Attachment 1: Narrative, Location Map, and Soils Map
Faith's Toyota Ford

1. **Introduction**

DeWolfe Engineering Associates, PC is writing on behalf of Faith's Toyota Ford to apply for a State Stormwater Discharge Permit pursuant to General Permit 3-9050 for the above referenced project. There is an existing stormwater permit for the property, 6532-9050.

2. **Project Description**

The proposed Faith's Toyota Ford Redevelopment project is located at 6896 US Route 5 in Westminster. The proposed project is the construction of a new 29,900 square foot automobile dealership and service facility with parking improvements at the existing Faith's Toyota Ford facility in Westminster, Vermont. The project will also include new on-site water and sewer services, and stormwater treatment. Once the new facility is complete, the existing facility will be removed and the area redeveloped for additional parking.

The project will result in the construction of 1.998 acres of new impervious surfaces and redevelopment of 2.382 acres of existing impervious surfaces. There are 0.567 acres of existing, non-jurisdictional, impervious. The existing permit covered an impervious expansion of 0.47 acres which are treated in an infiltration trench which is to be removed. The 0.47 acres will be redeveloped, and treated as new impervious in this application.

Permit coverage is required under jurisdiction of stormwater management rules – Environmental Protection Rules, Chapter 22 -107 (b)(3*) "*To commence the expansion of existing impervious surface by more than 5,000 square feet, such that the total resulting impervious surface is equal to or greater than one acre*".*

Due to the redevelopment of the previously developed site, we are planning to use a site balancing approach to treat a small portion of the expanded impervious area.

We are proposing to site balance 0.552 acres of new and redeveloped impervious from the north side of the building and the south end entrance which cannot be reasonably collected and treated. The project property has many overlapping environmental requirements for development, including that the majority of the site is within the floodplain of the Connecticut River. One of the floodplain requirements that applies due to Act 250 jurisdiction on the project is to provide compensatory storage for any proposed fill within the floodplain. The north side of the building drains by sheet flow to the steep side slopes necessary to elevate the building floor above the floodplain. At the bottom of the slopes are a swale that conveys off-site drainage around the site and a large basin that will provide compensatory flood storage. Similar to the existing condition in this area of the site, the flood storage basin does not discharge and any runoff that is collected will infiltrate. We cannot use

this basin as stormwater treatment as the compensatory flood storage is required to be provided separately from stormwater treatment storage.

At the north end of the site, there is a small area of expansion that drains directly to an existing swale that directs off site drainage around the site. There is not physical space to direct this runoff to the proposed stormwater treatment practice.

Collection and treatment of these areas would provide marginal benefits, especially when compared to the 3.823 acres of impervious that will be treated in the proposed infiltration basin.

The proposed stormwater treatment practice will treat 100% of the Water Quality Volume for all impervious which drains to it. The site balancing for the uncollected area is provided through the treatment beyond what is required for the redeveloped area. There is 2.24 acres of redeveloped area treated in the proposed stormwater treatment practice. Treating this area to 100% of the Water Quality Volume provides additional treatment equivalent to 1.12 acres of new impervious area.

Per the Application Requirements for Operational Stormwater Permits the area of site balancing is listed as "Existing for Permit Coverage – Treated to New Standards" on the Standards Compliance Workbook. This ensures that the flood control treatment standards (Channel Protection and Overbank Flood Protection) are met for the site balanced area. 0.567 acres of existing pavement will be resurfaced as part of the project with no change of grade or replacement of subbase, therefore this area has been listed as "Existing Impervious Area not for Permit Coverage". Since we are over-treating the proposed redevelopment, the uncollected new impervious in not listed under "Existing Impervious Area not for Permit Coverage" in order to correctly calculate treatment volumes as well as total site area based on the worksheet formulas.

3. Existing Condition

The project is located along US Route 5 in Westminster. The site slopes generally west to east toward existing railroad tracks and the Connecticut River. There is a box culvert under the railroad tracks which outlets to the river. Currently, there is an existing dealership building with paved drives and parking. The existing development is located on a plateau of sorts on the western half of the property and the eastern part of the property is undeveloped. A majority of the property is located within the 100-year flood plain.

The site drains generally to a single discharge point, the box culvert under the railroad tracks, however, most of the water which collects on site flows to a low area between the existing development and the tracks and infiltrates into the ground.

Slopes within the site area are generally flat with steeper slopes at embankments along the development down to the lower field area. Soil types within the site area include Agawam fine sandy loam (HYG B), and Ondowa fine sandy loam (HYG B).

