker@makah.com
PO Box 115
Neah Bay WA 98357

9.7.4.4 Puyallup Tribe of Indians. The following conditions apply only to discharges on the Puyallup Tribe of Indians Reservation:

- a. Each permittee shall be responsible for achieving compliance with the Puyallup Tribe's Water Quality Standards, including antidegradation provisions. The Puyallup Natural Resources Department will conduct an antidegradation review for permitted activities that have the potential to lower water quality. The antidegradation review will be consistent with the Tribe's Antidegradation Implementation Procedures. The Tribe may also impose additional controls on a site-specific basis, or request EPA to require the operator obtain coverage under an individual permit, if information in the NOI or from other sources indicates that the operator's discharges are not controlled as necessary to meet applicable water quality standards.
- b. The permittee shall be responsible for meeting any additional permit requirements imposed by EPA necessary to comply with the Puyallup Tribe's antidegradation policies if the discharge point is located within 1 linear mile upstream of waters designated by the Tribe.
- c. Each permittee shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to Char Naylor (char.naylor@puyalluptribe.com) and Russ Ladley (russ.ladley@puyalluptribe.com) by email or at the address listed below at the same time it is submitted to EPA.

Puyallup Tribe of Indians
3009 E. Portland Avenue
Tacoma, WA 98404
ATTN: Russ Ladley and Char Naylor

- d. All supporting documentation and certifications in the NOI related to coverage under the general permit for Endangered Species Act purposes shall be submitted to the Tribe's Resource Protection Manager (russ.ladley@puyalluptribe.com) and Char Naylor (char.naylor@puyalluptribe.com) for review.
- e. If EPA requires coverage under an individual or alternative permit, the permittee shall submit a copy of the permit to Russ Ladley and Char Naylor at the address listed above.

- f. The permittee shall submit all stormwater pollution prevention plans to Char Naylor for review and approval prior to beginning any activities resulting in a discharge to tribal waters.
- g. The permittee shall conduct benchmark monitoring for turbidity (or transparency) and, in the event of significant concrete work or engineered soils, pH monitoring as well. Monitoring, benchmarks, and reporting requirements contained in Condition S.4. (pp.13-20) of the Washington State Construction Stormwater General Permit, effective January 1, 2016, shall apply, as applicable.
- h. The permittee shall notify Char Naylor (253-680-5520) and Russ Ladley (253-680-5560) prior to conducting inspections at construction sites generating storm water discharged to tribal waters.
- i. Treat dewatering discharges with controls necessary to minimize discharges of pollutants in order to minimize the discharge of pollutants to groundwater or surface waters from stormwater that is removed from excavations, trenches, foundations, vaults, or other storage areas. Examples of appropriate controls include sediment basins or sediment traps, sediment socks, dewatering tanks, tube settlers, weir tanks, and filtration systems (e.g., bag or sand filters) that are designed to remove sediment.

To the extent feasible, utilize vegetated, upland areas of the site to infiltrate dewatering water before discharge. At all points where dewatering water is discharged, comply with the velocity dissipation requirements of Part 2.2.11 of EPA's 2016 General Construction Stormwater Permit. Examples of velocity dissipation devices include check dams, sediment traps, riprap, and grouted riprap at outlets.

- j. The permittee shall provide and maintain natural buffers to the maximum extent possible (and/or equivalent erosion and sediment controls) when tribal waters are located within 100 feet of the site's earth disturbances. If infeasible to provide and maintain an undisturbed 100 foot natural buffer, erosion and sediment controls to achieve the sediment load reduction equivalent to a 100-foot undisturbed natural buffer shall be required.

9.7.4.5 Spokane Tribe of Indians. The following conditions apply only to discharges on the Spokane Tribe Reservation:

- a. Pursuant to Tribal Law and Order Code (TLOC) Chapter 30 each operator shall be responsible for achieving compliance with the Surface Water Quality Standards of the Spokane Tribe. The operator shall notify the Spokane Tribe, Water Control Board (WCB) of any spills of hazardous material and;
- b. Each operator shall submit a signed hard copy of the Notice of Intent (NOI) to the WCB at the same time it is submitted to EPA.
- c. The permittee shall allow the Tribal Water Control Board or its designee to inspect and sample at the construction site as needed.
- d. Each operator shall submit a signed copy of the Notice of Termination (NOT) to the WCB at the same time it is submitted to EPA.

The correspondence address for the Spokane Tribe Water Control Board is:

Water Control Board
c/o. Brian Crossley
PO Box 480
Wellpinit WA 99040

(509)626-4409
crossley@spokanetribe.com

9.7.4.6 Swinomish Indian Tribal Community. The following conditions apply only to discharges on the Swinomish Reservation:

- a. Owners and operators seeking coverage under this permit who intend to discharge to Regulated Surface Waters must submit a copy of the Notice of Intent (NOI) to the DEP at the same time the NOI is submitted to EPA.
- b. Owners and operators seeking coverage under this permit must also submit a Stormwater Pollution Prevention Plan to the DEP for review and approval by DEP prior to beginning any discharge activities.
- c. Owners and operators must also submit to the DEP Changes in NOI and/or Notices of Termination at the same time they are submitted to EPA.

9.7.4.7 Tulalip Tribes. The following conditions apply only to discharges on the Tulalip Reservation:

- a. This certification does not exempt and is provisional upon compliance with other applicable statutes and codes administered by federal and Tulalip tribal agencies. Pursuant to Tulalip Tribes code of law, the operator must also obtain a land use permit from the Tulalip Tribes Planning Department as provided in Title 7 of the Tulalip Tribal Code (<http://www.codepublishing.com/WA/Tulalip/?Tulalip02/Tulalip0205.html>).
- b. Each CGP operator shall be responsible for achieving compliance with Tulalip Tribes Water Quality Standards.
- c. Each CGP operator shall submit their Stormwater Pollution Prevention Plan (SWPPP) to the:

Tulalip Natural & Cultural Resources Department
Tulalip Tribes
6406 Marine Drive
Tulalip, WA 98271

Appendix C – Copy of NOI and EPA Authorization email

DRAFT

Appendix D – Copy of Inspection Form

DRAFT

Site Address: _____
Site Inspection Form

Report No. _____
Page 1 **of** _____

Date / Time of Inspection: _____ Weather Conditions: _____

Recent Precipitation Event: _____

Construction Activities Underway: _____

Status of Existing BMPs

Erosion Control Measure	Status – Cleaning or Repair Needed	Comments/Notes
Straw Bales	<input type="checkbox"/> yes <input type="checkbox"/> no	
Silt Fence	<input type="checkbox"/> yes <input type="checkbox"/> no	
Catch Basin Protection	<input type="checkbox"/> yes <input type="checkbox"/> no	
Construction Entrance	<input type="checkbox"/> yes <input type="checkbox"/> no	
	<input type="checkbox"/> yes <input type="checkbox"/> no	
	<input type="checkbox"/> yes <input type="checkbox"/> no	
	<input type="checkbox"/> yes <input type="checkbox"/> no	
	<input type="checkbox"/> yes <input type="checkbox"/> no	
	<input type="checkbox"/> yes <input type="checkbox"/> no	
	<input type="checkbox"/> yes <input type="checkbox"/> no	

N/A-Not applicable

In the event of a spill refer to the Spill Response Procedure and contact appropriate agencies. Refer to Section 5.2 for Spill Prevention Plan and Response Procedures.

General Comments (Attached figures to show locations of concern):

Are additional Erosion Control Measures Needed?

yes no If yes, describe: _____

Are sediment/pollution discharges from the site present?

yes no If yes, describe: _____

Describe any corrective action required at this time: _____

Notes: _____

Attach additional sheets with notes, comments, illustrations and issues as needed. Use site plan to identify locations of work areas or issues noted above.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Stormwater Control Manager: _____ **Date:** _____

Qualifications: _____

Appendix E – Copy of Corrective Action Form

DRAFT

Stormwater Construction Corrective Action Form

General Information			
Project Name			
NPDES Tracking No.		Location	

Non Compliance

	BMP/activity	Date Observed	Date Corrected	Corrective Action Needed and Notes
1				
2				
3				
4				

Corrective Action

Describe how any incidents of non-compliance have been addressed:

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name and title: _____

Signature: _____

Date: _____

Appendix F – SWPPP Amendment Log

DRAFT

Appendix G – Subcontractor Certifications/Agreements

SUBCONTRACTOR CERTIFICATION
STORMWATER POLLUTION PREVENTION PLAN

Project Number: _____

Project Title: _____

Operator(s): _____

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP.

