APPLICATION FOR SPECIAL PERMIT AND SITE PLAN APPROVAL

MARCH 2016

Trinity Avenue Pump Station
Grafton Water District
Grafton, Massachusetts

TATA & HOWARD

Application for Special Permit & Site Plan Approval
Trinity Avenue Pump Station
Grafton, Massachusetts

Prepared by

TATA & HOWARD

Tata & Howard, Inc.
67 Forest Street
Marlborough, MA 01752

March 2015

TATA & HOWARD

March 15, 2016

Mr. Sargon Hanna, Chairman
Grafton Planning Board
30 Providence Road
Grafton, MA 01519

Subject: Special Permit & Site Plan Approval
Trinity Avenue Pump Station
T&H No. 3703

Dear Mr. Hanna:

Please find attached one (1) original of the Application for Special Permit & Site Plan Approval prepared on behalf of the Grafton Water District (GWD). The GWD proposes to construct a pump station at 25R Trinity Avenue along with all associated utilities and site work. Access to the pump station will be gained from Trinity Avenue along an access road on the property and across the bordering vegetated wetlands. A bridge crossing is proposed in an attempt to minimize any impact to the associated wetlands.

A Notice of Intent has been submitted concurrently with the Town of Grafton Conservation Commission. A portion of the proposed project area is located within the wetland buffer zones, floodplain buffer zone, floodplain, and wetland resource areas. Best management practices are proposed to prevent any negative impacts to sensitive environmental receptors. The District will continue to work with all Town and State agencies to meet local bylaws and state regulations.

We are available to respond to any questions or concerns from the Planning Board. The required copies of the pertinent design plans and specifications have been attached for reference.

Tata & Howard
67 Forest Street | Marlborough, MA 01752
T: 508-303-9400 | F: 508-449-9400
www.tataandhoward.com

Other Offices
MA | NH | CT | ME | VT | AZ | TX

Should you have any questions, please do not hesitate to contact our office. We look forward to attending the Board's next scheduled meeting on April 11, 2016, to discuss this project. We appreciate your continued assistance on this and all District projects.

Sincerely,
TATA & HOWARD, INC.

Karen Gracey

Karen L Gracey, P.E.
Vice President

Enclosure

cc: Matthew Pearson – System Manager, Grafton Water District

TATA & HOWARD

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Letter of Transmittal

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TATA & HOWARD

TOWN OF GRAFTON
GRAFTON MEMORIAL MUNICIPAL CENTER
30 PROVIDENCE ROAD
GRAFTON, MASSACHUSETTS 01519
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www.grafton-ma.gov

RECEIVED
MAR 09 2016

TREASURER / COLLECTOR

Certificate of Good Standing

Applicants seeking permits with the Town of Grafton must submit this completed form at the time of application. When all obligations are paid to date, you must attach this "Certificate of Good Standing," with your application. Delinquent bills must be paid in full before the appropriate department accepts your application. Please make arrangements to pay these outstanding bills at the Collector's Office.

Please note: it can take up to three (3) business days to process each request.

Please check all that apply and indicate if permit(s) have been issued.

	Permit Issued? Yes	No		Permit Issued? Yes	No
☐Building - Inspection(s)	____	X	☐Septic System	____	N/A
☐Building - Electric	____	X	☐Conservation	____	X
☐Building - Plumbing	____	X	☐Planning	____	X
☐Board of Health	____	N/A	☐Other	____	____

Other Permit: _____

Grafton Water District
Petitioner Name

44 Millbury St
Petitioner Address

Grafton, MA 01519
City, State, Zip

508. 839. 2302
Phone

Same
Property Owner / Applicant

25R Trinity Ave
Property Address

Grafton, MA
City, State, Zip

Date:	Current	Delinquent	N/A
Real Estate			✓
Personal Property			✓
Motor Vehicle Excise			✓
Disposal			✓
General Billing			✓

Samantha Rice
Treasurer / Collector Signature

3/9/16
Date

Form Revised: 10/15/2012

Section 2

TATA & HOWARD

TOWN OF GRAFTON

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www.grafton-ma.gov

PLANNING BOARD

APPLICATION FOR SPECIAL PERMIT

Application No. _____

APPLICANT & PROPERTY OWNER INFORMATION

NAME Matthew Pearson, System Manager, Grafton Water District

STREET 44 Millbury Avenue CITY/TOWN Grafton

STATE MA ZIP 01519 TELEPHONE (508) 839-2302

NAME OF PROPERTY OWNER (if different from Applicant) _____

Deed recorded in the Worcester District Registry of Deeds Book 54457 Page 152

SITE INFORMATION:

STREET AND NUMBER 25R Trinity Avenue

ZONING DISTRICT R-20 ASSESSOR'S MAP 98 LOT #(S) 121

LOT SIZE 1.60 Acres FRONTAGE 10-Feet

CURRENT USE Vacant

PROJECT/PLAN INFORMATION:

PLAN TITLE Trinity Avenue Pump Station

PREPARED BY (name/address of PE/Architect) Karen L. Gracey, P.E., Tata & Howard, Inc. 67 Forest St., Marlboro, MA

DATES March 2016

Use for which Special Permit is sought: (refer to § 3.2.3.1 of the Zoning Bylaw - Use Regulation Table):

Public Water Utility - Uses include wells, treatment facilities, storage tanks, and accessory uses.
(A use authorized under Special Permit as provided for in Section 1.5 of the Grafton Zoning By-Law)

Cite all appropriate sections of the Zoning By-Law which pertain to this Application, Use and Site:

Section 5.3.14 -Ways, Interiors Streets, and Utilities

TO THE GRAFTON PLANNING BOARD:

The undersigned, being the APPLICANT named above, hereby applies for a SPECIAL 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 _____ Date: 3/15/16

Property Owner's Signature (if not Applicant) _____ Date: _____

Section 3

TATA & HOWARD

TOWN OF GRAFTON
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PLANNING BOARD

APPLICATION FOR SITE PLAN APPROVAL

Application No. _____

APPLICANT NAME: Matthew Pearson, System Manager, Grafton Water District

STREET 44 Millbury Avenue CITY/TOWN Grafton

STATE MA ZIP 01519 TELEPHONE (508) 839-2302

PROPERTY OWNER NAME: Same

STREET _____ CITY/TOWN _____

STATE _____ ZIP _____ TELEPHONE _____

Deed recorded in the Worcester District Registry of Deeds Book 54457 Page 152

CONTACT PERSON'S NAME: Karen L. Gracey, P.E., Tata & Howard, Inc.

TELEPHONE (508) 219-4021

SITE INFORMATION:

STREET AND NUMBER 25R Trinity Avenue

ZONING DISTRICT R-20 ASSESSOR'S MAP 98 LOT #(S) 121

LOT SIZE 1.60 Acres FRONTAGE 10-Feet

CURRENT USE Vacant

PLAN INFORMATION:

PLAN TITLE Trinity Avenue Pump Station

PREPARED BY Tata & Howard, Inc., 67 Forest Street, Marlborough, MA 01752

DATE PREPARED March 2016 REVISION DATE _____

Describe proposed changes / additions: _____

Construction of a proposed pump station for water supply with associated utilities and site work.

TO THE GRAFTON PLANNING BOARD:

The undersigned, being the APPLICANT named above, hereby applies for approval of the above entitled SITE PLAN by the Planning Board and certifies that, to the best of APPLICANT'S knowledge and belief, the information contained herein is correct and complete and that said PLAN conforms with the requirements of the Zoning By-Law of the Town of Grafton.

Applicant's Signature _____ Date: 3/15/16

Property Owner's Signature (if not Applicant) _____ Date: _____

Section 4

TATA & HOWARD

SECTION 4 – NARRATIVE

4.1 Project Narrative

The Town of Grafton's recent population growth, subsequent increases in water consumption, and the need for redundancy have necessitated the development of an additional municipal water supply. After an extensive groundwater exploration program the 1.60 acre parcel of land, situated off of Trinity Avenue and owned by the Grafton Water District, was identified as the most viable option for a water supply source in Town. Therefore, the District proposes to construct the Trinity Avenue Pump Station and augment the current water supply to the community. Construction of a pumping station is required to convey the water from the supply source to the water distribution system. Additionally, the facility will incorporate a chemical feed system for pH adjustment and disinfection to maintain high quality, safe drinking water to the residents.

The Trinity Avenue Wellfield includes three existing gravel packed wells. The proposed pump station project will include installation of submersible pumps, individual water mains connecting the wells to the pump station, and a transmission main to convey the water from the wellfield to the water distribution system. The pump station will consist of a single story, rectangular, single wythe block wall building with a wood truss roof system protected by asphalt shingles. It is anticipated that the building's approximate footprint will be 21 feet by 28 feet and be supported on a cast-in-place concrete foundation. Construction of auxiliary systems, including the below grade propane storage tanks, transformer pad, and stormwater collection system will also be included in the project.

The project is located on District-owned property and no construction activities, equipment or supplies associated with the project, are anticipated to extend beyond the parcel boundaries or temporary easements. The project is currently situated along Fisherville Pond. The proposed pump station has been sited within the property bounds of the 1.60 acre, District owned parcel and above the floodplain elevation of 293 feet.

The addition of impervious area results from the installation of a paved access road, impervious roof, and a chemical delivery area, which is required to provide safe, adequate, year-round vehicular access to the building. The proposed 10-foot wide access road from Trinity Avenue to the pump station will be paved due to the steep 10% slope. Further, alterations to the site's topography are minimized, and it is anticipated that impacts to the existing stormwater flow are negligible/minimum. A copy of the stormwater checklist and report are included in Appendix B.

Maintenance of existing sources will always be necessary and with the addition of the Trinity Avenue Wellfield, the District will be able to better manage existing sources and extend their useful lives. Additionally, the District intends to reduce usage from Follette Street due to the proximity of the source to Cronin Brook which is listed as a cold water

fishery. Discussions with the Division of Fisheries and Wildlife support this course of action.

No negative environmental impacts are anticipated as a result of operation of the new wellfield. The results of the extended pumping test, conducted in 2013, indicate pumping rates will not negatively impact the surrounding wetlands system and nearby surface waters. The new source was approved by the Massachusetts Department of Environmental Protection (MassDEP) on September 30, 2014.

The Trinity Avenue Pump Station will undergo continuous operation. The proposed pump station will be remotely operated by the District's existing Supervisory Controls and Data Acquisition System (SCADA) from the District's main office on Millbury Street. Daily site visits will made by District personnel to inspect the facility and its operations. Occasional deliveries for chemical treatment and propane (emergency power) will take place on a monthly basis.

No future changes to the building are anticipated at this time. Future regulatory changes required by MassDEP may require modifications to existing operation and treatment. Should these potential regulatory changes require modifications to the building and site, the District would work closely with the Town and State to meet all local and state regulatory requirements.

4.2 Mitigating Measures

Erosion control socks and siltation fence will be placed along the limits of construction to create a barrier between the project work site and sensitive receptors. Sedimentation basins will be used should dewatering be required during the installation of the building and bridge foundations, below-grade propane tank installation, and gravel packed well pitless adaptor installations. The District will work closely with the Conservation Commission throughout construction to ensure proper use and maintenance of the erosion controls.

4.2 Waivers

Due to the geometry of the existing parcel, the following two zoning requirements will not be able to be met:

- 3.2.3.2 – Intensity of Use Schedule – Zoning District Medium Density Residential R-20. The minimum frontage/lot width of 125 feet does not exist. The existing lot frontage is 10-feet.
- 4.2.4.2 – Drives serving other permitted principal structures in an R-MF District. The driveway sideline requirement of 50 feet from other drives will no be met due to the geometry of the existing property.