The existing permit covered an impervious expansion of 0.47 acres on the northern end of the site which are treated in an infiltration trench at the bottom of the slope. This practice is proposed to be removed as part of this project. The impervious area currently treated by the infiltration trench will be treated as new for this project.

4. Proposed Stormwater System:

a) Description of Impervious Area:
   i) Existing Impervious Surfaces: 0.567 acres (not collected or treated)
   ii) New and Redeveloped Surfaces Treated by Site Balancing: 0.552 acres
   iii) Redeveloped Impervious Surfaces: 2.382 acres
   iv) New Impervious Surfaces for permit coverage: 1.998 acres

b) Receiving Body: S/N 001—Connecticut River

c) Fish Habitat Designation for Receiving Water: Cold

d) Description of compliance with each of the treatment standards in the 2017 VSMM including the treatment practices or waivers used to meet each of the following standards:

   i) Post-Construction Soil Depth and Quality Standard: Areas subject to the post construction soil depth and quality standard are designated on the project plans. There are several areas that are exempted from the standard because they are part of stormwater treatment practices, are impervious or are slopes greater than 33%. Note that much of the areas subject to the standard will be landscaped with plantings and mulch.

      The minimum topsoil depth is designated as 4 inches. Where topsoil will be removed, it will be stockpiled and used for final grading. Importing topsoil is allowed if sufficient topsoil is not available on the project site.

      Amendment may be necessary as the organic matter content is specified as being at least 4%. Compost utilized to amend the topsoil must have a C:N ratio below 25:1. It is specified that compost shall meet the definition of "compost" or meet the contaminant standards in the Vermont Solid Waste Management Rules.

   ii) Groundwater Recharge Standard: This standard is being met site-wide through the use of an infiltration basin. The Tv for this treatment practice is 1.058 acre-feet (ac-ft), which exceeds the site-wide recharge volume of 0.0583 ac-ft.

   iii) Water Quality Treatment Standard (WQ_V):
   S/N 001: Infiltration Basin

The infiltration basin is a Tier 1 practice and has been designed to treat and infiltrate all of the runoff that reaches the basin in the water quality (1") storm. The basin is sized to treat all existing, expanded, and redeveloped impervious within the watershed draining to the practice. A treatment volume of 1.058 ac-ft is provided in the basin (based on meeting the Qp10 requirement with the Hydrologic Condition Method). This greatly exceeds the required WQv of 0.2994 ac-ft. A pre-treatment forebay with a volume of 0.194 ac-ft is provided (64.7% of the water quality volume and 59.9% of the water quality volume of the watershed of the basin). The infiltration of the water quality storm ends at 26 hours.

Two test pit and percolation tests were performed at the site on April 19th and 20th, 2022. Both test pits and percolation tests were completed in the area of the infiltration basin.

Test Pit #1 was dug to nine feet in depth with no observed evidence of seasonal high groundwater table (SHGWT). The test pit was dug at approximate elevation 241.3'; therefore, SHGWT is lower than 232.3'. The bottom of the infiltration basin is 238.5', providing at least 6' of separation to SHGWT. Test Pit #2 was dug to nine feet in depth with no observed evidence of seasonal high groundwater table (SHGWT). The test pit was dug at approximate elevation 241.4'; therefore, SHGWT is lower than 232.4'. The bottom of the infiltration basin is 238.5', providing at least 6' of separation to SHGWT. Since there is at least 4' of separation to SHGWT, no groundwater mounding analysis is provided. See attached test pit logs.

Both percolation tests were performed adjacent to the test pits using the Borehole Infiltration Test method as described in Section 4.3.3.2.5 of the Manual except the pre-soak was performed using a modified Portland Method and Reduction Factor Method. Percolation Test #1 resulted in an average drop of 11 in/hr while Percolation Test #2 was 33 in/hr. DeWolfe has taken the lower of the two rates (11 in/hr) with a safety factor of two and used a value of 5.5 in/hr to model exfiltration from the infiltration basin. See attached infiltration test results

iv) Channel Protection Standard (CP_V):
S/N 001: CPv met through the Hydrologic Condition Method. A treatment volume of 1.058 ac-ft is provided in the basin (based on meeting the Qp10 requirement with the Hydrologic Condition Method) which exceeds the required treatment volume of 0.2946 ac-ft. There is no discharge from the basin in the 1-year storm.

v) Overbank Flood Protection Standard (Q_{P10}):
S/N 001: QP10 is met through the Hydrologic Condition method. The basin is sized to infiltrate the required QP10 Tv. The basin provides 1.058 ac-ft of treatment which exceeds the required 0.5458 ac-ft. The entire 10-year storm draining to the infiltration basin is managed on site and does not discharge to the existing box culvert (due to

elevation differences). The infiltration overflow is discharged to the low area north of the basin where it will continue to infiltrate.

vi) Extreme Flood Protection Standard (Q_{P100}):
QP100 is waived for S/N 001 as there is less than 10 acres of impervious area property-wide.