This certification is hereby signed in reference to the above named project:

Company: _____

Address: _____

Telephone Number: _____

Type of construction service to be provided: _____

Signature: _____

Title: _____

Date: _____

Appendix H – Grading and Stabilization Activities Log

Date Grading Activity Initiated	Description of Grading Activity	Description of Stabilization Measure and Location	Date Grading Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures Initiated
Click or tap to enter a date.			Click or tap to enter a date. <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	Click or tap to enter a date.
Click or tap to enter a date.			Click or tap to enter a date. <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	Click or tap to enter a date.
Click or tap to enter a date.			Click or tap to enter a date. <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	Click or tap to enter a date.
Click or tap to enter a date.			Click or tap to enter a date. <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	Click or tap to enter a date.
Click or tap to enter a date.			Click or tap to enter a date. <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	Click or tap to enter a date.
Click or tap to enter a date.			Click or tap to enter a date. <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	Click or tap to enter a date.

Date Grading Activity Initiated	Description of Grading Activity	Description of Stabilization Measure and Location	Date Grading Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures Initiated
Click or tap to enter a date.			Click or tap to enter a date. <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	Click or tap to enter a date.
Click or tap to enter a date.			Click or tap to enter a date. <input type="checkbox"/> Temporary <input type="checkbox"/> Permanent	Click or tap to enter a date.

DRAFT

Appendix I –SWPPP Training Log

Stormwater Pollution Prevention Training Log

Project Name: _____

Project Location: _____

Instructor's Name(s): _____

Instructor's Title(s): _____

Course Location: _____ Date: _____

Course Length (hours): _____

Stormwater Training Topic: *(check as appropriate)*

- | | |
|---|--|
| <input type="checkbox"/> Sediment and Erosion Controls | <input type="checkbox"/> Emergency Procedures |
| <input type="checkbox"/> Stabilization Controls | <input type="checkbox"/> Inspections/Corrective Actions |
| <input type="checkbox"/> Pollution Prevention Measures | |

Specific Training Objective: _____

Attendee Roster: *(attach additional pages as necessary)*

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		

Appendix J –Delegation of Authority Form

Delegation of Authority

I, _____ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit (CGP), at the _____ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

_____ (name of person or position)
_____ (company)
_____ (address)
_____ (city, state, zip)
_____ (phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix I of EPA's CGP, and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix I.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____
Company: _____
Title: _____
Signature: _____
Date: _____

Appendix K – Endangered Species Documentation

DRAFT



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
<http://www.fws.gov/newengland>

In Reply Refer To:

July 12, 2021

Consultation Code: 05E1NE00-2021-SLI-4105

Event Code: 05E1NE00-2021-E-12428

Project Name: millbury

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at:

<http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>;

<http://www.towerkill.com>; and

<http://>

www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2021-SLI-4105

Event Code: 05E1NE00-2021-E-12428

Project Name: millbury

Project Type: DEVELOPMENT

Project Description: road improvement

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@42.1907305,-71.76213760596758,14z>



Counties: Worcester County, Massachusetts

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Based on information accessed from the Information for Planning and Consultation (IPaC) tool provided by the U.S. Fish and Wildlife Services (US FWS), the Site is not within a mapped habitat zone for an endangered species (see documentation below).

US FWS listed the Northern Long-Eared Bat (NLEB) as a Threatened species under the Endangered Species Act (ESA, 50 CFR 17.11) on April 2, 2015 and mapped the majority of the state of Massachusetts as habitat. The Northern Long-Eared Bat is also listed as Endangered under the Massachusetts Endangered Species Act (MESA, M.G.L. c. 131 A).

Impacts to the NLEB under Section 7 of the ESA were assessed following the final 4(d) rule published January 14, 2016. This rule states, “Incidental take resulting from tree removal is prohibited if it: 1) Occurs within 0.25 mile radius of known northern long-eared bat hibernacula or 2) cuts or destroys known occupied maternity roost trees, or any other trees within a 150-foot (45-meter) radius from the known maternity tree during the pup season (June 1 through July 31).”Based on review of information published by the Massachusetts Natural Heritage and Endangered Species Program (NHESP), last updated June 12, 2019, the Site contains no mapped winter hibernacula or maternity roost trees for the NLEB. The Determination Key was completed on July 6, 2021. Based on the IPaC submission, any take of the NLEB that may occur as a result of the Project is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Appendix L – Historic Properties Documentation

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Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Millbury; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
MLB.A	Old Common		Millbury	
MLB.B	Grass Hill		Millbury	
MLB.C	Taintor - Stowe Farm		Millbury	
MLB.D	West Millbury		Millbury	
MLB.E	Bramanville		Millbury	
MLB.F	Wheelerville - Singletary Village		Millbury	
MLB.G	North Greenwood - Border Area		Millbury	
MLB.H	Main and Elm Streets Area		Millbury	
MLB.I	Canal Street Area		Millbury	
MLB.J	Miles - North Main Street Area		Millbury	
MLB.K	Prospect Street Area		Millbury	
MLB.L	Maple Street Area		Millbury	
MLB.M	South Main Street Area		Millbury	
MLB.N	Hakes, H. W. Manufacturing Company		Millbury	
MLB.O	New England High Carbon Wire Company		Millbury	
MLB.P	Bucks Village		Millbury	
MLB.Q	East Millbury		Millbury	
MLB.R	North Main Street, North Area		Millbury	
MLB.S	North Main Street, South Area		Millbury	
MLB.T	Greenwood Street Area		Millbury	
MLB.U	Blackstone Canal Historic District		Millbury	
MLB.465		22 Atwood Ave	Millbury	c 1960
MLB.24	Bond, Emory House	82 Auburn Rd	Millbury	r 1750
MLB.25	Longley, Nymphas House	90 Auburn Rd	Millbury	c 1820
MLB.63	Spaulding, Leonard House	2 Beach St	Millbury	
MLB.62	West End Thread Company Worker Housing	3 Beach St	Millbury	c 1911
MLB.64	Leland - Browning House	9 Beach St	Millbury	

Inv. No.	Property Name	Street	Town	Year
MLB.65		10 Beach St	Millbury	
MLB.66	Congregational Church Parsonage	11 Beach St	Millbury	c 1845
MLB.138	March, Joseph Merriam House	24 Beach St	Millbury	c 1850
MLB.139	Dyson, James House	41 Beach St	Millbury	c 1855
MLB.923	Woolshop Pond	Bellville Ln	Millbury	c 1800
MLB.924	Woolshop Pond Dam and Stonework	Bellville Ln	Millbury	c 1800
MLB.453		2 Bellville Ln	Millbury	c 1960
MLB.455		5 Bellville Ln	Millbury	c 1960
MLB.454		6 Bellville Ln	Millbury	c 1960
MLB.456		7 Bellville Ln	Millbury	c 1960
MLB.907	Blackstone Canal	Blackstone Canal	Millbury	1828
MLB.917	Blackstone Canal Towpath	Blackstone Canal	Millbury	1828
MLB.920	Blackstone Canal 37-Mile Marker	Blackstone Canal	Millbury	1828
MLB.921	Blackstone Canal Lock #35	Blackstone Canal	Millbury	1828
MLB.922	Blackstone Canal Basins	Blackstone Canal	Millbury	1828
MLB.919	Blackstone Canal Towpath Retaining Wall	Blackstone River	Millbury	1828
MLB.932	Aldrich Mills Dam	Blackstone River	Millbury	1828
MLB.901	Bucks Village Dam	Brightside Ave	Millbury	r 1860
MLB.389	Buck Brothers Edge Tool Factory Worker Housing	6 Brightside St	Millbury	
MLB.390	Buck Brothers Edge Tool Factory Worker Housing	7 Brightside St	Millbury	c 1882
MLB.391	Buck Brothers Edge Tool Factory Worker Housing	8 Brightside St	Millbury	c 1882
MLB.392	Buck Brothers Edge Tool Factory Worker Housing	9 Brightside St	Millbury	
MLB.393	Buck Brothers Edge Tool Factory Worker Housing	10 Brightside St	Millbury	c 1882
MLB.394		11 Brightside St	Millbury	c 1870
MLB.395	Buck Brothers Edge Tool Factory Worker Housing	12 Brightside St	Millbury	c 1882
MLB.396	Buck Brothers Edge Tool Factory Worker Housing	14 Brightside St	Millbury	c 1882
MLB.68	Lapham Mill Brick Worker House	3 Burbank St	Millbury	c 1875
MLB.70	Lapham, Frederick A. House	4 Burbank St	Millbury	1888
MLB.69	Lapham Mill Worker Housing	5A&B Burbank St	Millbury	
MLB.71	Lapham Mill Worker Housing	7A&B Burbank St	Millbury	
MLB.72	Burbank, Caleb House	23D Burbank St	Millbury	c 1832
MLB.73		24 Burbank St	Millbury	
MLB.74	Bancroft, H. L. House	26 Burbank St	Millbury	r 1865

