STORMWATER MANAGEMENT PLAN & DRAINAGE ANALYSIS

40 Somerstown Road
Town of Ossining - New York

October 5, 2016

Hudson Engineering & Consulting, P.C.
45 Knollwood Road – Suite 201
Elmsford, NY 10523
(914) 909-0420

STORMWATER MANAGEMENT
PLAN & DRAINAGE ANALYSIS
40 Somerstown Road
Town of Ossining - New York

INTRODUCTION

This Stormwater Management Plan presents the proposed Best Management Practices (BMPs) to control erosion and sedimentation and manage stormwater during and upon construction of the proposed parking improvements at 40 Somerstown Road in the Town of Ossining, Westchester County, New York.

This Plan consists of this narrative and a plan set entitled: "Proposed Site improvements, 40 Somerstown Road, Town of Ossining, Westchester County - New York", all as prepared by Hudson Engineering and Consulting, P.C., Elmsford, New York, last revised October 5, 2016. Since the project disturbance is less than one acre the New York State Department of Environmental Conservation [NYSDEC] stormwater regulations are not applicable.

METHODOLOGY

The stormwater analysis was developed utilizing the Soil Conservation Service (SCS) TR-20 methodologies (HydroCad®) to assist with the drainage analysis and design of the mitigation practice. The "Complex Number" (CN) value determination is based on soil type, vegetation and land use. The time of concentration (T_c) is determined by calculating the time required for runoff to travel from the most hydrologically distant point of the watershed to the point of collection. The CN and T_c data is input into the computer model. The project site is then modeled for the peak rates of runoff from the required extreme storm event(s).

The stormwater management design is based on the NYSDEC "New York State Stormwater Management Design Manual", latest edition and "Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMP's", by the Metropolitan Washington Council of Governments.

PRE-DESIGN INVESTIGATIVE ANALYSIS

A pre-design investigative analysis was performed including percolation and deep holes tests in the locations shown on the plans. A series of percolation tests were performed in the vicinity of the potential stormwater mitigation practice [TP-1, TP-2, TP-3, TP-4, TP-5] until constant rates were achieved, their results as follows:

- TP-1: A percolation rate of 21.8-minutes per inch (2.75-inches per hour) was observed. This location was not utilized in the design.

- TP-2: A percolation rate of 80-minutes per inch (0.75-inch per hour) was observed. A percolation rate of 80-minutes per inch (0.75 inches per hour) was utilized at this location.

- TP-3: A percolation rate of 60-minutes per inch (1-inches per hour) was observed. This location was not utilized in the design.

- TP-4: A percolation rate of 40-minutes per inch (1.50-inches per hour) was observed. This location was not utilized in the design.

- TP-5: A percolation rate of 18.5-minutes per inch (3.25-inch per hour) was observed. A percolation rate of 20-minutes per inch (3-inches per hour) was utilized at this location.

Four (4) deep test holes were excavated and labeled TP-2, TP-3, TP-4 and TP-5 as shown on the plans.

- TP-2 was excavated to a depth of 72-inches. The test revealed topsoil to a depth of 6-inches, compact brown loam to a depth of 36-inches, and brown sandy loam to the invert. Ledge rock was encountered at 72-inches. No groundwater was encountered.

- TP-3 was excavated to a depth of 84-inches. The test revealed topsoil to a depth of 8-inches and light brown loam to the invert. Ledge rock was encountered at 84-inches. No groundwater was encountered.

- TP-4 was excavated to a depth of 72-inches. The test revealed topsoil to a depth of 6-inches, brown sandy loam to a depth of 36-inches and compact brown loam to the invert. Ledge rock was encountered at 72-inches. No groundwater was encountered.

- TP-5 was excavated to a depth of 96-inches. The test revealed topsoil to a depth of 8-inches, compact sandy loam to a depth of 72-inches and grey clay to the invert. No groundwater or ledge rock was encountered.

The deep test hole log and percolation test data sheets are attached.

PRE-DEVELOPED CONDITION

In the pre-developed condition the site is modeled as two watersheds, Watershed 1 and Watershed 2.

Watershed 1 contains a tributary area of approximately 303,113 square feet. Of which, 258,215 square feet is pervious area in the form of lawn and landscaping (136,976 square feet in HSG B soils and 121,239 square feet in HSC C soils) and 44,898 square feet is impervious in the form of the existing driveway, building, and walkways. The weighted Complex Number (CN) value is calculated as 72 and the Time of Concentration (Tc) is calculated as 10.0 minutes. The

runoff flows overland in a westerly direction and exits the site at the western property line at DP-1.

Watershed 2 contains a tributary area of approximately 774,653 square feet. Of which, 9,710 square feet is impervious in the form of the existing driveway and 764,943 square feet is pervious. The pervious area is broken down as follows: 505,998 square feet is wooded area in HSG B soils, 141,284 square feet is lawn area in HSG C soils and 117,661 square feet is wooded area in HSG C soils. The weighted Complex Number (CN) value is calculated as 61 and the Time of Concentration (Tc) is calculated as 35.7 minutes. The runoff flows overland in a northerly direction and exits the property to at DP-2.

See Watershed Maps contained herein.

POST-DEVELOPED CONDITION

The project site was modeled as four watersheds in the proposed condition: Watershed 1, Watershed 1A, Watershed 1B and Watershed 2. Each watershed was analyzed as follows:

Watershed 1 contains a tributary area of approximately 276,196 square feet. Of which, 231,966 square feet is pervious area in the form of lawn and landscaping (136,130 square feet in HSG B soils and 95,836 square feet in HSC C soils) and 44,230 square feet is impervious in the form of the existing driveway and building. The weighted Complex Number (CN) value is calculated as 71 and the Time of Concentration (Tc) is calculated as 8.9 minutes. The runoff flows overland in a westerly direction and exits the site at the western property line at DP-1.

