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Ashland Conservation Commission
101 Main Street
Ashland, MA 01721

August 23, 2020

Subject: **Ashland Mills Re-Development**
10-50 Main Street
Ashland, MA

Dear Commission Members:

Applicant Ashland Properties, LLC, Richard Gordon, Manager, hereby submits plans, applications, and supporting documentation with the Stormwater Permit and Notice of Intent (to be submitted by others) for the property at 10-60 Main Street.

As an overview the project seeks to retain the mill buildings at 10, 20, 30and 40 Main Street with refurbishing and interior reuse, construct additional buildings complimentary to the site and the existing granite buildings, and relocate the access from Main Street to a location near and coordinated with the existing traffic signal. The developed site footprint will not vary from the existing overall.

The site comprises approximately 8 acres, has frontage and access from Main Street and Myrtle. It is bounded by the river to the rear, where a wall/berm separates it from the river/flood, and the property extends to Central Street along the river, however there is no physical access at Central Street.

The property was constructed as a mill in granite, but later a brick façade complex was added. Currently the building supports a variety of users, including professional, medical, general offices, storage, miscellaneous industrial uses, sports activities, and food preparation.

The proposal seeks to provide a mix of office/commercial and mostly residential units with a surplus of on-site parking in the open basements of the buildings.

The site is mapped in the FEMA Flood Hazard area Zone A, however the river is separated from the site by a retaining wall / berm complex and dewatered principally through an existing pump system, all of ancient vintage.

The site is also in the Nyanza plume, an Activity Use Limitation (AUL) designated zone. Past history of the site reveals some additional contamination as outlined in George Campbell, LSP, reports. Mr. Campbell is scheduled to oversee the soils activities on site during the construction works.

SITE CONDITIONS- HISTORIC MILL as they relate to proposed work/compliance

The site works area is paved or covered with buildings, and is low, within the FEMA Flood Zone. The historic aspects of drainage on site relied upon a pump system to dewater the site. This pump system will be replaced by a new pump system designed to handle various rainfall events using multiple pumps and have an emergency generator back up. Up to date hydrologic analysis is provided for the pump system designer.

The site is also in the Nyanza groundwater plume, and has residual contamination in soils from past on-site activities. Therefore changes to groundwater flows being monitored/treated by the DEP+EPA will not allow for infiltration. The drainage system will be modernized and have deep sump/gas trap catch basins for TSS removal.

Current survey data shows the site does not flood directly from the river over Myrtle Street.

SPECIAL PERMIT- Floodplain Overlay District

As noted the FEMA 100 year flood encroaches on the site, in the rear of the property with the potential to flood the parking areas (see attached FEMA Firmette and Site Plans). The parking lot areas will be graded to mimic the existing conditions/incremental volumes and not displace potential flood storage. Control of the flooding and site specific rainfall-runoff will be controlled by a new pumping system replacing the historic pump. A wetwell will be installed and various pump sizes and activation will control runoff accumulations.

> Section 8.1.3 provides: " *The following uses of low flood damage potential and causing no obstructions to flood flows shall be permitted, provided that they do not require structures, fill or storage of materials or equipment:*
>
> *7. Buildings lawfully existing prior to the adoption of these provisions."*
>
> Buildings 10 and 20, being kept in the same locations will meet the above criteria. For the other buildings the following provisions apply for a Special Permit:
>
> 8.1.4 *Special Permit. No structure or building shall be erected, constructed, substantially improved, reconstructed or otherwise created or moved and no earth or other materials dumped, filled, excavated or transferred unless a special permit is granted by the Planning Board. Said Board may issue a special permit hereunder (subject to other provisions of this chapter) if the application is compliant with the following provisions:*
>
> *1. The proposed use shall comply in all respects to the provisions of the underlying district in which the land is located.*

2. *Within ten (10) days of the receipt of the application, the Board shall transmit one (1) copy of the development plan to the Conservation Commission, Board of Health and Building Inspector. Final action shall not be taken until reports have been received from the above Boards or until thirty-five (35) days have elapsed.*

3. *All encroachments, including fill, new construction and substantial improvements to existing structures, and other development are prohibited in the floodway unless certification by a registered professional engineer is provided by the applicant demonstrating that such encroachment shall not result in any increase in flood levels during the occurrence of the one-hundred-year flood.*

4. *The Board may specify such additional requirement and conditions as it finds necessary to protect the health, safety and welfare of the public and the occupants of the proposed use.*

5. *All subdivision proposals must be designed to assure that:*

   a. Such proposals minimize flood damage;

   b. All public utilities and facilities are located and constructed to minimize or eliminate flood damage; and

   c. Adequate drainage is provided to reduce exposure to flood hazards.

The project does not displace floodwaters. The Special Permit can be granted where the buildings are being replaced comply with the criteria of this section where: (i) no floodway will be impacted (none on site), (ii) no increase in flood levels will result, (iii) the proposal minimizes flood damage, (iv) all public utilities are located to prevent flood damage, (v) all drainage is being retrofitted to reduce flood hazards (new pump system).

Should you have any questions or require additional information related to this project, please feel free to contact this office at 508-393-9727.

Sincerely,
Connorstone Engineering, Inc.

George Connors

STORMWATER REPORT

FOR

Ashland Mills Redevelopment
at
10-50 Main Street
Ashland, MA

August 22, 2022

PREPARED BY:
Connorstone Engineering, Inc.
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Northborough, MA 01532
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STORMWATER NARRATIVE

Ashland Mills Redevelopment
Northborough MA 01532

The overall site includes approximately 8 acres of land with frontage on Main Street and Myrtle Street in Downtown Ashland. The site includes a mill complex consisting of several buildings built between 1870 and the 1960's. Currently the site includes a mix of uses including professional office space to contractor space. Areas to the sides and rear of the building consist of paved driveways, parking, and storage to support the building uses.

The developed portion of the site is bounded to the rear by the Sudbury River. The mean annual high water line was delineated by Goddard Consulting, LLC, and an Order of resource Area Delineation (ORAD) was issued by the Conservation Commission confirming the locations. The Sudbury River has a mapped 100 year flood plain through this area, and based upon the FEMA flood profile the flood elevations vary from approximately elevation 187 to 185 running from west to east. This mapped limit of flood plain extends into the developed portion of the site. The river is separated from the developed portions of the site with an earthen berm and concrete retaining wall. The top of wall extends above the mapped 100 year flood elevation.

The site also includes an older stormwater pump station that historically removed stormwater from the site. The pump station is currently non-functional, and the intent of the proposal would be to replace and upgrade this pump station to dewater the site.

The site also lies within an Activities and Use Limitation (AUL) under MassDEP and EPA related to the Nyanza groundwater plume. Portions of Ram Status and Modification report by Campbell Environmental Inc. have been included for reference. The presence of potential contamination and high groundwater elevations would preclude the possibility of groundwater infiltration or artificial recharge on-site.

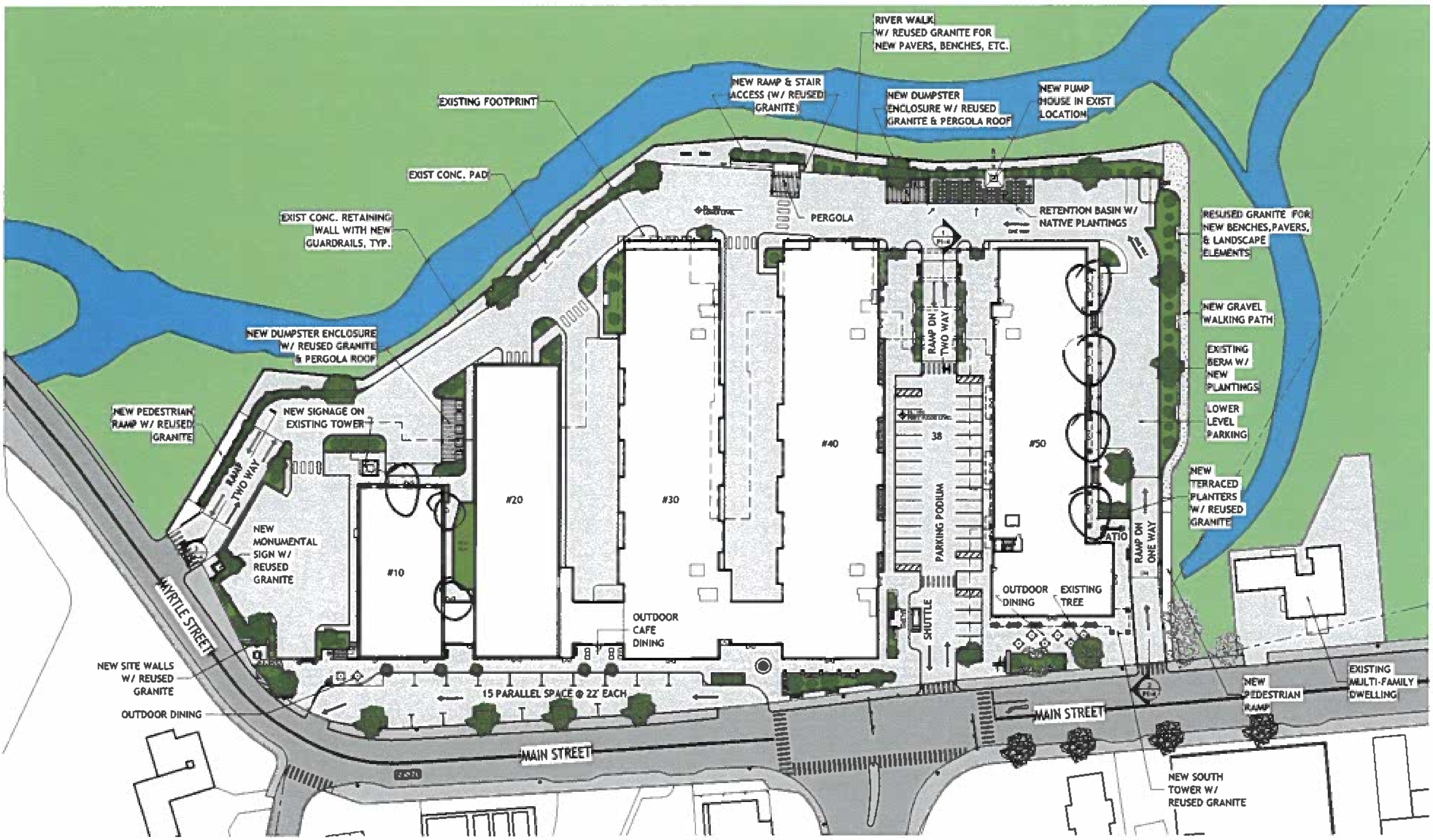
Proposed Work

The propose development includes the renovation of the two northerly buildings and the addition of three proposed buildings along Main Street. The buildings would all be connected via basement levels used for parking and access. Overall the project will include approximately 30,000 square feet of commercial space and 200 units of apartments. Parking has been provided through a mix of at grade exterior parking, garage space below the buildings, and a parking deck at the Main Street elevation. The proposed driveway and parking layout will provide access through the site and around the rear of the buildings for Fire and Emergency vehicle access. Three access and/or egress point have been proposed, including the main entrance to be coordinated with the existing signalized intersection with Main Street and Pleasant Street.