Inv. No.	Property Name	Street	Town	Year
MLB.75		27 Burbank St	Millbury	c 1915
MLB.76		28 Burbank St	Millbury	
MLB.77	Meem, George Tenement House	29A&B Burbank St	Millbury	1892
MLB.78		30 Burbank St	Millbury	
MLB.79		33 Burbank St	Millbury	c 1865
MLB.140	Lovell, Elias House	75 Burbank St	Millbury	c 1780
MLB.368	Cordis Cotton Mills Agent's House	1-3 Canal Ct	Millbury	r 1840
MLB.369	Cordis Cotton Mill Worker Housing	1-3 Canal Ct	Millbury	r 1810
MLB.370	Cordis Cotton Mills Worker Housing	5 Canal Ct	Millbury	r 1810
MLB.211	Millbury Branch Railroad Freight Depot	Canal St	Millbury	c 1890
MLB.925	Cordis Cotton Mill Pond	Canal St	Millbury	1822
MLB.195		3C Canal St	Millbury	r 1920
MLB.196		4 Canal St	Millbury	
MLB.197		5 Canal St	Millbury	
MLB.198	March House	6 Canal St	Millbury	
MLB.199		7 Canal St	Millbury	r 1920
MLB.201		9A&B Canal St	Millbury	r 1920
MLB.200	Sawyer, Samuel House	10 Canal St	Millbury	
MLB.202		11C Canal St	Millbury	r 1860
MLB.203		14 Canal St	Millbury	
MLB.204		16 Canal St	Millbury	
MLB.206		18 Canal St	Millbury	c 1800
MLB.207		20A&B Canal St	Millbury	
MLB.208		22C Canal St	Millbury	c 1830
MLB.209		24D Canal St	Millbury	c 1830
MLB.210		26A&B Canal St	Millbury	
MLB.431		29A&B Canal St	Millbury	c 1820
MLB.371	Cordis Cotton Mill	65 Canal St	Millbury	c 1822
MLB.10		1 Carlstrom Ln	Millbury	
MLB.16		86 Carlton Rd	Millbury	
MLB.186	Millbury Baptist Church	Church St	Millbury	1864
MLB.228		1A&B Church St	Millbury	
MLB.229		3A&B Church St	Millbury	
MLB.230	Goff, E. W. House	5A&B Church St	Millbury	c 1830
MLB.231	Ryan, William House	6 Church St	Millbury	
MLB.234	4-H Clubhouse	7 Church St	Millbury	
MLB.235		10 Church St	Millbury	
MLB.233		13 Church St	Millbury	

Inv. No.	Property Name	Street	Town	Year
MLB.232		15 Church St	Millbury	
MLB.336		Colonial Dr	Millbury	1900
MLB.402		2 Colton Rd	Millbury	c 1900
MLB.401	March, Andrus House	3 Colton Rd	Millbury	c 1725
MLB.313		3-5 Coral St	Millbury	
MLB.314		4A&C Coral St	Millbury	
MLB.315		5 Coral St	Millbury	
MLB.316		6 Coral St	Millbury	
MLB.317		7 Coral St	Millbury	
MLB.318		9 Coral St	Millbury	
MLB.918	Cross Street Bridge	Cross St	Millbury	
MLB.311		1 Curve St	Millbury	
MLB.312		2 Curve St	Millbury	
MLB.18		Davis Rd	Millbury	1782
MLB.905	West Main Street Bridge over Blackstone River	Elm St	Millbury	1895
MLB.217	Cordis Mill Workers Housing	1-5 Elm St	Millbury	
MLB.218	Cordis Mill Workers Housing	7 Elm St	Millbury	
MLB.219		8A&F Elm St	Millbury	
MLB.220		9 Elm St	Millbury	
MLB.222		13 Elm St	Millbury	
MLB.221	Merry House	14A&B Elm St	Millbury	1800
MLB.223		17A&C Elm St	Millbury	
MLB.224		19 Elm St	Millbury	
MLB.226		21A&C Elm St	Millbury	
MLB.225	Dudley, Simon House	24A&B Elm St	Millbury	
MLB.227		34 Elm St	Millbury	c 1815
MLB.182		35 Elm St	Millbury	
MLB.181		37A&C Elm St	Millbury	
MLB.179		55A&B Elm St	Millbury	
MLB.180		55A&B Elm St	Millbury	
MLB.177		73 Elm St	Millbury	
MLB.178		84 Elm St	Millbury	
MLB.175		88 Elm St	Millbury	
MLB.173		90 Elm St	Millbury	
MLB.174	Central Diner	90 Elm St	Millbury	1933
MLB.176	Barrows Block	95 Elm St	Millbury	1891
MLB.171	Cunningham Block	97 Elm St	Millbury	c 1895
MLB.170	Millbury Savings Bank	109 Elm St	Millbury	1891

Inv. No.	Property Name	Street	Town	Year
MLB.169	Dunton, Moses House	117 Elm St	Millbury	c 1828
MLB.168	U. S. Post Office - Millbury Main	119 Elm St	Millbury	c 1940
MLB.167	Torrey Mansion	122 Elm St	Millbury	c 1835
MLB.165	Waters, Asa Mansion	123 Elm St	Millbury	1826
MLB.166	Millbury Fire House	124 Elm St	Millbury	
MLB.164	Millbury Public Library	126 Elm St	Millbury	1915
MLB.162	Millbury High School	130 Elm St	Millbury	1913
MLB.161	Lincoln, Dr. House	131 Elm St	Millbury	
MLB.141	Sullivan, Jeremiah Farm	16A&B Elmwood St	Millbury	1867
MLB.142	Dursthoff, George William House	38 Elmwood St	Millbury	1883
MLB.143	Waters - Sabine - Carter House	52 Elmwood St	Millbury	c 1781
MLB.190		2A&B Farnsworth Ct	Millbury	
MLB.191	Farnsworth, Simon House	4A&D Farnsworth Ct	Millbury	c 1840
MLB.99		2 Fink Rd	Millbury	
MLB.17	Holman - Peirce Farm	Fjellman Rd	Millbury	
MLB.56		4 Glover Rd	Millbury	c 1900
MLB.58		6 Glover Rd	Millbury	
MLB.59	Marble, Simeon House	10 Glover Rd	Millbury	
MLB.425	Corby House	1516 Grafton Rd	Millbury	c 1890
MLB.426	Cedar Homestead	1526 Grafton Rd	Millbury	c 1915
MLB.427		1542 Grafton Rd	Millbury	c 1912
MLB.428		1544 Grafton Rd	Millbury	c 1912
MLB.374	Lower Tavern	1 Grafton St	Millbury	r 1840
MLB.435		4 Grafton St	Millbury	c 1810
MLB.451		9A&C Grafton St	Millbury	r 1950
MLB.452		15 Grafton St	Millbury	r 1950
MLB.404	York Tenement	16A&B Grafton St	Millbury	1892
MLB.405		27A&B Grafton St	Millbury	c 1858
MLB.406		30 Grafton St	Millbury	c 1925
MLB.407		31 Grafton St	Millbury	c 1890
MLB.408		32 Grafton St	Millbury	c 1900
MLB.409		38 Grafton St	Millbury	c 1870
MLB.410	Goodell, Samuel House	39A&B Grafton St	Millbury	r 1850
MLB.411		41A&B Grafton St	Millbury	c 1890
MLB.412		59 Grafton St	Millbury	1925
MLB.413		60 Grafton St	Millbury	1920
MLB.414		83 Grafton St	Millbury	r 1850
MLB.415		84 Grafton St	Millbury	c 1900

