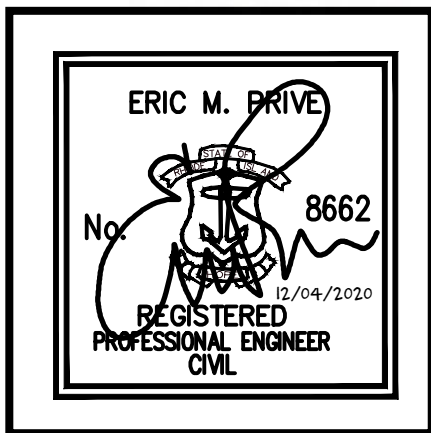
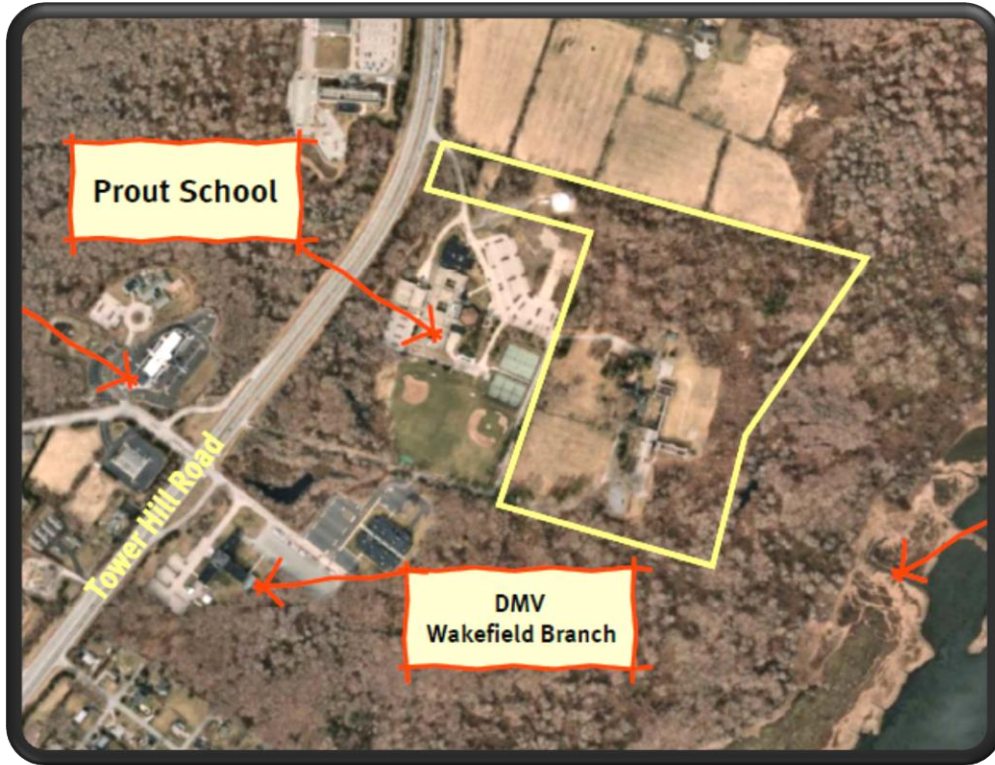




Stormwater Management Statement



Shepherd's Run

Located at 4780A Tower Hill Road

South Kingstown, Rhode Island

Applicant: Morgan + Schoen Hospitality

December 2020

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Executive Summary

On behalf of the applicant, we are submitting drainage calculations for the proposed development known as “Shepherd’s Run” located at 4780A Tower Hill Road in South Kingstown, RI. The site is located on Assessor’s Plat 50-4 Lot 12. The site exists today as open grassy areas, impervious pavement, and buildings with wooded areas surrounding. The building was formerly a convent but is presently abandoned. There are open grass fields, existing tennis courts, and associated parking areas. The applicant proposes to renovate the existing building and convert the grassed areas and wooded areas to a vineyard area as well as construct an impervious patio. The proposed impervious patio will provide area for events behind the building. There will be a decrease in the drainage coefficient number (CN) from pre-development to post-development conditions as the impervious patio area is negligible within the overall watershed subcatchment and the conversion of the grass areas to vineyard provide an improvement to existing conditions. The vineyards will also provide greater uptake of stormwater as thriving vegetation. This report details how the site will show no net increase in stormwater runoff from pre-development to post-development conditions.