As noted above, the site contains an inactive pump station that historically dewatered stormwater from the site. The proposed plan would include upgrading and replacing this pump system with a new pump station with sufficient capacity to accommodate current design flows. Final design of the pump station would be provide prior to construction. The proposed plan would also include an upgraded site collection system with deep sump catch basins and pretreatment structures. The pretreatment structures would include hydrodynamic separators (Stormceptor, or equal), that have been sized to removal at least 80% of the total suspended solids.

The site is classified as a Redevelopment Project under the MassDEP Standards and is also located within an AUL related to the Nyanza plume. Due to these restrictions, the project has been designed to comply with the Stormwater Standards to the maximum extent practical, and groundwater recharge/infiltration is not feasible. An explanation of each standard is provided in this report.

USGS LOCUS MAPPING



GRLA
Gorman Richardson Lewis Architects
ASHLAND MILLS
10-50 MAIN ST. ASHLAND, MA
CLIENT ADDRESS 1
CLIENT ADDRESS 2
CLIENT ADDRESS 3

SITE PLAN (1"=30')

P1

2020101.00 - ASHLAND MILLS PLANNING BOARD SUBMISSION - JUNE 30, 2022

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

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

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

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

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

Registered Professional Engineer's Certification

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

Registered Professional Engineer Block and Signature

Signature and Date 8/23/22

Checklist

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

☐ New development

☒ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

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

- [X] No disturbance to any Wetland Resource Areas
- [ ] Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- [ ] Reduced Impervious Area (Redevelopment Only)
- [ ] Minimizing disturbance to existing trees and shrubs
- [ ] LID Site Design Credit Requested:
  - [ ] Credit 1
  - [ ] Credit 2
  - [ ] Credit 3
- [ ] Use of "country drainage" versus curb and gutter conveyance and pipe
- [ ] Bioretention Cells (includes Rain Gardens)
- [ ] Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- [ ] Treebox Filter
- [ ] Water Quality Swale
- [ ] Grass Channel
- [ ] Green Roof
- [ ] Other (describe): _____

Standard 1: No New Untreated Discharges

- [X] No new untreated discharges
- [ ] Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- [ ] Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

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

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

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

Standard 3: Recharge

☐ Soil Analysis provided.

☐ Required Recharge Volume calculation provided.

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

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

☐ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

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

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

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

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

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

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

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

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

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

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

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

Standard 4: Water Quality

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

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

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

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

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

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

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

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

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

☐ The ½" or 1" Water Quality Volume or

☑ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

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

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

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

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

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

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

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

☐ All exposure has been eliminated.

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

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

Standard 6: Critical Areas

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

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

Checklist for Stormwater Report

Checklist (continued)

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

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

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

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

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

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

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

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

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

Checklist for Stormwater Report

Checklist (continued)

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

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

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

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

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

Standard 9: Operation and Maintenance Plan

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

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

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

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

Standard 10: Prohibition of Illicit Discharges

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

☒ An Illicit Discharge Compliance Statement is attached;

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

MA D.E.P. STORMWATER STANDARDS

Standard 1: No New Untreated Discharges

There are no new untreated discharges to any areas subject to protection or the 100 foot buffer zone. Any point discharge related to the new pump station will be provided with an adequately sized riprap outlet pad based upon the peak flow rate/velocity to prevent scour and dissipate flows.

Standard 2: Peak Rate Attenuation

The existing site contains an inactive pump station that historically dewatered stormwater from the site. More recently three openings through the berm/retaining wall have been provided. The proposed plan would include upgrading and replacing this pump system with a new pump station with sufficient capacity to accommodate the current design flows per NOAA Atlas 14 data. Final design of the pump station, including pump sizing, wet wells, etc., would be provide by a separate consultant prior to construction.

The peak flow rates for each design storm along with hydrographs have been provided for review and assistance in the final pump system design. The stormwater runoff has been analyzed using HydroCAD, and rainfall depths for the design storms were taken from the most recent NOAA Atlas 14 for Ashland, MA. A summary of each storm event is listed below.

Return Period	Inches	Peak Flow Rate
2 year	3.3	14.6 cfs
10 year	5.05	23.3 cfs
25 year	6.15	28.8 cfs
100year	7.85	37.1 cfs

Standard 3: Stormwater Recharge

The site lies within an Activities and Use Limitation (AUL) under MassDEP and EPA related to the Nyanza groundwater plume. Portions of Ram Status and Modification report by Campbell Environmental Inc. have been included for reference. The presence of potential contamination would preclude the possibility of groundwater infiltration or artificial recharge on-site.

Standard 4: Water Quality

The proposed project has been designed to provide an improvement to water quality thought the installation of new deep sump catch basins and water quality structures (Stormceptors) sized to remove a greater than 80% of the annual total suspended solids. A recommended long-term pollution prevention plan is also provided as part of the attached Operation and Maintenance Plan.

Water Quality Structure 1

1 **BMP**	2 **TSS Removal**	3 **Starting TSS**	4 **TSS Removal (2 * 3)**	5 **Remaining TSS (3 – 4)**
Deep Sump Catch Basin	25%	100%	25%	75%
Stormceptor 2400	77%	75%	58%	17%
		Total TSS Removal	83%	

STC-2400: TSS removal = 77%
Water quality flow rate = 4.4 cfs
WQF = (qu) x (imp. area in square miles) x (1-inch)
where qu = 795 (per MassDEP guidance table)
A = 154,500 s.f. = 0.0055 sq. mi.

Water Quality Structure 2

1 **BMP**	2 **TSS Removal**	3 **Starting TSS**	4 **TSS Removal (2 * 3)**	5 **Remaining TSS (3 – 4)**
Deep Sump Catch Basin	25%	100%	25%	75%
Stormceptor 450	82%	75%	62%	13%
		Total TSS Removal	87%	

STC-450i: TSS removal = 91%
Water quality flow rate = 0.71 cfs
WQF = (qu) x (imp. area in square miles) x (1-inch)
where qu = 795 (per MassDEP guidance table)
A = 24,800 sq. ft. = 0.00089 sq. mi.

Standard 5: Land Uses With Higher pollutant Loads

The proposed project may generate greater than 1,000 vehicle trips per day. However, much of the proposed parking and related access driveways are within the covered garage below the structure, and not exposed to precipitation generating runoff. The project has been designed to meet the requirement of Standard 5 where groundwater recharge has not been proposed and teh selected BMP's are suitable for the land use.

Standard 6: Critical Areas

Not applicable – The site is not located within any critical areas.

Standard 7: Redevelopment

The site is a Redevelopment project and has been designed to meet standards 2, 3, and 4 to the maximum extent practical. Additional description of each standard is provided above.

Standard 8: Construction Period Controls

1. A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan have been attached with this report (SWPPP)

2. The temporary sediment traps have been provided along the downgradient edge of work. The plans have shown berms to be placed in the two lower areas that would collect runoff from the work areas. Perimeter erosion controls have also been included with straw wattles and silt fence. During the initial phases of construction the existing paved areas would be utilized as stabilized construction entrances and staging areas.

3. The project is covered by the NPDES General Construction Permit, and a NOI filing with EPA will be required prior to construction

Standard 9: Operation and Maintenance Plan

A recommended Operation and Maintenance Plan has been attached with this report.

Standard 10: Illicit Discharge Statement

Illicit discharges are prohibited. Existing building are to be replaced or renovated with new utility connections and connections to the municipal sewer system within Main Street. All of the pre-existing plumbing and utility connections will be removed and/or otherwise decommissioned. The re-constructed site will include a new drainage system, where no illicit discharges or connections have been proposed. There will be no direct connections the Town MS4 system within Main Street.

STORMWATER DRAINAGE SYSTEM DESIGN

The street drainage system has been designed from calculations based upon the 25-year design storm to ensure capacity to convey stormwater.

Storm intensities were determined from exhibit 8-14 "*Intensity – Duration – Frequency Curve for Worcester, MA*" from the MassHighway Design Manual. The resulting analysis was performed using the Rational Method of determining peak storm flows. All storm sewer pipe sizes were determined using Manning's Equation for pipes flowing full.

The following table presents the hydraulic calculations performed for sizing the site drainage system. The structure references refer to those as shown on the site plan submitted with this report.

