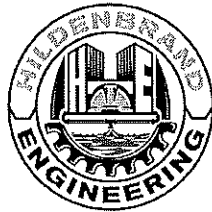


Stormwater Pollution Prevention Plan

Garthe Residence

13 Tavano Road
Town of Ossining

May 26, 2023



208 Creamery Road
Hopewell Junction, NY 12533

Brian@HildenEng.com

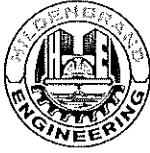
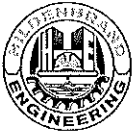


Table of Contents

1	Executive Summary	1
2	Project Site Description	1
2.1	Pre-Development Conditions	1
2.2	Post-Development Conditions	1
3	Construction Sequencing	2
4	Erosion and Sediment Control Plan	2
4.1	Erosion and Sediment Control Measures	3
4.2	Pollution Prevention Controls	4
4.3	Soil Restoration	5
5	Stormwater Management Plan	6
5.1	Hydrologic Analysis	6
5.1.1	Rainfall Data	7
5.1.2	Unified Stormwater Sizing Criteria	7
5.1.2.1	<i>Water Quantity Control</i>	7
5.1.3	Comparison of Peak Discharge Rates	7
6	Post Construction Requirements	8
6.1	Inspection and Maintenance	8
7	Conclusion	10

Appendices

- A Pre & Post HydroCAD Analysis
- B Water Quality Volume (WQv) Calculation
- C Soil Map and Report



1 Executive Summary

This Stormwater Pollution Prevention Plan (SWPPP) and accompanying project plans have been prepared for the construction activities associated with 13 Tavano Road located in the Town of Ossining, New York. The stormwater management, pollution prevention, and erosion and sediment control measures identified and detailed in this SWPPP and on the accompanying project plans have been designed in accordance with the requirements of the Town of Ossining and the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) Phase II technical standards.

The proposed project:

1. Maintains the existing drainage patterns, as much as possible.
2. Controls increases in the rate of stormwater runoff resulting from the proposed development without adversely affecting adjacent or downstream properties or receiving watercourses or bodies.
3. Reducing potential stormwater quality impacts and soil erosion resulting from stormwater runoff generated both during and after construction.

The pre- and post-development stormwater runoff conditions have been reviewed and evaluated. The proposed stormwater management facilities have been designed to provide 50-year storm quantity controls. Stormwater runoff will be detained, treated, and released at a rate equal to or less than that which existed prior to development of the project site.

2 Project Site Description

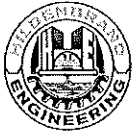
The Garthe/Vargas family owns 13 Tavano Road. The subject lot is 4.459 acres and located on the north side of the street. The property is located in the R-40 Zoning District. There is a main house, two accessory buildings, pool and pool house existing on the lot. There are 2 ponds located on the western side of the property. This proposed project will focus on the pool house area.

2.1 Pre-Development Conditions

The site is currently developed as a typical single-family residential lot, with a driveway, main house, two accessory buildings, pool and pool house. The topography of the site falls east to west, draining to the on-site ponds.

2.2 Post-Development Conditions

The proposal includes the expansion of the existing pool house to create an outdoor living space. The majority of the new development will be on an elevated deck with roof cover. The proposed stormwater management system will collect the roof area and mitigate the flows in an underground infiltration system. Percolation testing performed in the treatment area yielded favorable results.



4.1 Erosion and Sediment Control Measures

Temporary erosion and sediment control measures to be utilized during construction generally include the following:

1. **Stabilized Construction Entrance** - Prior to construction, stabilized construction entrances shall be installed to reduce the tracking of sediment onto public roadways. Construction traffic must enter and exit the site at the stabilized construction entrance. The entrance shall be maintained in good condition, which will control tracking of sediment onto public rights-of-way or streets. When necessary, the placement of additional aggregate atop the filter fabric shall be done to assure the minimum thickness is maintained. All sediments and soils spilled, dropped, or washed onto the public rights-of-way must be removed immediately. Periodic inspection and needed maintenance shall be provided after each substantial rainfall event.
2. **Dust Control** - Water trucks shall be used, as needed, during construction to reduce dust generated on the site. Dust control must be provided by the general contractor to a degree that is acceptable to the owner/operator, and in compliance with the applicable local and state dust control requirements.
3. **Temporary Soil Stockpile** - Materials, such as topsoil, shall be temporarily stockpiled (if necessary) on the site during the construction process. Stockpiles shall be located in an area away from storm drainage, water bodies and/or courses, and shall be properly protected from erosion by a surrounding silt fence barrier or hay bales when located on paved areas.
4. **Silt Fencing** - Prior to the initiation of and during construction activities, silt fencing shall be established along the perimeter of all areas to be disturbed as a result of the construction which lie up gradient of water courses or adjacent properties. These barriers may extend into non-impact areas to ensure adequate protection of adjacent lands. Clearing and grubbing shall be performed only as necessary for the installation of the sediment control barrier. To ensure effectiveness of the silt fencing, daily inspections and inspections immediately after significant storm events shall be performed by site personnel. Maintenance of the fence shall be performed as needed.
5. **Temporary Seeding** - Within seven days after construction activity ceases on any particular area of the site, all disturbed areas where there shall not be construction for longer than 14 days shall be temporarily seeded and mulched to minimize erosion and sediment loss.
6. **Dewatering** - Dewatering, if required, shall not be discharged directly into wetlands, water courses, water bodies, and storm sewer systems. Proper methods and devices shall be utilized to the extent permitted by law, such as pumping water into temporary sediment basins, providing surge protection at the inlet and outlet of pumps, floating the intake of the pump, or other methods to minimize and retain the suspended solids.

Permanent erosion and sediment control measures to be utilized after construction generally include the following:

1. **Establishment of Permanent Vegetation** - Disturbed areas that are not covered by impervious surfaces shall be seeded in accordance with the accompanying plans. The type of



6. Portable sanitary waste facilities shall be provided onsite for workers and shall be properly maintained.
7. Dumpsters and/or debris containers shall be located onsite and shall be of adequate size to manage respective materials. Regular collection and disposal of wastes shall occur as required.
8. Temporary concrete washout facilities should be located a minimum of 50 feet from storm drain inlets, open drainage facilities, and watercourses. Each facility should be located away from construction traffic or access areas to prevent disturbance or tracking. A sign should be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities. When temporary concrete washout facilities are no longer required for the work, the hardened concrete shall be removed and disposed of. Materials used to construct the temporary concrete washout facilities shall be removed and disposed of. Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities shall be backfilled and/or repaired, seeded, and mulched for final stabilization.
9. Non-stormwater components of site discharge must be clean water. Water used for construction, which discharges from the site, must originate from a public water supply or private well approved by the Health Department. Water used for construction that does not originate from an approved public supply must not discharge from the site. It can be retained in the ponds until it infiltrates and evaporates.

4.3 Soil Restoration

The soils within in the limits of disturbance are Type C soils. In accordance with Table 5.3 of the *New York State Stormwater Management Design Manual*, the soils shall be restored as outlined in [Table 1](#) below:

Table 1: Soil Restoration

Type of Soil Disturbance	Soil Restoration Requirement	Comment
No soil disturbance (preservation of natural features)	Restoration not permitted	Protect from any ongoing construction activity
Minimal soil disturbance	Restoration not permitted	Clearing and grubbing activities
Areas where topsoil is stripped only (no change in grade)	Apply 6" of topsoil	Protect from any ongoing construction activity
Areas of cut or fill	Aerate and apply 6" of topsoil	Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soils, a roller with many spikes making indentations in the soil, or prongs with function like a mini-subsoiler.



HydroCAD, a Computer-Aided-Design (CAD) program, was used to analyze the hydrologic characteristics of the pre-development watershed conditions, post-development watershed conditions, and proposed stormwater management systems. HydroCAD has the capability of computing hydrographs (which represents discharge rates characteristic of specified watershed conditions, precipitation, and geologic factors), combining hydrographs, and routing flows through pipes, streams, channels, and ponds.

5.1.1 Rainfall Data

Rainfall data utilized in the modeling and analysis was obtained from National Weather Service (NWS) Technical Paper 40 (TP-40), Rainfall Frequency Atlas of the U.S. Weather Bureau, published by the U.S. Department of Commerce. A Type III rainfall distribution was used to evaluate the pre- and post-development stormwater runoff conditions for the 50-year 24-hour storm events for the project location. Rainfall data specific to the portion of Westchester County under consideration is provided in [Table 2](#) below.

Table 2: Rainfall Data

Storm Event	24-Hour Rainfall
50-year	6.87 inches

5.1.2 Unified Stormwater Sizing Criteria

5.1.2.1 *Water Quantity Control*

5.1.3 Comparison of Peak Discharge Rates

A comparison of the pre- and post-development peak discharge rates is provided in [Table 3](#) below.