Inv. No.	Property Name	Street	Town	Year
MLB.319		3 Granite St	Millbury	
MLB.160	Hull, Elias Farm	Greenwood St	Millbury	c 1830
MLB.450		367 Greenwood St	Millbury	c 1895
MLB.27		436 Greenwood St	Millbury	c 1850
MLB.26	Bixby, Simon House	456 Greenwood St	Millbury	1822
MLB.372		5A&D Grove St	Millbury	c 1815
MLB.373	Hakes, H. W. House	8A&C Grove St	Millbury	1892
MLB.256		2 Hamilton St	Millbury	
MLB.257		4 Hamilton St	Millbury	
MLB.258		5 Hamilton St	Millbury	
MLB.260		11A&B Hamilton St	Millbury	
MLB.261		13 Hamilton St	Millbury	
MLB.262		15A&B Hamilton St	Millbury	
MLB.263		17A&B Hamilton St	Millbury	
MLB.80		4A&B High St	Millbury	c 1886
MLB.81	Leland, Dea. John House	16 High St	Millbury	
MLB.82	Paper Mill District School #3	26A&D High St	Millbury	r 1840
MLB.84		30 High St	Millbury	
MLB.86		32 High St	Millbury	
MLB.83		35 High St	Millbury	
MLB.85		37 High St	Millbury	
MLB.87		38A&B High St	Millbury	
MLB.88	March, Dea. Tyrus House	42 High St	Millbury	r 1780
MLB.67	Storage Building	Home Way	Millbury	c 1890
MLB.216		2 Howe Ave	Millbury	
MLB.464		7 Howe Ave	Millbury	c 1950
MLB.463		10 Howe Ave	Millbury	c 1900
MLB.462		12A&D Howe Ave	Millbury	c 1950
MLB.461		22 Howe Ave	Millbury	c 1970
MLB.375	Windle, Arthur Donald Wool Cleaning Company	4 Lincoln Ave Ext	Millbury	1916
MLB.500		Main St	Millbury	c 1970
MLB.915	Armory Village New Common	Main St	Millbury	
MLB.468		11 Main St	Millbury	c 1870
MLB.188	Millbury National Bank	18 Main St	Millbury	
MLB.187	First Presbyterian Society Meeting House	20 Main St	Millbury	1828
MLB.185		26 Main St	Millbury	
MLB.183	Barker, Calvin House	29 Main St	Millbury	
MLB.436		29 Main St	Millbury	c 1870

Inv. No.	Property Name	Street	Town	Year
MLB.189		34R Main St	Millbury	
MLB.184	Ducharme Block	36 Main St	Millbury	1892
MLB.379	Sibley - Buck House	45 Main St	Millbury	c 1860
MLB.926	Blackstone Canal Stone Retaining Wall	45 Main St	Millbury	c 1828
MLB.469		49 Main St	Millbury	c 1880
MLB.432		50 Main St	Millbury	c 1800
MLB.248		56 Main St	Millbury	c 1835
MLB.249		58 Main St	Millbury	
MLB.473	Saint Brigid's Catholic Church	59 Main St	Millbury	1954
MLB.474	Saint Brigid's Catholic Church Rectory	59 Main St	Millbury	1954
MLB.466		60 Main St	Millbury	r 1950
MLB.475		63 Main St	Millbury	c 1890
MLB.250	Harrington, J. N. House	72 Main St	Millbury	c 1860
MLB.476		73B Main St	Millbury	c 1890
MLB.251	Morse, C. D. House	74 Main St	Millbury	c 1850
MLB.478		75 Main St	Millbury	c 1890
MLB.252	Harrington House	78-80 Main St	Millbury	
MLB.253	Harrington House	78-80 Main St	Millbury	
MLB.254	Forbes, E. F House	82-84 Main St	Millbury	
MLB.477		85 Main St	Millbury	c 1890
MLB.255		86 Main St	Millbury	
MLB.479		91 Main St	Millbury	c 1890
MLB.480	Puffin's Restaurant	91 Main St	Millbury	r 1980
MLB.380	Ducharme, Damien House	96 Main St	Millbury	c 1895
MLB.481		97-101 Main St	Millbury	c 1900
MLB.482		97-101 Main St	Millbury	c 1985
MLB.483		103 Main St	Millbury	c 1900
MLB.927	Massachusetts Electric Substation	137 Main St	Millbury	c 1970
MLB.381	Searles, Charles E. House	150 Main St	Millbury	1892
MLB.484		151 Main St	Millbury	c 1900
MLB.485		153 Main St	Millbury	c 1960
MLB.382	Jacques, Peter C. House	155 Main St	Millbury	c 1880
MLB.486		159 Main St	Millbury	c 1920
MLB.487		161 Main St	Millbury	c 1900
MLB.488		163 Main St	Millbury	c 1990
MLB.489		175 Main St	Millbury	c 1900
MLB.490		181 Main St	Millbury	c 1910
MLB.491		187 Main St	Millbury	c 1910

Inv. No.	Property Name	Street	Town	Year
MLB.493		191 Main St	Millbury	c 1900
MLB.492		193 Main St	Millbury	c 1990
MLB.494		195 Main St	Millbury	c 1960
MLB.495	Burbank, G. House	199 Main St	Millbury	c 1890
MLB.504	Lincoln, Sanford W. House	202 Main St	Millbury	r 1865
MLB.496		203 Main St	Millbury	c 1960
MLB.497		205 Main St	Millbury	c 1960
MLB.498	Burling Woolen Mill Workers' Housing	207 Main St	Millbury	r 1865
MLB.499	Burling Woolen Mill Workers' Housing	215 Main St	Millbury	r 1865
MLB.157	Sherman, Edwin House	218 Main St	Millbury	1870
MLB.437		220 Main St	Millbury	1875
MLB.438		228 Main St	Millbury	c 1880
MLB.439		252 Main St	Millbury	c 1940
MLB.440		256 Main St	Millbury	c 1938
MLB.441		266 Main St	Millbury	c 1880
MLB.442		306 Main St	Millbury	c 1940
MLB.443		312 Main St	Millbury	c 1920
MLB.501	Chabot Motors	321 Main St	Millbury	c 1960
MLB.444		328 Main St	Millbury	1907
MLB.446		346 Main St	Millbury	c 1930
MLB.445		349 Main St	Millbury	c 1937
MLB.447		349 Main St	Millbury	c 1930
MLB.448		352 Main St	Millbury	c 1930
MLB.281		7 Maple St	Millbury	
MLB.282		9 Maple St	Millbury	
MLB.283		15 Maple St	Millbury	1855
MLB.284		17 Maple St	Millbury	
MLB.285		18 Maple St	Millbury	
MLB.286		19 Maple St	Millbury	
MLB.287		20 Maple St	Millbury	
MLB.288		23 Maple St	Millbury	c 1850
MLB.289		24 Maple St	Millbury	1855
MLB.290		26 Maple St	Millbury	
MLB.291		27 Maple St	Millbury	
MLB.292		28 Maple St	Millbury	
MLB.293		29 Maple St	Millbury	1855
MLB.294		31A&B Maple St	Millbury	
MLB.295		32 Maple St	Millbury	

Inv. No.	Property Name	Street	Town	Year
MLB.296		33 Maple St	Millbury	
MLB.297		35 Maple St	Millbury	
MLB.298		36A&B Maple St	Millbury	
MLB.299		37 Maple St	Millbury	
MLB.301		38 Maple St	Millbury	1845
MLB.300		39 Maple St	Millbury	
MLB.302		42 Maple St	Millbury	
MLB.304		44A&B Maple St	Millbury	
MLB.306		46A&B Maple St	Millbury	
MLB.303		47 Maple St	Millbury	
MLB.307		48 Maple St	Millbury	
MLB.305		49 Maple St	Millbury	
MLB.308		50 Maple St	Millbury	
MLB.309		52A&B Maple St	Millbury	
MLB.310		54A&B Maple St	Millbury	
MLB.376	Stockwell, Rufus House	4A&B Martin St	Millbury	r 1750
MLB.377	Bancroft, Joseph House	15 Martin St	Millbury	c 1845
MLB.502	Grout, William F. House	38 Martin St	Millbury	c 1900
MLB.503	Jelstrom, Oscar House	50 Martin St	Millbury	c 1900
MLB.929	Massachusetts Turnpike	Massachusetts Tpk	Millbury	r 1955
MLB.505	Greenwood, Henry King Barn	McCracken Rd	Millbury	r 1835
MLB.801	Dwinnel Cemetery	McCracken Rd	Millbury	1741
MLB.912	McCracken Road Bridge over Blackstone River	McCracken Rd	Millbury	1930
MLB.508	Carberry, Murty and Mary Sheriden House	24 McCracken Rd	Millbury	c 1880
MLB.467		2 Miles St	Millbury	c 1960
MLB.236	Miles, Clough R. House	4-8 Miles St	Millbury	c 1835
MLB.237		14 Miles St	Millbury	c 1900
MLB.238		15A&C Miles St	Millbury	
MLB.239		17 Miles St	Millbury	
MLB.240	Millbury Congregational Church Parsonage	19 Miles St	Millbury	
MLB.241	Percival, Charles House	20A&B Miles St	Millbury	
MLB.242	Chase, George House	21A&C Miles St	Millbury	
MLB.243		21A&B Miles St	Millbury	
MLB.244		24A&C Miles St	Millbury	
MLB.259	Hopkins, Hon. John House	27 Miles St	Millbury	c 1871
MLB.245		28 Miles St	Millbury	
MLB.247		30A&B Miles St	Millbury	
MLB.205		50 Miles St	Millbury	