Watershed 1A contains a tributary area of approximately 17,702 square feet, all of which is imperious area in the form of a portion of the proposed parking area. The weighted Complex Number (CN) value is calculated as 98 and the Time of Concentration (Tc) is calculated as a direct entry of 1.0 minute. The runoff from this tributary area is conveyed via a comprehensive drainage system to ninety-six (96) Cultec® 280HD Rechargers set in one foot of gravel at the sides and invert. The system is designed to fully accept (no release) the entire stormwater runoff volume for the 25-year storm event from the watershed and ex-filtrate the runoff into the surrounding soil sub-strata.

Watershed 1B contains a tributary area of approximately 18,415 square feet of imperious area in the form of a portion of the proposed parking lot. The weighted Complex Number (CN) value is calculated as 98 and the Time of Concentration (Tc) is calculated as a direct entry of 1.0 minute. The runoff from this tributary area is conveyed via a comprehensive drainage system to fifty-four (54) Cultec® 330XL Rechargers set in one foot of gravel at the sides and invert. The system is designed to fully accept (no release) the entire stormwater runoff volume for

the 25-year storm event from the watershed and ex-filtrate the runoff into the surrounding soil sub-strata.

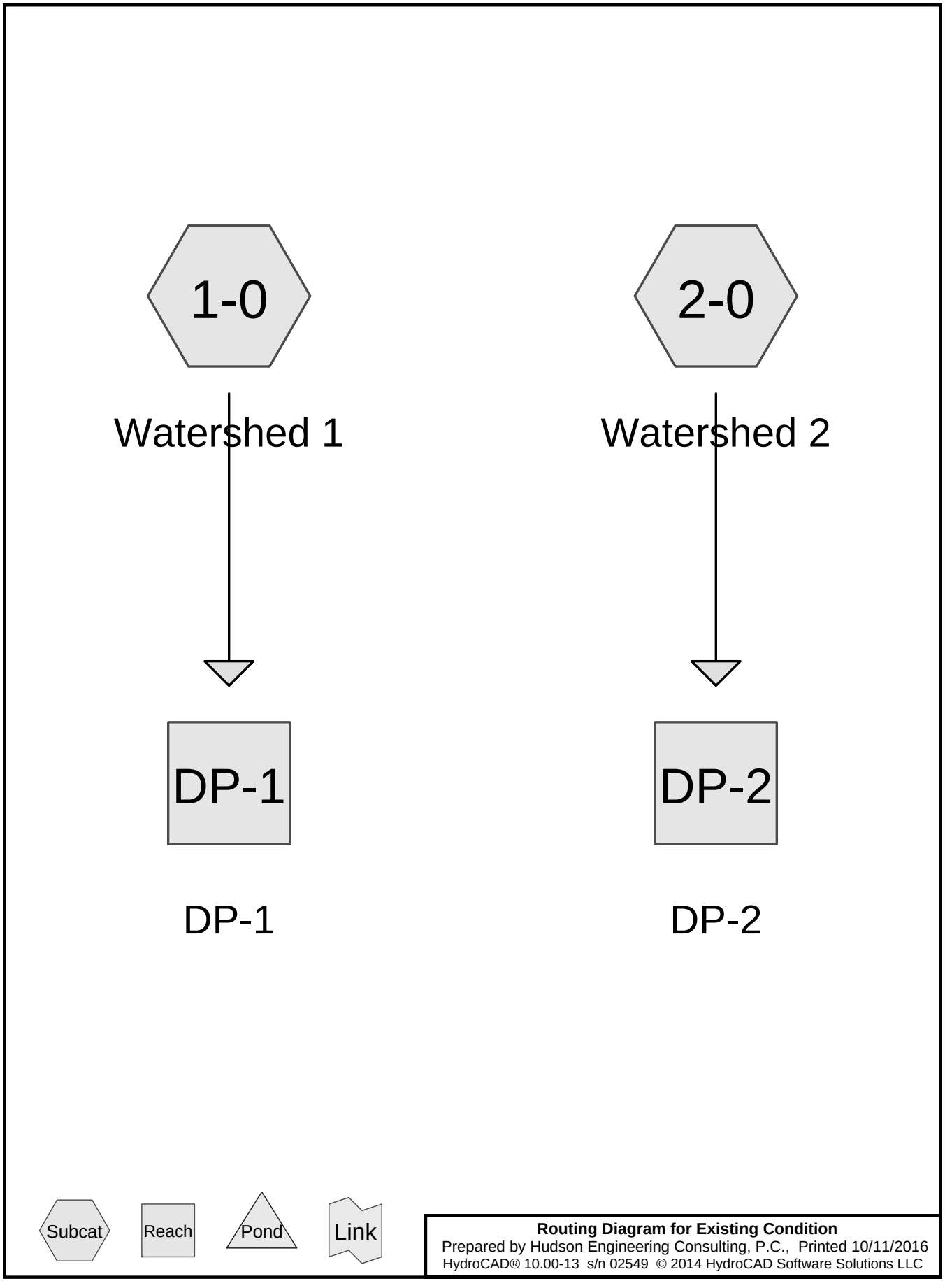
Watershed 2 contains a tributary area of approximately 765,453 square feet. Of which, 4,254 square feet is impervious in the form of the existing driveway and 761,199 square feet is pervious. The pervious area is broken down as follows: 505,998 square feet is wooded area in HSG B soils, 137,540 square feet is lawn area in HSG C soils, and 117,661 square feet is wooded area in HSG C soils. The weighted Complex Number (CN) value is calculated as 61 and the Time of Concentration (Tc) is calculated as 35.7 minutes. The runoff flows overland in a northerly direction and exits the property to at DP-2.