DRAIN PIPE SIZING CALCULATIONS

PROJECT Ashland Mill LOCATION Main Street, Ashland BY: VC n= 0.012

CLIENT SHEET 1 OF 1 DATE: 7/18/2022 RETURN PERIOD **25 Year**

Line		Area	C	CA	Tc	rain	Inlet flow Q	Pipe flow Qd	Pipe Size	Pipe Length	Slope	flowing full		Rim (feet)		Inv. El.	
FROM	TO	ac			min.	in/hr	cfs	cfs	in	ft	ft/ft	Qf	Vf	Upper	Lower	Upper	Lower
CB-1	DMH-1	0.28	0.75	0.21	5	6.5	1.37	**1.37**	12	16	0.050	**8.63**	10.99	181.90	181.80	179.00	178.20
CB-2	DMH-1	0.17	0.95	0.16	5	6.5	1.05	**1.05**	12	18	0.017	**4.99**	6.35	181.50	181.80	178.50	178.20
RD	DMH-1	0.08	0.95	0.08	5	6.5	0.49	**0.49**	6	18	0.017	**0.78**	4.00	181.50	181.80	178.50	178.20
DMH-1	DMH-2							**2.91**	12	70	0.010	**3.86**	4.92	181.80	181.40	178.10	177.40
CB-3	DMH-2	0.21	0.95	0.20	5	6.5	1.30	**1.30**	12	10	0.040	**7.72**	9.83	181.00	181.40	178.00	177.60
DMH-2	DMH-3							**4.21**	12	50	0.010	**3.86**	4.92	181.40	181.90	177.30	176.80
RD	DMH-3	0.24	0.95	0.23	5	6.5	1.48	**1.48**	8	10	0.020	**1.85**	5.31	---	181.90	---	177.00
DMH-3	DMH-4							**5.69**	15	100	0.011	**7.34**	5.98	181.90	181.30	176.60	175.50
CB-4	DMH-4	0.20	0.95	0.19	5	6.5	1.24	**1.24**	12	15	0.033	**7.05**	8.98	181.00	181.30	178.00	177.50
DMH-4	DMH-5							**8.95**	18	60	0.010	**11.39**	6.44	181.30	181.20	175.30	174.70
RD	DMH-5	0.52	0.95	0.49	5	6.5	3.21	**3.21**	12	24	0.020	**5.46**	6.95	---	181.20	---	176.00
CB-5	DMH-5	0.18	0.95	0.17	5	6.5	1.11	**1.11**	12	25	0.020	**5.46**	6.95	180.50	181.20	176.00	175.50
DMH-5	DMH-6							**13.28**	18	55	0.015	**13.73**	7.77	181.20	181.20	174.60	173.80
DMH-6	DMH-7							**14.26**	24	95	0.011	**25.16**	8.01	181.20	181.10	173.50	172.50
RD	DMH-7	0.56	0.95	0.53	5	6.5	3.46	**3.46**	12	30	0.020	**5.46**	6.95	---	181.10	---	176.00
CB-6	DMH-7	0.18	0.95	0.17	5	6.5	1.11	**1.11**	12	18	0.044	**8.14**	10.37	180.50	181.10	177.00	176.20
DMH-7	DMH-8							**18.83**	24	50	0.010	**24.52**	7.81	181.10	181.35	172.40	171.90
DD	DMH-8	0.38	0.95	0.36	5	6.5	2.35	**2.35**	15	30	0.020	**9.90**	8.07	---	181.35	---	176.00
DMH-8	WQS-1							**21.18**	24	14	0.011	**25.39**	8.08	181.35	181.50	171.80	171.65
WQS-1	DMH-11							**23.53**	24	10	0.015	**30.04**	9.56	181.50	181.35	171.40	171.25
RD	DMH-11	0.49	0.95	0.47	5	6.5	3.03	**3.03**	12	30	0.020	**5.46**	6.95	---	181.35	---	175.00
DMH-11	PC							**31.25**	24	6	0.025	**38.78**	12.34	181.35	---	171.15	171.00
RD	CB-9	0.10	0.75	0.08	5	6.5	0.49	**0.49**	6	25	0.020	**0.86**	4.38	---	181.00	---	178.50
CB-9	DMH-12	0.09	0.95	0.09	5	6.5	0.56	**1.04**	12	45	0.011	**4.07**	5.18	181.00	181.70	178.00	177.50
RD	DMH-12	0.05	0.95	0.05	5	6.5	0.31	**0.31**	12	12	0.020	**5.46**	6.95	---	181.70	---	178.00
DMH-12	DMH-13							**1.35**	12	70	0.011	**4.13**	5.26	181.70	181.50	177.40	176.60
CB-10	DMH-13	0.08	0.95	0.08	5	6.5	0.49	**0.49**	12	15	0.027	**6.31**	8.03	181.00	181.50	177.50	177.10
RD	DMH-13	0.03	0.95	0.03	5	6.5	0.19	**0.19**	12	12	0.020	**5.46**	6.95	---	181.50	---	178.50
DMH-13	DMH-4							**2.03**	12	80	0.011	**3.98**	5.07	181.50	181.30	176.50	175.65

DRAIN PIPE SIZING CALCULATIONS

PROJECT Ashland Mill LOCATION Main Street, Ashland BY: VC n= 0.012
CLIENT SHEET 1 OF 1 DATE: 7/18/2022 RETURN PERIOD **25 Year**

Line		Area	C	CA	Tc	rain	Inlet flow Q	Pipe flow Qd	Pipe Size	Pipe Length	Slope	flowing full		Rim (feet)		Inv. El.	
FROM	TO	ac			min.	in/hr	cfs	cfs	in	ft	ft/ft	Qf	Vf	Upper	Lower	Upper	Lower
CB-11	DMH-14	0.09	0.95	0.09	5	6.5	0.56	**0.56**	12	100	0.011	**4.05**	5.16	181.00	181.30	177.50	176.40
CB-12	DMH-14	0.07	0.95	0.07	5	6.5	0.43	**0.43**	12	10	0.050	**8.63**	10.99	181.00	181.30	177.50	177.00
DMH-14	DMH-6							**0.99**	12	125	0.010	**3.94**	5.01	181.30	181.20	176.30	175.00
CB-8	DMH-10	0.34	0.95	0.32	5	6.5	2.10	**2.10**	12	110	0.011	**4.12**	5.24	181.00	180.30	177.75	176.50
CB-7	DMH-10	0.21	0.95	0.20	5	6.5	1.30	**1.30**	12	18	0.028	**6.44**	8.19	180.00	180.30	177.00	176.50
DMH-10	WQS-2							**3.40**	15	85	0.012	**7.59**	6.19	180.30	181.20	176.30	175.30
WQS-2	DMH-11							**4.69**	15	10	0.020	**9.90**	8.07	181.20	181.35	175.20	175.00

WATER QUALITY STRUCTURE SIZING SUMMARY

Stormceptor®

Stormceptor Design Summary

PCSWMM for Stormceptor

Project Information

Date	8/23/2022
Project Name	Ashland Mill
Project Number	WQS-1
Location	Ashland

Designer Information

Company	CSEI
Contact	N/A

Notes

N/A

Drainage Area

Total Area (ac)	3.5
Imperviousness (%)	92

The Stormceptor System model STC 2400 achieves the water quality objective removing 77% TSS for a Fine (organics, silts and sand) particle size distribution; providing continuous positive treatment for a stormwater quality flow rate of 4.4 cfs.

Rainfall

Name	WORCESTER WSO AP
State	MA
ID	9923
Years of Records	1948 to 2005
Latitude	42°16'2"N
Longitude	71°52'34"W

Water Quality Objective

TSS Removal (%)	73
WQ Flow Rate (cfs)	4.4

Upstream Storage

Storage (ac-ft)	Discharge (cfs)
0	0

Stormceptor Sizing Summary

Stormceptor Model	TSS Removal %
STC 450i	62
STC 900	72
STC 1200	72
STC 1800	72
STC 2400	77
STC 3600	77
STC 4800	81
STC 6000	82
STC 7200	84
STC 11000	88
STC 13000	88
STC 16000	90

Rinker MATERIALS™

Stormceptor®

Stormceptor Design Summary

PCSWMM for Stormceptor

Project Information

Date	8/23/2022
Project Name	Ashland Mill
Project Number	WQS-2
Location	Ashland

Designer Information

Company	CSEI
Contact	N/A

Notes

N/A

Drainage Area

Total Area (ac)	0.57
Imperviousness (%)	100

The Stormceptor System model STC 450i achieves the water quality objective removing 82% TSS for a Fine (organics, silts and sand) particle size distribution; providing continuous positive treatment for a stormwater quality flow rate of 0.71 cfs.

Rainfall

Name	WORCESTER WSO AP
State	MA
ID	9923
Years of Records	1948 to 2005
Latitude	42°16'2"N
Longitude	71°52'34"W

Water Quality Objective

TSS Removal (%)	73
WQ Flow Rate (cfs)	0.71

Upstream Storage

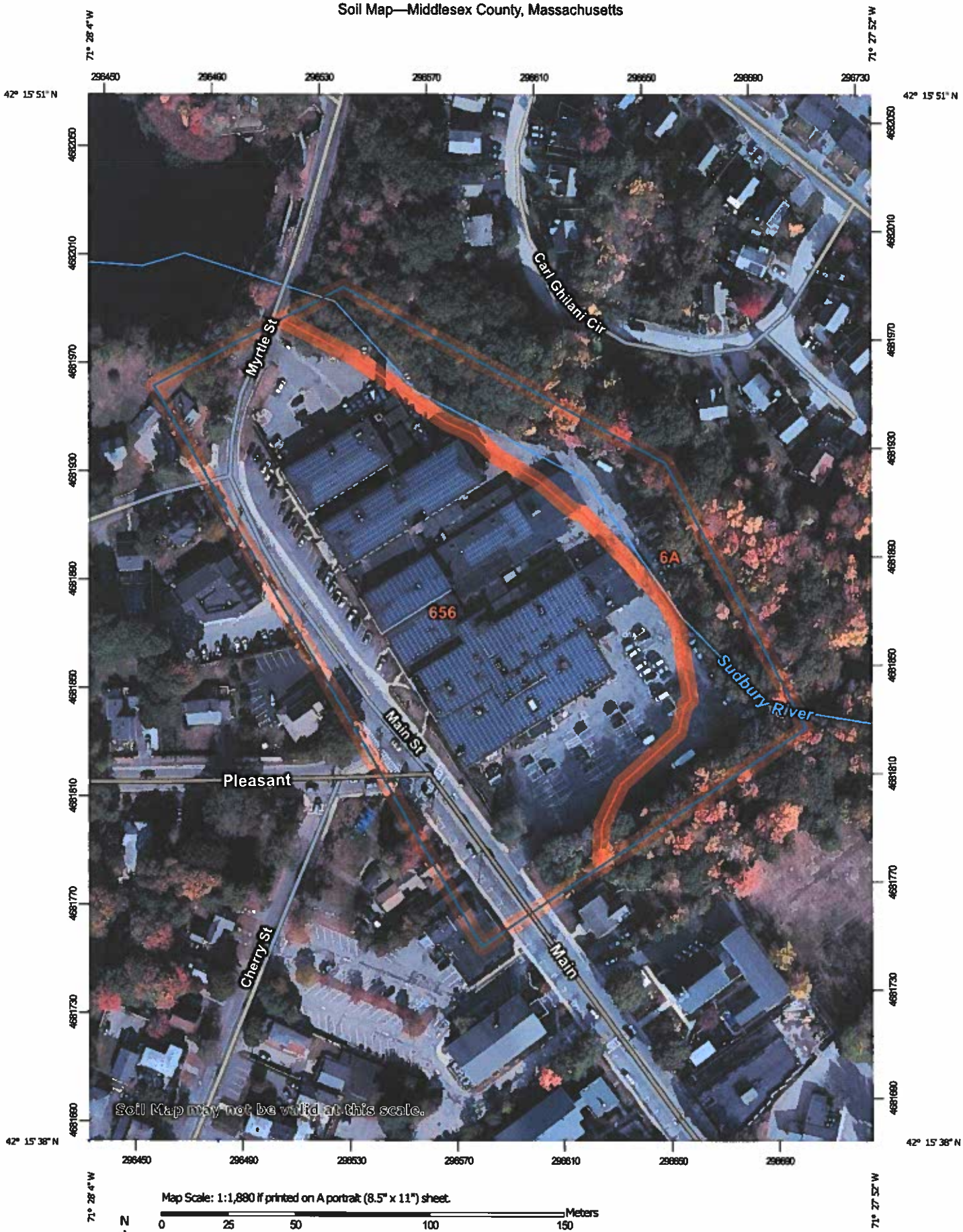
Storage (ac-ft)	Discharge (cfs)
0	0

Stormceptor Sizing Summary

Stormceptor Model	TSS Removal %
STC 450i	82
STC 900	89
STC 1200	89
STC 1800	89
STC 2400	91
STC 3600	92
STC 4800	94
STC 6000	94
STC 7200	95
STC 11000	96
STC 13000	97
STC 16000	97