Table 3: Comparison of Pre- & Post-Development Peak Discharge Rates

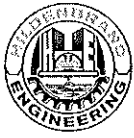
Storm Event	Pre (cfs)	Post (cfs)	Difference
50-year	0.14	0.7	-50%

Comparison of the peak discharge rates for pre- and post-development watershed conditions demonstrates that the peak rate of runoff from the proposed development will remain the nearly the same or not be increased. Therefore, the proposed development will not adversely impact the downstream or adjacent properties, receiving water bodies or courses, or wetlands. The results of the computer modeling used to analyze the pre- and post-development watershed conditions are presented in [Appendix A](#).



Table 4: General Site Post-Construction Inspection and Maintenance

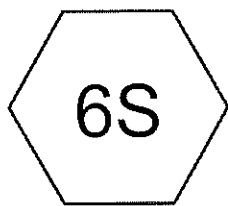
Maintenance Item	Frequency	Description of Inspection Parameters	Description of Remedy Procedures
Site Structures	Annual & After Major Storms	-Accumulated sediment in catch basin sumps -Accumulated debris and litter -Damage or fatigue of storm structures or associated components -Accumulation of pollutants, including oils or grease, in catch basin sumps	-Remove -Remove -Replace and/or repair, as necessary -Remove pollutants from catch basins. Replace and/or repair pollutant source. -Remove (sweep min. 2 times/year) -Remove
Pavement	Biannual/Annual	-Accumulated sediment in paved areas -Accumulated debris and litter	-Remove -Remove
Embankments	Annual	-Differential settlement of embankments -Embankment erosion -Animal burrows -Cracking, bulging, or sliding of embankment	-Stabilize and restore to original specs -Stabilize and restore to original specs -Remove -Stabilize and restore to original specs
Grass and Landscaped areas	Annual	-Vegetation: 80% coverage + less than 15% invasive plant species -Unauthorized plantings -Undesirable vegetative growth	-Restore original specs -Remove -Mow a min. of 3 times/year. May increase for aesthetic reasons. -Remove
Winter Maintenance	Monthly	-Accumulated debris and litter -Accumulation of snow and ice on catch basins, inlet and outlet structures, and end sections -Stock piled snow near inlets and outlets -Remaining deicing materials	-Remove -Remove -Remove -Remove in early spring by sweeping
Swales	Monthly	-Erosion of side slopes -Formation of rills or gullies -Excess grass growth -Undesirable vegetative growth -Accumulated debris, litter, or sediment -Residual deicing materials (sand)	-Stabilize and restore to original specs -Repair and restore to original specs -Mow -Remove -Remove -Remove & replace any damaged vegetation



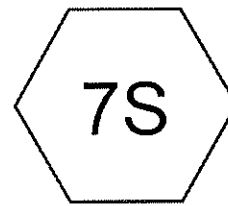
Stormwater Report
13 Tavano Road

Appendix A

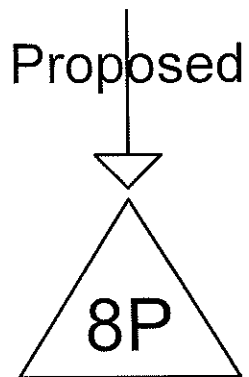
Pre & Post-Development HydroCAD Analysis



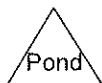
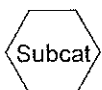
Existing



Proposed



2 Cultec Chambers



13 Tavano Road

Prepared by Hildenbrand Engineering, PLLC

HydroCAD® 10.10-6a s/n 11988 © 2020 HydroCAD Software Solutions LLC

Type III 24-hr 50-yr Rainfall=6.87"

Printed 5/29/2023

Page 3

Summary for Subcatchment 7S: Proposed

Runoff = 0.21 cfs @ 12.07 hrs, Volume= 0.017 af, Depth= 6.63"
Routed to Pond 8P : 2 Cultec Chambers