The following items are included for review:

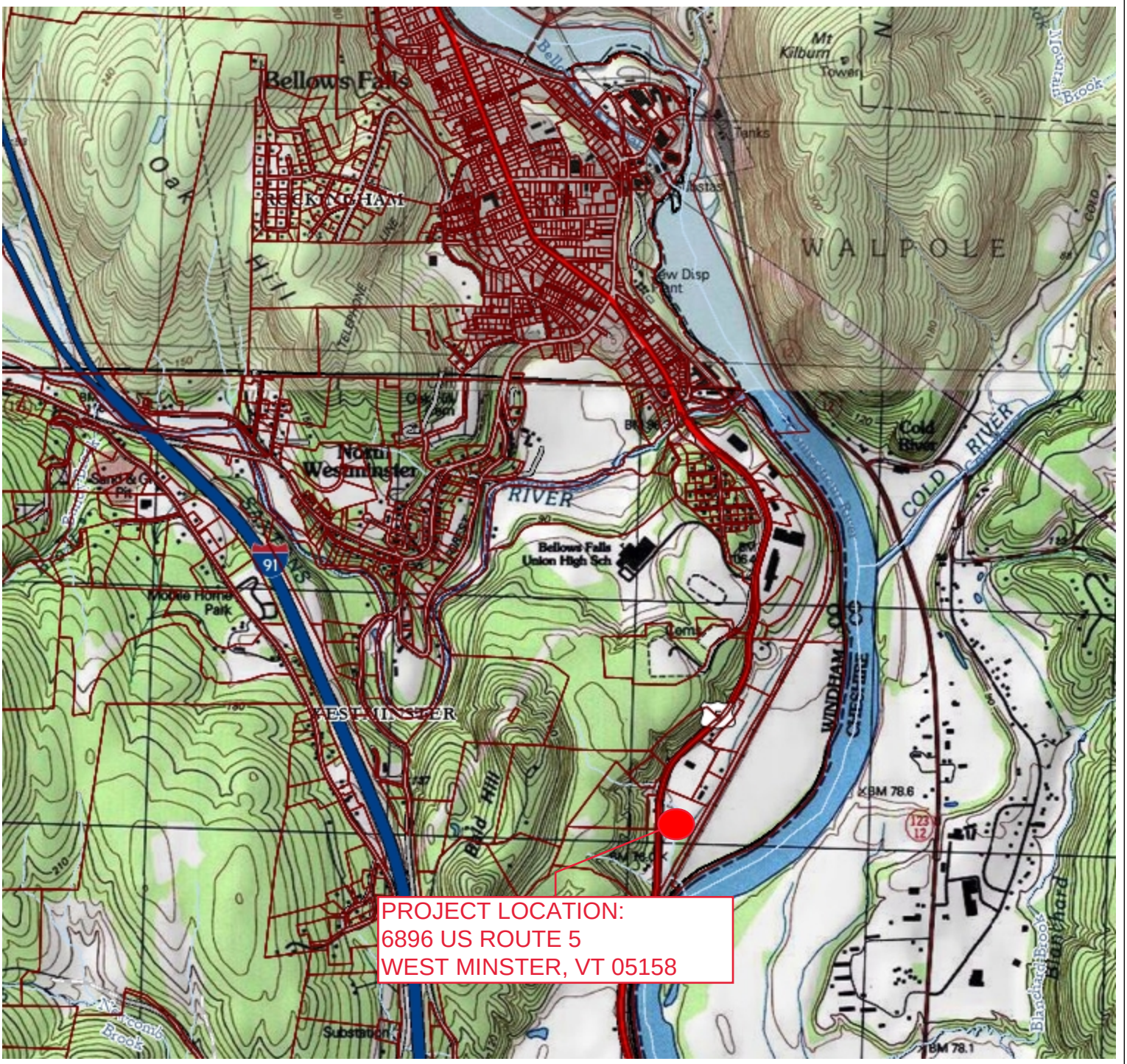
- **eNOI form submitted via ANROnline**
- **Narrative:** Narrative, Location Map, Soils Map, Test Pit Logs, Infiltration Test Results
- **Workbooks:** STP Selection Tool and Standards Compliance Workbook
- **Worksheets:** STP and Waiver Worksheets, grouped by discharge point
- **Modeling:** Runoff modeling and calculations demonstrating compliance with the applicable treatment standards.
- **Plans:** Pertinent plan sheets with all required information outlined in the Application Requirements for Operational Permits Document.
- **Plan Set Reference:** List of all plans applicable to the stormwater management design, operational standards, and application requirements.

