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Stormwater Report

Kenneth and Elizabeth Burdick

152 South Shore Road

Salisbury, CT



March 21, 2025 Revised May 19, 2025 JN: 4010218.22157.1

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- F. Impervious Coverage Calculations

Introduction

The owners of the parcel located at 152 South Shore Road intend to demolish and remove the existing house, garage, subsurface sewage disposal system, and the retaining walls located outside the 75-foot upland review area. Stormwater runoff ultimately reaches Lake Washining, which borders the parcel on the northerly side.

Site Description

The project is located on an existing fully developed parcel at the southern shore of Lake Washining. The proposed development will take place within the currently developed areas generally described as follows:

- The property lies in the R-20 Zone and the Lake Protection Overlay District.
- The parcel currently is predominately covered by buildings and lawn (grass) with some mature trees.
- There are Open Water wetlands (Lake Washining) on the northerly side of the site.
- The property generally slopes northerly toward the lake at varying grades of 2% to 15%.
- South Shore Road crosses the southern portion of the Parcel.

Stormwater runoff leaves the site as shallow concentrated flow to the west (Drainage Area-1), to the east (Drainage Area-3, and north (Drainage Area-2). The runoff discharge from these three areas enter to Lake Washining. A small portion on the southern end of the site (Drainage Area-4) flows to an existing catch basin located in South Shore Road which discharges to a swale on the neighboring property and eventually discharges to Lake Washining.

Proposed Project

The project involves the demolition discussed above and the construction of a new, three-bedroom dwelling with an attached garage, decks, and associated utilities. A new subsurface sewage disposal system will be constructed, and the existing driveway will be reconfigured.

Stormwater Management Practices

The project uses the following stormwater management practices:

• Low Impact Development: The project is designed using Low Impact Development techniques, such as keeping site disturbance to the minimum required and reducing the existing impervious surfaces to the extent practical. Table-1 below and the Watershed Maps in Appendix A present additional details for both existing and proposed site conditions.

- Rain Gardens: The site uses two rain gardens to capture and treat the runoff from most of the rooftop and the gravel portion of the driveway.
- Maintaining Site Hydrology: The existing drainage patterns are maintained with runoff being directed to essentially the same locations as under pre-development conditions.
- Crushed Stone Border: A crushed stone border will be installed along the northeast side of the driveway to reduce erosion and promote infiltration.
- Changing a parking area with a gravel surface to a permeable stone surface.

Impervious Surfaces Summary

By reducing the total impervious surfaces by approximately 960 square feet (16.8%), the total site peak discharge rate for the proposed conditions two-year, ten-year, twenty-five-year and one-hundred-year design storms are less than the peak discharge rates for the existing conditions. The peak discharge rates for existing and proposed conditions are shown in Table-2, below. See Appendix B for runoff coefficient and peak flow calculations.

Peak Discharge Storm Summary						
Design Storm	Existing Discharge	Proposed Discharge	Proposed Change			
(Year)	(CFS)	(CFS)	(CFS)			
Analysis Point-1						
2	0.25	0.32	+0.07			
10	0.37	0.47	+0.10			
25	0.49	0.61	+0.12			
100	0.69	0.87	+0.18			
Analysis Point-2						
2	0.44	0.36	-0.08			
10	0.65	0.52	-0.13			
25	0.85	0.69	-0.16			
100	1.21	0.98	-0.23			
Analysis Point-3						
2	0.26	0.27	+0.01			
10	0.38	0.39	+0.01			
25	0.50	0.52	+0.02			
100	0.71	0.73	+0.02			
Analysis Point-4						
2	0.25	0.20	-0.05			
10	0.37	0.29	-0.08			
25	0.49	0.38	-0.11			
100	0.69	0.54	-0.15			
Entire Site						
2	1.21	1.14	-0.07			
10	1.77	1.67	-0.10			
25	2.32	2.20	-0.12			
100	3.30	3.12	-0.18			

Table-1: Existing and Proposed Peak Discharge Summary

Normally, we would not present the resulting flows to two significant digits as the modeling techniques are not that precise. In this case, because the flows are so small and the differences so minor, the flows are carried to the hundredths of CFS to demonstrate that the post development flow is at or below the predevelopment flow across the range of storm frequencies.