The Grafton Water District requests that the above listed zoning requirements be waived as the geometry of the existing parcel does not allow for the above listed requirements to be met.

4.3 Conclusion

The District has investigated several solutions for the current water supply deficit and lack of redundancy. The development of the Trinity Avenue Pump Station site is the most viable and practical alternative that will allow the District to satisfy both existing and future demands within the Town of Grafton. It was determined that no negative environmental impacts are anticipated as a result of siting a public water supply source in this location.

The District intends to reduce usage from Follette Street due to the proximity of the source to Cronin Brook which is listed as a cold water fishery. The MassDEP Zone II delineation has been approved and is protected as required by MassDEP groundwater aquifer protection regulations. The Trinity Avenue Zone-II is currently being incorporated into the Town of Grafton Water Supply Protection Overlay District Modification.

Test well exploration at other sites within the District did not yield adequate supply for the development of a new source. Alternatives to the construction of the pump station were not considered as chemical feed facilities for pH adjustment and emergency chlorination are required by MassDEP. Alternatives to the location of the pump station were not considered as it must be located in the proximity of the Trinity Avenue Wellfield, within the property line of the 1.60 acre, District-owned parcel and above elevation 293 feet MSL.

Appendix A

TATA & HOWARD

TOWN OF GRAFTON
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www.grafton-ma.gov

BOARD OF ASSESSORS

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DEC 04 2015
GRAFTON
ASSESSORS

Request for Abutters List

Date of Request: 11/19/2015 Date List Needed: Earliest Convenience

Requested by: Matthew Barry / Tata & Howard, Inc. Phone: (508) 232-6228

Name of Property Owner: Grafton Water District (Previously owned by MA Div. of Fisheries & Wildlife)

Street Address of Property: 25 Rear Trinity Avenue

Map: 098.0 Block: 0000 Lot: 0121.0

REASON FOR LIST:

Hearing before the Zoning Board of Appeals	Yes _____	No _____
Hearing before the Planning Board	Yes _____	No _____
Hearing before the Conservation Commission	Yes ✓	No _____

Other: _____

REASON FOR HEARING - (please check)

Variance _____ Scenic Road _____ Title 5 _____ Special Permit ✓ Subdivision _____

Other: Proposed water supply pump station

RADIUS FOR ABUTTERS - (please check one)

Immediate _____ 300 Feet ✓ Upon, along, across or under: _____

LABELS

Two Sets of Labels will be provided if needed: Yes ✓ No _____
(Planning Board requires 2 sets of Labels)

^ Can we obtain three (3) sets of labels please?

Office Use Only

Date List Prepared: 12-4-15 Address Labels Prepared: 12-4-15

Fee Charged: $ 30- Amt. Paid: 30- $ Date: 12-4-15

Check: # 030886 Cash: $ _____ Money Order: $ _____

Revised: 1/22/2014

12/4/2015

25 Rear Trinity Avenue
Map 98, Lot 121

Tammy Kalinowski

Tammy Kalinowski, Office Manager

PARCEL ID	LOCATION	OWNER 1	OWNER 2	ADDRESS	CITY	ST	ZIP	BK	PG
110/098.0-0000-0006.0	176 PROVIDENCE ROAD	GRAFTON TOWN OF	RIVERVIEW PARK	30 PROVIDENCE ROAD	GRAFTON	MA	01519	3666	475
110/098.0-0000-0105.0	19 TRINITY AVENUE	MATTRICK WILLIAM C JR	MATTRICK JANE M	19 TRINITY AVENUE	GRAFTON	MA	01519	8959	195
110/098.0-0000-0106.0	21 TRINITY AVENUE	SUKIS STEPHEN P	STOKOWSKI HOLLIE A	21 TRINITY AVENUE	GRAFTON	MA	01519	7668	89
110/098.0-0000-0107.0	23 TRINITY AVENUE	FENNEUF ROY T	FENNEUF STEPHANIE	P O BOX 107	GRAFTON	MA	01519	6729	160
110/098.0-0000-0108.0	25 TRINITY AVENUE	HAYNES MARGARET W	LAMONT SCOTT B	25 TRINITY AVENUE	GRAFTON	MA	01519	20966	300
110/098.0-0000-0109.0	24 TRINITY AVENUE	GROCCIA JOSEPH J JR	GROCCIA DONNA M	24 TRINITY AVENUE	GRAFTON	MA	01519	6716	202
110/098.0-0000-0110.0	22 TRINITY AVENUE	MOOZA ROBERT J	MOOZA JEANNE M	22 TRINITY AVENUE	GRAFTON	MA	01519	6744	114
110/098.0-0000-0111.0	20 TRINITY AVENUE	DONNELLY STEPHEN		20 TRINITY AVENUE	GRAFTON	MA	01519	20984	148
110/098.0-0000-0121.0	25 TRINITY AVENUE	GRAFTON WATER DISTRICT		44 MILLBURY STREET	GRAFTON	MA	01519	54457	152
110/098.0-0000-0122.0	15 POWERLINE DRIVE	GRAFTON TOWN OF		30 PROVIDENCE ROAD	GRAFTON	MA	01519	11125	258
110/106.0-0000-0010.0	1 KITTERY POINT	GRAFTON TOWN OF		30 PROVIDENCE ROAD	GRAFTON	MA	01519	33601	353
110/106.0-0000-0011.0	141 PLEASANT STREET	NEW ENGLAND POWER COMPANY	PROPERTY TAX DEPARTMENT	40 SYLVAN ROAD	WALTHAM	MA	02451	4547	364
110/106.0-0000-0013.0	15 SUNNYSIDE TERRACE	OWNER UNKNOWN		ADDRESS UNKNOWN	CITY UNKNOWN	UN		0	0

Appendix B

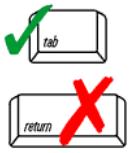
TATA & HOWARD

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

Checklist for Stormwater Report

A. Introduction

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



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

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

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

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

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

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

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

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

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

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

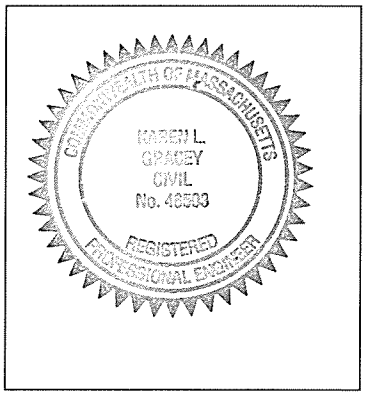
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the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

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

Registered Professional Engineer's Certification

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

Registered Professional Engineer Block and Signature



Karen Gracey
Signature and Date

Checklist

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

☒ New development

☐ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

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

☐ No disturbance to any Wetland Resource Areas

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

☐ Reduced Impervious Area (Redevelopment Only)

☒ Minimizing disturbance to existing trees and shrubs

☐ LID Site Design Credit Requested:

- ☐ Credit 1
- ☐ Credit 2
- ☐ Credit 3

☒ Use of "country drainage" versus curb and gutter conveyance and pipe

☐ Bioretention Cells (includes Rain Gardens)

☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)

☐ Treebox Filter

☐ Water Quality Swale

☒ Grass Channel

☐ Green Roof

☒ Other (describe): Gravel turnaround area

Standard 1: No New Untreated Discharges

☒ No new untreated discharges

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

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

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

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

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

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

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

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

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

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

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

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

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

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

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

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

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

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

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

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

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

Standard 4: Water Quality

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

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

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

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

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

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

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

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

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

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

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

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

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

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

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

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

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

☐ All exposure has been eliminated.

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

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

Standard 6: Critical Areas

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

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

Checklist for Stormwater Report

Checklist (continued)

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

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

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

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

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

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

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

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

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

Checklist for Stormwater Report

Checklist (continued)

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

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

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

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

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

Standard 9: Operation and Maintenance Plan

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

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

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

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

Standard 10: Prohibition of Illicit Discharges

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

☒ An Illicit Discharge Compliance Statement is attached;

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

Applicant: Grafton Water District
44 Millbury Street
Grafton, Massachusetts 01519

Project Name: Trinity Avenue Pump Station

Project Address: 25R Trinity Avenue (Map 98/Parcel 121)
Grafton, Massachusetts 01519

Representative: Karen L. Gracey, P.E.
Tata & Howard, Inc.
67 Forest Street
Marlborough, MA 01752

Project Narrative

The Town of Grafton's recent population growth, subsequent increases in water consumption, and the need for redundancy have necessitated the development of an additional municipal water supply. After an extensive groundwater exploration program, the 1.60 acre parcel of land, situated off of Trinity Avenue and owned by the Grafton Water District, was identified as the most viable option for a water supply source in Town. Therefore, the District proposes to construct the Trinity Avenue Pump Station and augment the current water supply to the community. Construction of a pumping station is required to convey the water from the supply source to the water distribution system. Additionally, the facility will incorporate a chemical feed system for pH adjustment and disinfection to maintain high quality, safe drinking water to the residents.

The Trinity Avenue Wellfield includes three existing gravel packed wells. The proposed pump station project will include installation of submersible pumps, individual water mains connecting the wells to the pump station, and a transmission main to convey the water from the wellfield to the water distribution system. The pump station will consist of a single story, rectangular, single wythe block wall building with a wood truss roof system protected by asphalt shingles. It is anticipated that the building's approximate footprint will be 21 feet by 28 feet and be supported on a cast-in-place concrete foundation. Construction of auxiliary systems, including the below grade propane storage tanks, transformer pad, and stormwater collection system will also be included in the project.

The project is located on District-owned property and no construction activities, equipment or supplies associated with the project, are anticipated to extend beyond the parcel boundaries or temporary easements. The project is currently situated along Fisherville Pond. The proposed pump station has been sited within the property bounds of the 1.60 acre, District owned parcel and above the floodplain elevation of 293 feet.

The following Table No. SW-1 details the total disturbance to the entire parcel, disturbance within the resource area buffers, and disturbance within the resource areas. The disturbance is either temporary in nature due to construction related activities or permanent due to construction of the access road for safe, daily access to the site.

Table No. SW-1
Disturbance Areas

Resource Area	Temporary Disturbance (sf)	Permanent Disturbance (sf)	Total (sf)
Entire Parcel	22,290	12,150	34,440
100' Wetland Buffer*	16,330	9,890	26,220
25' Wetland Buffer	1,040	1,180	2,220
Wetlands	1,070	0	1,070
Floodplain	13,170	6,330	19,500
25' Floodplain Buffer	3,080	8,390	11,470

*100' Wetland Buffer areas include areas within the 25' wetland buffer

Approximately 19,500 square feet (sf) of the project is situated below the 100-year floodplain (293 feet MSL); however, construction of the access road for safe, daily access to the site will require a proposed alteration to the existing topography. Of the project area below elevation 293 feet MSL, approximately 13,170 sf will be impacted temporarily due to construction related activities. The temporary disturbance will result in no change to the existing grades. Approximately 1,100 sf will be impacted within the floodplain and the existing grade will be filled for construction of the access road and bridge. The approximate fill volume within this area is 194 cubic yards. A compensatory storage area (totaling 194 cy) of approximately 5,330 sf will be located to the east of the gravel turnaround area.

The wetlands, wetland buffers, and floodplain buffers will incur some temporary disturbance due to construction related activities (See areas listed above in Table S-1). The permanent disturbance areas are related to construction of the access road. No permanent disturbance will occur within the wetlands.