Rinker MATERIALS™

NRCS SOIL MAPPING



Map Scale: 1:1,880 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 25 50 100 150

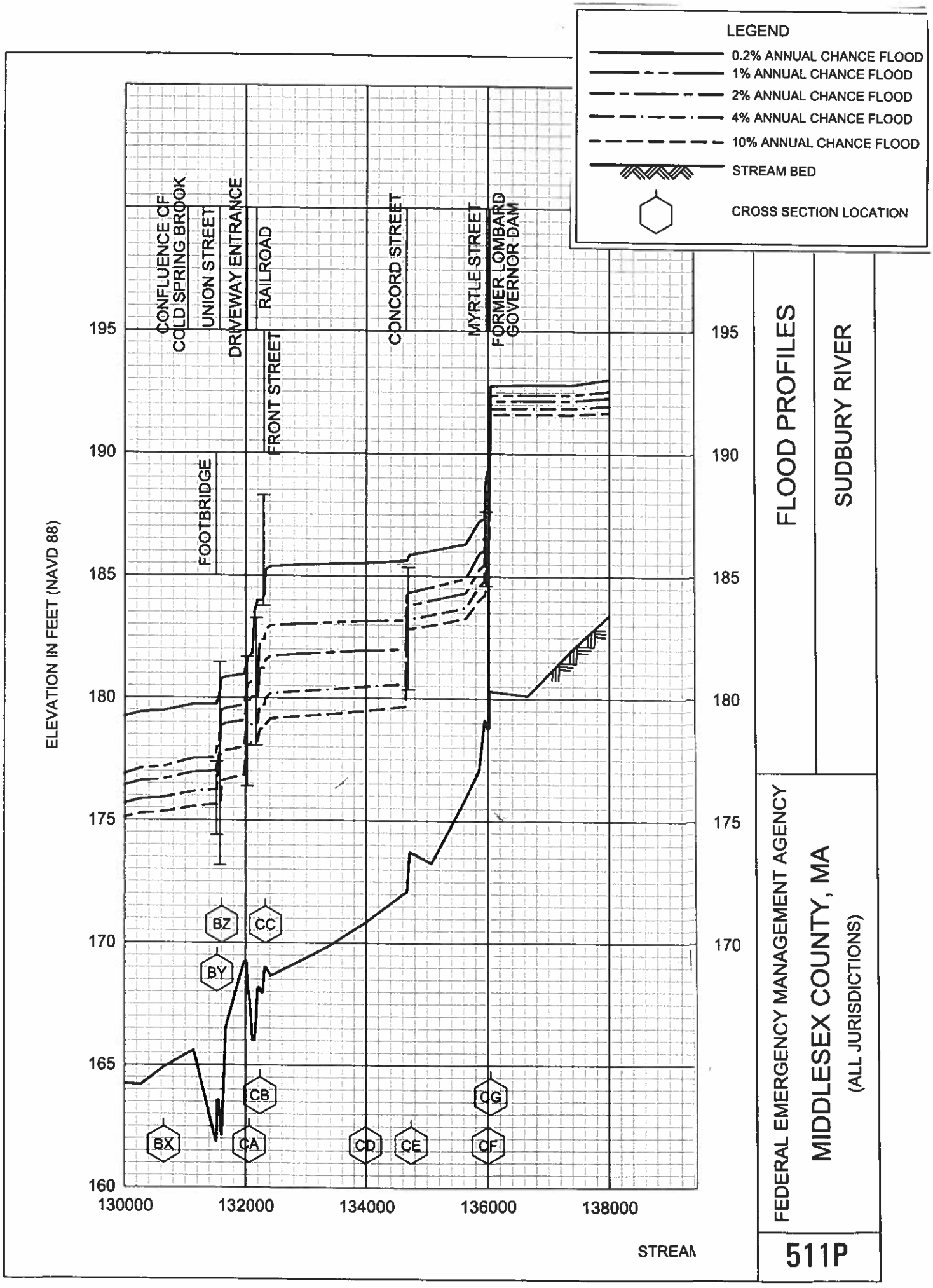
Feet: 0 50 100 200 300

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

Map Unit Legend

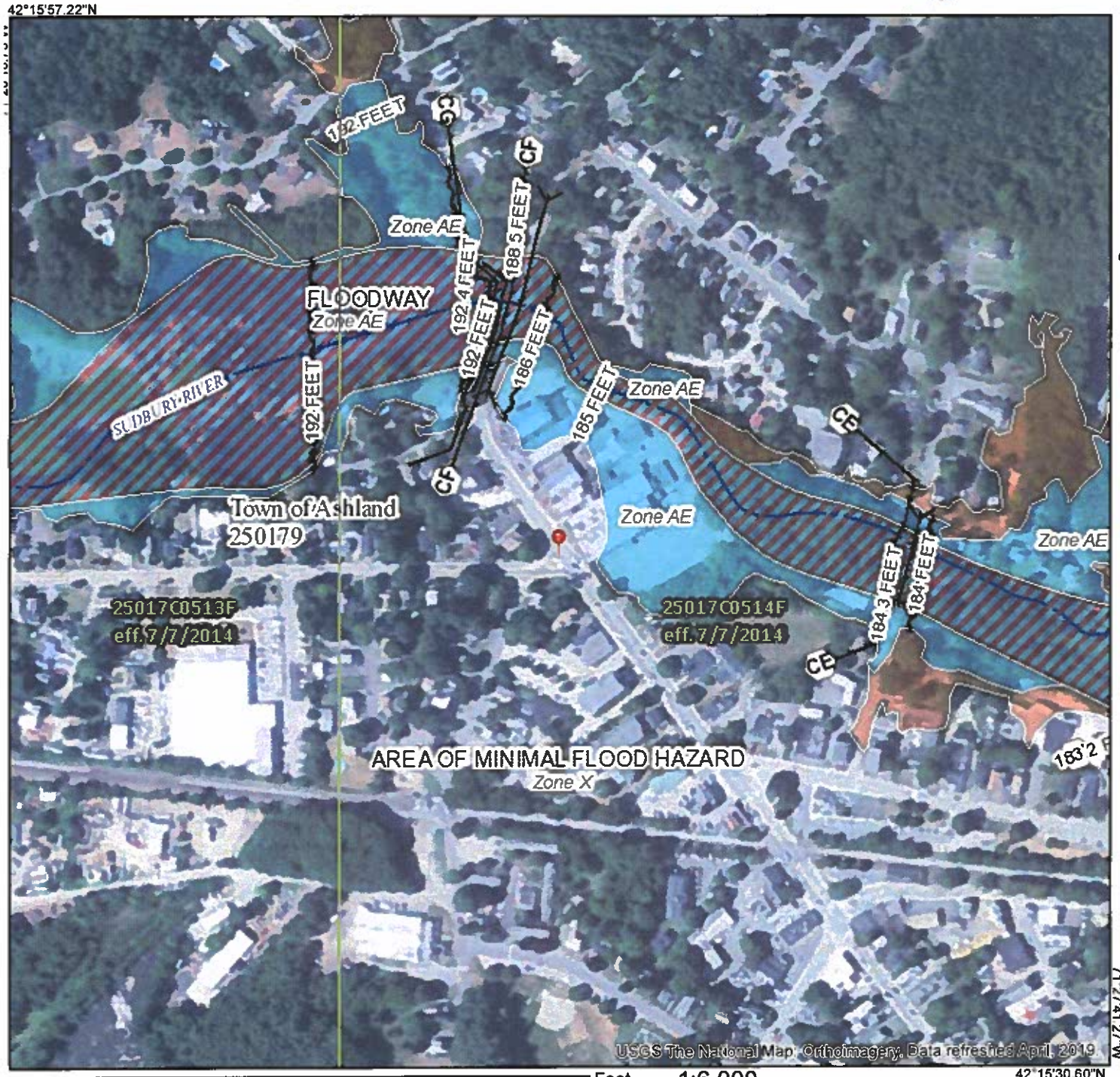
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
6A	Scarboro mucky fine sandy loam, 0 to 3 percent slopes	2.0	26.2%
656	Udorthents-Urban land complex	5.6	73.8%
Totals for Area of Interest		**7.6**	**100.0%**

FEMA MAPPING AND FIS PROFILE


LEGEND
0.2% ANNUAL CHANCE FLOOD
1% ANNUAL CHANCE FLOOD
2% ANNUAL CHANCE FLOOD
4% ANNUAL CHANCE FLOOD
10% ANNUAL CHANCE FLOOD
STREAM BED
CROSS SECTION LOCATION
CONFLUENCE OF COLD SPRING BROOK
UNION STREET
DRIVEWAY ENTRANCE
RAILROAD
FRONT STREET
FOOTBRIDGE
CONCORD STREET
MYRTLE STREET
FORMER LOMBARD GOVERNOR DAM
BZ
CC
BY
CB
BX
CA
CD
CE
CG
CF
ELEVATION IN FEET (NAVD 88)
195
190
185
180
175
170
165
160
130000
132000
134000
136000
138000
STREAM
FLOOD PROFILES
SUDBURY RIVER
FEDERAL EMERGENCY MANAGEMENT AGENCY
MIDDLESEX COUNTY, MA
(ALL JURISDICTIONS)
511P