The peak rates of runoff from Watershed 1, Watershed 1A, Watershed 1B and Watershed 2 were calculated to be as follows:

Design Point	STORM EVENT		
	25-year	10-year	2-year
DP-1			
• Pre-[cfs]	24.20	16.27	7.07
• Post-[cfs]	**22.16**	**14.76**	**6.26**
DP-2			
• Pre-[cfs]	24.48	14.48	4.23
• Post-[cfs]	**24.19**	**14.31**	**4.18**

CONCLUSION

The stormwater management plan proposed meets all the requirements set forth by the Town of Ossining. Design modification requirements that may occur during the approval process will be performed and submitted for review to the Town of Ossining.



Routing Diagram for Existing Condition

Prepared by Hudson Engineering Consulting, P.C., Printed 10/11/2016

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
136,976	61	>75% Grass cover, Good, HSG B (1-0)
262,523	74	>75% Grass cover, Good, HSG C (1-0, 2-0)
12,762	98	Building (1-0)
40,743	98	Existing Driveway (1-0, 2-0)
991	98	Existing Walks and Patios (1-0)
112	98	Existing Wall (1-0)
505,998	55	Woods, Good, HSG B (2-0)
117,661	70	Woods, Good, HSG C (2-0)
1,077,766	**64**	**TOTAL AREA**

Summary for Subcatchment 1-0: Watershed 1

Runoff = 7.07 cfs @ 12.15 hrs, Volume= 26,838 cf, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.41"

	Area (sf)	CN	Description
*	12,762	98	Building
*	31,033	98	Existing Driveway
*	991	98	Existing Walks and Patios
*	112	98	Existing Wall
	136,976	61	>75% Grass cover, Good, HSG B
	121,239	74	>75% Grass cover, Good, HSG C
	303,113	72	Weighted Average
	258,215		85.19% Pervious Area
	44,898		14.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	99	0.0353	0.22		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.50"
2.6	301	0.0777	1.95		**Shallow Concentrated Flow, B-DP-1** Short Grass Pasture Kv= 7.0 fps
10.0	400	Total			

Summary for Subcatchment 2-0: Watershed 2

Runoff = 4.23 cfs @ 12.62 hrs, Volume= 34,398 cf, Depth= 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.41"

	Area (sf)	CN	Description
	505,998	55	Woods, Good, HSG B
	141,284	74	>75% Grass cover, Good, HSG C
*	9,710	98	Existing Driveway
	117,661	70	Woods, Good, HSG C
	774,653	61	Weighted Average
	764,943		98.75% Pervious Area
	9,710		1.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.3	99	0.0323	0.06		**Sheet Flow, A->B**
					Woods: Dense underbrush n= 0.800 P2= 3.50"
2.7	208	0.0678	1.30		**Shallow Concentrated Flow, B->C**
					Woodland Kv= 5.0 fps
1.1	78	0.0526	1.15		**Shallow Concentrated Flow, C->D**
					Woodland Kv= 5.0 fps
1.8	204	0.1402	1.87		**Shallow Concentrated Flow, D->E**
					Woodland Kv= 5.0 fps
0.8	48	0.0438	1.05		**Shallow Concentrated Flow, D->DP-1**
					Woodland Kv= 5.0 fps
35.7	637	Total			

Summary for Reach DP-1: DP-1

Inflow Area = 303,113 sf, 14.81% Impervious, Inflow Depth = 1.06" for 2-Year event
Inflow = 7.07 cfs @ 12.15 hrs, Volume= 26,838 cf
Outflow = 7.07 cfs @ 12.15 hrs, Volume= 26,838 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach DP-2: DP-2

Inflow Area = 774,653 sf, 1.25% Impervious, Inflow Depth = 0.53" for 2-Year event
Inflow = 4.23 cfs @ 12.62 hrs, Volume= 34,398 cf
Outflow = 4.23 cfs @ 12.62 hrs, Volume= 34,398 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1-0: Watershed 1

Runoff = 16.27 cfs @ 12.14 hrs, Volume= 58,254 cf, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

	Area (sf)	CN	Description
*	12,762	98	Building
*	31,033	98	Existing Driveway
*	991	98	Existing Walks and Patios
*	112	98	Existing Wall
	136,976	61	>75% Grass cover, Good, HSG B
	121,239	74	>75% Grass cover, Good, HSG C
	303,113	72	Weighted Average
	258,215		85.19% Pervious Area
	44,898		14.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	99	0.0353	0.22		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.50"
2.6	301	0.0777	1.95		**Shallow Concentrated Flow, B-DP-1** Short Grass Pasture Kv= 7.0 fps
10.0	400	Total			

Summary for Subcatchment 2-0: Watershed 2

Runoff = 14.48 cfs @ 12.57 hrs, Volume= 93,858 cf, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

	Area (sf)	CN	Description
	505,998	55	Woods, Good, HSG B
	141,284	74	>75% Grass cover, Good, HSG C
*	9,710	98	Existing Driveway
	117,661	70	Woods, Good, HSG C
	774,653	61	Weighted Average
	764,943		98.75% Pervious Area
	9,710		1.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.3	99	0.0323	0.06		**Sheet Flow, A->B**
					Woods: Dense underbrush n= 0.800 P2= 3.50"
2.7	208	0.0678	1.30		**Shallow Concentrated Flow, B->C**
					Woodland Kv= 5.0 fps
1.1	78	0.0526	1.15		**Shallow Concentrated Flow, C->D**
					Woodland Kv= 5.0 fps
1.8	204	0.1402	1.87		**Shallow Concentrated Flow, D->E**
					Woodland Kv= 5.0 fps
0.8	48	0.0438	1.05		**Shallow Concentrated Flow, D->DP-1**
					Woodland Kv= 5.0 fps
35.7	637	Total			

Summary for Reach DP-1: DP-1

Inflow Area = 303,113 sf, 14.81% Impervious, Inflow Depth = 2.31" for 10-Year event
Inflow = 16.27 cfs @ 12.14 hrs, Volume= 58,254 cf
Outflow = 16.27 cfs @ 12.14 hrs, Volume= 58,254 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach DP-2: DP-2