The addition of impervious area results from the roof installation for the pump station and an impervious pavement chemical delivery area, which is required to provide safe, adequate access and contain any chemical spill without immediate infiltration. The proposed 10-foot wide access road will be paved due to the steep 10% grade from Trinity Avenue, across the bordering vegetated wetlands/bridge, to the pump station. The proposed turnaround area will be gravel, thereby reducing the impervious area associated with the site.

During construction, best management practices (BMPs) will be utilized to minimize potential impacts to the adjacent resource areas. Erosion control sock, silt fence and dewatering sedimentation basins will be used as necessary to mitigate stormwater impacts during and following rainfall events. The contractor will be required to maintain the working order of these BMPs and perform good housekeeping practices to minimize environmental impacts. All requirements issued by the Conservation Commission in the Order of Conditions will be strictly adhered to.

The site has been designed to minimize increases in impervious surfaces. Impervious surfaces associated with the project include the roof over the proposed pump station (approximately 600 sf) and impervious pavement at the chemical delivery area (approximately 275 sf). The access road will be paved resulting in an impervious area of approximately 2,200 sf. The remaining area will be finished with gravel to promote natural infiltration of rainwater. The gravel will also improve upon existing drainage conditions by creating pore spaces for stormwater attenuation.

The stormwater management for this site has been designed to incorporate efficient, dependable drainage and minimize additional impacts to the project site. Limited vehicular traffic, and restricted access to the public, along with implementation of good housekeeping practices by the District will maximize efficiency and dependability of the onsite stormwater systems.

With a combination of good housekeeping practices, and proper maintenance of the gravel, the proposed BMPs will manage quantity and quality. No long-term impacts to the adjacent resource areas are anticipated with installation and proper maintenance of the proposed BMPs.

Standard 1: No New Untreated Discharges

The existing site drains towards Fisherville Pond to the Northeast of the proposed project area. The construction of the pump station and associated paved areas will render approximately 3,075 square feet of impervious area. Of this, approximately 600 square feet is the building roof which will discharge clean runoff to the infiltration system to the north of the building. The runoff from the paved access road will be treated by the grass lined channel with check dams to the northeast of the access road. The runoff from the remaining paved access road and parking areas will sheetflow toward the gravel turnaround area.

The use of gravel will allow direct infiltration of rainfall and mitigate runoff resulting from development of the site. The gravel turnaround area will be maintained by the Grafton Water District.

The proposed site is directly adjacent to the floodplain of Fisherville Pond. An increase in grade is proposed within the floodplain for safe, daily access; therefore, resulting in compensatory storage. Any temporary disturbance below the 293 foot MSL floodplain will be returned to existing grade or lower. The proposed fill of the floodplain along the access road is approximately 194 cubic yards. The resulting compensatory storage area

will be located to the east of the gravel turnaround area and will consist of removal of approximately 194 cubic yards of material at the same elevation. Minimal tree clearing will occurring within the compensatory storage area. Flow patterns outside of the limit of work will remain unchanged. There will be no new, untreated discharges within the project site.

Standard 2: Peak Rate Attenuation

The United States Department of Agriculture's (USDA) Soil Report for the proposed site indicates that local soils are comprised almost entirely of Type A and A/D soils. The soil reports are included in Attachment 1.

The Hydrologic Rational Method for estimating peak discharge as referenced in the Massachusetts Highway Department Project Development and Design Guidebook was implemented to verify suitable storage capacities for proper peak-rate attenuation. Storage capacity requirements are further discussed under Standard 4.

Table SW-2 shows the pre- and post-development peak runoff rates in cubic feet per second (cfs) as calculated using the above referenced design guidelines. Post-development peak runoff rates do not exceed the pre-development peak runoff rates.

Table No. SW-2
Peak Runoff Rates for Pre- and Post-Development Rainfall Events

	25-year Storm	100-year Storm
Pre-Development	0.95 cfs	1.26 cfs
Post-Development	0.93 cfs	1.24 cfs

All Rational Method calculations were performed using the Massachusetts Highway Department Project Development and Design Guidebook (2006). Calculations are included in Attachment 2.

Standard 3: Recharge

As mentioned previously, the site is composed of Type A & A/D soils. For these soil types, stormwater regulations (Massachusetts Stormwater Handbook) require 0.60 inches and 0.10 inches, respectively, of recharge for every square foot of new impervious area. Proposed construction on the site will include approximately 3,075 square feet of impervious surface area, however, all impervious areas will be infiltrated on site thereby providing 100% recharge from impervious areas following treatment, as necessary.

The required recharge volume for the pump station roof is 0.60 inches per square foot or approximately 30 cubic feet. Cultec storage calculations are included in Attachment 2. The total storage provided is approximately 158 cubic feet. In accordance with the Massachusetts Stormwater Handbook, minimum infiltration rates shall be 0.17 inches per

hour and all infiltration structures must be able to fully drain within 72 hours. Soil sample S3 between depths of 2-6 feet were comprised mainly of sand and gravel. NRCS particle size analysis classifies the above sample as sand. A sand texture class (NRCS hydrologic soil group A) infiltrates at a rate of 8.27 inches per hour. Soil sample results and related calculations are included in Attachment 2.

In accordance with the Massachusetts Stormwater Handbook, the time drawdown (infiltration) of the BMP is as follows:

$$Time_{drawdown} = \frac{Rv}{(K)(Bottom\ Area)}$$

Where:
Rv = Storage Volume
K = Saturated Hydraulic Conductivity (Rawls Rate)
Bottom Area = Bottom Area of Recharge Structure

$$Time_{drawdown} = \frac{158\ cubic\ feet}{(8.27\ inches/hour)(1\ ft/12\ inches)(150\ square\ feet)}$$

$Time_{drawdown}$ = 1.53 hours

1.53 hours < 72 hours so result is satisfactory for design purposes

Standard 4: Water Quality

Water quality during the construction phase is addressed in the Construction Period Stormwater Pollution Prevention Plan, found in Attachment 3. Post-development water quality is addressed both in this stormwater report (see TSS analysis below) and in the Long-Term Pollution Prevention Plan, found in Attachment 4.

Proposed construction will create approximately 2,200 square feet of impervious access road. The runoff from the access road will be directed into the grassed lined channel with check dams for treatment. The grass lined channel provides 50% TSS removal. Stormwater regulations require 44% of the total suspended solids to be removed prior to discharge to an infiltration structure. Due to the high groundwater and proximity to the nearby bordering vegetated wetlands, an infiltration structure north of the bordering vegetated wetlands will not be effective. Discharge from the grass lined channel will be distributed amongst a gravel apron approximately 20 feet by 15 feet (300 square feet). The gravel apron will be inspected seasonally and maintained as necessary.

Proposed construction will create approximately 600 square feet of impervious roof area. The runoff from the pump station roof will be directed to roof drains and infiltration system. The infiltrators provide 80% TSS removal, as required by stormwater regulations.

Table SW-3 depicts the total percentages of TSS removal for the BMPs proposed for this project.

Table No. SW-3
TSS Removal

Treatment Train BMPs	TSS Removal Rate	Starting TSS Load	Amount Removed	Remaining Load
Grassed Channel	50%	1.00	0.50	0.50
Dry Well / Infiltrators	80%	1.00	0.80	0.20

Increased TSS removal rates will be achieved using a combination of good housekeeping practices (sediment removal by means of sweeping, vacuuming, and maintenance on impervious and porous surfaces). Maintenance of all stormwater BMPs is outlined in the Operation and Maintenance Plan, found in Attachment 5. Maintenance must be performed to preserve peak rate attenuation and treatment efficiencies.

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)
No LUHPPLs are anticipated with the proposed project.

Standard 6: Critical Areas
Although a small portion of the project is within 250 feet of a District wellfield, the stormwater discharge is located at the furthest extent possible of this critical area.

Standard 7: Redevelopments and Other Projects Subject to the Standards Only to the Maximum Extent Practicable
The project is not applicable for consideration as a redevelopment due to the increased impervious area proposed.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control
Portions of the proposed project are located within the resource area buffer zones. As such, temporary stormwater control devices were selected to protect these sensitive areas during the construction period. These mitigation measures include the installation of erosion control sock, siltation fence, and sedimentation basins.

Each of these devices will be installed prior to the start of construction and maintained for the duration of the project. Upon completion of construction, all temporary stormwater control devices will be removed and properly disposed. Specific construction period pollution prevention and stormwater mitigation details can be found in the Construction Period Stormwater Pollution Prevention Plan, provided in Attachment 3.

Standard 9: Operation and Maintenance Plan

The long-term Operation and Maintenance Plan is included in Attachment 5.

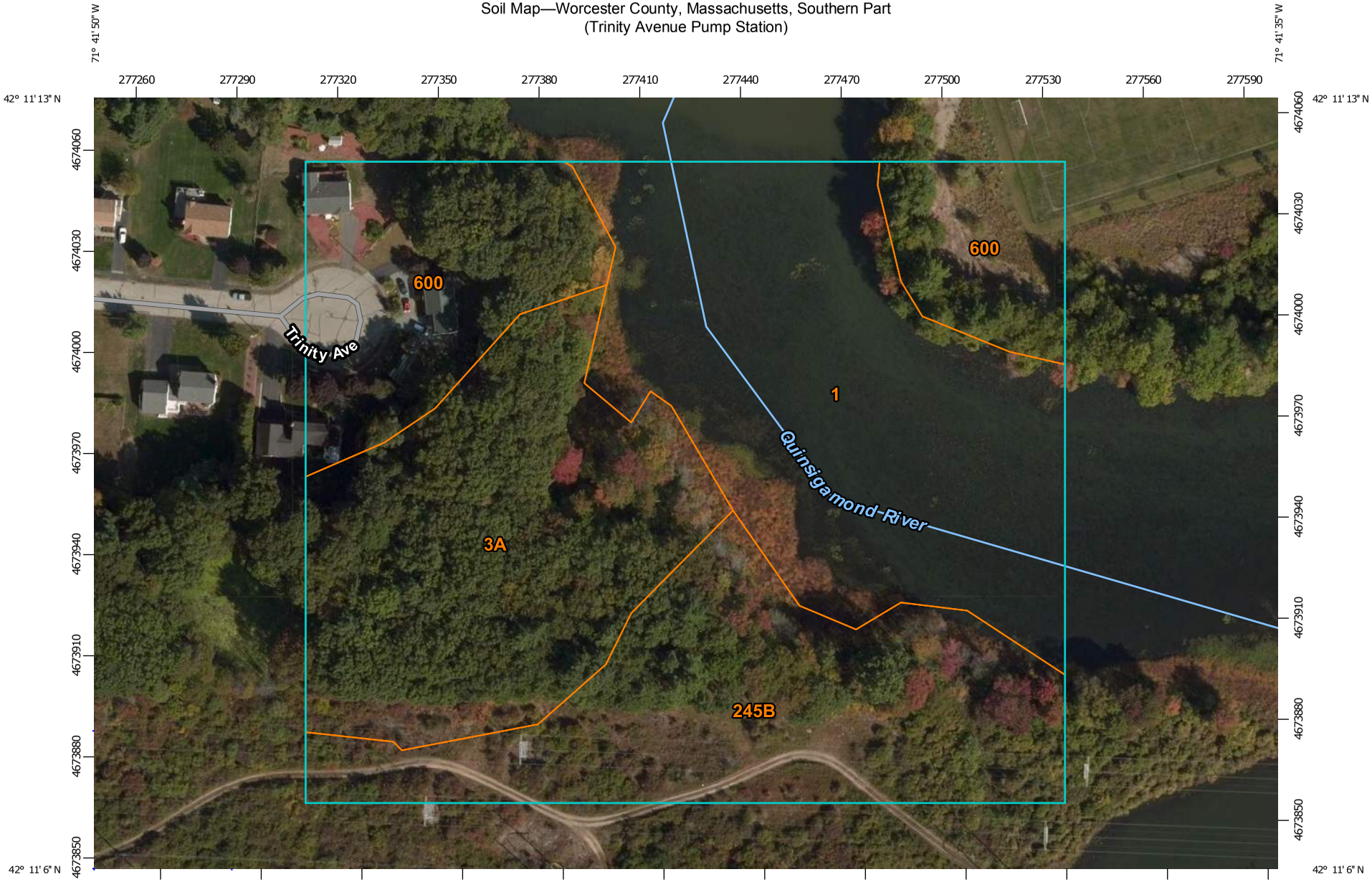
Standard 10: Prohibition of Illicit Discharges

The Illicit Compliance Statement is included in the Long Term Pollution Prevention Plan found in Attachment 4.