VERMONT

Natural Resources Atlas

Vermont Agency of Natural Resources

vermont.gov



LEGEND

- Parcels (standardized)
- Roads
  - Interstate
  - US Highway; 1
  - State Highway
  - Town Highway (Class 1)
  - Town Highway (Class 2,3)
  - Town Highway (Class 4)

NOTES

Map created using ANR GIS mapping techology.

1: 24,000

May 25, 2022

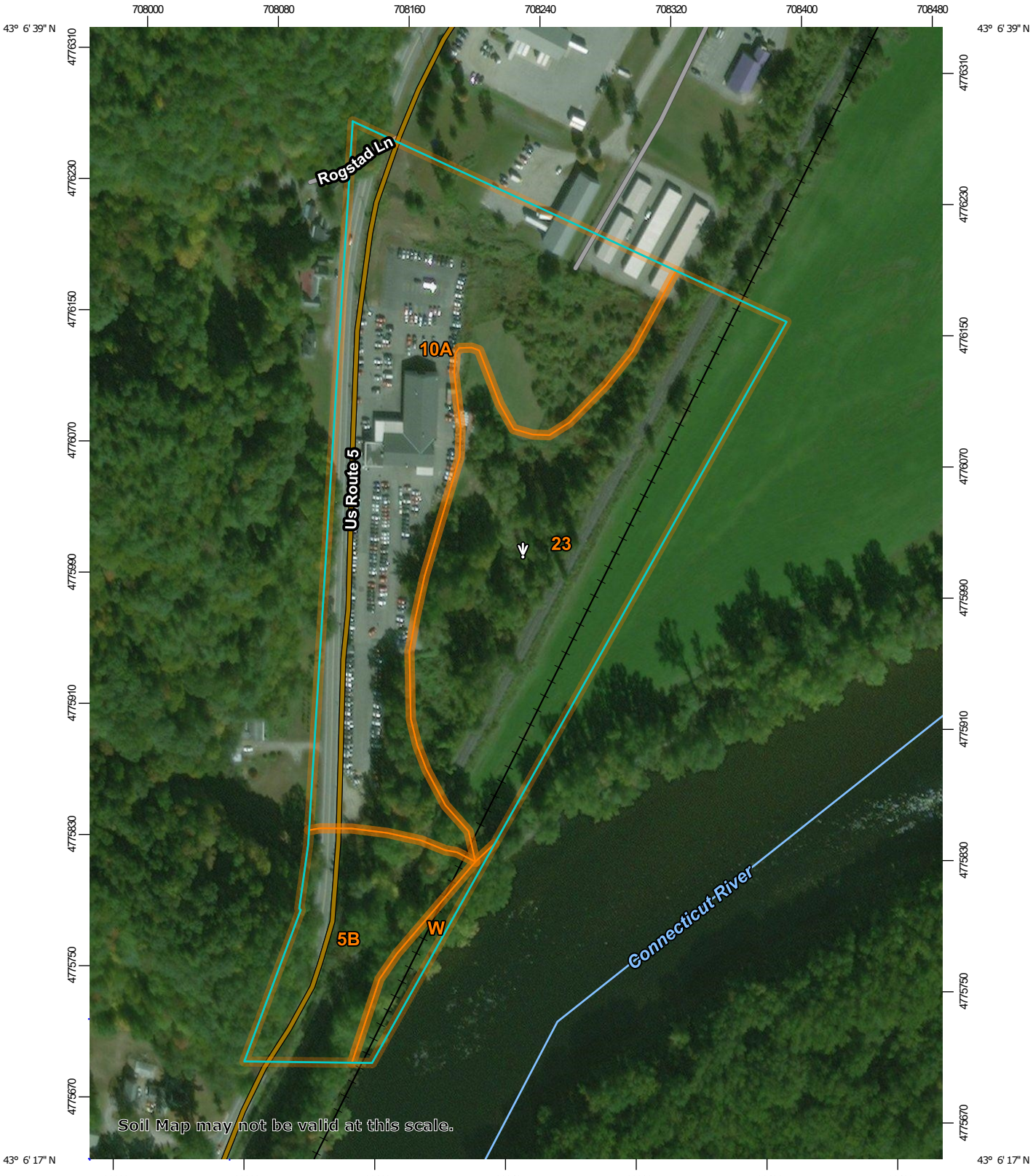
1,219.0 0 610.00 1,219.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

