

Site Engineering Report

Stone Residence
108 Five Mile River Road
Darien, Connecticut

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TOWN OF DARIEN
PLANNING & ZONING

Prepared for:

Harlan & Susan Stone
108 Five Mile River Road
Darien, CT 06820

Date Prepared:

September, 2020

Prepared by:

DiVesta Civil Engineering Associates, Inc.

51 Painter Ridge Road
Roxbury, Connecticut 06783
(860) 354-4226
dceainc@charter.net

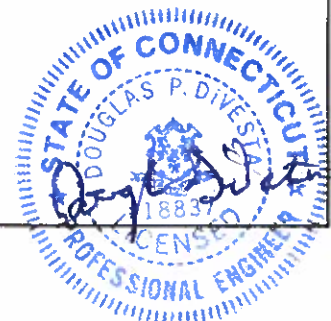


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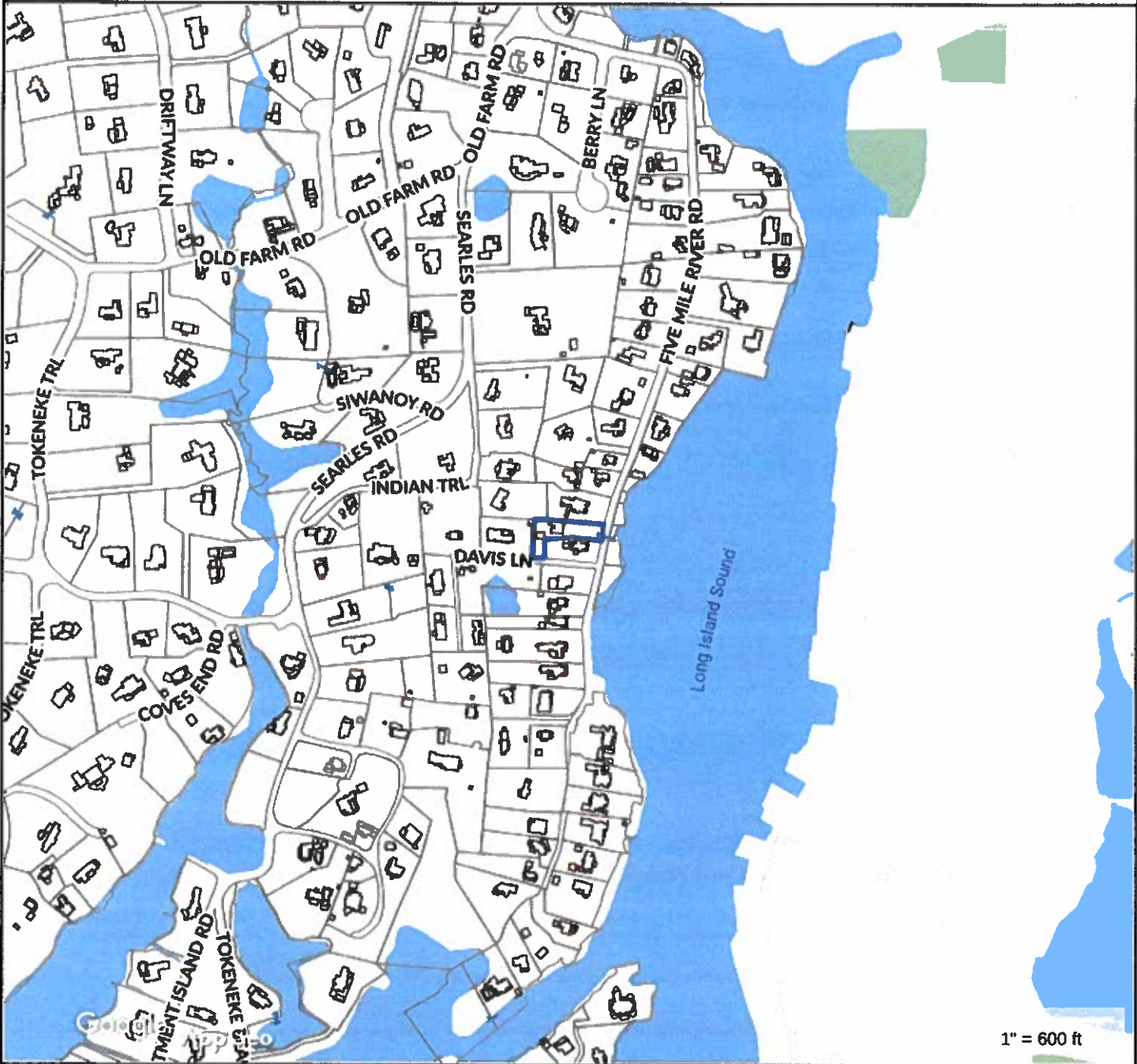
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DiVesta Civil Engineering Associates, Inc.