Attachment 1

TATA & HOWARD

Soil Map—Worcester County, Massachusetts, Southern Part
(Trinity Avenue Pump Station)



Map Scale: 1:1,610 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

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

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

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: http://websoilsurvey.nrcs.usda.gov
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 8, Sep 28, 2015

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

Date(s) aerial images were photographed: Sep 12, 2014—Sep 28, 2014

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

Worcester County, Massachusetts, Southern Part (MA615)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
1	Water	3.4	31.8%
3A	Scarboro and Walpole soils, 0 to 3 percent slopes	2.7	25.0%
245B	Hinckley loamy sand, 3 to 8 percent slopes	2.5	23.7%
600	Pits, gravel	2.1	19.5%
Totals for Area of Interest		**10.7**	**100.0%**

Worcester County, Massachusetts, Southern Part

3A—Scarboro and Walpole soils, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svks
Elevation: 160 to 480 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Scarboro and similar soils: 45 percent
Walpole and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scarboro

Setting

Landform: Depressions, outwash terraces, drainageways, outwash deltas
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy glaciofluvial deposits derived from schist and/or sandy glaciofluvial deposits derived from gneiss and/or sandy glaciofluvial deposits derived from granite

Typical profile

Oe - 0 to 3 inches: mucky peat
A - 3 to 11 inches: mucky fine sandy loam
Cg1 - 11 to 21 inches: sand
Cg2 - 21 to 65 inches: gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.42 to 14.17 in/hr)
Depth to water table: About 0 to 2 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D

Description of Walpole

Setting

Landform: Drainageways on outwash terraces, depressions on outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip, talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss

Typical profile

O - 0 to 2 inches: muck
A - 2 to 11 inches: fine sandy loam
Bg - 11 to 24 inches: fine sandy loam
Bw - 24 to 28 inches: sandy loam
Cg - 28 to 65 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D

Minor Components

Swansea

Percent of map unit: 10 percent
Landform: Bogs, swamps
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave

Wareham

Percent of map unit: 10 percent
Landform: Depressions
Down-slope shape: Concave

Across-slope shape: Concave

Data Source Information

Soil Survey Area: Worcester County, Massachusetts, Southern Part
Survey Area Data: Version 8, Sep 28, 2015

Worcester County, Massachusetts, Southern Part

245B—Hinckley loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2svm8
Elevation: 0 to 1,430 feet
Mean annual precipitation: 36 to 53 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hinckley and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Eskers, outwash deltas, moraines, outwash terraces, outwash plains, kame terraces, kames
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Base slope, crest, nose slope, side slope, riser, tread
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A

Minor Components

Windsor

Percent of map unit: 8 percent
Landform: Moraines, outwash terraces, outwash plains, kame terraces, kames, eskers, outwash deltas
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, linear, concave

Sudbury

Percent of map unit: 5 percent
Landform: Kame terraces, outwash deltas, moraines, outwash terraces, outwash plains
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope, base slope, head slope, tread
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave

Agawam

Percent of map unit: 2 percent
Landform: Kames, eskers, outwash deltas, moraines, outwash terraces, outwash plains, kame terraces
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, linear, concave

Data Source Information

Soil Survey Area: Worcester County, Massachusetts, Southern Part
Survey Area Data: Version 8, Sep 28, 2015

Attachment 2

TATA & HOWARD

CULTEC
Founder of Plastic Chamber Technology
Stormwater and Septic Solutions
Since 1986
1-800-4-CULTEC
custservice@cultec.com

Prepared For:

Name: Matthew Pearson
Grafton Water District
Street: 44 Millbury Street
City: Grafton
MA 01519
(508) 839-2302
graftonh20@aol.com

Project Information:

Name: Trinity Avenye Pump Station
Street: Address 25R Trinity Ave
City: Grafton
MA 01519

Date: March 14, 2016

Engineer:

Name: Matthew Barry
Tata & Howard, Inc.
Street: 67 Forest Street
City: Marlborough
MA 01519
(508) 232-6228
(508) 449-9400
mbarry@tataandhoward.com

Calculations Performed By:

Name: Matthew Barry
Tata & Howard, Inc.
Street: 67 Forest Street
City: Marlborough
MA 01519
(508) 232-6228
(508) 449-9400
mbarry@tataandhoward.com

Input Given Parameters

Unit of Measure	English	
Select Model	Contactor 100HD	
Stone Porosity	40.0%	
Number of Header Systems	1 Header	
Stone Depth **Above** Chamber	6	inches
Stone Depth **Below** Chamber	6	inches
Workable Bed Depth	5.00	feet
Max. Bed Width	16.00	feet
Storage Volume Required	50.00	cu. feet

Image for visual reference only.May not reflect selected model.

Chamber Specifications		
Height	12.5	inches
Width	36.00	inches
Length	8.00	feet
Installed Length	7.50	feet
Bare Chamber Volume	14.00	cu. feet
Installed Chamber Volume	28.81	cu. feet
Bed Depth	2.96	feet
Bed Width	15.00	feet
Storage Volume Provided	158.50	cu. feet

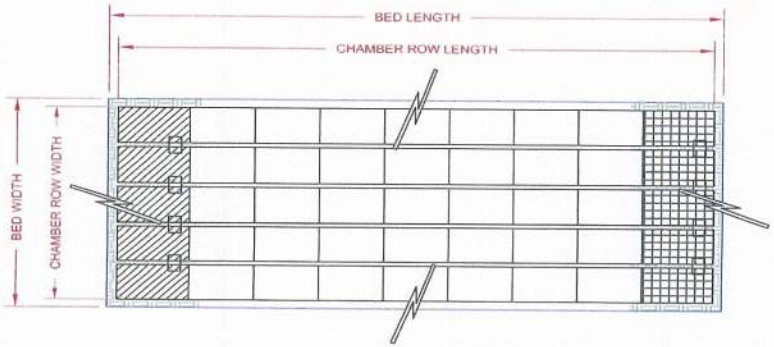
Materials List

Contactor 100HD Stormwater System by CULTEC, Inc.

Approx. Unit Count - not for construction	1	pieces
Actual Number of Chambers Required	4	pieces
Starter Chambers	4	pieces
Intermediate Chambers	0	pieces
End Chambers	0	pieces

HVLV SFCx2 Feed Connector	3	pieces
CULTEC No. 410™ Filter Fabric	49.14	sq. yards
CULTEC No. 20L Polyethylene Liner	15.00	feet
Stone	9.12	cu. yards

Bed Detail



Number of Rows Wide	4	pieces
Number of Chambers Long	1	pieces
Chamber Row Width	13.00	feet
Chamber Row Length	8.00	feet
Bed Width	15.00	feet
Bed Length	10.00	feet
Bed Area Required	150.00	sq. feet

Bed detail for reference only. Not project specific. Not to scale. Use CULTEC StormGenie to output project specific detail.

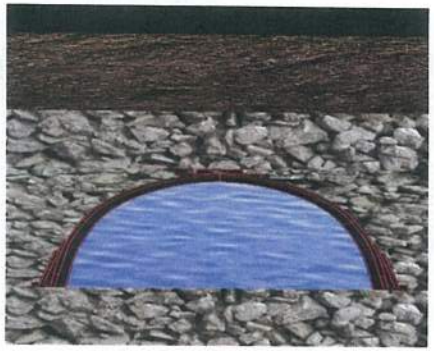
CULTEC, Inc.
P.O. Box 280, Brookfield, CT 06804 USA
Phone: 203-775-4416 - Fax: 203-775-1462 - **www.cultec.com**

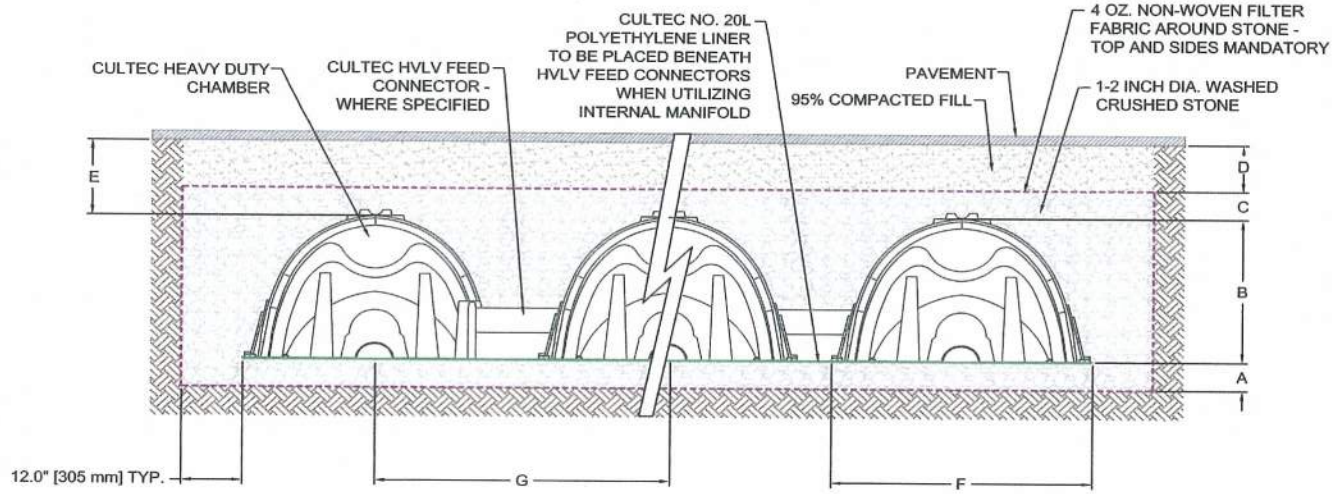
Project Name: Name: Trinity Avenye Pump Station **Date:** March 14, 2016

Cross Section Detail

Conceptual graphic only. Not job specific.