1.0 Project Description

The purpose of this report is to specify that there will be no need for an additional Stormwater Management System to be implemented in the redevelopment of the proposed “Shepherd’s Run” project located at 4780A Tower Hill Road. The site totals 35.69 acres located on Assessor’s Plat 50-4 Lot 12 in South Kingstown, Rhode Island. The site is located off Tower Hill Road behind the Prout School and to the west of Pettaquamscutt Cove. The proposed development will include the same layout of the existing building with an additional patio and conversion of grassed and wooded areas to new vineyards. The site is currently serviced by public water and a private onsite wastewater treatment system (OWTS), which will remain with the improvements.

The stormwater quality will remain by modifying the surface types and improving the existing onsite conditions. The minor increase in impervious surface associated with the proposed patio/tent will have negligible impact to the downstream receiving design point. The site has been designed to meet or exceed the RIDEM Stormwater Design and Installations Standards Manual.

2.0 Site Conditions

2.1 SOILS

There are the following soil types within the analyzed area of the Site as mapped by the NRCS USDA Soil Conservation service:

Soil Symbol	Description	Hydrologic Group
BrB	Broadbrook silt loam, 3 to 8 percent slopes	C
RaA	Rainbow silt loam, 0 to 3 percent slopes	C
RaB	Rainbow silt loam, 3 to 8 percent slopes	C
Se	Stissing silt loam	C

UD	Udorthents-Urban land complex	None
WbB	Wapping silt loam, 3 to 8 percent slopes	B

UD (Udorthents-Urban land complex) was assumed to be Hydrologic Group C. Site specific soil evaluations can be found in Appendix A2.1.

2.2 EXISTING SITE CONDITIONS

Presently the site consists of open grassed fields, impervious pavement, and buildings with wooded areas. There are multiple buildings with a significant area of asphalt. The building and pavement will remain but will be redeveloped internally. All stormwater onsite eventually discharges east directly to the Pettaquamscutt Cove. The Pettaquamscutt Cove is a Type 1 water located within the Narrow River Special Area Management Plan (SAMP).

Stormwater flows from west to east overland throughout site and eventually discharges to the Pettaquamscutt Cove.

2.3 POST SITE CONDITIONS

The post-development conditions include very similar conditions to the pre-development. The site was modeled as one watershed area with a design point along the eastern property line. The building, pavement, and infrastructure will stay the same from the existing conditions. Some of the grassed fields and some of the wooded area will be converted to a vineyard area which will mimic a combination of trees and grass. There will be a new impervious patio in post conditions. The addition of the impervious patio combined with the subtraction of grassed fields/wooded area decreases the surface CN value, so that there is no need for additional water quality BMP's that do not already exist.

The above elements demonstrate that the standards of the Rhode Island Stormwater Design and Installation Standards Manual (RISDISM) have been met. By keeping post development stormwater flow rate (and volume) to a level equal to the pre-development rate, any potential impacts from the property development on the abutting properties/wetlands etc. have been mitigated.

Appendix A

A3.5.4.5 HydroCAD 100-Year Storm Analysis

2193-001-EHCD

Prepared by DiPrete Engineering

Printed 12/3/2020

HydroCAD® 10.10-4b s/n 01125 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.768	61	>75% Grass cover, Good, HSG B (10)
9.330	74	>75% Grass cover, Good, HSG C (10)
0.036	96	Gravel surface, HSG C (10)
0.091	98	Impervious, HSG B (10)
1.435	98	Impervious, HSG C (10)
0.665	98	Roofs, HSG C (10)
4.340	70	Woods, Good, HSG C (10)

Summary for Subcatchment 10: Pre-Development

Runoff = 88.64 cfs @ 12.17 hrs, Volume= 7.798 af, Depth= 5.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100-Year Rainfall=8.50"