A. Watershed Maps





B. Runoff Coefficient and Peak Discharge Calculations



SUBJECT: Existing Conditions

Q = CIA

COMP. BY: TAP CHK. BY:

DATE: 05/19/25

Site Soils NRCS Hydrologic Soil Group: B

Peak Flow Rate by Rational Method

Rational:

A = Watershed Area (acres) C = Runoff Coefficient I = Rain Fall Intensity (In/Hr.) Q = Peak Discharge (cfs)

	Composite				
	Runoff	Drainage	Design	Rain Fall	Peak
Drainage Area Label	Coefficient	Area	Storm	Intensity	Discharge
		(Acres)	(Year)	(In/Hr)	(CFS)
Drainage Area-1	0.375	0.141	2	4.76	0.25
Drainage Area-2	0.473	0.197	2	4.76	0.44
Drainage Area-3	0.541	0.101	2	4.76	0.26
Drainage Area-4	0.702	0.076	2	4.76	0.25
				Total	1.21
Drainage Area-1	0.375	0.141	10	6.96	0.37
Drainage Area-2	0.473	0.197	10	6.96	0.65
Drainage Area-3	0.541	0.101	10	6.96	0.38
Drainage Area-4	0.702	0.076	10	6.96	0.37
				Total	1.77
Drainage Area-1	0.412	0.141	25	8.33	0.49
Drainage Area-2	0.520	0.197	25	8.33	0.85
Drainage Area-3	0.595	0.101	25	8.33	0.50
Drainage Area-4	0.772	0.076	25	8.33	0.49
				Total	2.32
Drainage Area-1	0.469	0.141	100	10.40	0.69
Drainage Area-2	0.591	0.197	100	10.40	1.21
Drainage Area-3	0.676	0.101	100	10.40	0.71
Drainage Area-4	0.877	0.076	100	10.40	0.69
				Total	3.30

-			
Drainage	Surface	Area (acres)	
Area			Avg. C
			Value
DA-1	Imp. Area	0.011	0.95
	Trees	0.030	0.25
	Grass	0.100	0.35
	Composite	0.141	0.375
DA-2	Imp. Area	0.039	0.95
	Trees	0.008	0.25
	Grass	0.150	0.35
	Composite	0.197	0.473
			•
DA-3	Imp. Area	0.033	0.95
	Trees	0.005	0.25
	Grass	0.063	0.35
	Composite	0.101	0.541
DA-4	Imp. Area	0.049	0.95
	Trees	0.027	0.25
	Grass	0.000	0.35
	Composite	0.076	0.702
Total Area I	Modeled	0.515	Acres
Re	Cf		
		1.1	
		1.2	
	100		1.25

Runoff Coefficient	s per ConnDOT D	rainage Manual	- Chapter 6:	
Table 6-3 - Recomr	nended Coefficie	nts for Pervious A	Areas:	
		NRCS Hydrold	ogic Soil Group	
Slope	Α	В	С	D
Flat: (0%-1%)	0.04 - 0.09	0.07 - 0.12	0.11 - 0.16	0.15 - 0.20
Ave.: (2%-6%)	0.09 - 0.14	0.12 - 0.17	0.16 - 0.21	0.20 - 0.25
Steep: (> 6%)	0.13 - 0.18	0.18 - 0.24	0.23 - 0.31	0.28 - 0.38
<u>Table 6-5 - Runoff (</u>	Coefficients for Im	npervious Areas		
Asphalt	Concrete	Drives &		
Streets	Streets	Walks	Roofs	
0.70 - 0.95	0.80 - 0.95	0.75 - 0.85	0.75 - 0.95	
<u>Table 6-4</u>	- f fi a i a mba fa u \ / a ui.			
Recommended Co		Dus Selecteu Lai	u uses.	M. 10
	Neighbor-	Single	Multi	Multi
Downtown	hood	Family	Units	Units
Areas	Areas	Areas	Detached	Attached
0.70 - 0.95	0.50 - 0.70	0.30 - 0.50	0.40 - 0.60	0.60 - 0.75
	Resi-	Apartment	Light	Heavy
	dential	Dwelling	Industrial	Industrial
Suburban	(>1.2 Ac.)	Areas	Areas	Areas
0.25 - 0.40	0.30 - 0.45	0.50 - 0.70	0.50 - 0.80	0.60 - 0.90
Parks &		Rail	Un-	
Cemetery	Play-	Yard	Improved	
	grounds	Areas	Areas	
0.10 - 0.25	0.20 - 0.40	0.20 - 0.40	0.10 - 0.30	1

Notes:

1) Runoff Coefficient estimated by Haley Ward (see separate calculations)

2) Rainfall Intensity calculated by Haley Ward for D = Tc (Use 5 min for all areas due to small size)