Contactor 100HD		
Pavement	3	inches
95% Compacted Fill	8	inches
Stone Above	6	inches
Chamber Height	12.5	inches
Stone Below	6	inches
Effective Depth	24.5	inches
Bed Depth	35.5	inches





A	Depth of Stone Base	6.0	inches
B	Chamber Height	12.5	inches
C	Depth of Stone Above Units	6.0	inches
D	Depth of 95% Compacted Fill	8.0	inches
E	Max. Depth of Cover Allowed Above Crown of Chamber	12.0	feet
F	Chamber Width	36.0	inches
G	Center to Center Spacing	3.33	feet

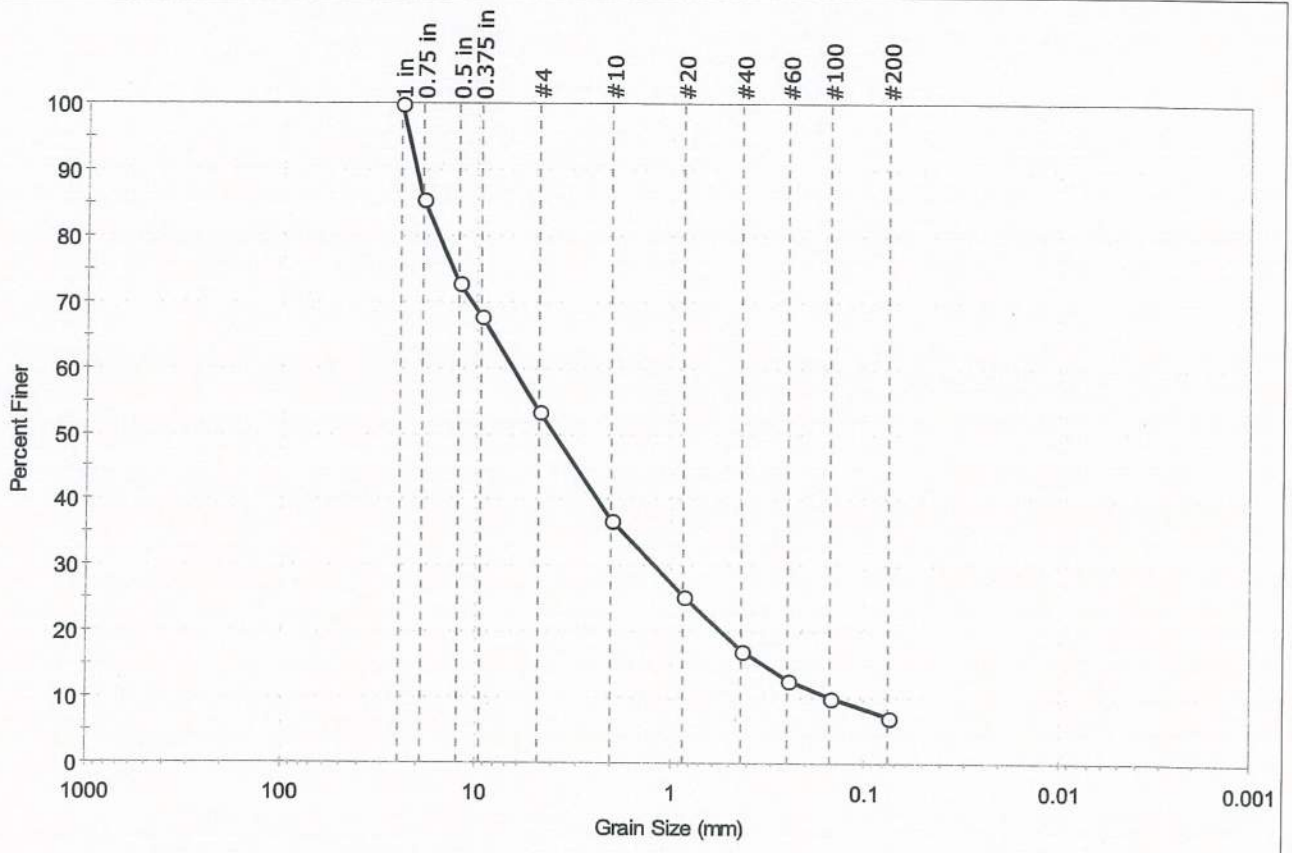
Breakdown of Storage Provided by Contactor 100HD	Stormwater System	
Chambers	59.71	cu. feet
Feed Connectors	0.29	cu. feet
Stone	98.50	cu. feet
Total Storage Provided	158.50	cu. feet

CULTEC, Inc.
P.O. Box 280, Brookfield, CT 06804 USA
Phone: 203-775-4416 - Fax: 203-775-1462 - **www.cultec.com**

GeoTesting EXPRESS

Client:	Lahlaf Geotechnical Consulting				
Project:	Trinity Ave Pump Station				
Location:	Grafton, MA			Project No:	GTX-303741
Boring ID:	B4	Sample Type:	jar	Tested By:	jbr
Sample ID:	S3	Test Date:	09/22/15	Checked By:	emm
Depth :	4-6	Test Id:	347321		
Test Comment:	---				
Visual Description:	Moist, gray gravel with silt and sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
–	46.5	46.3	7.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	85		
0.5 in	12.50	73		
0.375 in	9.50	68		
#4	4.75	53		
#10	2.00	37		
#20	0.85	25		
#40	0.42	17		
#60	0.25	13		
#100	0.15	10		
#200	0.075	7.2		

Coefficients

D_{85} = 18.7010 mm	D_{30} = 1.2098 mm
D_{60} = 6.5327 mm	D_{15} = 0.3323 mm
D_{50} = 3.9729 mm	D_{10} = 0.1531 mm
C_u = 42.669	C_c = 1.463

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-a (1))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

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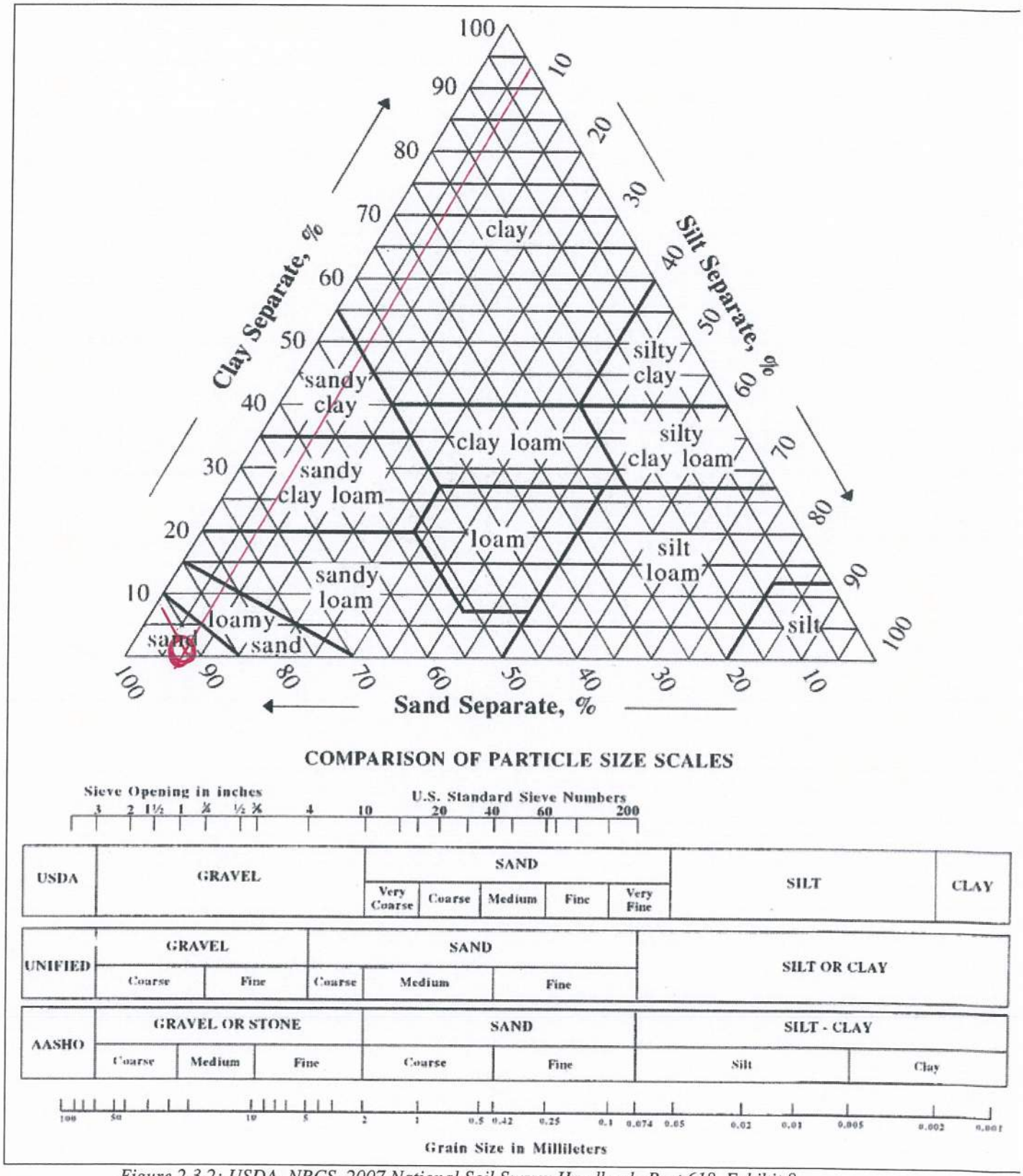


Figure 2.3.2: USDA, NRCS, 2007 National Soil Survey Handbook, Part 618, Exhibit 8, http://soils.usda.gov/technical/handbook/contents/part618ex.html#ex8

Type III 24-hr Rainfall=1.29"

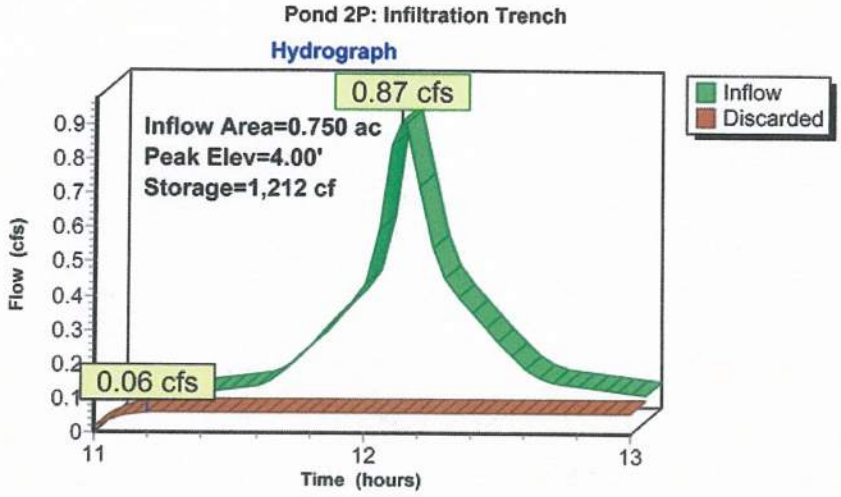


Table 2.3.3. 1982 Rawls Rates[18]

Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate Inches/Hour
Sand	A	8.27
Loamy Sand	A	2.41
Sandy Loam	B	1.02
Loam	B	0.52
Silt Loam	C	0.27
Sandy Clay Loam	C	0.17
Clay Loam	D	0.09
Silty Clay Loam	D	0.06
Sandy Clay	D	0.05
Silty Clay	D	0.04
Clay	D	0.02

[18] Rawls, Brakensiek and Saxton, 1982

TATA & HOWARD
INCORPORATED
CONSULTING ENGINEERS

JOB 3703 Grafton T3 Access Rd
SHEET NO. 1 OF 9
CALCULATED BY MSB DATE 3/10/16
CHECKED BY LSS DATE 3/14/16
SCALE None

Trinity Avenue Channel Sizing Calcs

Notes:
- Rational Method Used (Mass Hwy Ch. 8 pg 8-13)
- Ex. + Prop. Access Rd considered 10-ft wide
- Areas, length, elevations from survey / CAD

Flow Calcs

$Q = Ca\ Ci\ A$

where $Ca = 1.25$ (100-Year) (Mthy Ch 8 8-25)
$Ca = 1.10$ 25-Year

- A = Area of Influence
- Tc = Length (Watercourse) / Velocity
- C is derived from Exhibit 8-8 and Exhibit 8-9, Mthy Chp. 8 pg 8-21
- Calculations are based on 100-yr & 25-yr storm events.
- C = 0.20 based on average value for Woodland + Unimproved
- i is derived using watercourse (Tc) length and elevation difference to determine slope. Slope is used in Exhibit 8-11 Mass Highway Ch. 8 pg 8-26. to determine velocity. Velocity and watercourse length are used to determine Tc, which is used in Exhibit 8-12, Mthy ch. 8 pg 8-29

100 yr Pre

TATA & HOWARD INCORPORATED
CONSULTING ENGINEERS

JOB Grafton PS
SHEET NO. 2 OF 9
CALCULATED BY MSR DATE 3/14/16
CHECKED BY LSS DATE 3/14/16
SCALE None

A_1: $A = (6,805\ ft^2) / (43,560\ ft^2/Acre) = 0.156$ Acres

Watercourse Length = 167 ft. Elev. Diff = 311 - 291 = 20 ft.