Inv. No.	Property Name	Street	Town	Year
MLB.60	Ramshorn Wool Scouring Mills	1 Mill St	Millbury	c 1883
MLB.61	Holman House	6 Mill St	Millbury	
MLB.378	Millbury Water Company Pumping Sation	35 Millbury Ave	Millbury	1895
MLB.422	March, Jacob Homestead	144 Millbury Ave	Millbury	r 1750
MLB.421	Dorothy Manor Elementary School	153 Millbury Ave	Millbury	1924
MLB.423	Haywood Farm	308 Millbury Ave	Millbury	r 1750
MLB.424	Haywood, Joseph House	310 Millbury Ave	Millbury	1814
MLB.908	Route 122A Bridge over Blackstone River	North Providence Rd	Millbury	1906
MLB.429	Oakes, Randall Mitchell Farmhouse	21 Oakes St	Millbury	c 1865
MLB.913	Millbury Old Common	Old Common Rd	Millbury	c 1744
MLB.2		1 Old Common Rd	Millbury	
MLB.3	Freeland, Dr. James House	5 Old Common Rd	Millbury	c 1772
MLB.4		7 Old Common Rd	Millbury	r 1750
MLB.5		9 Old Common Rd	Millbury	c 1863
MLB.6	Wellman, Rev. James - Carter House	11 Old Common Rd	Millbury	c 1747
MLB.9		15 Old Common Rd	Millbury	c 1850
MLB.8	Neff House	17 Old Common Rd	Millbury	c 1850
MLB.7	Chaplin, Rev. Ebenezer - Marble House	21 Old Common Rd	Millbury	c 1764
MLB.900	Providence and Worcester Railroad Bridge	P & W Railroad	Millbury	1889
MLB.449		3A&B Park Hill Ave	Millbury	c 1880
MLB.158	Gould House	16A&B Park Hill Ave	Millbury	r 1750
MLB.159	Jewett, Dr. Charles - Bracket, Calvin R. Farm	17 Park Hill Ave	Millbury	c 1835
MLB.321		1 Pearl St	Millbury	
MLB.322		3 Pearl St	Millbury	
MLB.323		4 Pearl St	Millbury	
MLB.324		5 Pearl St	Millbury	
MLB.326		7 Pearl St	Millbury	
MLB.325		8a&b Pearl St	Millbury	
MLB.328		11 Pearl St	Millbury	
MLB.327		14 Pearl St	Millbury	
MLB.264		2 Prospect St	Millbury	
MLB.265		6 Prospect St	Millbury	
MLB.266		10 Prospect St	Millbury	
MLB.267		12 Prospect St	Millbury	
MLB.268		14A&B Prospect St	Millbury	
MLB.269		16 Prospect St	Millbury	
MLB.270		18 Prospect St	Millbury	
MLB.271		20 Prospect St	Millbury	

Inv. No.	Property Name	Street	Town	Year
MLB.272		22 Prospect St	Millbury	
MLB.273		24 Prospect St	Millbury	
MLB.274		26 Prospect St	Millbury	
MLB.275		28 Prospect St	Millbury	
MLB.276		30 Prospect St	Millbury	
MLB.277		32 Prospect St	Millbury	
MLB.278		34 Prospect St	Millbury	
MLB.279	Goddard House	36 Prospect St	Millbury	
MLB.280		40 Prospect St	Millbury	
MLB.416	Worcester Consolidated Railway Power Plant	Providence Rd	Millbury	1898
MLB.403	Millbury Electric Substation #2	Providence St	Millbury	1926
MLB.802	County Bridge Cemetery	Providence St	Millbury	1742
MLB.320		8 Providence St	Millbury	
MLB.433	Millbury Elementary School	12 Providence St	Millbury	c 1875
MLB.384	Simpson, Peter - Aldrich, Charles T. House	40 Providence St	Millbury	c 1865
MLB.417		132 Providence St	Millbury	r 1820
MLB.903	West Main Street Bridge	Purple Heart Hwy	Millbury	1937
MLB.904	Route 146 Bridge over P & W Railroad	Purple Heart Hwy	Millbury	c 1935
MLB.213		1 Railroad Ct	Millbury	
MLB.214		3-5 Railroad Ct	Millbury	
MLB.215		3-5 Railroad Ct	Millbury	
MLB.89	Crane and Waters Worker Housing	2-8 Rhodes St	Millbury	c 1865
MLB.91	Crane and Waters' Hosiery Mill	2 Rhodes St	Millbury	c 1865
MLB.90	Waters, Horace House	5 Rhodes St	Millbury	
MLB.92	Crane and Waters Worker Housing	10-12 Rhodes St	Millbury	c 1865
MLB.93		11A&B Rhodes St	Millbury	c 1850
MLB.94		12-14 Rhodes St	Millbury	c 1850
MLB.95		14 Rhodes St	Millbury	c 1850
MLB.96		15A&B Rhodes St	Millbury	c 1865
MLB.97		22 Rhodes St	Millbury	c 1865
MLB.98		25 Rhodes St	Millbury	
MLB.388	Buck Brothers Warehouse	Riverlin St	Millbury	1914
MLB.457	J and G Forge	Riverlin St	Millbury	c 1900
MLB.916	Riverlin Street Bridge over Blackstone River	Riverlin St	Millbury	1956
MLB.458		35 Riverlin St	Millbury	c 1900
MLB.459		37 Riverlin St	Millbury	c 1900
MLB.385	Wait, Rufus House	43 Riverlin St	Millbury	r 1780
MLB.397	Buck Brothers Edge Tool Factory Worker	95 Riverlin St	Millbury	r 1860

Inv. No.	Property Name	Street	Town	Year
	Housing			
MLB.398	Buck Brothers Edge Tool Factory Worker Housing	99-101 Riverlin St	Millbury	c 1882
MLB.399	Buck Brothers Edge Tool Factory Worker Housing	103 Riverlin St	Millbury	r 1860
MLB.400	Buck Brothers Edge Tool Factory Worker Housing	107 Riverlin St	Millbury	r 1890
MLB.420	March, Andrus House	154 Riverlin St	Millbury	1813
MLB.419	Mathews, J. W. House	211 Riverlin St	Millbury	1892
MLB.418		248 Riverlin St	Millbury	r 1780
MLB.906	Blackstone Canal Dam	Rt 146	Millbury	1828
MLB.909	Route 146 Bridge over Blackstone River	Rt 146	Millbury	1936
MLB.928	Burling Mills Overflow Dam	Rt 146	Millbury	c 1859
MLB.910	Route 20 Bridge over Route 146	Rt 20	Millbury	1931
MLB.911	Route 20 Bridge over Blackstone River	Rt 20	Millbury	1931
MLB.930	Route 20	Rt 20	Millbury	r 1955
MLB.386		20A&B School St	Millbury	c 1820
MLB.914	South Main Street Bridge over Blackstone River	South Main St	Millbury	1908
MLB.192	Armsby Building	7 South Main St	Millbury	1883
MLB.194	Parker, Sumner Richardson Carriage Factory	12 South Main St	Millbury	c 1858
MLB.193		15 South Main St	Millbury	
MLB.329		20 South Main St	Millbury	r 1860
MLB.332		23 South Main St	Millbury	
MLB.330		25 South Main St	Millbury	1815
MLB.335	Eddy, Justus House	29 South Main St	Millbury	r 1810
MLB.331	Dike, James House	30A&B South Main St	Millbury	r 1840
MLB.337	Witherby, Thomas H. House	31 South Main St	Millbury	r 1810
MLB.333		32A&C South Main St	Millbury	c 1900
MLB.334		34 South Main St	Millbury	r 1840
MLB.339	Witherby, Calvin Knowles House	35 South Main St	Millbury	c 1855
MLB.340		37A&B South Main St	Millbury	1929
MLB.338		38 South Main St	Millbury	c 1920
MLB.342		39A&B South Main St	Millbury	r 1840
MLB.344		41 South Main St	Millbury	r 1840
MLB.341	White - Pitts - Lovell House	42 South Main St	Millbury	r 1840
MLB.345	Taft, Philip - Rockwell, Henry E. House	43A&B South Main St	Millbury	c 1845
MLB.343		46 South Main St	Millbury	r 1860
MLB.346		50 South Main St	Millbury	r 1840
MLB.348	Coombs, James Farm	55 South Main St	Millbury	r 1840