National Flood Hazard Layer FIRMette

FEMA



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/28/2020 at 10:04:03 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Sudbury River (continued)								
BX	130,623	116	1,092	3.5	177.2	177.2	177.2	0.0
BY	131,527	124	833	3.9	178.0	178.0	178.2	0.2
BZ	131,607	148	1,019	3.5	179.5	179.5	179.7	0.2
CA	132,056	110	810	4.3	180.6	180.6	181.5	0.9
CB	132,232	74	864	4.3	182.4	182.4	183.0	0.6
CC	132,326	95	962	4.1	182.8	182.8	183.4	0.6
CD	133,984	271	2,670	1.9	183.2	183.2	184.0	0.8
CE	134,733	191	1,545	3.1	184.3	184.3	185.0	0.7
CF	135,999	228	1,040	3.0	188.5	188.5	188.9	0.4
CG	136,040	301	2,354	1.2	192.4	192.4	192.5	0.1
CH	138,080	155	993	3.3	192.6	192.6	192.7	0.1
CI	139,099	123	582	7.3	195.3	195.3	195.5	0.2
CJ	139,392	227	1,058	3.3	196.7	196.7	197.5	0.8
CK	139,852	156	768	5.2	200.5	200.5	201.3	0.8
CL	139,876	175	1,038	3.1	200.9	200.9	201.5	0.6
CM	141,397	200	1,663	2.5	201.5	201.5	202.0	0.5
CN	143,723	168	1,012	4.6	202.6	202.6	203.2	0.6
CO	145,187	71	327	7.5	206.3	206.3	206.3	0.0

[1]Feet above confluence with Concord River

TABLE 12

FEDERAL EMERGENCY MANAGEMENT AGENCY

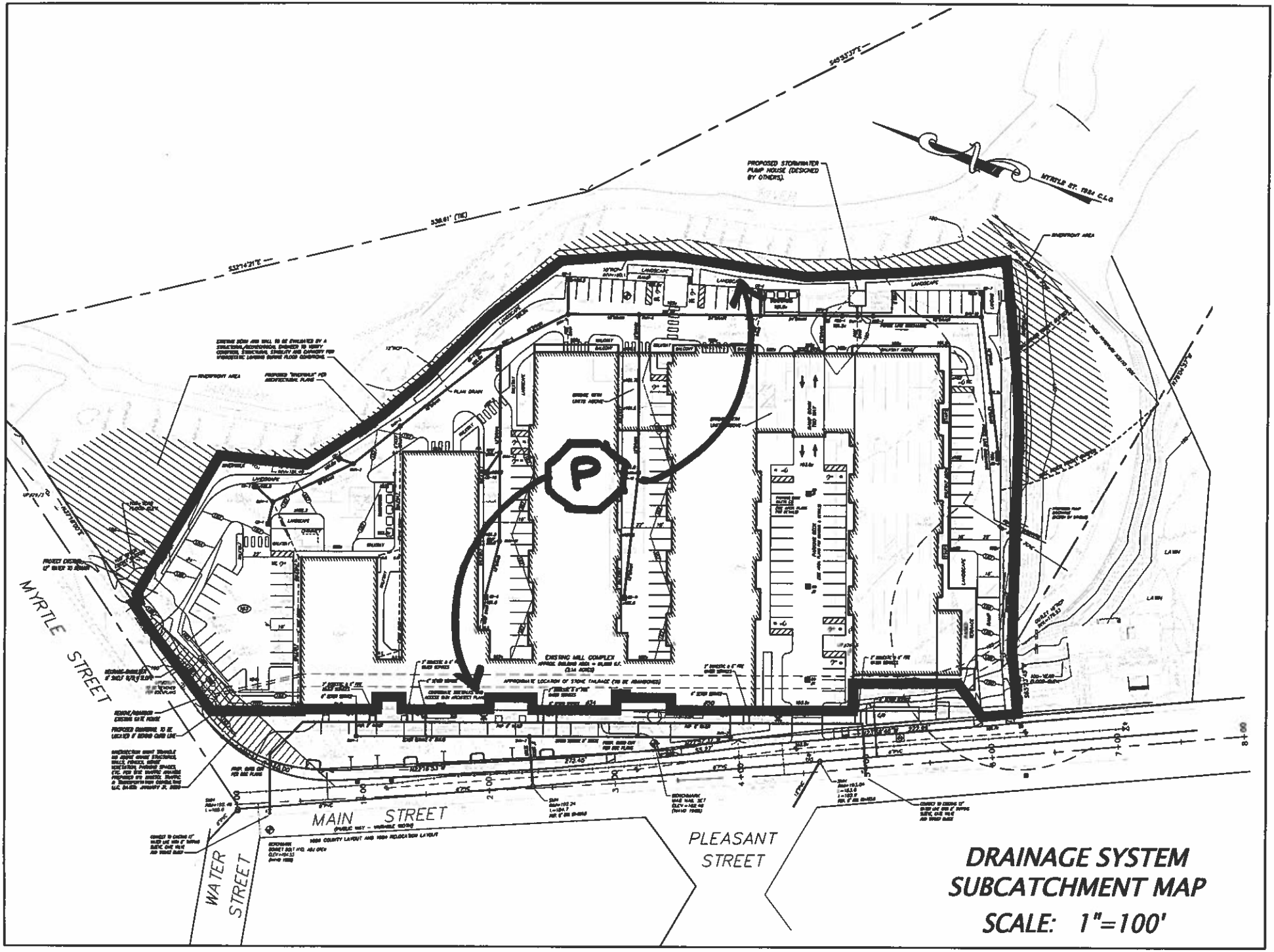
MIDDLESEX COUNTY, MA
(ALL JURISDICTIONS)

FLOODWAY DATA

SUDBURY RIVER

HYDROCAD CALCULATIONS

PROPOSED CONDITION
2 Year, 10 Year, 25 Year
& 100 Year Storm
Calculation Sheets


MYRTLE STREET
MAIN STREET
PLEASANT STREET
WATER STREET
P
DRAINAGE SYSTEM
SUBCATCHMENT MAP
SCALE: 1"=100'

Summary for Subcatchment P: Proposed Development to Pump Chamber

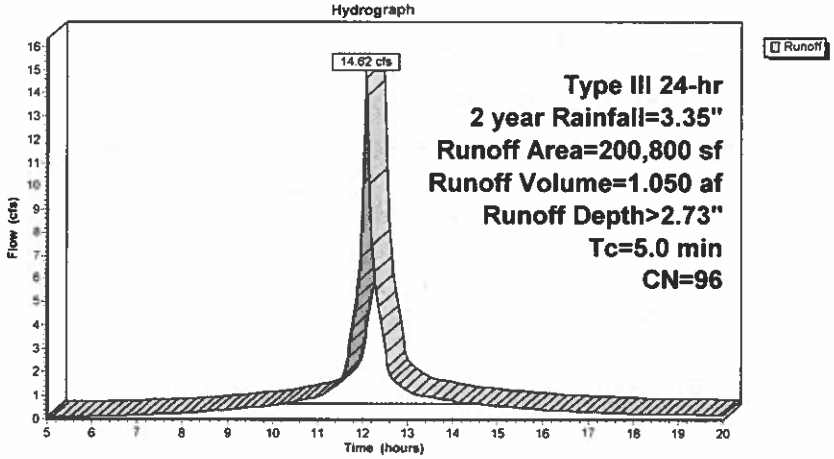
Runoff = 14.62 cfs @ 12.07 hrs, Volume= 1.050 af, Depth> 2.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 year Rainfall=3.35"

	Area (sf)	CN	Description
*	184,100	98	Paved parking & Roofs, HSG C
	16,700	74	>75% Grass cover, Good, HSG C
	200,800	96	Weighted Average
	16,700		8.32% Pervious Area
	184,100		91.68% Impervious Area

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

Subcatchment P: Proposed Development to Pump Chamber



Summary for Subcatchment P: Proposed Development to Pump Chamber

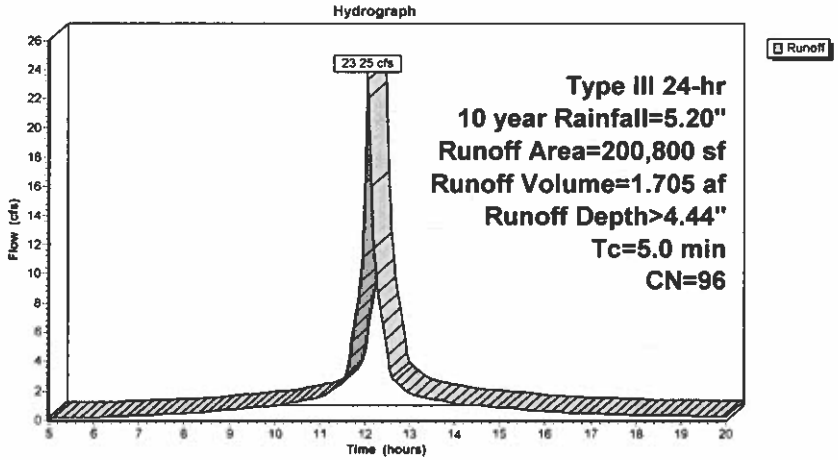
Runoff = 23.25 cfs @ 12.07 hrs, Volume= 1.705 af, Depth> 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=5.20"

	Area (sf)	CN	Description
*	184,100	98	Paved parking & Roofs, HSG C
	16,700	74	>75% Grass cover, Good, HSG C
	200,800	96	Weighted Average
	16,700		8.32% Pervious Area
	184,100		91.68% Impervious Area

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

Subcatchment P: Proposed Development to Pump Chamber



Summary for Subcatchment P: Proposed Development to Pump Chamber

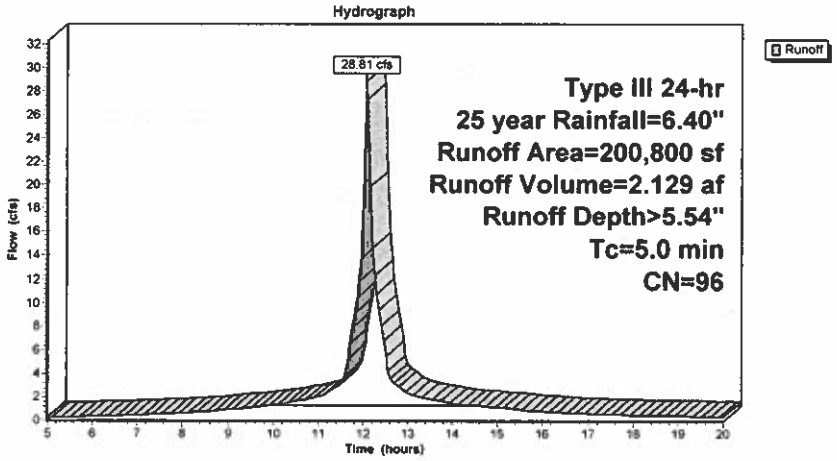
Runoff = 28.81 cfs @ 12.07 hrs, Volume= 2.129 af, Depth> 5.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 year Rainfall=6.40"