1" = 2000 Ft. 1cm = 240 Meters

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Soil Map—Cheshire County, New Hampshire, and Windham County, Vermont
(Soil WaterFeatures)



Map Scale: 1:3,360 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 45 90 180 270

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
W	Water	0.5	2.3%
Subtotals for Soil Survey Area		**0.5**	**2.3%**
Totals for Area of Interest		**22.5**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
5B	Windsor loamy sand, 3 to 8 percent slopes	2.6	11.7%
10A	Agawam fine sandy loam, 0 to 3 percent slopes	10.4	46.3%
23	Ondawa fine sandy loam, 0 to 3 percent slopes, occasionally flooded	8.9	39.7%
Subtotals for Soil Survey Area		**22.0**	**97.7%**
Totals for Area of Interest		**22.5**	**100.0%**

DEA Job #21051C

Faith Automotive
Westminster, Vermont

			Test pit #	**Infiltration Area, TP1**		Date:	4/19/2022
	Weather:	40 deg F, Partly cloudy				Time:	1:00 PM
	Ground slope:					Logged by:	JJS
Approx Elevation	Base elevation of layer (inches from surface =0")	Structure	Consistence	Texture	Color	Redox Features	Comments
234.72	0						
233.72	12	Granular	Friable	Silty Clay	2.5Y 3/2 (very dark grayish brown)		
232.72	24	Subangular Blocky	Friable	Silty Clay	2.5Y 3/2 (very dark grayish brown)		
231.22	42	Subangular Blocky	Friable	Clay	2.5Y 4/2 (weak red)		
229.72	60	Subangular Blocky	Friable	Clay Loam	2.5Y 4/2 (weak red)		
225.72	108	Subangular Blocky	Friable	Silty Clay	2.5Y 3/3 (dark reddish brown)		
General Comments	Soils are very easy to dig by hand. Rapidly over excavated more than 24 inches with post hole digger from 4'-6' below ground surface. Very little pressure between thumb and finger requred to crumble peds. No seeps to 9 foot depth of excavation. No indication of mottling, uniform dark olive colors with very little variance throughout the excavation.						

DEA Job #21051C

Faith Automotive
Westminster, Vermont

			Test pit #	**Infiltration Area, TP2**		Date:	4/19/2022
	Weather:	40 deg F, Partly cloudy				Time:	1:00 PM
	Ground slope:					Logged by:	JJS
Approx Elevation	Base elevation of layer (inches from surface =0")	Structure	Consistence	Texture	Color	Redox Features	Comments
234.63	0						
233.46	14	Granular	Friable	Silty Clay	2.5Y 3/2 (very dark grayish brown)		
231.63	36	Subangular Blocky	Friable	Clay	2.5Y 3/2 (very dark grayish brown)		
230.13	54	Subangular Blocky	Friable	Clay Loam	2.5Y 4/2 (weak red)		
225.63	108	Subangular Blocky	Friable	Silty Clay	2.5Y 4/2 (weak red)		
General Comments		Very similar to Infiltration area TP1.					

Date: April 20, 2022
Job Number: 21051
Job Name: Faith's Ford/Toyota

Infiltration Test Data Sheet

Civil & Structural Engineers
DeWolfe ENGINEERING ASSOCIATES
PROFESSIONAL CORPORATION

Infiltration Test #: 1

Drop Distance: 24 in

General Location: Between parking and RR tracks, southern most pit

INFILTRATION TEST	1	2	3	4
Start Time	10:31	11:31	12:31	13:31
End Time	11:31	12:31	13:31	14:31
Duration	1:00	1:00	1:00	1:00
Drop Height (in)	11 in	11 in	11 in	11 in
AVERAGE DROP (IN/HR)	11 in / Hour			

General Notes:

Completed By: Riuchard B Colburn III

Date: April 20, 2022
Job Number: 21051
Job Name: Faith's Ford/Toyota

Infiltration Test Data Sheet

Civil & Structural Engineers
DeWolfe ENGINEERING ASSOCIATES
PROFESSIONAL CORPORATION

Infiltration Test #: 2

Drop Distance: 24 in

General Location: Between parking and RR tracks, northern most pit

INFILTRATION TEST	1	2	3	4
Start Time	10:40	11:21	12:05	12:49
End Time	11:21	12:05	12:49	13:33
Duration	0:41	0:44	0:44	0:44
Drop Height (in)	24 in	24 in	24 in	24 in
AVERAGE DROP (IN/HR)	33 in / Hour			

General Notes:

Completed By: Riuchard B Colburn III