Inv. No.	Property Name	Street	Town	Year
MLB.349	Gale - Packard House	58 South Main St	Millbury	c 1850
MLB.350		59 South Main St	Millbury	r 1860
MLB.351	Pearce House	60 South Main St	Millbury	c 1850
MLB.352		62 South Main St	Millbury	r 1885
MLB.354	Abbott, G. House	64 South Main St	Millbury	r 1855
MLB.353	Cunningham, Winthrop R. House	65 South Main St	Millbury	c 1845
MLB.355		66 South Main St	Millbury	r 1860
MLB.356		71 South Main St	Millbury	1906
MLB.20	Small - Stowe Farm	South Oxford Rd	Millbury	r 1750
MLB.800	West Millbury Cemetery	South Oxford Rd	Millbury	1762
MLB.53		3 South Oxford Rd	Millbury	
MLB.54	Eaton, Thomas House	5 South Oxford Rd	Millbury	c 1850
MLB.55		7 South Oxford Rd	Millbury	
MLB.57		9 South Oxford Rd	Millbury	
MLB.19	Pierce, Andreas Waters Farm	38 South Oxford Rd	Millbury	c 1851
MLB.29	Tainter - Stowe House	Stowe Rd	Millbury	c 1775
MLB.30	Tainter - Stowe Farm	14 Stowe Rd	Millbury	1750
MLB.23	Pierce, Aaron House	20 Stowe Rd	Millbury	c 1810
MLB.144	West End Thread Company Boarding House	10A&D Sutton Rd	Millbury	c 1860
MLB.357		7A&B Sycamore St	Millbury	r 1890
MLB.358		8 Sycamore St	Millbury	r 1840
MLB.359		12 Sycamore St	Millbury	r 1840
MLB.360		14 Sycamore St	Millbury	r 1860
MLB.361	Longley, Timothy House	17 Sycamore St	Millbury	r 1840
MLB.362		18 Sycamore St	Millbury	r 1890
MLB.363		21A&E Sycamore St	Millbury	c 1845
MLB.365		22 Sycamore St	Millbury	r 1860
MLB.364		23-25 Sycamore St	Millbury	c 1855
MLB.366		26 Sycamore St	Millbury	r 1860
MLB.367		33 Sycamore St	Millbury	r 1920
MLB.103	Mill Office	99 Sycamore St	Millbury	r 1905
MLB.100		102A&B Sycamore St	Millbury	
MLB.101		102A&B Sycamore St	Millbury	c 1904
MLB.102		102A&B Sycamore St	Millbury	c 1835
MLB.28	Tainter, Willard S. - Price, James House	Tainter Hill Rd	Millbury	c 1851
MLB.104		1 Victoria Terr	Millbury	
MLB.105		3 Victoria Terr	Millbury	
MLB.106		5 Victoria Terr	Millbury	

Inv. No.	Property Name	Street	Town	Year
MLB.107		6 Victoria Terr	Millbury	
MLB.902	Cemetery Bridge	Water St	Millbury	r 1925
MLB.108	Mill Housing	7A&B Waters Ct	Millbury	
MLB.109	Waters Barn	8 Waters Ct	Millbury	
MLB.39		West Main St	Millbury	
MLB.51	West Congregational Church - Union Church	West Main St	Millbury	1888
MLB.52	Grass Hill School	West Main St	Millbury	c 1861
MLB.130	Bramanville Fire Barn	West Main St	Millbury	c 1885
MLB.131	Singletery Mill	West Main St	Millbury	c 1846
MLB.931	Singletery Millpond	West Main St	Millbury	
MLB.506	Rich, John S. House	17 West Main St	Millbury	c 1892
MLB.507	G & D Auto Garage	24 West Main St	Millbury	c 1960
MLB.145	Severy, Moody House	35 West Main St	Millbury	r 1790
MLB.146	Livermore, Anson G. House	40 West Main St	Millbury	c 1810
MLB.147	Mallalieu, George W. House	55 West Main St	Millbury	c 1845
MLB.148		82 West Main St	Millbury	r 1810
MLB.110		88 West Main St	Millbury	
MLB.111	Waters, O. H. House	89A&B West Main St	Millbury	
MLB.112	Warfield, Samuel R. - Whitney, Levi L. House	90A&B West Main St	Millbury	c 1855
MLB.113	Windle, W. W. Wool Scouring Mill	95 West Main St	Millbury	c 1853
MLB.114	Harris, Ithron House	98 West Main St	Millbury	r 1840
MLB.115	Winter, A. S. Union Store	99 West Main St	Millbury	
MLB.116	Mill Housing	100 West Main St	Millbury	
MLB.117	Mill Housing	102A&B West Main St	Millbury	
MLB.118	Lovell's Hotel	107 West Main St	Millbury	r 1840
MLB.119	Mill Housing	108 West Main St	Millbury	
MLB.120	Lapham, Mowry A. Woolen Mill - Mayo Woolen Mill #1	115 West Main St	Millbury	1879
MLB.121	Mill Housing	116 West Main St	Millbury	
MLB.122	Mill Housing	118 West Main St	Millbury	
MLB.123	Mill Housing	124 West Main St	Millbury	
MLB.124	Braman, Dana House - Saint Charles Hotel	126 West Main St	Millbury	r 1840
MLB.125	Lovell, A. B. House	130 West Main St	Millbury	
MLB.126	Mill Housing	140 West Main St	Millbury	
MLB.127		144 West Main St	Millbury	
MLB.128	Sullivan - Bancroft House	146 West Main St	Millbury	c 1865
MLB.129	Bramanville First Congregational Church	148 West Main St	Millbury	c 1803
MLB.151		162 West Main St	Millbury	r 1780

Inv. No.	Property Name	Street	Town	Year
MLB.153	West End Thread Company Mill Housing	164 West Main St	Millbury	c 1911
MLB.154	West End Thread Company Mill Housing	166 West Main St	Millbury	c 1911
MLB.156	West End Thread Company Mill Housing	170 West Main St	Millbury	c 1911
MLB.155	West End Thread Company Mill Housing	172 West Main St	Millbury	c 1911
MLB.149	Whitney - MacDuff Thread Mill	175 West Main St	Millbury	1886
MLB.150		177 West Main St	Millbury	r 1840
MLB.132		192 West Main St	Millbury	c 1900
MLB.133		196 West Main St	Millbury	r 1845
MLB.134		197 West Main St	Millbury	
MLB.135		198 West Main St	Millbury	r 1845
MLB.136		199 West Main St	Millbury	
MLB.137	Wheeler Mill Offices	200 West Main St	Millbury	
MLB.152	Harris, Harry W. House	206 West Main St	Millbury	c 1840
MLB.21	Waters, Elijah House	272 West Main St	Millbury	1845
MLB.31	Wood Shoe Manufacturing Company Workers Housing	283 West Main St	Millbury	c 1855
MLB.34	Wood, J. G. House	284 West Main St	Millbury	
MLB.32	Wood Shoe Manufacturing Company Workers Housing	285 West Main St	Millbury	c 1855
MLB.33	Wood Shoe Manufacturing Company Workers Housing	287 West Main St	Millbury	c 1855
MLB.35		288 West Main St	Millbury	
MLB.36	Glover, Henry W. Hardwood Handle Factory	289 West Main St	Millbury	r 1900
MLB.37	Wood, D. House and Barn	290 West Main St	Millbury	
MLB.38	Morse House and Barn	292 West Main St	Millbury	
MLB.430	Snow, Buckley House	295 West Main St	Millbury	c 1850
MLB.41	Eddy, Amos House	299 West Main St	Millbury	
MLB.42	Griggs - Wood House	301 West Main St	Millbury	
MLB.43	Marble - Windle House	302 West Main St	Millbury	
MLB.44	Marble - Morris House	303 West Main St	Millbury	
MLB.45	Childs, E. N. House	305 West Main St	Millbury	c 1845
MLB.47		306 West Main St	Millbury	
MLB.46	Gleason, Abijah House	307 West Main St	Millbury	c 1810
MLB.48		311 West Main St	Millbury	
MLB.49	Goulding House	312 West Main St	Millbury	c 1800
MLB.50		313 West Main St	Millbury	
MLB.11	Glazier House	333 West Main St	Millbury	
MLB.12	Crane, J. C. House	335 West Main St	Millbury	
MLB.14		338 West Main St	Millbury	c 1815