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Roxbury, Connecticut 06783
(860) 354-4226
dceainc@charter.net

108 Five Mile River Road



Property Information

Property ID 05470
 Location 108 FIVE MILE RIVER ROAD
 Owner STONE HARLAN S



**MAP FOR REFERENCE ONLY
 NOT A LEGAL DOCUMENT**

Town of Darien, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 8/1/2019
 Data updated 8/1/2019

Introduction

This report has been prepared to present technical information in support of the application for the construction of an in-ground pool and patios, utilizing the existing pre cast galleries as the sub-surface bio-retention area and grading associated with the construction of the pool and patios at 108 Five Mile River Road, located in the R-1/2 zone of Darien.

Existing Site Conditions

The subject property is located at 108 Five Mile River Road. The property has a total lot area of .522 ± acres or 22,772± square feet. Currently there is an existing single family dwelling on the property along with a detached garage. Access to this property is via asphalt driveway located on Davis Lane.

The property is bordered by residential properties on the north, south and west and Five Mile River road to the east.

The existing house is located at the high point in the property. The property slopes mildly to the east towards the Five Mile River, to the south towards another property of the owner and Davis Lane and to the west towards other residential properties. The property consists of manicured lawn with mature landscaping throughout.

The coastal area management review line bisects the lower portion of the property located parallel to Five Mile River Road. A portion of the property falls within the one percent change flood hazard zone.

Project Description

The proposal for this site consists of constructing an in-ground pool and patios associated with the pool. Other work associated with this project will be site grading and utilizing the existing pre cast galleries as the subsurface bio-retention area for the stormwater management system to handle the water quality volume.

Stormwater Management Facilities

Existing Site Runoff Characteristics

Currently the runoff from the house roof areas discharges onto the ground then sheet flows in a westerly, southerly and easterly direction which ultimately flows to the Five Mile River.

Developed Condition Site Runoff Characteristics

The proposed grading will not change the overall drainage pattern. Once the regrading is completed the drainage pattern will be the same. Due to the property being located adjacent to the Five Mile River and in the lower reaches of the watershed for the Five Mile River, detention is not required. We are proposing to collect the water quality

volume from the proposed pool and patios and treat the water quality volume in the existing four foot by four foot pre cast galleries that were once used for the septic system on the property. The water quality volume consists of the first inch of runoff. All other runoff from the site will sheet flow onto the ground and ultimately flow to the Five Mile River.

The water quality volume for the proposed pool and patios will require 101.3 cubic feet of storage for the first inch of runoff. Utilizing 56 linear feet of the existing pre cast galleries for the subsurface bio-retention area will have a storage volume below the inlet invert of 3,226 cubic feet. This volume is equal to or greater than the water quality volume.

Per Section 880 of the Darien Zoning Regulations we have requested a waiver of the requirements of Section 880 for a detailed stormwater management plan and drainage plan. Please see the attached letter.

Site Utilities

Water Supply

The site is currently served by the existing municipal water supply located within Nearwater Lane.

Sanitary Sewer

The site is currently served by an existing septic system. The septic tank will be pumped and crushed. The leaching field which consists of 72 linear feet of four foot by four foot pre cast galleries will be pumped and used for the water quality volume. A grinder pump will be installed and connected to the sanitary sewer main located within Five Mile River Road.

Sedimentation & Erosion Control Narrative

Reference is made to the Sedimentation and Erosion Control Plan drawing, which, along with this text is included in the report, part of the Sedimentation and Erosion Control Plan for this project. All erosion controls are to follow the 2002 CT Guideline for Soil Erosion and Sediment Control.

Sedimentation and erosion controls for the lot will consist of silt fence placed on the down gradient side of all cut and fill areas. Sedimentation and erosion controls shown on the plan are specific to this property.

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Appendix A:
**Stormwater Management
Operation and Maintenance
Plan**

DiVesta Civil Engineering Associates, Inc.

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dceainc@charter.net

**Stormwater Management
Operation and Maintenance Plan
For**

**108 Five Mile River Road
Darien, Connecticut**

September 18, 2020

The object of the stormwater management operation and maintenance plan is three fold; 1) is to collect the runoff from the pool patios and convey the runoff into the subsurface bio-retention system, 2) once the runoff has been collected and conveyed to the subsurface bio-retention system the runoff will infiltrate into the surrounding soil, 3) the treatment system will detain the water quality volume of runoff from the pool patios before infiltrating into the surrounding soil before discharging into the Five Mile River Road.