Inflow Area = 774,653 sf, 1.25% Impervious, Inflow Depth = 1.45" for 10-Year event
Inflow = 14.48 cfs @ 12.57 hrs, Volume= 93,858 cf
Outflow = 14.48 cfs @ 12.57 hrs, Volume= 93,858 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1-0: Watershed 1

Runoff = 24.20 cfs @ 12.14 hrs, Volume= 85,844 cf, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.49"

	Area (sf)	CN	Description
*	12,762	98	Building
*	31,033	98	Existing Driveway
*	991	98	Existing Walks and Patios
*	112	98	Existing Wall
	136,976	61	>75% Grass cover, Good, HSG B
	121,239	74	>75% Grass cover, Good, HSG C
	303,113	72	Weighted Average
	258,215		85.19% Pervious Area
	44,898		14.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	99	0.0353	0.22		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.50"
2.6	301	0.0777	1.95		**Shallow Concentrated Flow, B-DP-1** Short Grass Pasture Kv= 7.0 fps
10.0	400	Total			

Summary for Subcatchment 2-0: Watershed 2

Runoff = 24.48 cfs @ 12.53 hrs, Volume= 151,072 cf, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.49"

	Area (sf)	CN	Description
	505,998	55	Woods, Good, HSG B
	141,284	74	>75% Grass cover, Good, HSG C
*	9,710	98	Existing Driveway
	117,661	70	Woods, Good, HSG C
	774,653	61	Weighted Average
	764,943		98.75% Pervious Area
	9,710		1.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.3	99	0.0323	0.06		**Sheet Flow, A->B**
					Woods: Dense underbrush n= 0.800 P2= 3.50"
2.7	208	0.0678	1.30		**Shallow Concentrated Flow, B->C**
					Woodland Kv= 5.0 fps
1.1	78	0.0526	1.15		**Shallow Concentrated Flow, C->D**
					Woodland Kv= 5.0 fps
1.8	204	0.1402	1.87		**Shallow Concentrated Flow, D->E**
					Woodland Kv= 5.0 fps
0.8	48	0.0438	1.05		**Shallow Concentrated Flow, D->DP-1**
					Woodland Kv= 5.0 fps
35.7	637	Total			

Summary for Reach DP-1: DP-1

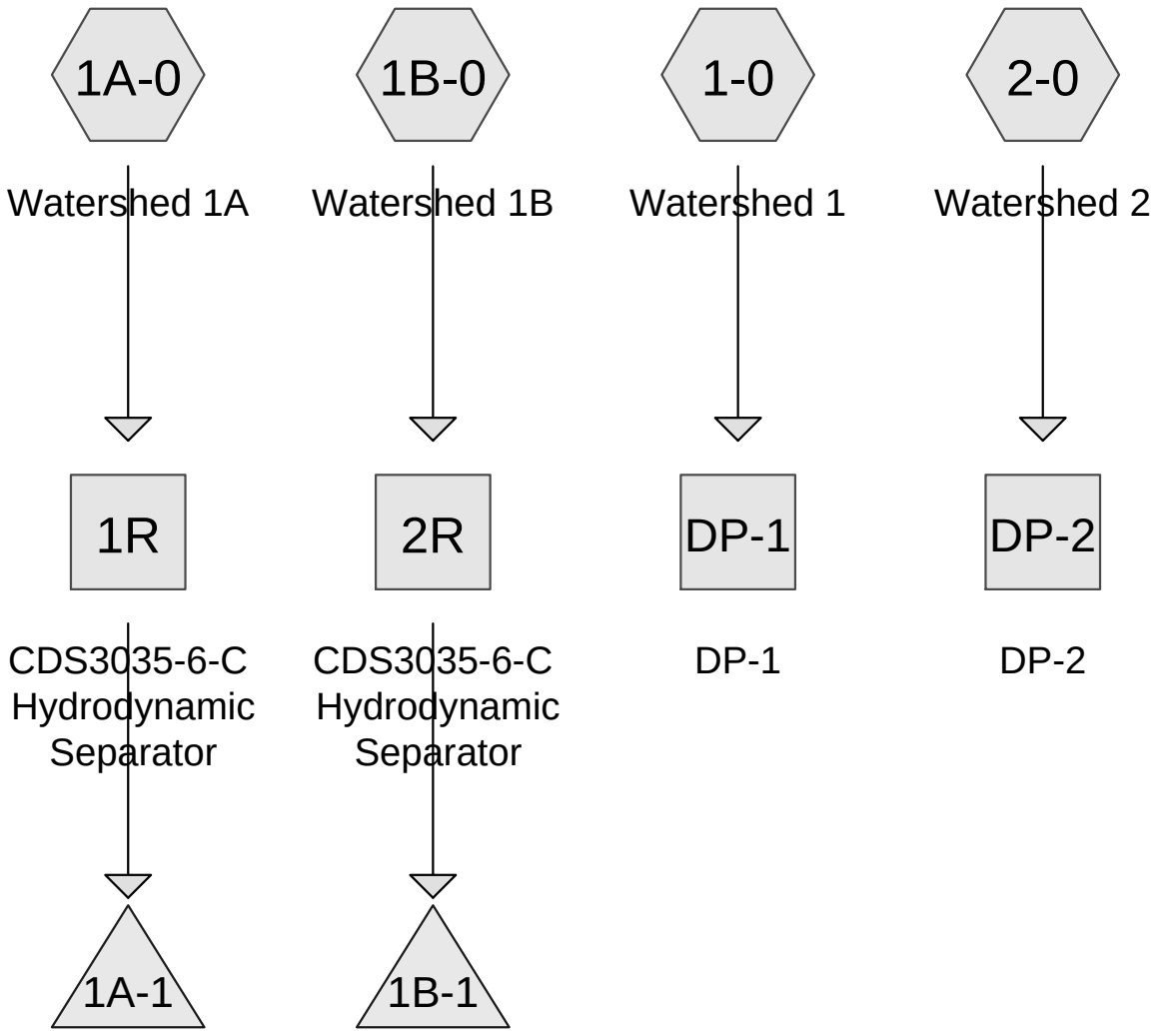
Inflow Area = 303,113 sf, 14.81% Impervious, Inflow Depth = 3.40" for 25-Year event
Inflow = 24.20 cfs @ 12.14 hrs, Volume= 85,844 cf
Outflow = 24.20 cfs @ 12.14 hrs, Volume= 85,844 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach DP-2: DP-2