	Area (sf)	CN	Description
*	184,100	98	Paved parking & Roofs, HSG C
	16,700	74	>75% Grass cover, Good, HSG C
	200,800	96	Weighted Average
	16,700		8.32% Pervious Area
	184,100		91.68% Impervious Area

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

Subcatchment P: Proposed Development to Pump Chamber



Summary for Subcatchment P: Proposed Development to Pump Chamber

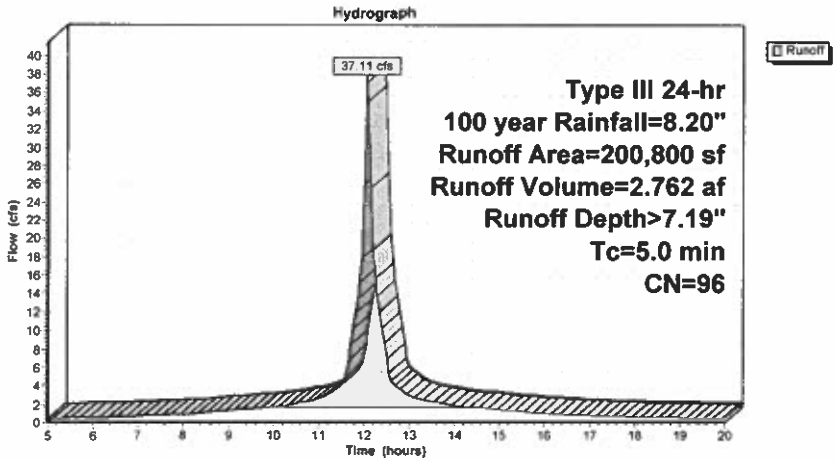
Runoff = 37.11 cfs @ 12.07 hrs, Volume= 2.762 af, Depth> 7.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 year Rainfall=8.20"

	Area (sf)	CN	Description
*	184,100	98	Paved parking & Roofs, HSG C
	16,700	74	>75% Grass cover, Good, HSG C
	200,800	96	Weighted Average
	16,700		8.32% Pervious Area
	184,100		91.68% Impervious Area

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

Subcatchment P: Proposed Development to Pump Chamber



STORMWATER OPERATION & MAINTENANCE PLAN

Stormwater Operations and Management Plan and Long-term Pollution Prevention Program

Ashland Mills
Main Street, Ashland, MA

Stormwater Management System Owner:
AND Responsible Party _____

This Operation and Maintenance Plan has been prepared in accordance with the MA Department of Environmental Protection stormwater standards and recommendations outlined in the stormwater handbook. This plan outlines the minimum efforts necessary to ensure that the stormwater collection and treatment system and sedimentation and erosion control system for this site operates in accordance with Massachusetts Department of Environmental Protection (DEP) stormwater management policy. Efforts in addition to the minimum listed herein may be required to ensure adequate stormwater management.

This plan includes general site restrictions, routing/non-routine operation and maintenance; reporting and record keeping; and an estimated budget.

General Conditions

1. The following site conditions are imposed as part of this Plan.
    - Illicit discharges into stormwater management system are perpetually prohibited.
    - The use of fertilizers should be limited to slow-release, low-nitrogen fertilizers.

2. The Town Engineer shall be notified before maintenance work is preformed and shall be afforded the opportunity to inspect the work. Copies of any contracts, inspection reports, and invoices for the work performed shall be retained and made available if requested by the Town Engineer.

3. All material removed from the drainage system (i.e. catch basin cleanings) shall be legally disposed of off-site.

Operation and Maintenance:

Stormwater management facilities should be inspected a minimum of four times per year and following at least one major storm per year. Upon completion of inspection, the inspector should specify any necessary corrective actions to be taken by ownership of the facility. The items to be inspected and maintained are described in the following sections.

Based on the observed conditions, the Responsible Party shall immediately schedule the appropriate maintenance. Some minor maintenance, such as the removal of blockages, debris and saplings in the basins may be conducted at the time of the inspection. More difficult maintenance activities, requiring special equipment, will have to be scheduled, such as the removal of excessive sediment or the repair of eroded areas. All sediment must be removed at least once per year.

Catch Basins, and Stormceptors.
The actual removal of sediments and associated pollutants and trash occurs only when sumps are cleaned out; therefore, regular maintenance is required. The more frequent the cleaning, the less likely sediments will be resuspended and subsequently discharged. Frequent cleaning also results in more volume available for future storms and enhances the overall performance.

At a minimum, catch basins and Stormceptors should be inspected four times annually, and cleaned whenever sediment accumulation exceeds 12 inches in catch basins and 8 inches in Stormceptors. Disposal of the accumulated sediment and hydrocarbons must be in accordance with applicable local, state, and federal guidelines and regulations. At each inspection, inspect gas trap hoods and repair as necessary. Inspect outlet pipe and remove debris .Vacuum trucks shall be utilized for all cleanings.

Street Sweeping
Street sweeping of the roadway should be performed at least twice per year, preferably in the spring after the snow has melted and in the fall, prior to snowfall. Disposal of the sweepings must be in accordance with applicable local, state, and federal guidelines and regulations.

Debris Accumulation
The inspector shall check basins and channels for both sediment and debris accumulations. Debris and sediment shall be removed at the time of the inspection, if feasible. Sediment shall not be allowed to accumulate and restrict flows. Most debris can be removed by hand or with hand tools (e.g. shovel). Some larger objects, such as fallen tree limbs, may have to be cut up before removal by hand is possible.

Vegetation
The initial vegetation inspection shall occur four (4) weeks after final stabilization of the site; vegetation shall be dense (and aesthetically acceptable on all portions of the project, including the side slopes, buffer strips and the embankments). The inspector shall determine and document: (1) whether fertilizing is required (2) the areas where grass shall be mowed, and (3) the areas which shall be protected against erosion. In addition, recently seeded areas shall be inspected for failures.

Eroded areas shall be filled and compacted, if necessary, and reseeded as soon as possible. If an area erodes twice, then a geotextile fabric is to be installed to stabilize the area to allow vegetation to be established. These maintenance activities shall take place during the planting season. Areas affected by lack of rainfall shall be watered. If a recently established vegetated area is determined to be inadequate for erosion control it shall be refertilized with microbial release, not sulfur encapsulated, fertilizer, (using half of the rate originally applied). If the stand is more than 60% damaged, it shall be reestablished, following the original preparation and seeding instructions. Areas of repeated erosion/scour problems shall be lined with riprap only after twice attempting to stabilize the area with geotextile fabric.

Pipe Outlets
Pipe outlets shall be checked for: (1) signs of seepage, (2) signs of scour, (3) cracks, breaks, or deterioration of materials, and (4) rip rap condition / undermining. The outlet channel itself shall be free from obstruction (e.g., fallen trees). Vegetation and riprap shall be in good condition (e.g., grass shall be dense and healthy looking; riprap shall be free from undermining and/or deterioration). If scour is evident, the damaged area shall be filled, compacted and reseeded, stabilized with a geotextile fabric, or lined with riprap in that order. If rip rapped areas have been damaged, the riprap shall be replaced or supplemented. The use of concentrated flow dissipation devices, such as level spreaders, may help to eliminate inlet scour problems.

Snow Removal
Snow shall not be plowed toward the wetland areas. All catch basins shall be uncovered and functional immediately after snow plowing.

Public Safety Features
The driveway shall be kept free of snow and debris for emergency vehicle access. Storage shall not be allowed in these areas.

Activity	Frequency
Perform Inspection of all System Components and Prepare Report	Four times per year
Clean Catch Basins & Stormceptor	Minimum once per year or when sediment reaches 12-inches in catch basins or 8-inches in Stormceptor
Street Sweeping	Minimum twice per year (spring and fall)
Clean Gutters	Minimum twice per year or whenever debris is noted

Reporting and Record Keeping

The responsible party will be responsible for maintaining accurate Maintenance Logs for all maintenance and inspections. The maintenance logs shall be kept on site for a minimum of three (3) years and be available for inspection by the Town municipal departments or other auditing authority, including inspections, repairs, replacement and disposal (for disposal, the log shall indicate the type of material and the disposal location). This will be a perpetual requirement of the Owners or their Designated Party.

The Site Maintenance Log will be completed as described above, and at a minimum will include the following items:

- Date activity performed;
- Last rain event;
- BMP's inspected and condition;
- Specific maintenance task;
- Staff or contractor performing activity;
- Verification of maintenance activity;
- For disposal include type of material and the disposal location; and
- Recommended additional maintenance tasks.

Estimated Budget

The estimated annual budget to perform the routine scheduled maintenance is approximately $5,000.00. This estimate does not include the repair of structures, pipes, embankments; cleaning drain lines; snow plowing; or other non-routine tasks.

Emergency Response Plan / Spill Control Practices

On-site storage of hazardous materials shall not be allowed.

In the event of an accident in the roadway or on individual lots, where a significant amount of gasoline or other petroleum product is released, the following procedure should be followed:

1. Immediately contact the following agencies:

Ashland Fire Department	(508) 881-2323
MassDEP Emergency response	(888) 304-1133

2. Provide support to agencies listed above, which may include contacting an outside contractor to provide clean-up or contacting a Licensed Site Professional (LSP) to lead the clean-up.

If the volume of spill has reached the catch basins, the structures should be cleaned by a licensed liquid waste hauler. The outlet to the drainage system should be inspected. If there is evidence of discharge from the drainage system, additional corrective actions must be taken extending to the receiving water or beyond.