Inv. No.	Property Name	Street	Town	Year
MLB.13	Hall - Balcom House	339 West Main St	Millbury	r 1780
MLB.15	Pearson's Dairy	342 West Main St	Millbury	
MLB.22		392 West Main St	Millbury	c 1800
MLB.387	Bowden Felting Mills	West St	Millbury	1898
MLB.470		5 West St	Millbury	c 1980
MLB.471		7 West St	Millbury	c 1910
MLB.472		8 West St	Millbury	r 1850
MLB.460		13 Williams St	Millbury	c 1970
MLB.347	Fuller, Auston House	2 Woodland St	Millbury	c 1850

Appendix M – Rainfall Gauge Recording




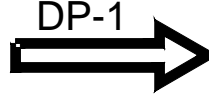


Use the table below to record the rainfall gauge readings at the beginning and end of each work day. An example table follows.

Month/Year			Month/Year			Month/Year		
Day	Start time	End time	Day	Start time	End time	Day	Start time	End time
1			1			1		
2			2			2		
3			3			3		
4			4			4		
5			5			5		
6			6			6		
7			7			7		
8			8			8		
9			9			9		
10			10			10		
11			11			11		
12			12			12		
13			13			13		
14			14			14		
15			15			15		
16			16			16		
17			17			17		
18			18			18		
19			19			19		
20			20			20		
21			21			21		
22			22			22		
23			23			23		
24			24			24		
25			25			25		
26			26			26		
27			27			27		
28			28			28		
29			29			29		
30			30			30		
31			31			31		

EXISTING HYDROLOGY

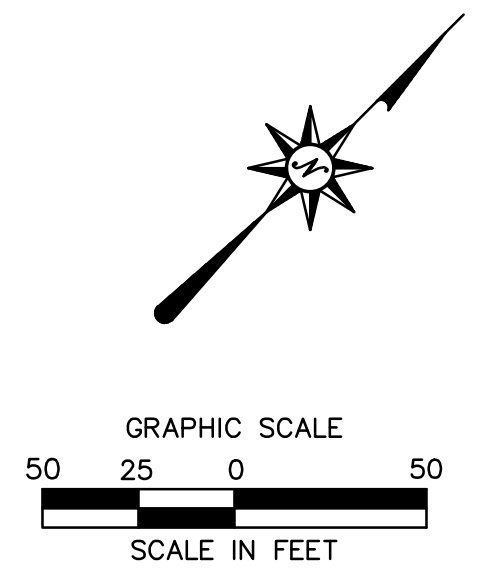
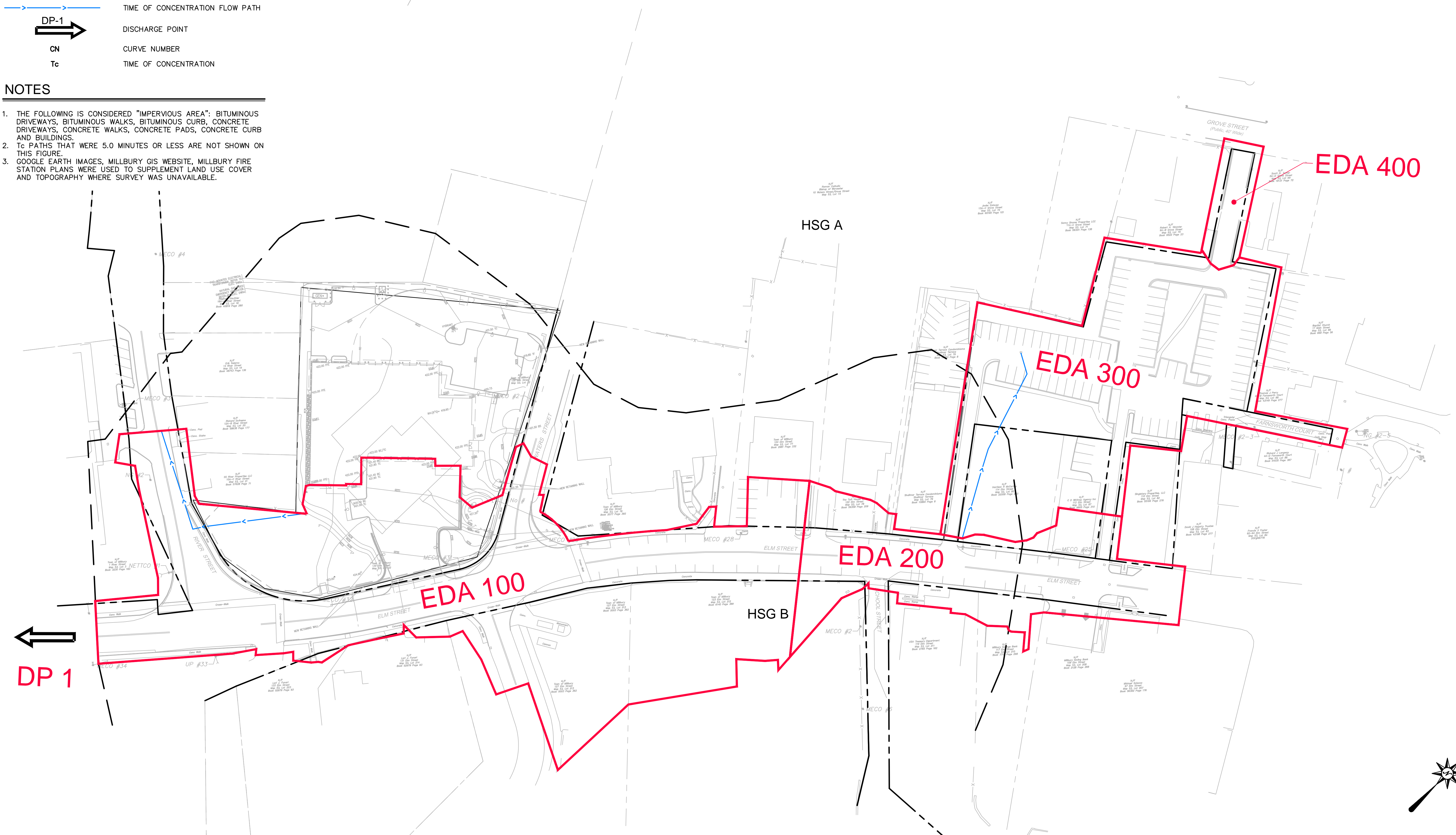
DRAINAGE AREA	TOTAL AREA (S.F.)	IMPERVIOUS AREA (S.F.)	PERVIOUS AREA (S.F.)	PERCENT IMPERVIOUS (%)	CN	Tc (MIN.)
EDA 100	133,174	78,316	54,429	58.9%	83	7.8
EDA 200	37,320	28,974	8,346	77.6%	89	5.0
EDA 300	71,652	43,837	27,815	61.2%	77	8.1
EDA400	5,336	3,478	1,858	65.2%	77	5.0

LEGEND

-  PROPERTY LINE
-  EXISTING DRAINAGE AREA BOUNDARY
-  TIME OF CONCENTRATION FLOW PATH
-  DISCHARGE POINT
-  CURVE NUMBER
-  TIME OF CONCENTRATION

NOTES

1. THE FOLLOWING IS CONSIDERED "IMPERVIOUS AREA": BITUMINOUS DRIVEWAYS, BITUMINOUS WALKS, BITUMINOUS CURB, CONCRETE DRIVEWAYS, CONCRETE WALKS, CONCRETE PADS, CONCRETE CURB AND BUILDINGS.
2. Tc PATHS THAT WERE 5.0 MINUTES OR LESS ARE NOT SHOWN ON THIS FIGURE.
3. GOOGLE EARTH IMAGES, MILLBURY GIS WEBSITE, MILLBURY FIRE STATION PLANS WERE USED TO SUPPLEMENT LAND USE COVER AND TOPOGRAPHY WHERE SURVEY WAS UNAVAILABLE.