Maintenance Measures

1. Inspect the channel drains and junction boxes sumps annually for any accumulation of sediment. If there is any accumulated sediment it shall be removed by hand.
2. Inspect annually the conveyance piping to ensure that they are clear and free of buildup debris and that there are no blockages and that the pipes are free flowing.
3. Removal of any accumulated sediment will ensure that the bio-retention systems will function properly.

Stone Residence

Appendix B:
**Water Quality Volume
Calculations**

DiVesta Civil Engineering Associates, Inc.

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dceainc@charter.net

Location:
Stone Residence
108 Five Mile River Road
Darien, CT

Dated: 09/18/20

Water Quality Volume Calculations

Water Quality Volume (WQV) = ((1") (R) (A)) / 12

Where:

A = total area in square feet

R = 0.05 + 0.009 (I)

I = percent impervious cover

Proposed Pool, Pool Patio: Available Storage = 3,226 cf

A = 1,344 sf

I = 95%

R = 0.05 + 0.009 (95%)

R = 0.905

WQV = ((1") (R) (A)) / 12

WQV = ((1") (0.905) (1,344 sf)) / 12

WQV = 101.4 cu-ft (required)

Volume of Existing 4'x4' Concrete Galleries:

Volume of Galleries = 4' x 4' x 3' = 48 cf

Volume of Stone = 2 x (1' x 4' x 3') = 24 cf

40 % voids in stone = .40 x 24 cf = 9.6 cf

Total Volume of galleries and Stone per unit = 57.6 cf

Total Volume of storage in 56 linear feet of galleries = 3,226 cf

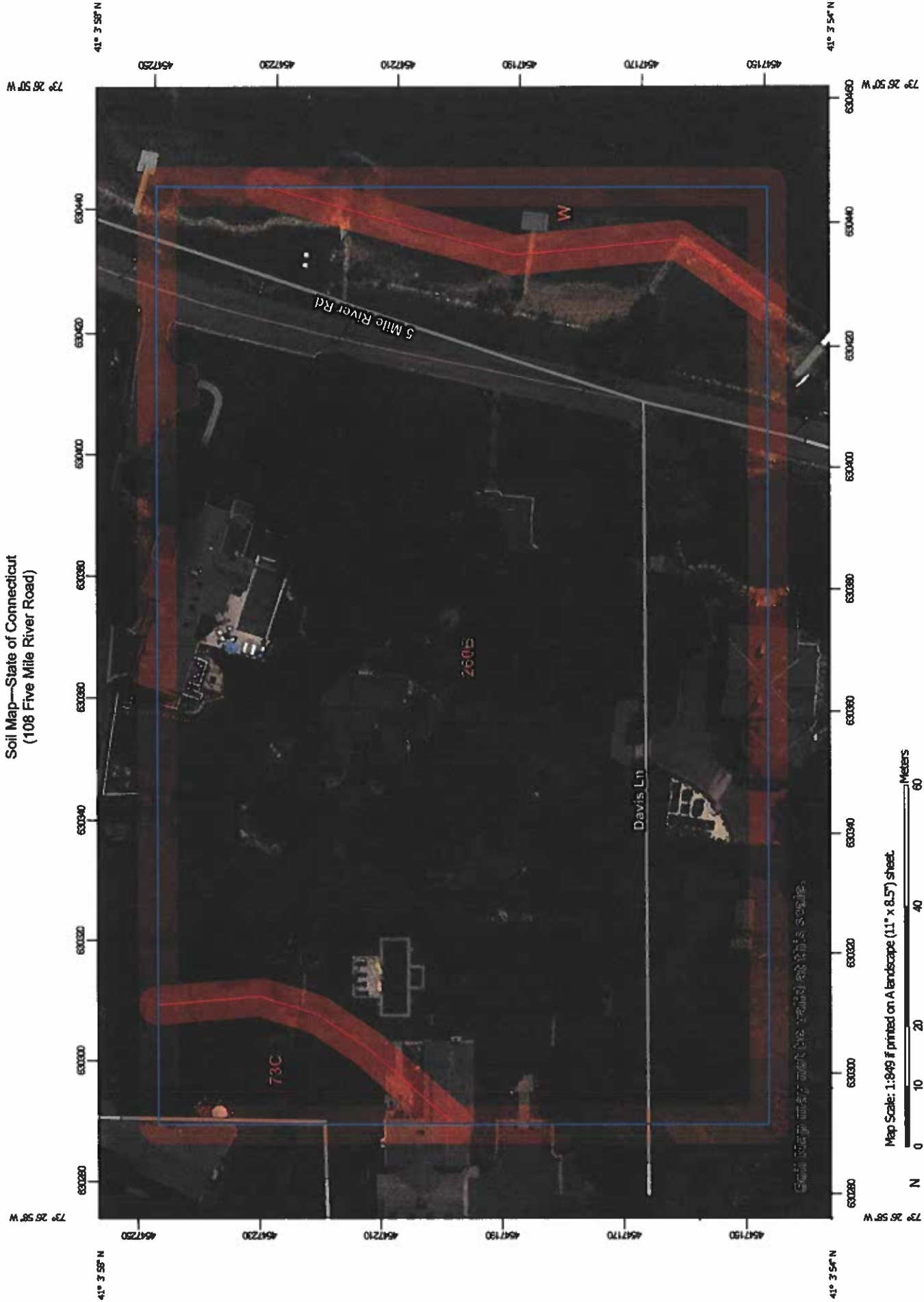
Stone Residence

Appendix C:
Web Soils

DiVesta Civil Engineering Associates, Inc.

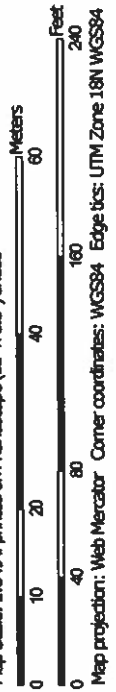
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Soil Map—State of Connecticut
(108 Five Mile River Road)



Soil map may not be valid at this scale.

Map Scale: 1:849 if printed on A landscape (11" x 8.5") sheet.



MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

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

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

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










































Soil Survey Area: State of Connecticut
Survey Area Data: Version 20, Jun 9, 2020

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

Date(s) aerial images were photographed: Jul 21, 2014—Aug 27, 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 LEGEND

 Area of Interest (AOI)	 Spoil Area
 Soils	 Stony Spot
 Soil Map Unit Polygons	 Very Stony Spot
 Soil Map Unit Lines	 Wet Spot