(Path of wetland/Slope)

$S = (20\ ft) / (167\ ft) = 11.9\% \rightarrow V = 2.5\ ft/s$

$T_t = (167\ ft) / (2.5\ ft/s) = (66.8\ s) / (60\ s/min) = 1.11\ min$

5 minute minimum on Exhibit 8-14 $= i = 8.0\ in/hr$

$C_a = 1.25$ $C = 0.20$ $A = 0.156$ Acres

$Q = C_a C i A = (1.25)(0.20)(8.0)(0.156) = 0.31\ ft^3/s$

A_2: $A = (27,635\ ft^2) / (43,560\ ft^2/Acre) = 0.634$ Acres

Watercourse Length = 401 ft Elev. Diff. = 293 - 292 = 1 ft.

(South of wetland / PS)

$S = (1\ ft) / (401\ ft.) = 0.3\% \rightarrow V = 0.55\ ft/s$

$T_t = (401\ ft) / (0.55\ ft/s) = (729.1) / (60\ s/min) = 12.15\ min$

$i = 6.0\ in/hr$ $C_a = 1.25$ $C = 0.20$ $A = 0.634$ Acres

$Q = C_a C i A = (1.25)(0.20)(6.0)(0.634) = 0.95\ ft^3/s$

Pre-Development Discharge $= A_1 + A_2 = 0.31\ ft^3/s + 0.95\ ft^3/s$

$= 1.26\ ft^3/sec$

25 Yr / Pre

TATA & HOWARD INCORPORATED
CONSULTING ENGINEERS

JOB Grafton PS
SHEET NO. 3 OF 9
CALCULATED BY MSB DATE 3/14/16
CHECKED BY LSS DATE 3/14/16
SCALE None

(North of Wetlands / Slope)

A_1: $A = (6{,}805\ ft^2) / (43{,}560\ ft^2/Ac) = 0.156$ Acres ✓

Watercourse Length = 167 ft Elev. Dif. = 311 − 291 = 20 feet

$S = (20\ ft) / (167\ ft) = 11.9\% \rightarrow V = 2.5$ ft/sec ✓

$T_t = (167\ ft) / (2.5\ ft/s) = (66.8\ s) / (60\ s/min) = 1.11$ min ✓

5 minute minimum on Exhibit 8-141 = $i = 6.5$ in/hr ✓

$C_a = 1.10$ $C = 0.20$ $A = 0.156$ Acres

$Q = C_a C i A = (1.10)(0.20)(6.5)(0.156) = 0.22\ ft^3/sec$ ✓

(South of Wetlands / PS)

A_2: $A = (27{,}635\ ft^2) / (43{,}560\ ft^2/Ac) = 0.634$ Acres ✓

Watercourse Length = 401 ft. Elev. Dif. = 293 − 292 = 1 ft.

$S = (1\ ft) / (401\ ft) = 0.3\%$ ✓ $\rightarrow V = 0.6$ ft/sec ✓

$T_t = (401\ ft) / (0.6\ ft/s) = (668.3\ s) / (60\ s/min) = 11.14$ min ✓

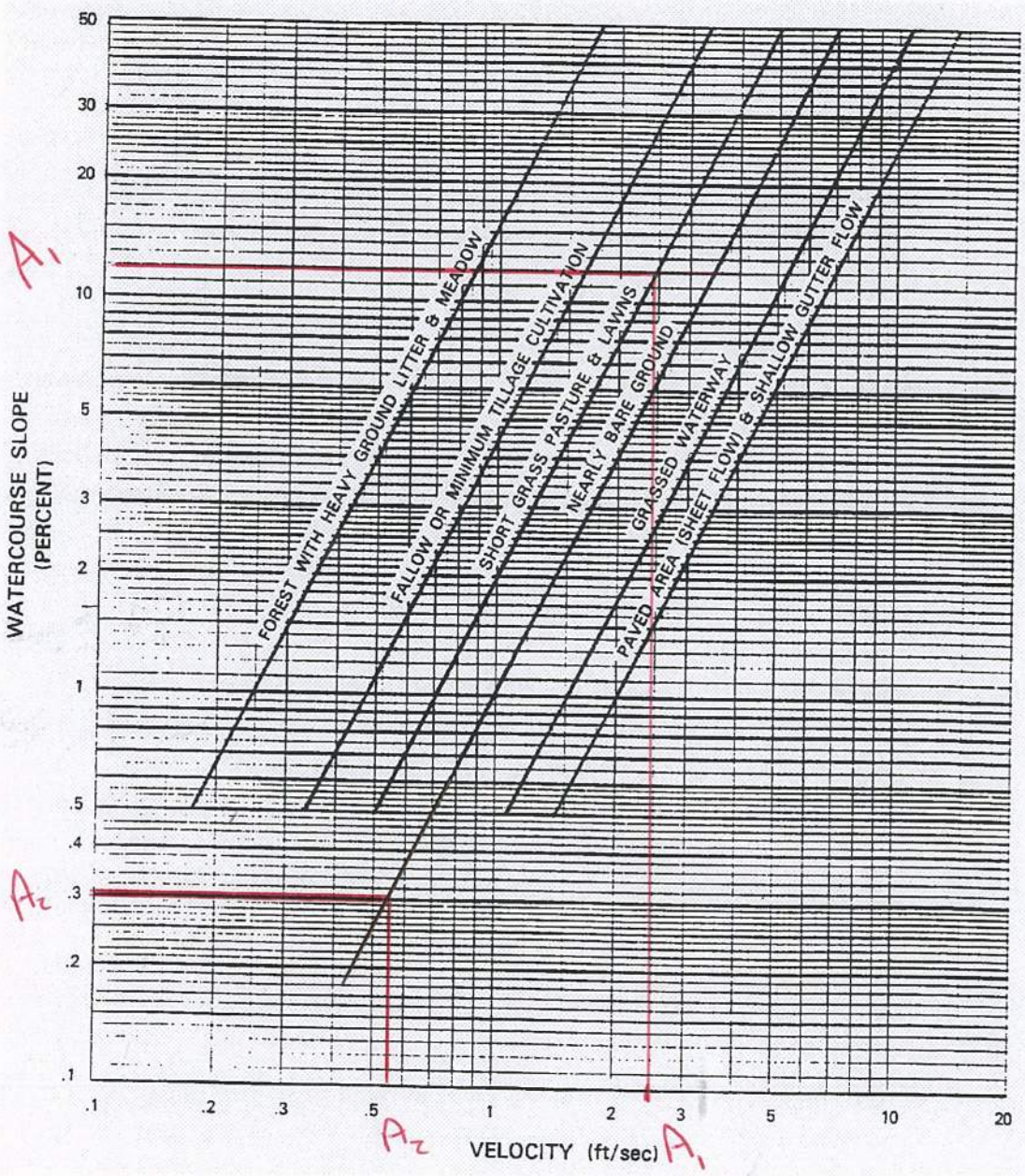
$i = 5.2$ in/hr ✓ $C_a = 1.10$ $C = 0.20$ $A = 0.634$ Acres

$Q = C_a C i A = (1.10)(0.20)(5.2)(0.634) = 0.73\ ft^3/sec$ ✓

Pre-Development Discharge (25 year) = $A_1 + A_2 = 0.22\ ft^3/s + 0.73\ ft^3/s$

$= 0.95\ ft^3/sec$ ✓

Exhibit 8-11
Average Velocities for Overland Flow

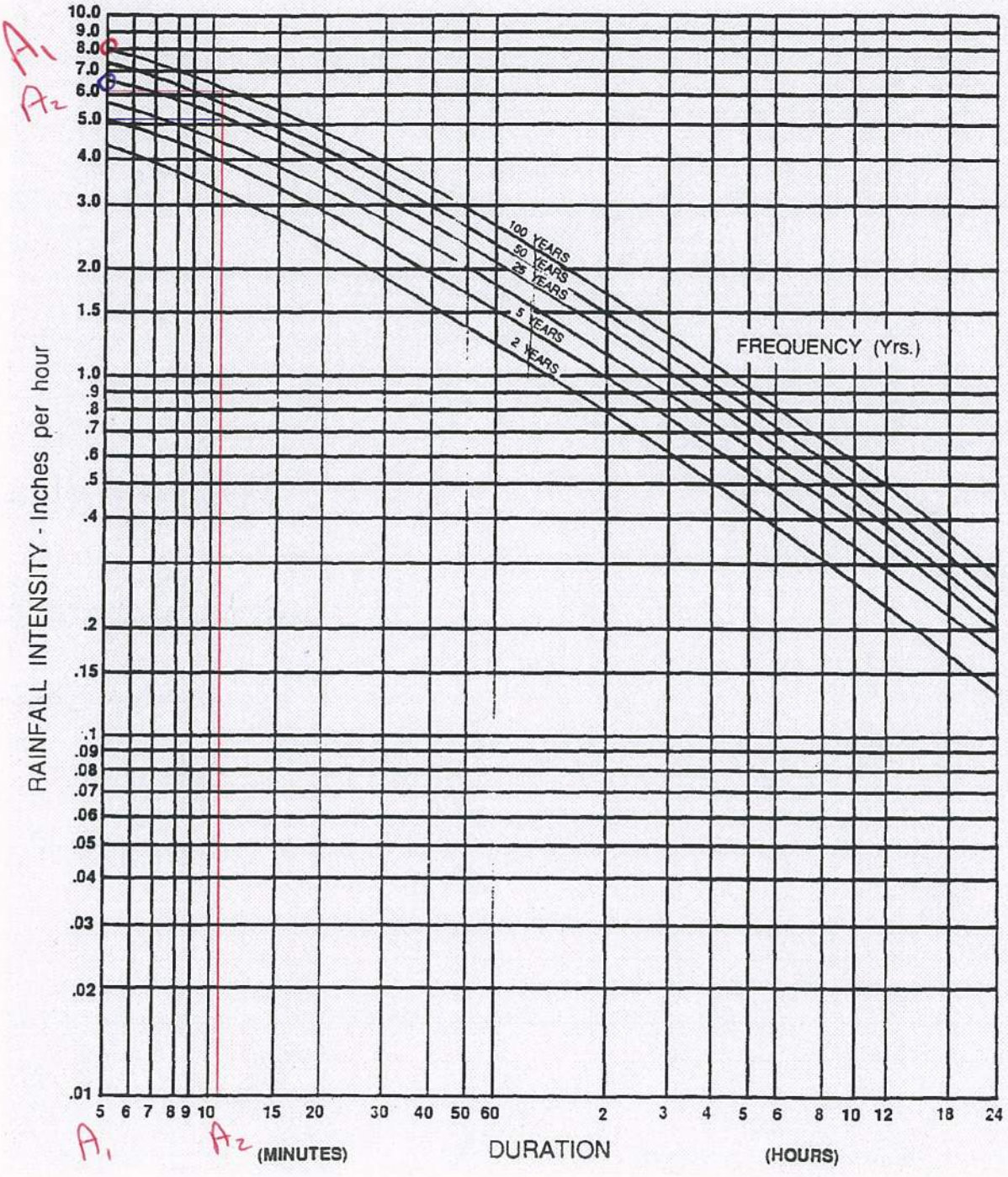


Source: TR55 - Urban Hydrology for Small Wetlands, NRCS

Sheet No. 5 of 9

Exhibit 8-14

Intensity - Duration - Frequency Curve for Worcester, MA



Source: TR55 - Urban Hydrology for Small Wetlands, NRCS

100 yr / Post

TATA & HOWARD INCORPORATED
CONSULTING ENGINEERS

JOB Grafton PS
SHEET NO. 6 OF 9
CALCULATED BY MSB DATE 3/14/16
CHECKED BY LSS DATE 3/14/16
SCALE None

A_3: $A = (6{,}805\ ft^2) / (43{,}560\ ft^2/Acre) = 0.156$ Acres

Watercourse Length = 193 ft. Elev. Dif. = 311 − 291 = 20 ft.