3) Drainage area delineated by Haley Ward and measured using AutoCAD software (see separate watershed delineation)



SUBJECT: Proposed Conditions

COMP. BY: TAP CHK. BY:

Q = CIA

Peak Flow Rate by Rational Method

Rational:

A = Watershed Area (acres) C = Runoff Coefficient I = Rain Fall Intensity (In/Hr.) Q = Peak Discharge (cfs)

Runoff Drainage Area Label Runoff Coefficient Drainage Area Drainage Area Rain Fall Intensity Peak Discharge Main Sall Coefficient Drainage Area Storm Intensity Discharge Drainage Area 0.478 0.140 2 4.76 0.32 Drainage Area-1 0.478 0.140 2 4.76 0.32 Drainage Area-2 0.403 0.186 2 4.76 0.32 Drainage Area-3 0.501 0.112 2 4.76 0.20 Drainage Area-4 0.546 0.076 2 4.76 0.20 Drainage Area-1 0.478 0.140 10 6.96 0.52 Drainage Area-1 0.478 0.140 10 6.96 0.52 Drainage Area-3 0.501 0.112 10 6.96 0.29 Drainage Area-3 0.501 0.112 10 6.96 0.29 Drainage Area-3 0.551 0.112 10 6.96 0.29 Drainage Area-		Composite				
Drainage Area Label Coefficient Drainage Area Storm Intensity Discharge (Acres) (Year) (In/Hr) (CFS) Drainage Area-1 0.478 0.140 2 4.76 0.32 Drainage Area-2 0.403 0.186 2 4.76 0.32 Drainage Area-3 0.501 0.112 2 4.76 0.27 Drainage Area-3 0.501 0.112 2 4.76 0.20 Drainage Area-3 0.501 0.112 2 4.76 0.20 Drainage Area-4 0.546 0.076 2 4.76 0.20 Drainage Area-1 0.478 0.140 10 6.96 0.47 Drainage Area-2 0.403 0.186 10 6.96 0.52 Drainage Area-3 0.501 0.112 10 6.96 0.29 Drainage Area-4 0.546 0.076 10 6.96 0.29 Drainage Area-1 0.525 0.140 25 8		Runoff		Design	Rain Fall	Peak
(Acres) (Year) (In/Hr) (CFS) Drainage Area-1 0.478 0.140 2 4.76 0.32 Drainage Area-2 0.403 0.186 2 4.76 0.32 Drainage Area-3 0.501 0.112 2 4.76 0.27 Drainage Area-3 0.501 0.112 2 4.76 0.20 Drainage Area-4 0.546 0.076 2 4.76 0.20 Drainage Area-4 0.546 0.076 2 4.76 0.20 Drainage Area-1 0.478 0.140 10 6.96 0.47 Drainage Area-2 0.403 0.186 10 6.96 0.52 Drainage Area-3 0.501 0.112 10 6.96 0.29 Drainage Area-4 0.546 0.076 10 6.96 0.29 Drainage Area-1 0.525 0.140 25 8.33 0.61 Drainage Area-3 0.551 0.112 25 8.33 0.52	Drainage Area Label	Coefficient	Drainage Area	Storm	Intensity	Discharge
Drainage Area-1 0.478 0.140 2 4.76 0.32 Drainage Area-2 0.403 0.186 2 4.76 0.36 Drainage Area-3 0.501 0.112 2 4.76 0.27 Drainage Area-3 0.501 0.112 2 4.76 0.27 Drainage Area-4 0.546 0.076 2 4.76 0.20 Drainage Area-4 0.546 0.076 2 4.76 0.20 Drainage Area-1 0.478 0.140 10 6.96 0.47 Drainage Area-2 0.403 0.186 10 6.96 0.52 Drainage Area-3 0.501 0.112 10 6.96 0.29 Drainage Area-4 0.546 0.076 10 6.96 0.29 Drainage Area-1 0.525 0.140 25 8.33 0.61 Drainage Area-1 0.525 0.140 25 8.33 0.52 Drainage Area-3 0.551 0.112 25 <td></td> <td></td> <td>(Acres)</td> <td>(Year)</td> <td>(In/Hr)</td> <td>(CFS)</td>			(Acres)	(Year)	(In/Hr)	(CFS)
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Drainage Area-3 0.501 0.112 2 4.76 0.27 Drainage Area-4 0.546 0.076 2 4.76 0.20 Total 1.14 Total 1.14 Drainage Area-1 0.478 0.140 10 6.96 0.47 Drainage Area-2 0.403 0.186 10 6.96 0.52 Drainage Area-3 0.501 0.112 10 6.96 0.29 Drainage Area-4 0.546 0.076 10 6.96 0.29 Drainage Area-1 0.525 0.140 25 8.33 0.61 Drainage Area-1 0.525 0.140 25 8.33 0.69 Drainage Area-1 0.525 0.140 25 8.33 0.69 Drainage Area-3 0.551 0.112 25 8.33 0.52 Drainage Area-4 0.601 0.076 25 8.33 0.38 Drainage Area-1 0.597 0.140 100 10.4 0.87	Drainage Area-2	0.403	0.186	2	4.76	0.36