 Soil Map Unit Points	 Other
 Special Point Features	 Special Line Features
 Blowout	 Water Features
 Borrow Pit	 Streams and Canals
 Clay Spot	 Transportation
 Closed Depression	 Rails
 Gravel Pit	 Interstate Highways
 Gravelly Spot	 US Routes
 Landfill	 Major Roads
 Lava Flow	 Local Roads
 Marsh or swamp	 Background
 Mine or Quarry	 Aerial Photography
 Miscellaneous Water	
 Perennial Water	
 Rock Outcrop	
 Saline Spot	
 Sandy Spot	
 Severely Eroded Spot	
 Sinkhole	
 Slide or Slip	
 Sodic Spot	

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	0.2	4.8%
260B	Charlton-Urban land complex, 3 to 8 percent slopes	3.5	90.7%
W	Water	0.2	4.5%
Totals for Area of Interest		3.8	100.0%

State of Connecticut

260B—Charlton-Urban land complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2xf7
Elevation: 0 to 1,020 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

Charlton and similar soils: 40 percent
Urban land: 35 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton

Setting

Landform: Ridges, hills, ground moraines
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw - 7 to 22 inches: gravelly fine sandy loam
C - 22 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B

Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Urban Land

Typical profile

M - 0 to 10 inches: cemented material

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 0 inches to manufactured layer

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low
(0.00 to 0.00 in/hr)

Available water capacity: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydrologic Soil Group: D

Hydric soil rating: Unranked

Minor Components

Chatfield

Percent of map unit: 10 percent

Landform: Ridges, hills

Landform position (two-dimensional): Backslope, shoulder, summit

Landform position (three-dimensional): Crest, side slope, nose slope

Down-slope shape: Convex

Across-slope shape: Convex, linear

Hydric soil rating: No

Leicester

Percent of map unit: 5 percent

Landform: Hills, depressions, drainageways, ground moraines

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave, linear

Across-slope shape: Concave

Hydric soil rating: Yes

Sutton

Percent of map unit: 5 percent

Landform: Hills, ground moraines

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

Udorthents

Percent of map unit: 5 percent

Landform: Ridges

Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: State of Connecticut
Survey Area Data: Version 20, Jun 9, 2020