REVISIONS	No.	Date	Desc.

Designed L.A.E.
Drawn L.A.E.
Reviewed XXX
Scale 1"=50'
Project No. 2001478
Date JULY, 2021
CAD File: ED200147801

Title
EXISTING DRAINAGE MAP

Sheet No.
FIG. 2

7/20/2021 10:56 AM C:\PROJECTS\14-0004\14-0004-01\DWG\ED200147801.DWG (ED) - 14-0004-01-01

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PROPOSED HYDROLOGY

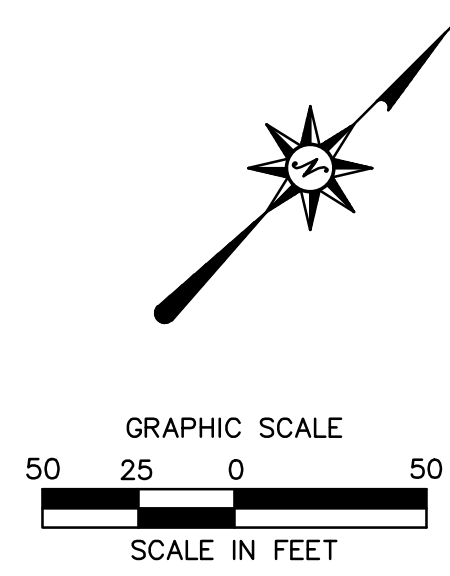
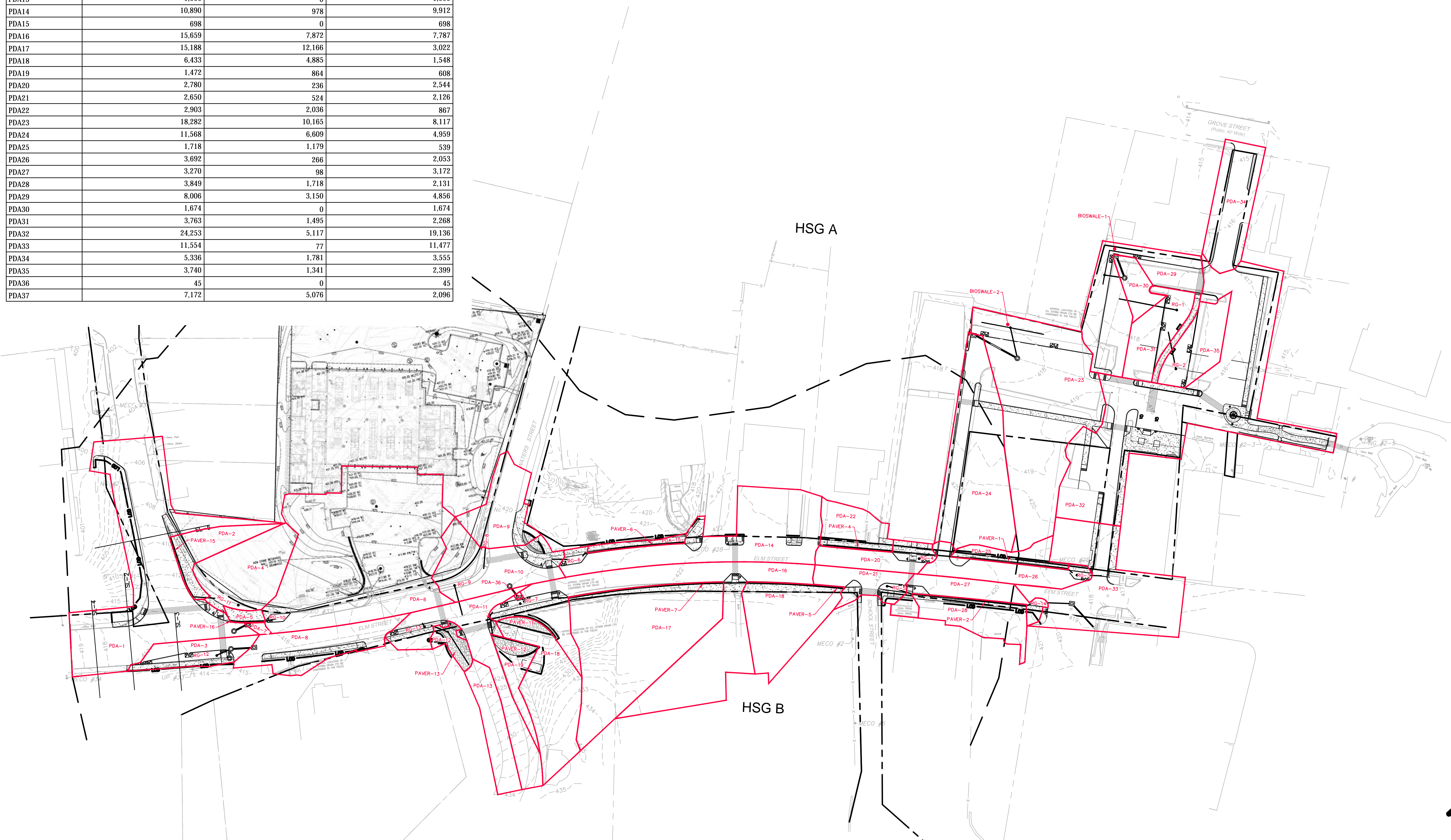
Drainage Area	Catchment Area (sf)	Pervious Cover (sf)	Impervious Cover (sf)
PDA1	19,575	5,253	14,322
PDA2	2,857	1,872	985
PDA3	2,880	581	2,299
PDA4	5,937	5,674	263
PDA5	486	0	486
PDA6	24,318	7,999	16,319
PDA7	200	0	200
PDA8	5,198	1,014	4,184
PDA9	4,402	886	3,516
PDA10	6,478	1,600	4,878
PDA11	5,063	758	4,305
PDA12	1,064	219	845
PDA13	1,066	0	1,066
PDA14	10,890	978	9,912
PDA15	698	0	698
PDA16	15,659	7,872	7,787
PDA17	15,188	12,166	3,022
PDA18	6,433	4,885	1,548
PDA19	1,472	864	608
PDA20	2,780	236	2,544
PDA21	2,650	524	2,126
PDA22	2,903	2,036	867
PDA23	18,282	10,165	8,117
PDA24	11,568	6,609	4,959
PDA25	1,718	1,179	539
PDA26	3,692	266	2,053
PDA27	3,270	98	3,172
PDA28	3,849	1,718	2,131
PDA29	8,006	3,150	4,856
PDA30	1,674	0	1,674
PDA31	3,763	1,495	2,268
PDA32	24,253	5,117	19,136
PDA33	11,554	77	11,477
PDA34	5,336	1,781	3,555
PDA35	3,740	1,341	2,399
PDA36	45	0	45
PDA37	7,172	5,076	2,096

LEGEND

-  PROPERTY LINE
-  PROPOSED DRAINAGE AREA BOUNDARY

NOTES

1. THE FOLLOWING IS CONSIDERED "IMPERVIOUS AREA": BITUMINOUS DRIVEWAYS, BITUMINOUS WALKS, BITUMINOUS CURB, CONCRETE DRIVEWAYS, CONCRETE WALKS, CONCRETE PADS, CONCRETE CURB AND BUILDINGS.
2. GOOGLE EARTH IMAGES, MILLBURY GIS WEBSITE, MILLBURY FIRE STATION PLANS WERE USED TO SUPPLEMENT LAND USE COVER AND TOPOGRAPHY WHERE SURVEY WAS UNAVAILABLE.



REVISIONS	
No.	Date

Designed	L.A.E.
Drawn	L.A.E.
Reviewed	XXX
Scale	1"=50'
Project No.	2001478
Date	May, 2021
CAD File:	PD200147802
Title	STORMWATER BMPS CATCHMENT MAP
Sheet No.	

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