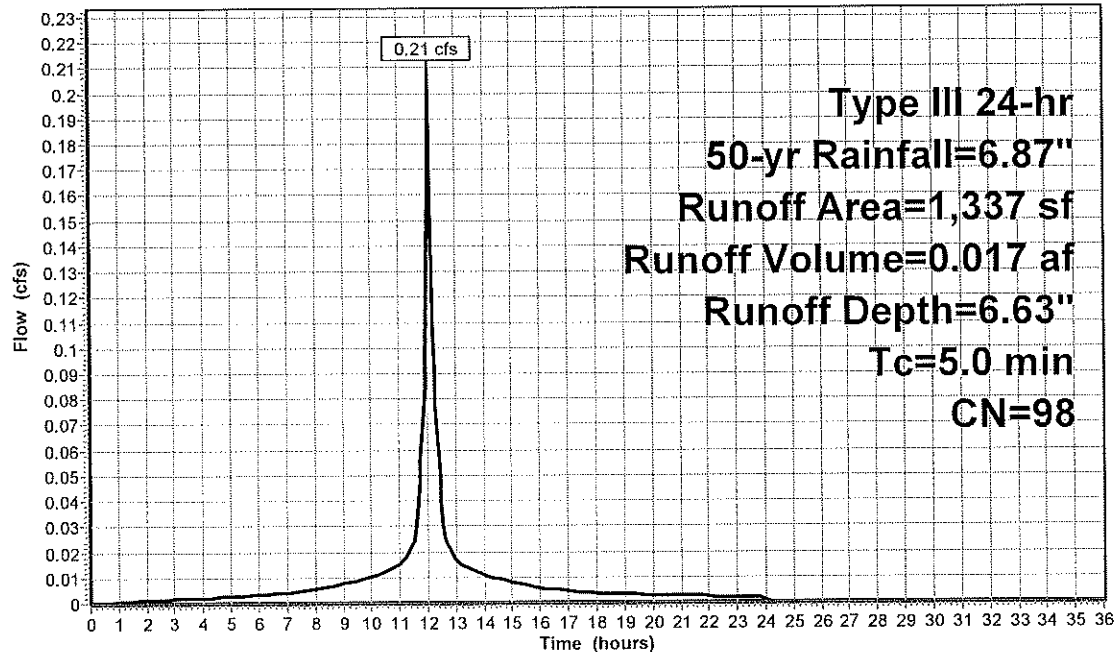
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-yr Rainfall=6.87"

	Area (sf)	CN	Description
*	1,337	98	Roof Area, HSG C
	1,337		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 7S: Proposed

Hydrograph



Pond 8P: 2 Cultec Chambers - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 1 rows

2 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 15.50' Row Length +12.0" End Stone x 2 = 17.50' Base Length

1 Rows x 52.0" Wide + 12.0" Side Stone x 2 = 6.33' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

2 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 1 Rows = 115.5 cf Chamber Storage

392.5 cf Field - 115.5 cf Chambers = 277.0 cf Stone x 40.0% Voids = 110.8 cf Stone Storage

Chamber Storage + Stone Storage = 226.3 cf = 0.005 af

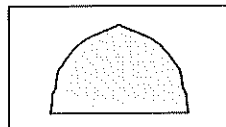
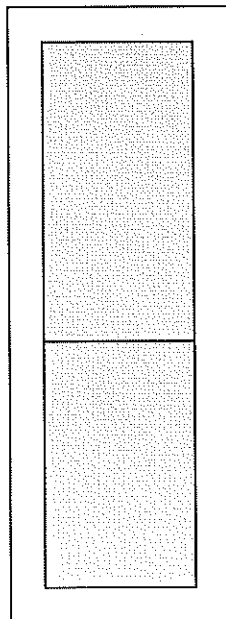
Overall Storage Efficiency = 57.7%

Overall System Size = 17.50' x 6.33' x 3.54'

