DRAINAGE REPORT
117 Beachside Avenue
Westport, CT

- PREPARED FOR –

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- PREPARED BY -

The Huntington Company, LLC
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1. Site Description:

The subject property is a 0.675±-acre parcel of land located on the north side of Beachside Avenue in Westport, Connecticut.

2. Existing Conditions:

The site currently supports a single-family two-story residence with front porch, front sidewalk, circular asphalt driveway, and rear patio. The residence is served by public water and on-site septic. The property slopes from south to north, with the northern portion containing wetlands and falling within FEMA Firm Zone AE (Base Flood Elevation 13) and the W.P.L.O. boundary. Upland soils on the property are listed as Agawam Fine Sandy Loam, soil type "B" as per the NRCS Soils Map. The wetland soils on the property area listed as Westbrook mucky peat, soil type "D" as per the NRCS Soils Map. Due to the proximity to Long Island Sound, the site is subject to tidal fluctuations.

3. Proposed Conditions:

The proposed development includes removal of the existing residence and driveway, and construction of a new two-story single-family residence with a front porch, rear deck, and new driveway. Under proposed conditions, there will be a reduction of impervious area of approximately 450± sf. The property will continue to be served by public water, natural gas and on-site septic.

To manage runoff from new impervious surfaces and meet water quality volume requirements, a rain garden and subsurface stormwater detention system consisting of underground gallery units will be installed. The systems will detain runoff and provide the water quality volume storage from the proposed house and driveway.

4. Design Objectives:

The stormwater detention system has been designed to meet the Town of Westport's requirements for site drainage. The property is tidally influenced and therefore requires the storm drainage to be designed for storage of the water quality volume or first 1" of runoff.

7. Conclusion:

A proposed rain garden and (10) 12" high H-20 concrete gallery units embedded in washed stone will be more than sufficient to meet the design objectives (See location and details of the proposed rain garden and detention system on the site plan). Roof runoff is fairly clean, and the roof area of the proposed residence and porch will be routed through the subsurface detention system. The driveway runoff will be collected vis a 2' x 2' cb with 2' sump, for settling of sediment, prior to being discharged into the proposed rain garden.

In conclusion, the proposed rain garden and stormwater detention system effectively provide the required water quality volume storage, as detailed in *Appendix A*. Furthermore, the project does not result in any increase in impervious surface area and there is also no increase in impervious cover with a direct hydraulic connection to the Town of Westport storm drainage system/waterways or Long Island Sound as outlined in *Appendix C*.

APPENDIX A – Water Quality
Volume Calculations

WATER QUALITY VOLUME DESIGN CALCULATIONS
FOR #117 BEACHSIDE DRIVE

Water Quality Volume (WQV):

WQV = 1.0”(R)(A)/12
R = Volumetric Runoff Coefficient = 0.05+0.009(I)
A= Disturbed Lot Area = 12,500 ft^2
Impervious Coverage = 4,508 ft^2
I = Impervious Coverage / A = 4,508 / 12,500 = 36.06 %

Water Quality Volume Calculations:
R = 0.05+0.009(36.06) = 0.37454
A = 12,500 ft^2
WQV = 1.0” (0.37454) (12,500 ft^2) / 12 = = 390 ft^3

Water Quality Volume Required = 390 ft^3

Volume retained within Rain Garden (1P) up to the overflow drain is 160 ft^3

Volume retained within (10) 12” High Concrete Galleries, (2P) up to the overflow drain is 231 ft^3.

Total Storage Volume = 160 ft^3+231 ft^3 = 391 ft^3 > Water Quality Volume = 390 ft^3

APPENDIX B
NRCS Soils Map

Soil Map—State of Connecticut, Western Part
(117 Beachside Avenue)

Map Scale: 1:1,160 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 15 30 60 90

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N 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 1:12,000.

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, Western Part
Survey Area Data: Version 2, Aug 30, 2024

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

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
29A	Agawam fine sandy loam, 0 to 3 percent slopes	1.3	24.7%
29B	Agawam fine sandy loam, 3 to 8 percent slopes	1.6	30.3%
38C	Hinckley loamy sand, 3 to 15 percent slopes	0.5	8.7%
99	Westbrook mucky peat, 0 to 2 percent slopes, very frequently flooded, low halinity	1.2	22.1%
229B	Agawam-Urban land complex, 0 to 8 percent slopes	0.2	3.5%
W	Water	0.6	10.6%
Totals for Area of Interest		**5.4**	**100.0%**

State of Connecticut, Western Part

29A—Agawam fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tyqw
Elevation: 0 to 1,040 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Agawam

Setting

Landform: Kames, moraines, outwash terraces, outwash plains, kame terraces
Landform position (two-dimensional): Backslope, shoulder, footslope, summit
Landform position (three-dimensional): Side slope, crest, tread, riser, rise, dip
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from gneiss, granite, schist, and/or phyllite