Drainage Area-4 0.546 0.076 2 4.76 0.20 Total Total 1.14 Total 1.14 Drainage Area-1 0.478 0.140 10 6.96 0.47 Drainage Area-2 0.403 0.186 10 6.96 0.52 Drainage Area-3 0.501 0.112 10 6.96 0.39 Drainage Area-4 0.546 0.076 10 6.96 0.29 Drainage Area-4 0.552 0.140 25 8.33 0.61 Drainage Area-1 0.525 0.140 25 8.33 0.69 Drainage Area-2 0.443 0.186 25 8.33 0.69 Drainage Area-3 0.551 0.112 25 8.33 0.52 Drainage Area-4 0.601 0.076 25 8.33 0.52 Drainage Area-4 0.601 0.076 25 8.33 0.38 Drainage Area-1 0.597 0.140 100 10.4	Drainage Area-3	0.501	0.112	2	4.76	0.27
Total Total 1.14 Drainage Area-1 0.478 0.140 10 6.96 0.47 Drainage Area-2 0.403 0.186 10 6.96 0.52 Drainage Area-3 0.501 0.112 10 6.96 0.39 Drainage Area-4 0.546 0.076 10 6.96 0.29 Drainage Area-4 0.5546 0.076 10 6.96 0.29 Drainage Area-4 0.555 0.140 25 8.33 0.61 Drainage Area-2 0.443 0.186 25 8.33 0.69 Drainage Area-3 0.551 0.112 25 8.33 0.52 Drainage Area-4 0.601 0.076 25 8.33 0.52 Drainage Area-4 0.601 0.076 25 8.33 0.38 Drainage Area-4 0.601 0.076 25 8.33 0.38 Drainage Area-4 0.601 0.076 25 8.33 0.38	Drainage Area-4	0.546	0.076	2	4.76	0.20
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Drainage Area-1 0.478 0.140 10 6.96 0.47 Drainage Area-2 0.403 0.186 10 6.96 0.52 Drainage Area-3 0.501 0.112 10 6.96 0.39 Drainage Area-4 0.546 0.076 10 6.96 0.29 Total 1.67 Drainage Area-4 0.525 0.140 25 8.33 0.61 Drainage Area-1 0.525 0.140 25 8.33 0.61 Drainage Area-2 0.443 0.186 25 8.33 0.69 Drainage Area-3 0.551 0.112 25 8.33 0.52 Drainage Area-4 0.601 0.076 25 8.33 0.52 Drainage Area-4 0.601 0.076 25 8.33 0.52 Drainage Area-1 0.597 0.140 100 10.4 0.87 Drainage Area-3 0.627 0.140 100 10.4 0.98						
Drainage Area-2 0.403 0.186 10 6.96 0.52 Drainage Area-3 0.501 0.112 10 6.96 0.39 Drainage Area-4 0.546 0.076 10 6.96 0.29 Total 1.67 Total 1.67 Drainage Area-4 0.525 0.140 25 8.33 0.61 Drainage Area-1 0.525 0.140 25 8.33 0.69 Drainage Area-2 0.443 0.186 25 8.33 0.52 Drainage Area-3 0.551 0.112 25 8.33 0.52 Drainage Area-4 0.601 0.076 25 8.33 0.38 Drainage Area-4 0.601 0.076 25 8.33 0.38 Drainage Area-1 0.597 0.140 100 10.4 0.87 Drainage Area-2 0.504 0.186 100 10.4 0.98 Drainage Area-3 0.627 0.112	Drainage Area-1	0.478	0.140	10	6.96	0.47
Drainage Area-3 0.501 0.112 10 6.96 0.39 Drainage Area-4 0.546 0.076 10 6.96 0.29 Total 1.67 Total 1.67 Drainage Area-4 0.525 0.140 25 8.33 0.61 Drainage Area-2 0.443 0.186 25 8.33 0.69 Drainage Area-3 0.551 0.112 25 8.33 0.52 Drainage Area-3 0.551 0.112 25 8.33 0.52 Drainage Area-4 0.601 0.076 25 8.33 0.38 Total 2.20 Drainage Area-1 0.597 0.140 100 10.4 0.87 Drainage Area-1 0.597 0.140 100 10.4 0.98 0.73 Drainage Area-3 0.627 0.112 100 10.4 0.73 Drainage Area-4 0.683 0.076 100 10.4 0.54	Drainage Area-2	0.403	0.186	10	6.96	0.52
Drainage Area-4 0.546 0.076 10 6.96 0.29 Total Total 1.67 Drainage Area-1 0.525 0.140 25 8.33 0.61 Drainage Area-2 0.443 0.186 25 8.33 0.69 Drainage Area-3 0.551 0.112 25 8.33 0.52 Drainage Area-4 0.601 0.076 25 8.33 0.52 Drainage Area-4 0.601 0.076 25 8.33 0.38 Drainage Area-4 0.601 0.076 25 8.33 0.38 Drainage Area-4 0.601 0.076 25 8.33 0.38 Drainage Area-4 0.697 0.140 100 10.4 0.87 Drainage Area-2 0.504 0.186 100 10.4 0.73 Drainage Area-3 0.627 0.112 100 10.4 0.73 Drainage Area-4 0.683 0.076 100 10.4 0.54	Drainage Area-3	0.501	0.112	10	6.96	0.39