Area (ac)	CN	Description
0.768	61	>75% Grass cover, Good, HSG B
9.330	74	>75% Grass cover, Good, HSG C
0.036	96	Gravel surface, HSG C
0.091	98	Impervious, HSG B
1.435	98	Impervious, HSG C
0.665	98	Roofs, HSG C
4.340	70	Woods, Good, HSG C
16.665	76	Weighted Average
14.474		86.85% Pervious Area
2.191		13.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.0600	0.18		Sheet Flow, A Grass: Dense n= 0.240 P2= 3.30"
3.3	788	0.0620	4.01		Shallow Concentrated Flow, B Unpaved Kv= 16.1 fps
12.4	888	Total			

2193-001-PHCD

Prepared by DiPrete Engineering

Printed 12/3/2020

HydroCAD® 10.10-4b s/n 01125 © 2020 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.265	61	>75% Grass cover, Good, HSG B (100)
5.742	74	>75% Grass cover, Good, HSG C (100)
0.036	96	Gravel surface, HSG C (100)
0.091	98	Impervious, HSG B (100)
1.560	98	Impervious, HSG C (100)
0.665	98	Roofs, HSG C (100)
2.359	70	Woods, Good, HSG C (100)
0.504	58	Woods/grass comb., Good, HSG B (100)
5.444	72	Woods/grass comb., Good, HSG C (100)

2193-001-PHCD

Prepared by DiPrete Engineering

HydroCAD® 10.10-4b s/n 01125 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 100-Year Rainfall=8.50"

Printed 12/3/2020

Summary for Subcatchment 100: Post-Development

Runoff = 86.89 cfs @ 12.17 hrs, Volume= 7.631 af, Depth= 5.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.50"

Area (ac)	CN	Description
0.265	61	>75% Grass cover, Good, HSG B
5.742	74	>75% Grass cover, Good, HSG C
0.036	96	Gravel surface, HSG C
0.091	98	Impervious, HSG B
1.560	98	Impervious, HSG C
0.665	98	Roofs, HSG C
2.359	70	Woods, Good, HSG C
0.504	58	Woods/grass comb., Good, HSG B
5.444	72	Woods/grass comb., Good, HSG C
16.665	75	Weighted Average
14.350		86.11% Pervious Area
2.315		13.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.0600	0.18		Sheet Flow, A Grass: Dense n= 0.240 P2= 3.30"
3.3	788	0.0620	4.01		Shallow Concentrated Flow, B Unpaved Kv= 16.1 fps
12.4	888	Total			

Watershed Maps

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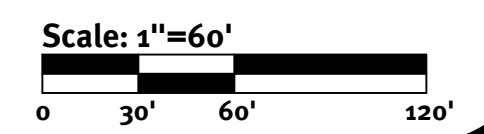


Legend

- Woods - A Soils
- Woods - B Soils
- Woods - C Soils
- Woods - D Soils
- Grass - A Soils
- Grass - B Soils
- Grass - C Soils
- Grass - D Soils
- Gravel - A Soils
- Gravel - B Soils
- Gravel - C Soils
- Gravel - D Soils
- Impervious
- Brush - A Soils
- Brush - B Soils
- Brush - C Soils
- Brush - D Soils
- Water

Legend

- Tc Line (With Elevations)
- Subcat Area
- Soil Boundary
- Subcatchment
- Drainage Pond/Bio Retention/Infiltrating Swale
- Drainage Structure/Pond with Insignificant Storage
- Swale
- Design Point
- Reach



Pre-Watershed Map
Shepherd's Run
DiPrete Engineering

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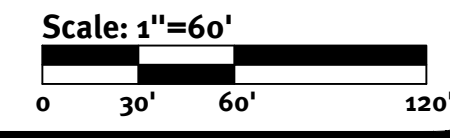


Legend

- Woods - A Soils
- Woods - B Soils
- Woods - C Soils
- Woods - D Soils
- Grass - A Soils
- Grass - B Soils
- Grass - C Soils
- Grass - D Soils
- Gravel - A Soils
- Gravel - B Soils
- Gravel - C Soils
- Gravel - D Soils
- Impervious
- Brush - A Soils
- Brush - B Soils
- Brush - C Soils
- Brush - D Soils
- Water

Legend

- Tc Line (With Elevations)
- Subcat Area
- Soil Boundary
- Subcatchment
- Drainage Pond/Bio Retention/Infiltrating Swale
- Drainage Structure/Pond with Insignificant Storage
- Swale
- Design Point
- Reach



Post-Watershed Map
 Shepherd's Run
 DiPrete Engineering

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