Inflow Area = 774,653 sf, 1.25% Impervious, Inflow Depth = 2.34" for 25-Year event
Inflow = 24.48 cfs @ 12.53 hrs, Volume= 151,072 cf
Outflow = 24.48 cfs @ 12.53 hrs, Volume= 151,072 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs



Subcat Reach Pond Link

Routing Diagram for Proposed Condition

Prepared by Hudson Engineering Consulting, P.C., Printed 10/11/2016

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
136,130	61	>75% Grass cover, Good, HSG B (1-0)
233,376	74	>75% Grass cover, Good, HSG C (1-0, 2-0)
12,762	98	Building (1-0)
4,254	98	Existing Driveway (2-0)
991	98	Existing Walks and Patios (1-0)
112	98	Existing Wall (1-0)
28,634	98	Existing and Proposed Driveway (1-0)
36,117	98	Portion of Existing and Proposed Driveway (1A-0, 1B-0)
1,731	98	Proposed Walks and Patios (1-0)
505,998	55	Woods, Good, HSG B (2-0)
117,661	70	Woods, Good, HSG C (2-0)
1,077,766	**65**	**TOTAL AREA**

Summary for Subcatchment 1-0: Watershed 1

Runoff = 6.26 cfs @ 12.14 hrs, Volume= 23,177 cf, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.41"

	Area (sf)	CN	Description
*	12,762	98	Building
*	28,634	98	Existing and Proposed Driveway
*	991	98	Existing Walks and Patios
*	112	98	Existing Wall
*	1,731	98	Proposed Walks and Patios
	136,130	61	>75% Grass cover, Good, HSG B
	95,836	74	>75% Grass cover, Good, HSG C
	276,196	71	Weighted Average
	231,966		83.99% Pervious Area
	44,230		16.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	99	0.0475	0.25		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.50"
2.3	274	0.0788	1.96		**Shallow Concentrated Flow, B-DP-1** Short Grass Pasture Kv= 7.0 fps
8.9	373	Total			

Summary for Subcatchment 1A-0: Watershed 1A

Runoff = 1.61 cfs @ 12.01 hrs, Volume= 4,686 cf, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.41"

	Area (sf)	CN	Description
*	17,702	98	Portion of Existing and Proposed Driveway
	17,702		100.00% Impervious Area

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

Summary for Subcatchment 1B-0: Watershed 1B

Runoff = 1.67 cfs @ 12.01 hrs, Volume= 4,875 cf, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.41"

	Area (sf)	CN	Description
*	18,415	98	Portion of Existing and Proposed Driveway
	18,415		100.00% Impervious Area

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

Summary for Subcatchment 2-0: Watershed 2

Runoff = 4.18 cfs @ 12.62 hrs, Volume= 33,990 cf, Depth= 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.41"

	Area (sf)	CN	Description
	505,998	55	Woods, Good, HSG B
	137,540	74	>75% Grass cover, Good, HSG C
	117,661	70	Woods, Good, HSG C
*	4,254	98	Existing Driveway
	765,453	61	Weighted Average
	761,199		99.44% Pervious Area
	4,254		0.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.3	99	0.0323	0.06		**Sheet Flow, A->B** Woods: Dense underbrush n= 0.800 P2= 3.50"
2.7	208	0.0678	1.30		**Shallow Concentrated Flow, B->C** Woodland Kv= 5.0 fps
1.1	78	0.0526	1.15		**Shallow Concentrated Flow, C->D** Woodland Kv= 5.0 fps
1.8	204	0.1402	1.87		**Shallow Concentrated Flow, D->E** Woodland Kv= 5.0 fps
0.8	48	0.0438	1.05		**Shallow Concentrated Flow, D->DP-1** Woodland Kv= 5.0 fps
35.7	637	Total			

Summary for Reach 1R: CDS3035-6-C Hydrodynamic Separator

Inflow Area = 17,702 sf,100.00% Impervious, Inflow Depth = 3.18" for 2-Year event
Inflow = 1.61 cfs @ 12.01 hrs, Volume= 4,686 cf
Outflow = 1.61 cfs @ 12.01 hrs, Volume= 4,686 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: CDS3035-6-C Hydrodynamic Separator

Inflow Area = 18,415 sf,100.00% Impervious, Inflow Depth = 3.18" for 2-Year event
Inflow = 1.67 cfs @ 12.01 hrs, Volume= 4,875 cf
Outflow = 1.67 cfs @ 12.01 hrs, Volume= 4,875 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach DP-1: DP-1

Inflow Area = 276,196 sf, 16.01% Impervious, Inflow Depth = 1.01" for 2-Year event
Inflow = 6.26 cfs @ 12.14 hrs, Volume= 23,177 cf
Outflow = 6.26 cfs @ 12.14 hrs, Volume= 23,177 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach DP-2: DP-2

Inflow Area = 765,453 sf, 0.56% Impervious, Inflow Depth = 0.53" for 2-Year event
Inflow = 4.18 cfs @ 12.62 hrs, Volume= 33,990 cf
Outflow = 4.18 cfs @ 12.62 hrs, Volume= 33,990 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Pond 1A-1: 96 Cultec 280HD Rechargers