Image Area-1 0.525 0.140 25 8.33 0.61 Drainage Area-2 0.443 0.186 25 8.33 0.69 Drainage Area-3 0.551 0.112 25 8.33 0.52 Drainage Area-3 0.551 0.112 25 8.33 0.52 Drainage Area-4 0.601 0.076 25 8.33 0.38 Drainage Area-1 0.597 0.140 100 10.4 0.87 Drainage Area-2 0.504 0.186 100 10.4 0.98 Drainage Area-3 0.627 0.112 100 10.4 0.73 Drainage Area-4 0.683 0.076 100 10.4 0.54	Drainage Area-4	0.546	0.076	10	6.96	0.29
Drainage Area-1 0.525 0.140 25 8.33 0.61 Drainage Area-2 0.443 0.186 25 8.33 0.69 Drainage Area-3 0.551 0.112 25 8.33 0.52 Drainage Area-3 0.551 0.112 25 8.33 0.52 Drainage Area-4 0.601 0.076 25 8.33 0.38 Drainage Area-4 0.601 0.076 25 8.33 0.38 Drainage Area-4 0.601 0.076 25 8.33 0.38 Drainage Area-4 0.597 0.140 100 10.4 0.87 Drainage Area-2 0.504 0.186 100 10.4 0.98 Drainage Area-3 0.627 0.112 100 10.4 0.73 Drainage Area-4 0.683 0.076 100 10.4 0.54					Total	1.67
Drainage Area-1 0.525 0.140 25 8.33 0.61 Drainage Area-2 0.443 0.186 25 8.33 0.69 Drainage Area-3 0.551 0.112 25 8.33 0.52 Drainage Area-3 0.551 0.112 25 8.33 0.52 Drainage Area-4 0.601 0.076 25 8.33 0.38 Total 2.20 Drainage Area-4 0.697 0.140 100 10.4 0.87 Drainage Area-1 0.597 0.140 100 10.4 0.98 Drainage Area-2 0.504 0.186 100 10.4 0.98 Drainage Area-3 0.627 0.112 100 10.4 0.73 Drainage Area-4 0.683 0.076 100 10.4 0.54						
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Drainage Area-3 0.551 0.112 25 8.33 0.52 Drainage Area-4 0.601 0.076 25 8.33 0.38 Total 2.20 Drainage Area-1 0.597 0.140 100 10.4 0.87 Drainage Area-2 0.504 0.186 100 10.4 0.98 Drainage Area-3 0.627 0.112 100 10.4 0.73 Drainage Area-4 0.683 0.076 100 10.4 0.54	Drainage Area-2	0.443	0.186	25	8.33	0.69
Drainage Area-4 0.601 0.076 25 8.33 0.38 Drainage Area-1 0.597 0.140 100 10.4 0.87 Drainage Area-2 0.504 0.186 100 10.4 0.98 Drainage Area-3 0.627 0.112 100 10.4 0.73 Drainage Area-4 0.683 0.076 100 10.4 0.54	Drainage Area-3	0.551	0.112	25	8.33	0.52
Total 2.20 Drainage Area-1 0.597 0.140 100 10.4 0.87 Drainage Area-2 0.504 0.186 100 10.4 0.98 Drainage Area-3 0.627 0.112 100 10.4 0.73 Drainage Area-4 0.683 0.076 100 10.4 0.54	Drainage Area-4	0.601	0.076	25	8.33	0.38
Drainage Area-1 0.597 0.140 100 10.4 0.87 Drainage Area-2 0.504 0.186 100 10.4 0.98 Drainage Area-3 0.627 0.112 100 10.4 0.73 Drainage Area-4 0.683 0.076 100 10.4 0.54					Total	2.20
Drainage Area-2 0.504 0.186 100 10.4 0.98 Drainage Area-3 0.627 0.112 100 10.4 0.73 Drainage Area-4 0.683 0.076 100 10.4 0.54 Drainage Area-4 0.683 0.076 100 10.4 0.54	Drainage Area 1	0 507	0.140	100	10.4	0.97
Drainage Area-3 0.627 0.112 100 10.4 0.96 Drainage Area-3 0.627 0.112 100 10.4 0.73 Drainage Area-4 0.683 0.076 100 10.4 0.54 Total	Drainage Area 2	0.597	0.140	100	10.4	0.07
Drainage Area-4 0.627 0.112 100 10.4 0.73 Drainage Area-4 0.683 0.076 100 10.4 0.54 Total	Drainage Area 2	0.504	0.180	100	10.4	0.98
Diamage Area-4 0.005 0.076 100 10.4 0.54 Total 3.12	Drainage Area 4	0.627	0.112	100	10.4	0.73
lotal 3.12	Dialilage Alea-4	0.683	0.076	100	10.4	0.54
Market and Annual A	M				rotal	3.12