2 Chambers

14.5 cy Field

10.3 cy Stone



Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point	
Smoothing	Yes
State	New York
Location	New York, United States
Latitude	41.175 degrees North
Longitude	73.826 degrees West
Elevation	150 feet
Date/Time	Sat May 27 2023 09:54:57 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.34	0.51	0.64	0.84	1.05	1.30	1yr	0.90	1.24	1.50	1.84	2.26	2.78	3.16	1yr	2.46	3.04	3.54	4.24	4.88	1yr
2yr	0.40	0.62	0.77	1.02	1.28	1.60	2yr	1.11	1.49	1.84	2.27	2.79	3.41	3.84	2yr	3.02	3.69	4.25	5.02	5.70	2yr
5yr	0.47	0.73	0.92	1.23	1.57	1.98	5yr	1.35	1.83	2.29	2.84	3.51	4.31	4.88	5yr	3.81	4.69	5.44	6.29	7.06	5yr
10yr	0.52	0.82	1.04	1.41	1.83	2.33	10yr	1.58	2.15	2.71	3.38	4.18	5.14	5.86	10yr	4.55	5.63	6.56	7.45	8.31	10yr
25yr	0.60	0.96	1.22	1.69	2.25	2.91	25yr	1.94	2.65	3.39	4.26	5.28	6.49	7.46	25yr	5.75	7.18	8.41	9.34	10.31	25yr
50yr	0.68	1.09	1.40	1.96	2.63	3.43	50yr	2.27	3.11	4.02	5.06	6.30	7.76	8.97	50yr	6.87	8.63	10.14	11.07	12.14	50yr
100yr	0.76	1.24	1.60	2.26	3.09	4.06	100yr	2.66	3.65	4.78	6.04	7.53	9.29	10.79	100yr	8.22	10.38	12.25	13.14	14.30	100yr
200yr	0.86	1.41	1.83	2.62	3.63	4.81	200yr	3.13	4.29	5.68	7.21	9.00	11.12	12.99	200yr	9.84	12.49	14.79	15.60	16.86	200yr
500yr	1.04	1.71	2.22	3.22	4.50	6.01	500yr	3.88	5.31	7.12	9.08	11.40	14.14	16.61	500yr	12.51	15.97	19.00	19.57	20.96	500yr

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.52	0.70	0.86	1.15	1yr	0.74	1.13	1.37	1.71	2.16	2.40	2.89	1yr	2.13	2.78	3.29	3.80	4.35	1yr
2yr	0.39	0.60	0.74	1.00	1.23	1.48	2yr	1.06	1.44	1.69	2.16	2.70	3.29	3.71	2yr	2.91	3.56	4.10	4.82	5.51	2yr
5yr	0.43	0.67	0.83	1.14	1.45	1.73	5yr	1.25	1.69	1.98	2.51	3.15	4.05	4.48	5yr	3.58	4.30	4.96	5.79	6.47	5yr
10yr	0.47	0.73	0.90	1.26	1.63	1.93	10yr	1.41	1.89	2.23	2.79	3.53	4.52	5.16	10yr	4.00	4.96	5.73	6.46	7.04	10yr
25yr	0.53	0.81	1.01	1.44	1.89	2.23	25yr	1.64	2.18	2.60	3.20	4.13	5.45	6.26	25yr	4.82	6.02	7.23	7.63	7.97	25yr
50yr	0.58	0.89	1.11	1.59	2.14	2.50	50yr	1.85	2.44	2.93	3.55	4.65	6.28	7.23	50yr	5.56	6.95	8.45	8.65	8.71	50yr
100yr	0.64	0.97	1.22	1.76	2.42	2.81	100yr	2.09	2.74	3.31	3.92	5.24	7.27	8.38	100yr	6.44	8.06	9.87	9.79	9.49	100yr
200yr	0.71	1.07	1.35	1.96	2.73	3.14	200yr	2.35	3.07	3.75	4.35	5.91	8.45	9.74	200yr	7.48	9.36	11.55	11.07	10.31	200yr
500yr	0.81	1.21	1.56	2.26	3.21	3.65	500yr	2.77	3.57	4.45	4.99	6.98	10.33	11.89	500yr	9.14	11.44	14.24	13.04	11.41	500yr

Upper Confidence Limits



Stormwater Report
13 Tavano Road

Appendix B

WQv Calculation

Date: _____
Calculated by: _____

NYSDEC Water Quality Volume (WQv) Calculation

PROJECT: 13 Tavano Road
BMP Location: Infiltration collecting Outdoor Living

Total Watershed Area: 0.030 Acres

Impervious Area: 0.030 Acres

% Impervious is: 100.00

Value of P: 1.5 Inches

$$R_v = 0.05 + (0.009 \times I)$$

RV = 0.950

$$WQ_v = P \times R_v \times A / 12$$

WQv =

0.004
155

Acre-Feet
Cubic Feet

Infiltration provides 0.005 af of Storage



Stormwater Report
13 Tavano Road

Appendix C

Soil Map & Report

Soil Map—Westchester County, New York (13 Tavano Rd)



Map Scale: 1:468 if printed on A portrait (8.5" x 11") sheet.

0 5 10 20 30 Meters

0 20 40 80 120 Feet

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



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

5/27/2023
Page 1 of 3

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CrC	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	0.4	100.0%
Totals for Area of Interest		0.4	100.0%