RELEASE ABATEMENT MEASURE MODIFICATION AND STATUS REPORT (NARRATIVE)

RELEASE ABATEMENT MEASURE MODIFICATION AND STATUS REPORT

10-50 Main Street
Ashland, MA
MassDEP RTN 3-15917

Prepared for:
Ashland Properties, LLC
330 Hopping Brook Road
Holliston, Massachusetts

Prepared by:
Campbell Environmental Incorporated
38 Sunset Drive
Northboro, Massachusetts

June 2022

TABLE OF CONTENTS

1 INTRODUCTION

1.0 INTRODUCTION

Campbell Environmental Incorporated (CEI) prepared this Release Abatement Measure (RAM) Plan status report and plan modification on behalf of Ashland Properties, LLC (Ashland Properties). This plan describes the proposed response actions for the site located at 10-50 Main Street, Ashland, Massachusetts. The modified plan incorporates comments provided by the Massachusetts Department of Environmental Protection (MassDEP). The status report summarizes site activities from February-June 2022.

The site is listed under Release Tracking Number (RTN) 3-15917. The site was closed in 2011 via submittal of a Class A3 Response Action Outcome, (Permanent Solution Statement with Conditions). An Activity and Use Limitation (AUL) was filed in May 2011 restricting residential, day care and school use at the site.

The site consists of approximately 7.79 acres of land identified on the Town of Ashland Assessors Map as parcel 0140-0128. The site is largely occupied by an interconnected commercial building and paved parking. Historical uses of the property included a textile mill and manufacturing. The site is currently occupied by commercial and warehousing tenants.

Ashland Properties intends to conduct response actions sufficient to allow future residential use at the site. Following the completion of response actions a new AUL will filed along with a revised Permanent Solution Statement (PSS) and Risk Assessment.

Ashland Properties plans to renovate the existing site property for mixed use commercial and residential development. As part of their redevelopment plan, with the exception of the 10 Main Street building, a ground floor open air parking garage will be constructed. Residential development will occur above the parking garage. An estimated 25% of the residential development will be affordable housing. The construction of a ground floor/open air garage will mitigate the potential for vapor intrusion. Construction of a maintenance/utility room is also planned on the ground floor. Installation of a vapor barrier is proposed in the maintenance/utility room. Following the installation of the vapor barrier, indoor air testing for chlorinated volatile organic compounds (cVOCs) will be conducted. The new building will not include a basement. Limited soil excavation is planned to install footings and new utilities. Field screening of soils with a photoionization detector (PID) will occur during excavation. To the extent feasible, if elevated volatile organic compound impacts are detected during excavation (e.g. field screening results above 100 ppmv) then soils will be segregated for proper disposal. The majority of the final site configuration will be paved or covered by parking garage.

This information is provided in accordance with the Massachusetts Contingency Plan (MCP) 310 CMR 40.0444. Figures, including a MassGIS Priority Resource Map, a Locus Map and proposed Site Plans are attached.

2 SITE CHARACTERISTICS

2.1 Site Contacts

Persons responsible for the RAM include the following:

Richard Gordon, President
Ashland Properties LLC
330 Hopping Brook Road
Holliston, MA 01746

Ph. 5088938931

The Licensed Site Professional is:

George E. Campbell
Campbell Environmental Incorporated
38 Sunset Drive
Northboro, MA 01532

Ph. 5083080402

2.2 Site Location, Description and Operations

The attached MassDEP GIS Priority Resource Map and Site Locus Map identifies the site on the Framingham, Massachusetts 15-minute series topographic quadrangle map published by the United States Geological Survey (USGS).

The site consists of approximately 7.79 acres of land identified on the Town of Ashland Assessors Map as parcel 0140-0128. The site is largely occupied by an interconnected commercial building and paved parking. Historical uses of the property included a textile mill and manufacturing. The site is currently occupied by commercial and warehousing tenants.

The subject site includes groundwater and soils impacted by OHM. As described in the previous PSS, the site is impacted by on site historical releases of Oil and Hazardous Materials (OHM) including cVOCs and metals. The site is also impacted by releases of OHM derived from the upgradient Nyanza Superfund Site. A map of the Nyanza site, prepared by the EPA, illustrating the subject site, is attached. Groundwater at the site is impacted by OHM releases derived from the Nyanza site.

2.3 Site Hydrology and Sensitive Receptors

2.3.1 Surficial Geology and Soils

Based on data collected during subsurface investigations, soils beneath the site consist of historical fill materials underlain by sand and gravel. The Sudbury River is located immediately northwest of the site. The groundwater flow direction is northwest, towards the Sudbury River.

2.3.2 SENSITIVE RECEPTORS

The site is currently occupied by commercial and warehousing tenants and is largely covered by pavement and building. The site is located in a mixed use commercial and residential area in Ashland. The Sudbury River is downgradient of the site. Note that a retaining wall, located north of the site, separates the Sudbury River bank from the paved parking area. Residential properties are not downgradient. No potable wells are located within 500 feet of the site. The site is not located within a designated Zone II groundwater recharge area or IWPA, Zone A of a Class A Surface Water or Potential Drinking Water Source Area. In accordance with the MCP, site groundwater is not designated as GW-1 (protective of drinking water). The Sudbury River is north and west of the site. Potential impacts to the Sudbury River have been investigated as part of the assessment at the Nyanza superfund site.

cVOC impacted groundwater is located within 30 feet of the on-site occupied commercial buildings and is less than 15 feet below surface grade. Groundwater at the site is therefore designated as GW-2 and GW-3. Vapor intrusion risk was evaluated during the 2011 Response Action Outcome Statement. Additional response actions including construction of an open-air garage and installation of a vapor barrier are proposed to reduce the potential risk to future on site occupants.

3.0 RAM

3.1 RAM OBJECTIVE AND ACTIVITIES

The objective of the RAM is to conduct additional response actions to allow for residential use of the property and to properly manage impacted soil and groundwater encountered during excavation. Following the response actions, a new Activity and Use Limitation and revised Permanent Solution Statement and Risk Assessment will be filed with MassDEP. Additional response actions will include the installation of a vapor barrier to mitigate potential vapor intrusion. Following the construction of the parking garage and installation of the vapor barriers, a minimum of two rounds of indoor air sampling will be conducted via summa canisters and the EPA TO-15 Method. In addition, a limited quantity of soil will be excavated when subsurface utility corridors and footings are installed. Soil quality will be assessed via field screening with a calibrated photo ionization detector (PID) via the jar headspace technique and sampling for VOCs. The RAM is proposed to reduce potential risks to human health, safety, public welfare, and the environment. The proposed RAM activities are further described below. RAM activities likely will occur during the first quarter of 2023.

3.2 CONCEPTUAL SITE MODEL

As documented under RTN 3-15917, OHM, including tetrachloroethylene, PCE (and associated daughter products) and metals likely were released on site due to historical use of the property. The site groundwater is also impacted by OHM, including VOCs derived

3 RELEASE ABATEMENT MEASURE

from the upgradient Nyanza superfund site. Over time, these VOCs are likely to decline in concentration due to cleanup at the Nyanza site and the natural attenuation of VOCs. Prior indoor air sampling in the current site buildings conducted by both the USEPA and ARCADIS (prior consultant) indicated that VOCs concentrations in indoor air are acceptable for commercial uses. Additional response actions, including the construction of an open-air ground floor parking garage and installation of a vapor barrier, will be conducted so that the site may be used for residential purposes. Following construction, the great majority of the site will be covered by garage, building or asphalt paved roadways and parking. Note that all residential development will occur over the open-air parking garage. No ground floor residential developments are proposed. Following completion of the response actions, a new AUL will be filed. A draft AUL will be provided to the MassDEP prior to recording the AUL. The new AUL will include limitations on ground floor residential development and require LSP oversight during future management of soil at the site. Following the completion of the response actions, a revised PSS, risk assessment and new AUL will be prepared.

3.3 SOIL ASSESSMENT AND MANAGEMENT

Activities that may be conducted under this RAM include field screening of soils, soil excavation, stockpiling of soil, post excavation sampling of soils for laboratory analysis, soil classification sampling and subsequent transportation of the soil to an authorized disposal facility. Excavation for footings, utilities or lighting fixtures likely is not expected to exceed ten feet below surface grade. During construction, three monitoring wells, previously installed by the USEPA, will be protected by steel plates and protective concrete barriers. An excavator or backhoe will be used to advance excavations. Dewatering of groundwater is not currently planned although a limited quantity of groundwater or rainwater may be recovered for disposal at a licensed facility. Post excavation bottom and sidewall soil samples will be retained for field screening with a calibrated photoionization detector (PID) and the jar headspace technique. Select samples will be retained for VOC laboratory analysis. When feasible, soils with elevated VOC concentrations (e.g. above 100 ppmv) will be stockpiled on plastic for classification and subsequent disposal. Following post excavation sampling, the excavation will either be backfilled with clean fill and/or native excavated soils. Up to 500 cubic yards of soil may be stockpiled and securely covered with plastic prior to transportation of this soil to an authorized facility. Impacted soil will be sampled for waste classification and transported to an authorized facility under a Massachusetts 21E Bill of Lading (BOL) or uniform hazardous waste manifest.

3.4 VAPOR BARRIER

Most of the ground floor of the new building will be open-air parking. Residential construction will not occur on the ground floor but will occur above the open-air parking garage. A Drago Wrap Vapor Intrusion Barrier or equivalent will be installed under a maintenance/utility room on the ground floor. The installation will follow manufacturers

LABORATORY DATA

LIMITATIONS

3 RELEASE ABATEMENT MEASURE

specifications. Smoke testing will be conducted following installation to check for leaks in the membrane. MassDEP will be provided with notice prior to the installation of the barrier. Following the smoke testing, a concrete topping slab will be applied to protect the vapor barrier and further reduce the potential for future vapor intrusion. Additional information concerning the vapor barrier will be included in Subsequent RAM Status and/or completion reports. Following installation, a minimum of two rounds of indoor air sampling will be conducted for cVOCs via EPA method TO-15.

3.5 ENVIRONMENTAL MONITORING

The following environmental monitoring plan will be implemented during the RAM activities:

3.5.1 INDOOR AIR SAMPLING

Following the construction of the garage and installation of a vapor barrier, two rounds of indoor air sampling for cVOCs will be conducted in central locations inside the building. Sample locations will include the ground floor utility room, the 10 Main Street building and select locations within the residential development. Consistent with MassDEP guidance, doors and windows will be closed during the sampling. At least one round of sampling will be completed during cold weather months. The air samples will be collected using laboratory supplies summa canisters via the EPA TO-15 Method over a 24-hour time period.