Typical profile

Ap - 0 to 11 inches: fine sandy loam
Bw1 - 11 to 16 inches: fine sandy loam
Bw2 - 16 to 26 inches: fine sandy loam
2C1 - 26 to 39 inches: loamy fine sand
2C2 - 39 to 55 inches: loamy fine sand
2C3 - 55 to 65 inches: loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 15 to 35 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Very 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 supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Ninigret

Percent of map unit: 5 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Windsor

Percent of map unit: 4 percent
Landform: Outwash plains, outwash terraces, deltas, dunes
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Hinckley

Percent of map unit: 3 percent
Landform: Outwash plains, eskers, kames, deltas
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Walpole

Percent of map unit: 3 percent
Landform: Outwash plains, depressions, outwash terraces, depressions, deltas
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: State of Connecticut, Western Part
Survey Area Data: Version 2, Aug 30, 2024

State of Connecticut, Western Part

29B—Agawam fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tyqx
Elevation: 0 to 820 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Agawam

Setting

Landform: Outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist and/or phyllite

Typical profile

Ap - 0 to 11 inches: fine sandy loam
Bw1 - 11 to 16 inches: fine sandy loam
Bw2 - 16 to 26 inches: fine sandy loam
2C1 - 26 to 45 inches: loamy fine sand
2C2 - 45 to 55 inches: loamy fine sand
2C3 - 55 to 65 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 15 to 35 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Medium
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 to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 5 percent
Landform: Outwash terraces
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Ninigret

Percent of map unit: 4 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Hinckley

Percent of map unit: 3 percent
Landform: Eskers
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Walpole

Percent of map unit: 3 percent
Landform: Depressions, outwash terraces, depressions, deltas, outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: State of Connecticut, Western Part
Survey Area Data: Version 2, Aug 30, 2024

State of Connecticut, Western Part

99—Westbrook mucky peat, 0 to 2 percent slopes, very frequently flooded, low halinity

Map Unit Setting

National map unit symbol: 31j9r
Elevation: 0 feet
Mean annual precipitation: 30 to 72 inches
Mean annual air temperature: 44 to 61 degrees F
Frost-free period: 180 to 204 days
Farmland classification: Not prime farmland

Map Unit Composition

Westbrook and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Westbrook

Setting

Landform: Tidal marshes
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Partly-decomposed herbaceous organic material over loamy estuarine deposits

Typical profile

Oese - 0 to 19 inches: mucky peat
Cseg - 19 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 3.0
Available water supply, 0 to 60 inches: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: D
Ecological site: R144AY001CT - Tidal Salt Low Marsh mesic very frequently flooded
Hydric soil rating: Yes

Minor Components

Barn island
Percent of map unit: 10 percent
Landform: Tidal marshes
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R144AY001CT - Tidal Salt Low Marsh mesic very frequently flooded, R144AY002CT - Tidal Salt High Marsh mesic very frequently flooded
Hydric soil rating: Yes

Ipswich
Percent of map unit: 5 percent
Landform: Tidal marshes
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R144AY001CT - Tidal Salt Low Marsh mesic very frequently flooded
Hydric soil rating: Yes

Calves
Percent of map unit: 3 percent
Landform: Tidal marshes
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R144AY001CT - Tidal Salt Low Marsh mesic very frequently flooded
Hydric soil rating: Yes

Oyster river
Percent of map unit: 2 percent
Landform: Tidal marshes
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R144AY001CT - Tidal Salt Low Marsh mesic very frequently flooded, R144AY002CT - Tidal Salt High Marsh mesic very frequently flooded

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: State of Connecticut, Western Part
Survey Area Data: Version 2, Aug 30, 2024

APPENDIX – MS4 Impervious Cover Reduction Worksheet

Town of Westport Department of Public Works
Town Hall, 110 Myrtle Ave.
Westport, Connecticut 06880
(203) 341-1120
By: The Huntington Company, LLC
Dated: 08/23/25
Revised:

MS4 Impervious Cover Reduction Worksheet

Address: 117 Beachside Avenue, Westport, CT
GIS ID #: I06-003-000
Lot Area: 29,402 SF

Existing Conditions

	Area (SF)	
Impervious Items	**Disconnected**	**Connected**
Ex. Bldg Cov.	2,855	0
Ex. Driveway	2,164	0
Ex. Walk & Patio	627	0
	0	0
Other	0	0
Totals	**5,646**	**0** **SF**

Proposed Conditions

	Area (SF)	
Impervious Items	**Disconnected**	**Connected**
Pr. Bldg Cov.	3,175	0
Pr. Driveway	1,442	0
Pr. Front Walk	220	0
Pr. Mech, Pad	32	0
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
	0	0
	0	
	0	0
Totals	**4,869**	**0** **SF**

Connected Impervious Area Reduction

Existing Connected Impervious Cover	0	SF
Proposed Connected Impervious Cover	0	SF
Reduction	0	SF
Percent Reduction	**0.0%**	