Inflow Area = 17,702 sf,100.00% Impervious, Inflow Depth = 3.18" for 2-Year event
Inflow = 1.61 cfs @ 12.01 hrs, Volume= 4,686 cf
Outflow = 0.06 cfs @ 9.68 hrs, Volume= 4,686 cf, Atten= 97%, Lag= 0.0 min
Discarded = 0.06 cfs @ 9.68 hrs, Volume= 4,686 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 1.49' @ 14.79 hrs Surf.Area= 3,216 sf Storage= 2,325 cf

Plug-Flow detention time= 355.2 min calculated for 4,685 cf (100% of inflow)
Center-of-Mass det. time= 355.2 min (1,105.7 - 750.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	1,849 cf	**54.50'W x 59.00'L x 3.21'H Field A** 10,316 cf Overall - 4,153 cf Embedded = 6,163 cf x 30.0% Voids
#2A	1.00'	4,153 cf	**Cultec R-280HD** x 96 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 12 rows
		6,002 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**0.750 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.06 cfs @ 9.68 hrs HW=0.03' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Summary for Pond 1B-1: 54 Cultec 330XL Rechargers

Inflow Area = 18,415 sf,100.00% Impervious, Inflow Depth = 3.18" for 2-Year event
Inflow = 1.67 cfs @ 12.01 hrs, Volume= 4,875 cf
Outflow = 0.14 cfs @ 11.37 hrs, Volume= 4,875 cf, Atten= 91%, Lag= 0.0 min
Discarded = 0.14 cfs @ 11.37 hrs, Volume= 4,875 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 1.60' @ 12.74 hrs Surf.Area= 2,048 sf Storage= 1,615 cf

Plug-Flow detention time= 75.9 min calculated for 4,874 cf (100% of inflow)
Center-of-Mass det. time= 75.9 min (826.3 - 750.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	1,300 cf	**45.00'W x 45.50'L x 3.54'H Field A** 7,252 cf Overall - 2,917 cf Embedded = 4,334 cf x 30.0% Voids
#2A	1.00'	2,917 cf	**Cultec R-330XLHD** x 54 Inside #1 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 9 rows
		4,217 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.14 cfs @ 11.37 hrs HW=0.04' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Summary for Subcatchment 1-0: Watershed 1

Runoff = 14.76 cfs @ 12.13 hrs, Volume= 51,163 cf, Depth= 2.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

	Area (sf)	CN	Description
*	12,762	98	Building
*	28,634	98	Existing and Proposed Driveway
*	991	98	Existing Walks and Patios
*	112	98	Existing Wall
*	1,731	98	Proposed Walks and Patios
	136,130	61	>75% Grass cover, Good, HSG B
	95,836	74	>75% Grass cover, Good, HSG C
	276,196	71	Weighted Average
	231,966		83.99% Pervious Area
	44,230		16.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	99	0.0475	0.25		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.50"
2.3	274	0.0788	1.96		**Shallow Concentrated Flow, B-DP-1** Short Grass Pasture Kv= 7.0 fps
8.9	373	Total			

Summary for Subcatchment 1A-0: Watershed 1A

Runoff = 2.44 cfs @ 12.01 hrs, Volume= 7,233 cf, Depth= 4.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

	Area (sf)	CN	Description
*	17,702	98	Portion of Existing and Proposed Driveway
	17,702		100.00% Impervious Area

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

Summary for Subcatchment 1B-0: Watershed 1B

Runoff = 2.53 cfs @ 12.01 hrs, Volume= 7,524 cf, Depth= 4.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

	Area (sf)	CN	Description
*	18,415	98	Portion of Existing and Proposed Driveway
	18,415		100.00% Impervious Area

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

Summary for Subcatchment 2-0: Watershed 2

Runoff = 14.31 cfs @ 12.57 hrs, Volume= 92,743 cf, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.14"

	Area (sf)	CN	Description
	505,998	55	Woods, Good, HSG B
	137,540	74	>75% Grass cover, Good, HSG C
	117,661	70	Woods, Good, HSG C
*	4,254	98	Existing Driveway
	765,453	61	Weighted Average
	761,199		99.44% Pervious Area
	4,254		0.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.3	99	0.0323	0.06		**Sheet Flow, A->B** Woods: Dense underbrush n= 0.800 P2= 3.50"
2.7	208	0.0678	1.30		**Shallow Concentrated Flow, B->C** Woodland Kv= 5.0 fps
1.1	78	0.0526	1.15		**Shallow Concentrated Flow, C->D** Woodland Kv= 5.0 fps
1.8	204	0.1402	1.87		**Shallow Concentrated Flow, D->E** Woodland Kv= 5.0 fps
0.8	48	0.0438	1.05		**Shallow Concentrated Flow, D->DP-1** Woodland Kv= 5.0 fps
35.7	637	Total			

Summary for Reach 1R: CDS3035-6-C Hydrodynamic Separator

Inflow Area = 17,702 sf,100.00% Impervious, Inflow Depth = 4.90" for 10-Year event
Inflow = 2.44 cfs @ 12.01 hrs, Volume= 7,233 cf
Outflow = 2.44 cfs @ 12.01 hrs, Volume= 7,233 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: CDS3035-6-C Hydrodynamic Separator

Inflow Area = 18,415 sf,100.00% Impervious, Inflow Depth = 4.90" for 10-Year event
Inflow = 2.53 cfs @ 12.01 hrs, Volume= 7,524 cf
Outflow = 2.53 cfs @ 12.01 hrs, Volume= 7,524 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach DP-1: DP-1

Inflow Area = 276,196 sf, 16.01% Impervious, Inflow Depth = 2.22" for 10-Year event
Inflow = 14.76 cfs @ 12.13 hrs, Volume= 51,163 cf
Outflow = 14.76 cfs @ 12.13 hrs, Volume= 51,163 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach DP-2: DP-2

Inflow Area = 765,453 sf, 0.56% Impervious, Inflow Depth = 1.45" for 10-Year event
Inflow = 14.31 cfs @ 12.57 hrs, Volume= 92,743 cf
Outflow = 14.31 cfs @ 12.57 hrs, Volume= 92,743 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Pond 1A-1: 96 Cultec 280HD Rechargers