Drainage Area	Surface	Area (acres)	Avg. C Value
DA-1	Imp. Area	0.034	0.95
	Trees	0.027	0.25
	Grass/permeable	0.080	0.35
	Composite	0.140	0.478
DA-2	Imp. Area	0.016	0.95
	Trees	0.002	0.25
	Grass/permeable	0.168	0.35
	Composite	0.186	0.403
	-		
DA-3	Imp. Area	0.030	0.95
	Trees	0.012	0.25
	Grass/permeable	0.070	0.35
	Composite	0.112	0.501
			0
DA-4	Imp. Area	0.029	0.95
	Trees	0.027	0.25
	Grass/permeable	0.020	0.35
	Composite	0.076	0.546
L			
Total Area N	lodeled	0.515	Acres
R	ecurrence Interv	al	Cf
	(years)		
	25		1.1
	50		1.2
	100		1.25

DATE: 05/19/25

Site Soils NRCS Hydrologic Soil Group: B

Runoff Coefficients per ConnDOT Drainage Manual - Chapter 6:

Table 6-3 - Recommended Coefficients for Pervious Areas:

	NRCS Hydrologic Soil Group				
Slope	Α	В	С	D	
Flat: (0%-1%)	0.04 - 0.09	0.07 - 0.12	0.11-0.16	0.15 - 0.20	
Ave.: (2%-6%)	0.09 - 0.14	0.12 - 0.17	0.16 - 0.21	0.20 - 0.25	
Steep: (> 6%)	0.13 - 0.18	0.18 - 0.24	0.23 - 0.31	0.28 - 0.38	

Table 6-5 - Runoff Coefficients for Impervious Areas

Asphalt	Concrete	Drives &	Roofs
Streets	Streets	Walks	
0.70 - 0.95	0.80 - 0.95	0.75 - 0.85	0.75 - 0.95

Table 6-4								
Recommended Coet	Recommended Coefficients for Various Selected Land Uses:							
	Neighbor-	Single	Multi	Multi				
Downtown	hood	Family	Units	Units				
Areas	Areas	Areas	Detached	Attached				
0.70 - 0.95	0.50 - 0.70	0.30 - 0.50	0.40 - 0.60	0.60 - 0.75				
	Resi-	Apartment	Light	Heavy				
	dential	Dwelling	Industrial	Industrial				
Suburban	(>1.2 Ac.)	Areas	Areas	Areas				
0.25 - 0.40	0.30 - 0.45	0.50 - 0.70	0.50 - 0.80	0.60 - 0.90				
Parks &		Rail	Un-					
Cemetery	Play-	Yard	Improved					
	grounds	Areas	Areas					
0.10 - 0.25	0.20 - 0.40	0.20 - 0.40	0.10 - 0.30					