$S = (20\ ft)/(193\ ft) = 10.3\% \rightarrow V = 4.8\ ft/s$

$T_t = (193\ ft)/(4.8\ ft/s) = (40.2\ s)/(60\ s/min) = 0.67\ min$

5 minute minimum on Exhibit B-14 $i = 8.0\ in/hr$

$C_a = 1.25$ $C = 0.20$ $A = 0.156$ Acres

$Q = C_a C i A = (1.25)(0.20)(8.0)(0.156) = 0.31\ ft^3/sec$

A_4: $A = (27{,}038\ ft^2) / (43{,}560\ ft^2/Acre) = 0.621$ Acres
Less PS roof area to infiltrator

Watercourse Length = 401 ft Elev. Dif. = 293 − 292 = 1 ft.

$S = (1\ ft)/(401\ ft) = 0.3\% \rightarrow V = 0.55\ ft/s$

$T_t = (401\ ft)/(0.55\ ft/s) = (729.1\ s)/(60\ s/min) = 12.15\ min$

$i = 6.0\ in/hr$ $C_a = 1.25$ $C = 0.20$ $A = 0.621$ Acres

$Q = C_a C i A = (1.25)(0.20)(6.0)(0.621) = 0.93\ ft^3/s$

Post Development (100 year) Discharge $= A_3 + A_4 = 0.31\ ft^3/s + 0.93\ ft^3/s$
$= 1.24\ ft^3/sec$

25 yr / Post

TATA & HOWARD INCORPORATED
CONSULTING ENGINEERS

JOB Grafton PS
SHEET NO. 7 OF 9
CALCULATED BY MSB DATE 3/14/16
CHECKED BY LS DATE 3/14/16
SCALE None

A_3: $A = (6,805\ ft^2) / (43,560\ ft^2/Ac) = 0.156$ Acres

Watercourse Length = 193 ft. Elev. Dif. = 311 - 291 = 20 feet

$S = (20\ ft)/(193\ ft) = 10.3\% \rightarrow V = 4.8\ ft/s$

$T_t = (193\ ft)/(4.8\ ft/s) = (40.2\ s)/(60\ s/min) = 0.67$ min

5 min minimum on Exhibit 8-14 $i = 6.5$ in/hr

$C_a = 1.10$ $C = 0.20$ $A = 0.156$ Acres

$Q = C_a C i A = (1.10)(0.20)(6.5)(0.156) = 0.22\ ft^3/sec$

A_4: $A = (27,038\ ft^2)$ less PS roof area to infiltrator $/ (43,560\ ft^2/Ac) = 0.621$ Acres

Watercourse Length = 401 feet Elev. Dif. = 293 - 292 = 1 ft

$S = (1\ ft)/(401\ ft) = 0.3\% \rightarrow V = 0.6\ ft/s$

$T_t = (401\ ft)/(0.6\ ft/s) = (668.3\ s)/(60\ s/min) = 11.14$ min

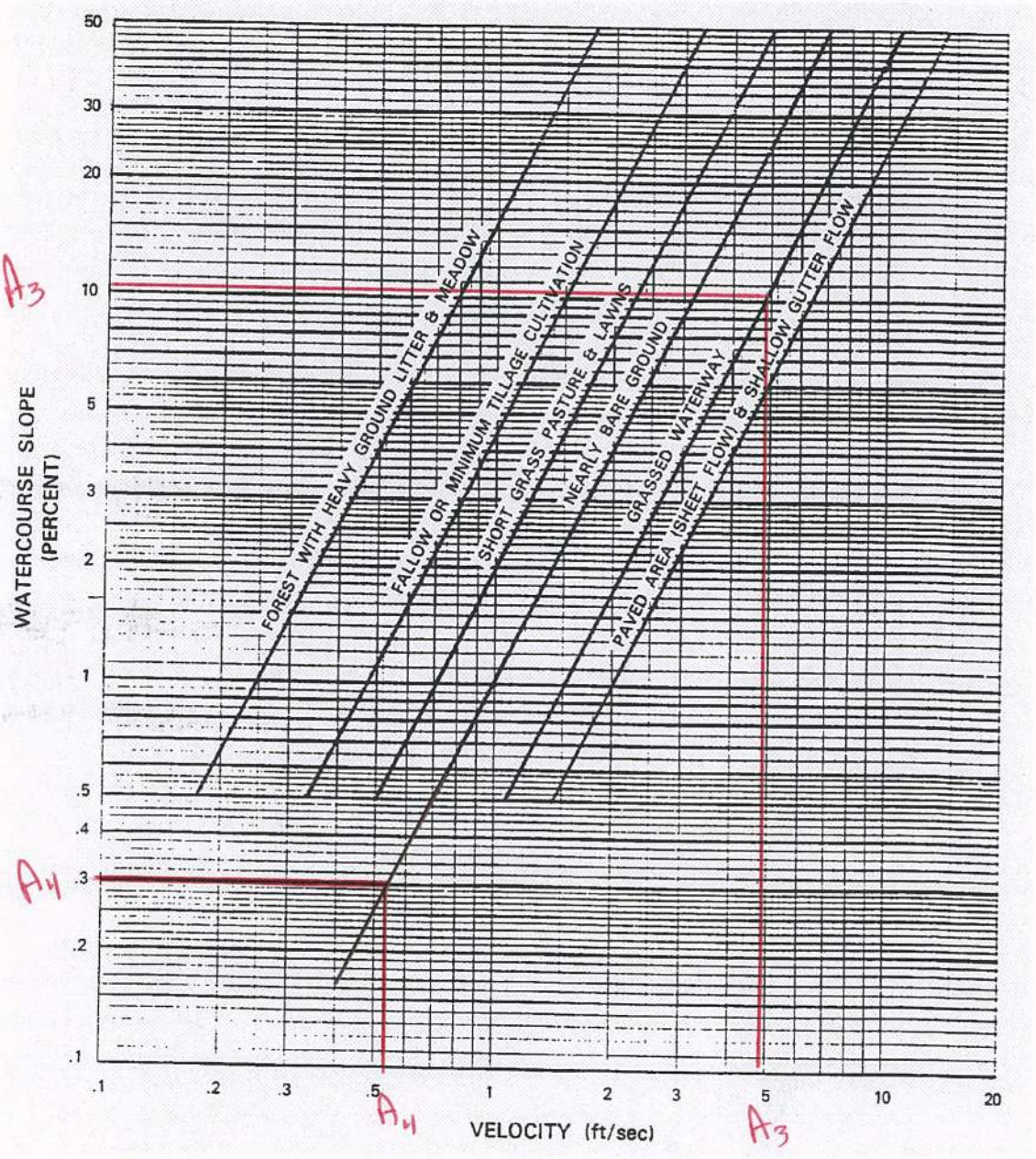
$i = 5.2$ in/hr $C_a = 1.10$ $C = 0.20$ $A = 0.621$ Acres