Inflow Area = 17,702 sf,100.00% Impervious, Inflow Depth = 4.90" for 10-Year event
Inflow = 2.44 cfs @ 12.01 hrs, Volume= 7,233 cf
Outflow = 0.06 cfs @ 8.38 hrs, Volume= 7,233 cf, Atten= 98%, Lag= 0.0 min
Discarded = 0.06 cfs @ 8.38 hrs, Volume= 7,233 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 2.23' @ 15.97 hrs Surf.Area= 3,216 sf Storage= 4,209 cf

Plug-Flow detention time= 647.8 min calculated for 7,231 cf (100% of inflow)
Center-of-Mass det. time= 647.8 min (1,390.8 - 742.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	1,849 cf	**54.50'W x 59.00'L x 3.21'H Field A** 10,316 cf Overall - 4,153 cf Embedded = 6,163 cf x 30.0% Voids
#2A	1.00'	4,153 cf	**Cultec R-280HD** x 96 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 12 rows
		6,002 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**0.750 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.06 cfs @ 8.38 hrs HW=0.03' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Summary for Pond 1B-1: 54 Cultec 330XL Rechargers

Inflow Area = 18,415 sf,100.00% Impervious, Inflow Depth = 4.90" for 10-Year event
Inflow = 2.53 cfs @ 12.01 hrs, Volume= 7,524 cf
Outflow = 0.14 cfs @ 10.79 hrs, Volume= 7,524 cf, Atten= 94%, Lag= 0.0 min
Discarded = 0.14 cfs @ 10.79 hrs, Volume= 7,524 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 2.42' @ 13.35 hrs Surf.Area= 2,048 sf Storage= 2,931 cf

Plug-Flow detention time= 155.1 min calculated for 7,523 cf (100% of inflow)
Center-of-Mass det. time= 155.1 min (898.0 - 742.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	1,300 cf	**45.00'W x 45.50'L x 3.54'H Field A** 7,252 cf Overall - 2,917 cf Embedded = 4,334 cf x 30.0% Voids
#2A	1.00'	2,917 cf	**Cultec R-330XLHD** x 54 Inside #1 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 9 rows
		4,217 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.14 cfs @ 10.79 hrs HW=0.04' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Summary for Subcatchment 1-0: Watershed 1

Runoff = 22.16 cfs @ 12.13 hrs, Volume= 75,916 cf, Depth= 3.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.49"

	Area (sf)	CN	Description
*	12,762	98	Building
*	28,634	98	Existing and Proposed Driveway
*	991	98	Existing Walks and Patios
*	112	98	Existing Wall
*	1,731	98	Proposed Walks and Patios
	136,130	61	>75% Grass cover, Good, HSG B
	95,836	74	>75% Grass cover, Good, HSG C
	276,196	71	Weighted Average
	231,966		83.99% Pervious Area
	44,230		16.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	99	0.0475	0.25		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.50"
2.3	274	0.0788	1.96		**Shallow Concentrated Flow, B-DP-1** Short Grass Pasture Kv= 7.0 fps
8.9	373	Total			

Summary for Subcatchment 1A-0: Watershed 1A

Runoff = 3.08 cfs @ 12.01 hrs, Volume= 9,222 cf, Depth= 6.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.49"

	Area (sf)	CN	Description
*	17,702	98	Portion of Existing and Proposed Driveway
	17,702		100.00% Impervious Area

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

Summary for Subcatchment 1B-0: Watershed 1B

Runoff = 3.21 cfs @ 12.01 hrs, Volume= 9,593 cf, Depth= 6.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.49"

	Area (sf)	CN	Description
*	18,415	98	Portion of Existing and Proposed Driveway
	18,415		100.00% Impervious Area

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

Summary for Subcatchment 2-0: Watershed 2

Runoff = 24.19 cfs @ 12.53 hrs, Volume= 149,278 cf, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.49"

	Area (sf)	CN	Description
	505,998	55	Woods, Good, HSG B
	137,540	74	>75% Grass cover, Good, HSG C
	117,661	70	Woods, Good, HSG C
*	4,254	98	Existing Driveway
	765,453	61	Weighted Average
	761,199		99.44% Pervious Area
	4,254		0.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.3	99	0.0323	0.06		**Sheet Flow, A->B** Woods: Dense underbrush n= 0.800 P2= 3.50"
2.7	208	0.0678	1.30		**Shallow Concentrated Flow, B->C** Woodland Kv= 5.0 fps
1.1	78	0.0526	1.15		**Shallow Concentrated Flow, C->D** Woodland Kv= 5.0 fps
1.8	204	0.1402	1.87		**Shallow Concentrated Flow, D->E** Woodland Kv= 5.0 fps
0.8	48	0.0438	1.05		**Shallow Concentrated Flow, D->DP-1** Woodland Kv= 5.0 fps
35.7	637	Total			

Summary for Reach 1R: CDS3035-6-C Hydrodynamic Separator

Inflow Area = 17,702 sf,100.00% Impervious, Inflow Depth = 6.25" for 25-Year event
Inflow = 3.08 cfs @ 12.01 hrs, Volume= 9,222 cf
Outflow = 3.08 cfs @ 12.01 hrs, Volume= 9,222 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: CDS3035-6-C Hydrodynamic Separator

Inflow Area = 18,415 sf,100.00% Impervious, Inflow Depth = 6.25" for 25-Year event
Inflow = 3.21 cfs @ 12.01 hrs, Volume= 9,593 cf
Outflow = 3.21 cfs @ 12.01 hrs, Volume= 9,593 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach DP-1: DP-1

Inflow Area = 276,196 sf, 16.01% Impervious, Inflow Depth = 3.30" for 25-Year event
Inflow = 22.16 cfs @ 12.13 hrs, Volume= 75,916 cf
Outflow = 22.16 cfs @ 12.13 hrs, Volume= 75,916 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach DP-2: DP-2