1) Runoff Coefficient estimated by Haley Ward (see separate calculations)

2) Rainfall Intensity calculated by Haley Ward for D = Tc (Use 5 min for all areas due to small size)

3) Drainage area delineated by Haley Ward and measured using AutoCAD software (see separate watershed delineation)

C. USDA Soils Map



State of Connecticut, Western Part

90C—Stockbridge loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9Irs Elevation: 0 to 1,200 feet Mean annual precipitation: 43 to 54 inches Mean annual air temperature: 45 to 55 degrees F Frost-free period: 140 to 185 days Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Stockbridge

Setting

Landform: Hills Down-slope shape: Concave Across-slope shape: Linear Parent material: Coarse-loamy till derived from limestone and dolomite and/or schist

Typical profile

Ap - 0 to 10 inches: loam Bw1 - 10 to 20 inches: loam Bw2 - 20 to 28 inches: loam C1 - 28 to 42 inches: gravelly loam C2 - 42 to 48 inches: gravelly loam C3 - 48 to 65 inches: gravelly loam

Properties and qualities

Slope: 8 to 15 percent Depth to restrictive feature: More than 80 inches Drainage class: Well drained Runoff class: Medium Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr) Depth to water table: More than 80 inches Frequency of flooding: None Frequency of flooding: None Calcium carbonate, maximum content: 10 percent Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B Ecological site: F144AY036NY - Semi-Rich Well Drained Till Uplands Hydric soil rating: No

Minor Components

Mudgepond

Percent of map unit: 5 percent Landform: Depressions, drainageways Down-slope shape: Concave Across-slope shape: Concave Hydric soil rating: Yes

Georgia

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

Alden

Percent of map unit: 3 percent Landform: Depressions, drainageways Down-slope shape: Concave, linear Across-slope shape: Concave Hydric soil rating: Yes

Nellis

Percent of map unit: 3 percent Landform: Hills Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Farmington

Percent of map unit: 2 percent Landform: Hills, ridges Down-slope shape: Convex Across-slope shape: Convex Hydric soil rating: No

Paxton

Percent of map unit: 2 percent Landform: Till plains, drumlins, hills Down-slope shape: Linear Across-slope shape: Convex Hydric soil rating: No

Data Source Information

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

D. Rain Garden Volume Calculations



SUBJECT: Water Quality Volume Calculations RAIN GARDEN 1 COMP. BY: TAP CHK. BY: DATE: 05/19/25

I. Determine Volume of Water Quality Basin

I

А

GRV

D

А

Τ

WQV = (1.3"(R)(A))/12

WQV = Water Quality Volume (ac-ft) Volumetric Runoff Coefficient R =

= 0.05+0.009(1)

= Percent Impervious Cover (whole number)

Where:

Site Area (acres) = Watershed area excluding bottom of basin =

Watershed	Watershed Area (acres)	Percent Impervious	Volumetric Runoff Coefficient	Water Quality Volume (ac-ft)	Water Quality Volume (CF)
					-
To Rain Garden-1	0.07	40	0.41	0.0033	145
				Total Required	145

Total Required

GRV = ((D)(A)(I))/12

Where:

= Groundwater Recharge Volume

= Depth of Runoff to be Recharged (Table 7.4 of Stormwater Quality Manual)

= Site Area (acres)

Percent Impervious Cover (decimal) =

Watershed Number	Watershed Area (acres)	Percent Impervious	Groundwater Recharge Depth (D)	Groundwater Recharge Volume (ac.ft)	Groundwater Recharge Volume (CF)
To Rain Garden-1	0.07	0.40	0.25	0.0006	27

Table 7.4 NRCS Groundwater Average Hydrologic Annual Recharge Soil Group Depth (D) Recharge 18 in/year 0.4 inch А В 12 in/year 0.25 inch С 0.1 inch 6 in/year D 3 in/year 0 inch

For Hydrologic Soil Group, see Web Soil Survey The majority of development occurs over soil with hydrologic group B For Design Use WQV since it is higher than GRV

Volume of Proposed Rain Garden-1 For New House

Contour Elevation	Elevation Difference (ft)	Area (sq. ff.)	Volume (CF)	Cumulative Volume (CF)	
749.3	-	83			
750.3	1.0	220	152		
			-	152	Greater Than 145 CF, OKAY