3.5.2 EXCAVATION AIR MONITORING

Ambient air in the vicinity of the excavation area will be periodically monitored with a PID. The detection of elevated VOCs during excavation will require implementation of proper health and safety protocols and may require the temporary cessation of excavation. In addition, soil samples collected during the assessment will be field screened with a PID via the jar headspace screening technique. Screening of soil samples during the assessment will help determine whether the objectives of the RAM have been met. Following screening, select post excavation soil samples will be retained for VOC and metals laboratory analysis.

3.5.3 DUST MONITORING

Minimal dust is expected due to the limited size of the excavation areas for footings/utilities. However, the excavation area will be visually monitored for dust. Excavation will cease if excessive dust is detected. If needed, spray water will be used to control dust via spray hose. Excavated soils will be securely stockpiled either in a roll off or covered with plastic at the end of each workday.

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3.5.4 RUNOFF

Due to the small size of the proposed excavations, runoff during field activities is considered unlikely. Sorbent booms or hay bales will used where needed to prevent site runoff. Contaminated soils will be stockpiled on impervious surfaces or plastic and securely covered with plastic. Crushed stone will be used as needed to reduce the potential for dust in unpaved areas. Trucks will be inspected prior to leaving the site. If excessive soil is detected on the tires, the truck tires will be cleaned via scrubbing and/or spray washing with potable water. The wash water will be either contained or allowed to infiltrate into the site ground surface.

3.5.5 SECURITY

Access to the excavation areas will be restricted via temporary fencing and/or safety cones and caution tape. Only authorized personnel will be allowed access to the work areas. All work areas and stockpiles will be secured at the end of the day.

3.6 PERMITS

Digsafe will be contacted at least 72-hours prior to the start of the excavation. If needed, an excavation permit will be obtained from the Town of Ashland. Ashland Properties will also obtain any other Town of Ashland permits needed for this project. These permits likely will include a construction permit and notice of intent as needed.

3.7 PUBLIC INVOLVEMENT

Notification letters were forwarded to Town of Ashland officials to inform them of the RAM Plan.

3.8 SCHEDULE

RAM field activities will likely be initiated during the first quarter of 2023. RAM Status reports will be prepared as required by the MCP. Following completion of RAM activities, a RAM Completion report will be prepared.

3.9 HEALTH AND SAFETY

RAM response actions will be governed by a site-specific health and safety plan (HASP). Ashland Properties will develop their health and safety plan for construction activities. All field sampling and LSP oversight will be performed in accordance with a HASP.

3 RELEASE ABATEMENT MEASURE

4.0 2022 SOIL AND GROUNDWATER SAMPLING

4.1 SOIL SAMPLING/MONITORING WELL INSTALLATION

Subsurface investigations were conducted in March and April 2022. These investigations included the field screening and sampling of soils and the installation of three monitoring wells and the sampling of site groundwater. The soil investigations were conducted to assess current soil quality in the vicinity where future construction may occur. The groundwater sampling was conducted to determine if chlorinated volatile organic compounds (VOCs) currently exceeds the MassDEP GW-2 Standards.

On March 22, 2022, seven soil borings (C-1 through C-7) were advanced on site via a Geoprobe direct push drilling rig. Prior to drilling the site was premarked for Digsafe and Town of Ashland subsurface utility clearance. Drilling was conducted by a Massachusetts licensed driller, Technical Drilling Services, with oversight provided by a CEI hydrogeologist. Soil samples were collected with two-inch diameter five-foot long. plastic sleeves. Note that shallow drill (approximately one to two feet below surface grade) refusal was encountered immediately east of the building at 50 Main Street. This refusal is likely due to the presence of a historic building foundation. Soil samples were continuously screened with a photoionization detector (PID) using the jar head space screening method. All jar headspace field screening results were non detected. Subsurface lithology included approximately up to five feet of historical fill underlain by predominantly fine to coarse sands and gravel. Monitoring wells MW-1, MW-2 and MW-3 were installed at boring locations C-1, C-3 and C-5. The monitoring wells were constructed with two-inch diameter PVC solid riser and well screen. The monitoring wells were completed with a surface mounted steel road box set in concrete. Subsurface lithology and well construction specifications are detailed in the attached boring logs. Three composite soil samples (C-1, C-3 and C-5) from 2-10 feet below grade were retained for analysis of soil preclassification parameters including VOCs, PCBs, RCRA 8 metals and semi-volatile organics. Four composite soil samples (C-2, C-4, C-6 and C-7) from 2-5 feet below grade were retained RCRA 8 metals and PCBs. All soil samples were collected using laboratory supplied glassware and following collection, transported on ice to a Massachusetts certified laboratory for analysis.

The laboratory analytical results indicate that these soil samples did not exceeded Massachusetts Contingency Plan (MCP) S-1/GW-2/GW-3 Soil Standards. See the attached tabular results summary and the laboratory analytical data. See the attached figure illustrating the soil boring locations.

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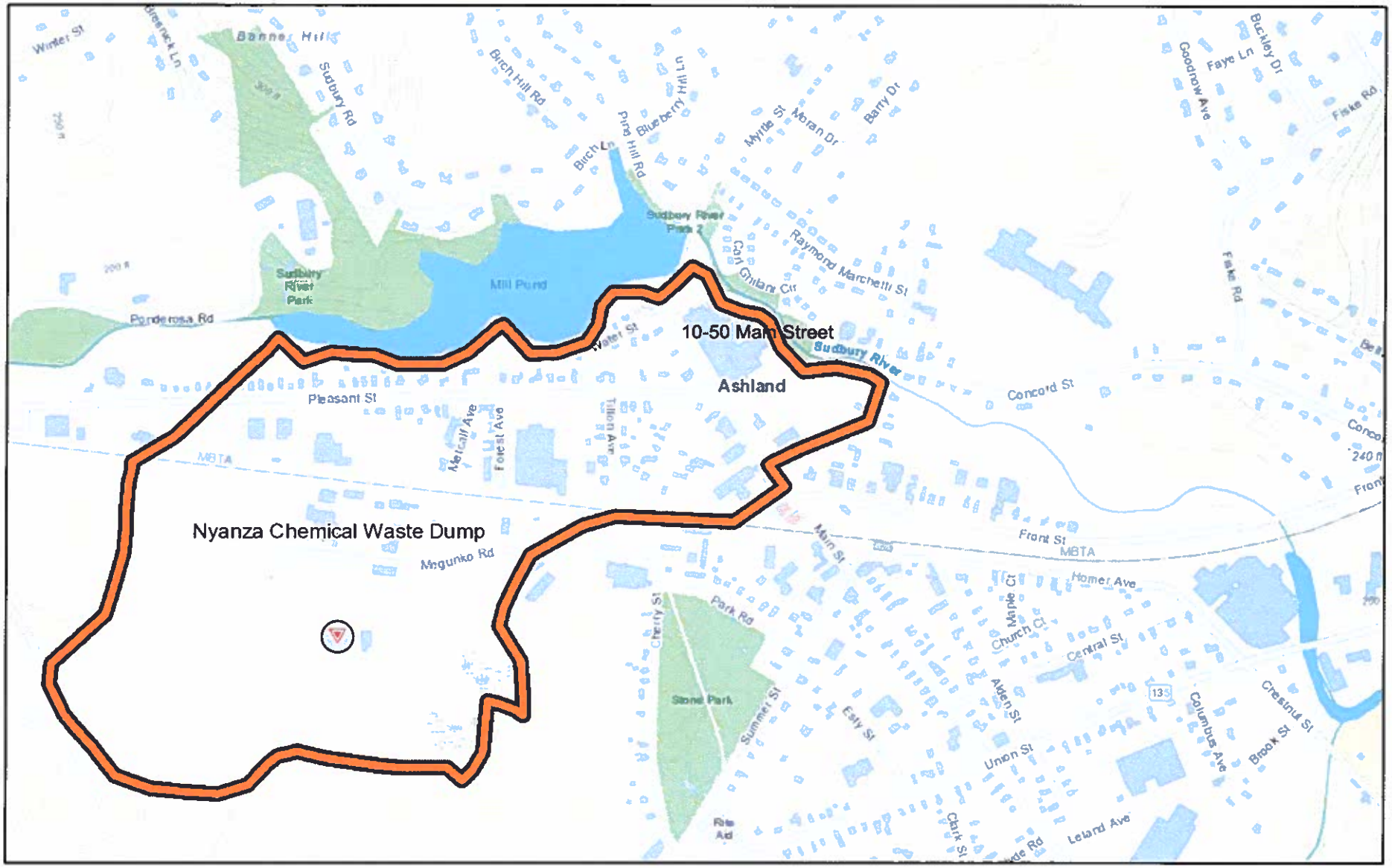
4.2 GROUNDWATER SAMPLING

On April 11, 2022 groundwater samples were collected from monitoring wells MW-1, MW-2 and MW-3. Prior to sampling, each well was gauged with an electronic interface probe capable of detecting non aqueous phase liquids (NAPL) and the depth to the water table at an accuracy of 0.01 feet or greater. No NAPL was detected during gauging or sampling. As measured from the top of the well casing, the depth to the water table ranged from 2.56 feet at MW-2 to 7.23 feet at MW-1. Following gauging, using dedicated disposable sampling tubing, all wells were purged of approximately three times the volume of water present in each well. Following purging, groundwater samples were collected using laboratory supplied sample bottles. Following collection, samples were transported on ice to a Massachusetts certified laboratory for VOC analysis.

The groundwater analytical data indicates that chlorinated VOCs exceed MCP GW-2 Standards (protective of indoor air quality) at monitoring well MW-1 and MW-2. Specifically, trichloroethene was detected in MW-1 at 14.4 ug/l and cis-1,2 Dichloroethene was detected at 29.2 ug/l in MW-1 and 67.5 ug/l at MW-2. These analytical results are generally consistent (but lower) than historical data. See the attached tabular results summary and the laboratory analytical data. See the attached figure illustrating the soil boring/monitoring well locations. Resampling of groundwater is recommended in late summer 2022.



April 28, 2020

Override 1

State Outlines

Sites

Incidents of National Significance

Federal Facility Docket/Superfund NPL/RCRA CA

Federal Facility Docket/Brownfields/RCRA CA

RCRA Corrective Action/Superfund NPL

Federal Facility Docket/Superfund NPL

1:11,313

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

US EPA, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL,

Generated from: Cleanups in My Community: Date above is the date map map