$Q = C_a C i A = (1.10)(0.20)(5.2)(0.621) = 0.71\ ft^3/sec$

Post-Development Discharge (25 year) $= A_3 + A_4 = 0.22\ ft^3/s + 0.71\ ft^3/s$

$= 0.93\ ft^3/sec$

Exhibit 8-11
Average Velocities for Overland Flow

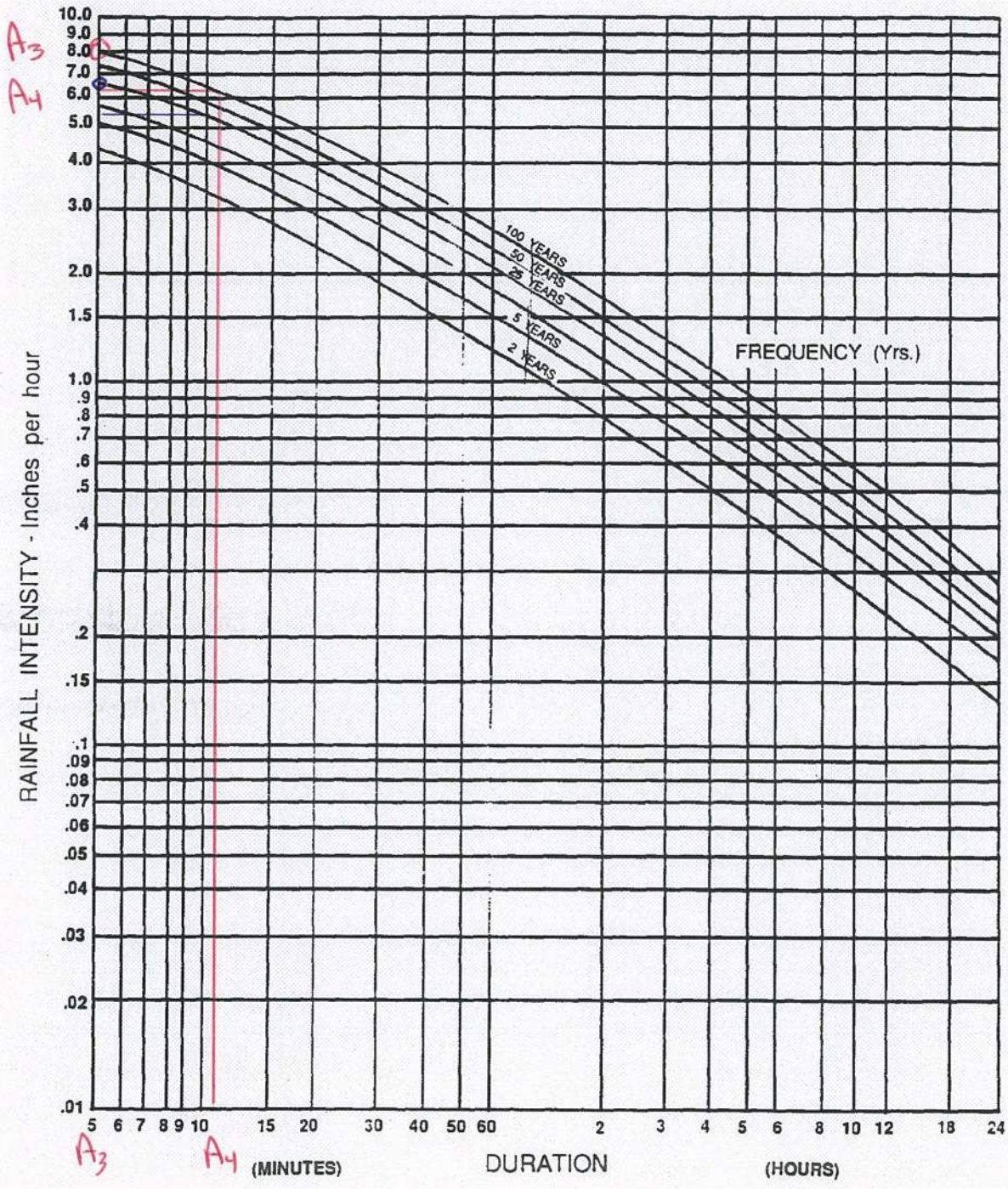


Source: TR55 - Urban Hydrology for Small Wetlands, NRCS

Sheet No. 9 of 9

Exhibit 8-14

Intensity - Duration - Frequency Curve for Worcester, MA



Source: TR55 - Urban Hydrology for Small Wetlands, NRCS

Attachment 3

TATA & HOWARD

1. **Narrative:**
   The proposed Construction Period Pollution Prevention Plan will focus on the delineation of the limits of work in the field with the installation of erosion control socks and silt fence. This limit of work will serve two purposes: it will clearly define the acceptable limits of construction to prevent non-permitted work within the resource areas or buffers, and the erosion control socks and silt fence will prevent the migration of silt material into the resource areas during rain events. If dewatering is necessary, sedimentation basins will be used to remove silt particles from the water prior to discharge to the buffer zone.

2. **Construction Period Pollution Prevention Measures:**
   a. Maintain site, landscaping, and vegetation.
   b. Sweep and pick up litter on pavement and grounds.
   c. Deliveries shall be monitored to prevent on-site spillage of chemicals during delivery.
   d. Keep impervious pavement in good repair. Maintain landscaped areas.
   e. Install and maintain erosion control measures.

3. **Erosion and Sedimentation Control Plan Drawings:**
   a. See attached Drawing No. C-4 & No. C-6.

4. **Detail drawings and specifications for erosion control BMPs**
   a. See attached Drawing No. C-6.
   b. See Appendix F, Related Specification Sections

5. **Vegetation Planning**
   a. Vegetation is an important part of the post-construction stormwater treatment process. Special care is to be taken to protect the stormwater BMPs during construction. This includes, but is not limited to, the protection of these areas from construction period erosion with silt fence and erosion control socks. The stormwater control features will be inspected at the completion of the project to ensure they are free from construction period silt and other damage. Traffic over these areas should be limited to prevent compaction.

6. **Site Development Plan**
   a. See attached Drawing No. C-1 thru C-7.

7. **Construction Sequencing**
   a. Clearing (no grubbing) of trees to the limit of work;
   b. Installation of erosion control measures;
   c. Grubbing;
   d. Excavation and construction of proposed bridge abutments;
   e. Installation of Bailey Bridge;
   f. Construction of stormwater structures;
   g. Excavation and construction of proposed building and appurtenances;

h. Site grading and paving;
i. Final stabilization of all disturbed areas;
j. Removal of erosion control measures.

8. **Sequencing of Erosion and Sedimentation Controls**
   a. Erosion control socks and silt fence will be installed prior to any grubbing, excavation or construction.
   b. Sedimentation basins are to be constructed prior to the discharge of water from any dewatering operation.

9. **Operation and Maintenance of Erosion and Sedimentation Controls**
   a. Erosion control socks to be replaced when saturated with silt, when structurally deteriorated to 2/3 the original height, or when gaps appear.
   b. Silt fence is to be installed with a minimum of 1 foot of fabric buried. Silt fence is to be replaced when it has been torn or fallen down. The replacement piece must overlap the silt fence in good condition by a minimum of 10 feet.
   c. The sedimentation basins shall receive the water from dewatering pumps and allow the settling and filtration of silt materials prior to discharge to the resource areas. Sediment collected shall be properly disposed of off-site, as directed by Owner.

10. **Inspection Schedule**
    a. Inspection of all sedimentation controls shall be completed by the contractor on a daily workday basis.

11. **Maintenance Schedule**
    a. Maintenance of all sedimentation controls shall be completed by the contractor as needed.

12. **Inspection and Maintenance Log Form**
    a. The contractor is to maintain a log of daily inspections, required corrective action, and maintenance performed on all sedimentation and erosion control devices.

Attachment 4

TATA & HOWARD

1. **Narrative**
   The proposed pump station will be located adjacent to a District water supply and the following plan has been designed to minimize the potential for pollution in the long-term.

2. **Good housekeeping practices:**
   a. Maintain site, landscaping, and vegetation.
   b. Sweep and pick up litter on pavement and grounds. Continue sweeping activities.
   c. Deliveries shall be monitored to prevent on-site spillage of chemicals during delivery.
   d. Keep pavement in good repair. Maintain landscaped areas.
   e. Use appropriate snow removal spreading device and use of dedicated snow stockpile areas.

3. **Storage of waste materials:**
   a. There are no provisions for a dumpster.
   b. All chemicals will be delivered to the chemical delivery area and stored inside the pump station. As required by the Massachusetts Department of Environmental Protection, secondary chemical containment is provided in the pump station.

4. **Vehicle washing control:**
   a. There will be no vehicle washing or storage on site.

5. **Inspection and maintenance of BMPs:**
   a. Regular inspection and maintenance should be conducted in accordance with the Operation and Maintenance Plan, found in Appendix G.

6. **Spill prevention and response:**
   a. Inventory materials to be present at the pump station.
   b. Train employees and subcontractors in prevention and clean-up procedures.
   c. Store materials in their appropriate containers within the pump station.
   d. Follow manufacturer's recommendation for disposal of used containers.
   e. Do not store excessive amounts of material to minimize the potential of a large spill or leak.
   f. Clean up spills.
      1. Maintain spill kits and absorbent materials on-site.
      2. Never hose down "dirty" pavement or impermeable surfaces where fluids have spilled. Use dry clean up methods (sawdust, cat litter and/or rags and absorbent pads) and properly dispose of contaminated material.
      3. Sweep up dry materials immediately. Never wash them away or bury them.
      4. Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
      5. Report significant spills to the Grafton Water District, Town of Grafton Conservation Commission, and Town of Grafton Board of Health.

7. **Provisions for maintenance of lawns, gardens, and other landscaped areas:**
   a. Fertilizer shall not be used on site.
   b. Shrubbery and encroaching natural vegetation shall be maintained with trimming and cutting as necessary.

8. **Requirements for storage and use of fertilizers, herbicides, and pesticides:**
   a. The use of fertilizer, herbicides or pesticides is not allowed on site.

9. **Pet waste management provisions:**
   a. Pets will not be allowed onsite and in the vicinity of the pump station and wellfield.

10. **Provisions for operation and management of septic systems:**
    a. The site is not equipped with sanitary facilities. The pump station has a sample sink for use in water quality testing by trained personnel and an emergency shower/eyewash. The sample sink and emergency eyewash drain to a drywell located on site, and are not to be used for disposal of any substance not related to the sampling and testing of drinking water.

11. **Proper Management of Deicing chemicals and snow:**
    a. Snow shall not be stored near environmentally sensitive areas. Plowing and/or sanding of the access drive and paved areas must be done in accordance with the guidelines set forth in the Operation and Maintenance Plan.
    b. No sand or rock salt will be stored on site. The use of salt, sodium chloride or calcium chloride is not allowed due to close proximity to a drinking water supply. Sand may be used but kept to a minimum. Excess sand is to be removed in the early spring by a street sweeper and or vacuum as described in the Operation and Maintenance Plan to avoid discharge to the resource areas and buffers.
    c. Sweeping can be done by mechanical sweepers, vacuum sweeper (when required) or hand sweeper. The quantity of sand is a direct correlation with the treatment of ice and snow. Sweeping for this site should be done each spring. Collecting the particulate before it enters the buffer zones, resource areas or BMPs is environmentally friendly and can lengthen the life of the BMPs.

12. **Emergency contacts for implementing Long-Term Pollution Prevention Plan:**

Matthew Pearson, System Manager

Grafton Water District

Address: 44 Millbury Street
P.O. Box 537
Grafton, MA 01519
Phone: (508) 839-2302

Attachment
Illicit Compliance Statement

It is the intent of the Grafton Water District (Owner) to control illicit disposal into the storm drainage system. There will be no connection to the storm water system to inadvertently direct other types of liquids, chemicals or solids into the storm drainage system. The Owner will also promote a clean green environment by mitigating spills onto pavements; oils, chemicals, debris and litter.

Respectfully Acknowledged,

Matthew Pearson, System Manager
Grafton Water District

Attachment 5

TATA & HOWARD

Stormwater Management Owners:

Upon completion of the project, the Grafton Water District will assume responsibility for the stormwater management system and the operation and maintenance of the BMPs.

Responsible Party:

The District will be responsible for the annual inspection and maintenance of the site. The General Manager will be responsible for keeping BMPs operating properly. Properly functioning BMPs will have longer life spans and a properly maintained site will provide greater protection to the public water supply.

Schedule of Maintenance Tasks

The following is the required maintenance schedule for each BMP located on site.

Access Road

1. Pavement areas should be checked seasonally for deterioration. Gravel should be swept or raked to maintain a clean area. Additional gravel should be added as needed.

2. Leaves and other organic matter should be raked or vacuumed from gravel areas regularly to prevent weed growth. Any weeds should be removed to maintain porosity.

3. Care should be taken during snowplowing of gravel areas to avoid contact between the plow blade and the gravel system. A skid may be attached to the bottom of the plow to avoid problems.

General Maintenance

1. The use of deicing agents (sodium chloride, etc.) is prohibited. Sand may be used for traction control and to assist with ice-melting during winter conditions. To the greatest extent practicable, snow will be stockpiled outside the 100-foot buffer. Snow should be plowed away from the resource areas.

2. During normal pump station operations, vehicles will remain exclusively on the gravel and paved areas.

3. Access to the site will only be granted to personnel authorized by the Grafton Water District. Access to the site will be gated at all times.

4. The areas of the site that are not needed for operation and maintenance of the pump station will be allowed to re-naturalize. Following construction, native vegetation will be allowed to establish within disturbed areas and will not be pruned or removed unless vegetation encroaches into maintained areas.

Scaled Drawings of BMPs

Attached are scaled drawing of the site and the location of the BMPs. See Drawing Nos. C-4 and C-6.

Public Safety Features

As a public water supply, this site is gated to restrict the public's access. With respect to the BMPs, modified "country drainage" was implemented to minimize potential impacts to estimated and priority habitat areas. Further, the proposed system does not pose restrictions on year round vehicular access and promotes safe chemical deliveries to the pump station. It is not anticipated that the proposed operation and maintenance activities will pose risk to public safety.

Estimated Budget

Below is a table of the required maintenance tasks, the frequency and anticipated cost. The Grafton Water District staff will be responsible for regular maintenance along the access road and gravel areas, and will not introduce additional costs.

Estimated Maintenance Expenses

Pavement and Gravel Areas		
Inspect	4 times yearly	Time and labor
Remove Organic Debris	As needed	Time and labor
Rake/Sweep/Add Gravel	As needed	Time and labor
General Maintenance		
Vegetation management	As needed	Time and labor

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