SUBJECT: Water Quality Volume Calculations RAIN GARDEN 2 COMP. BY: SMA CHK. BY: TAP DATE: 02/05/25

I. Determine Volume of Water Quality Basin

I

А

GRV

D

А

Τ

WQV = (1.3''(R)(A))/12

Water Quality Volume (ac-ft) =

WQV Volumetric Runoff Coefficient R =

0.05+0.009(1) =

Percent Impervious Cover (whole number) =

Where:

Site Area (acres) = Watershed area excluding bottom of basin =

Watershed	Watershed Area (acres)	Percent Impervious	Volumetric Runoff Coefficient	Water Quality Volume (ac-ft)	Water Quality Volume (CF)
					-
To Rain Garden-2	0.01	42	0.43	0.0006	28
				Total Required	28

Total Required

GRV = ((D)(A)(I))/12

Where:

= Groundwater Recharge Volume

= Depth of Runoff to be Recharged (Table 7.4 of Stormwater Quality Manual)

= Site Area (acres)

Percent Impervious Cover (decimal) =

Watershed Number	Watershed Area (acres)	Percent Impervious	Groundwater Recharge Depth (D)	Groundwater Recharge Volume (ac.ft)	Groundwater Recharge Volume (CF)
To Rain Garden-2	0.01	0.42	0.25	0.0001	5

Table 7.4			
NRCS Hydrologic Soil Group	Average Annual Recharge	Groundwater Recharge Depth (D)	
А	18 in/year	0.4 inch	
В	12 in/year	0.25 inch	
С	6 in/year	0.1 inch	
D	3 in/year	0 inch	

For Hydrologic Soil Group, see Web Soil Survey The majority of development occurs over soil with hydrologic group B For Design Use WQV since it is higher than GRV

Volume of Proposed Rain Garden-2 For New House

Contour Elevation	Elevation Difference (ft)	Area (sq. ff.)	Volume (CF)	Cumulative Volume (CF)	
745.45	-	19			
746.20	0.75	80	37		
			-	37	Greater Than 28 CF, OKAY

E. Permeable Patio Design



SUBJECT: Permeable Patio Design COMP. BY: TAP CHK. BY:

DATE: 05/19/25

I. Determine Water Quality Volume Required

WQV = (1.3''(R)(A))/12 Where:

WQV	=	Water Quality Volume (ac-ft)
R	=	Volumetric Runoff Coefficient
	=	0.05+0.009(I)
I.	=	Percent Impervious Cover (whole number)
А	=	Site Area (acres) = Area of Patio 580 SF

Watershed	Watershed Area (acres)	Percent Impervious	Volumetric Runoff Coefficient	Water Quality Volume (ac-ft)	Water Quality Volume (CF)
					-
Patio Area	0.0133	100	0.95	0.0014	60
				Total Required	60

II. Soil Conditions

The underlying soil is Stockbridge Loam, Class B Test pits reveal bedrock is deeper than 70" and seasonal high groundwater (SHGW) is an average of 41"

The finished grade at the patio is the same as the existing grade.

The depth of the patio system will be 16"

At 17.25", the bottom will be more than 3 feet above bedrock

At 17.25", the bottom will be 25" above SHGW, 24" is recommended for residential applications

III. Volume of Reservoir

 $\begin{array}{c|c} \mbox{The reservoir is 6 inches of crushed stone with an estimated void ratio of 40\%} \\ \mbox{Area (SF)} & \mbox{Void ratio (\% Depth (ft) } & \mbox{Volume (CF)} \\ & \mbox{580} & \mbox{40\% } & \mbox{0.2708} & \mbox{62.8 > 60, okay} \end{array}$

IV. Drain Time

 $Td = V/(K^*A) \times 12 in/hr$

r (default rate for class B Loam
1

Td = 2.4 hours

F. Impervious Coverage Calculations



PROJECT No. : 4010218.22157.1 DRAWING No.: 1

PROJECT: BURDICK - 152 SOUTH SHORE RD. SALISBURY

TITLE: EX. IMPERVIOUS AREA CALCULATIONS

DWN. BY: JS CHK. BY: TAP DATE: 2025.05.19





PROJECT No. : 4010218.22157.1 DRAWING No.: 1

PROJECT: BURDICK - 152 SOUTH SHORE RD. SALISBURY

TITLE: PROPOSED IMPERVIOUS AREA CALCULATIONS

DWN. BY: JS CHK. BY: TAP DATE: 2025.05.19