Inflow Area = 765,453 sf, 0.56% Impervious, Inflow Depth = 2.34" for 25-Year event
Inflow = 24.19 cfs @ 12.53 hrs, Volume= 149,278 cf
Outflow = 24.19 cfs @ 12.53 hrs, Volume= 149,278 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Pond 1A-1: 96 Cultec 280HD Rechargers

Inflow Area = 17,702 sf,100.00% Impervious, Inflow Depth = 6.25" for 25-Year event
Inflow = 3.08 cfs @ 12.01 hrs, Volume= 9,222 cf
Outflow = 0.06 cfs @ 7.47 hrs, Volume= 9,222 cf, Atten= 98%, Lag= 0.0 min
Discarded = 0.06 cfs @ 7.47 hrs, Volume= 9,222 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 3.02' @ 17.01 hrs Surf.Area= 3,216 sf Storage= 5,792 cf

Plug-Flow detention time= 889.4 min calculated for 9,220 cf (100% of inflow)
Center-of-Mass det. time= 889.5 min (1,628.8 - 739.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	1,849 cf	**54.50'W x 59.00'L x 3.21'H Field A** 10,316 cf Overall - 4,153 cf Embedded = 6,163 cf x 30.0% Voids
#2A	1.00'	4,153 cf	**Cultec R-280HD** x 96 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 12 rows
		6,002 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**0.750 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.06 cfs @ 7.47 hrs HW=0.03' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Summary for Pond 1B-1: 54 Cultec 330XL Rechargers

Inflow Area = 18,415 sf,100.00% Impervious, Inflow Depth = 6.25" for 25-Year event
Inflow = 3.21 cfs @ 12.01 hrs, Volume= 9,593 cf
Outflow = 0.14 cfs @ 10.21 hrs, Volume= 9,593 cf, Atten= 96%, Lag= 0.0 min
Discarded = 0.14 cfs @ 10.21 hrs, Volume= 9,593 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 3.42' @ 13.91 hrs Surf.Area= 2,048 sf Storage= 4,138 cf

Plug-Flow detention time= 231.7 min calculated for 9,592 cf (100% of inflow)
Center-of-Mass det. time= 231.7 min (971.1 - 739.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	1,300 cf	**45.00'W x 45.50'L x 3.54'H Field A** 7,252 cf Overall - 2,917 cf Embedded = 4,334 cf x 30.0% Voids
#2A	1.00'	2,917 cf	**Cultec R-330XLHD** x 54 Inside #1 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 9 rows
		4,217 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**3.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.14 cfs @ 10.21 hrs HW=0.04' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

HUDSON ENGINEERING & CONSULTING, P.C.

SITE ADDRESS: 40 Somerstown Rd.
TOWN/VILLAGE: Ossining
DATE: 9-12-16 TIME: 1:00
WEATHER: Sunny TEMP. 77 °F
WITNESSED BY: Thomas Kohany

DEEP TEST HOLE DATA SHEET – STORMWATER MANAGEMENT SYSTEM

DEPTH	HOLE NO. 2	HOLE NO. 3	HOLE NO. 4	HOLE NO. 5
G.L.	0"-6"	0"-8"	0"-6"	0"-8"
6"	Topsoil	Top soil	Topsoil	Top soil
12"	6"-36"	8"-84"	6"-36"	8"-72"
18"	Compact brown	light brown	brown Sandy	Compact
24"	loam	loam	loam	Sandy loam
30"				
36"	36"-72"		36"-72"	
42"	brown Sandy		Compact	
48"	loam		brown loam	
54"				
60"				
66"				
72"	Ledge@72"		Ledge@72"	72"-96"
78"	No groundwater		No groundwater	Grey Clay
84"		Ledge@84"		No ledge
90"		No groundwater		No Groundwater
96"				
102"				
108"				

- *Indicate level at which Ground Water (GW), Mottling and/or Ledge Rock is encountered.*
- *Indicate level for which water level rises after being encountered.*

EXCAVATION PERFORMED BY:

45 Knollwood Road – Suite 201 - Elmsford, NY 10523 (914) 909-0420 Fax (914) 560-2086

HUDSON ENGINEERING & CONSULTING, P.C.

SITE ADDRESS: 40 Somerstown Rd
TOWN/VILLAGE: Ossining
DATE: 9/23 TIME: 10:00 am
WEATHER: Sunny TEMP. 80 °F
WITNESSED BY: Chris Cavalieri

PERCOLATION TEST HOLE DATA SHEET – STORMWATER MANAGEMENT SYSTEM

Owner _____

HOLE #	CLOCK TIME				PERCOLATION				
					Depth to Water From Ground Surface		Water Level in Inches Drop in inches	Soil Rate	
Hole Number	Run No.	Start	Stop	Elapse Time (Min.)	Start Inches	Stop Inches		Min. per inch	Inches per Hour
# 1	1	1:54	2:24	30	11.5	13	1,5	20	3
	2	2:25	2:55	30	11.5	13	1,5	20	3
"Ø	3	2:55	3:25	30	11.5	12,875	1,375	21,8	2,75
	4								
	5								
# 2	1	1:52	2:22	30	10.75	11.5	0,75	40	1.5
	2	2:23	2:53	30	10.75	11.5	0.75	40	1.5
"Ø	3	2:53	3:23	30	10.5	10.875	0.375	80	0.75
	4								
	5								
# 3	1	1:50	2:20	30	16	16.75	0.75	40	1.5
	2	2:21	2:51	30	16	16.75	0.75	40	1.5
"Ø	3	2:51	3:21	30	16	16.5	0.5	60	1
	4								
	5								

Notes:
1) Tests to be repeated at the same depth until approximately equal soil rates are obtained at each percolation test hole. All data to be submitted for review.
2) Depth measurements to be made from top of hole.

HUDSON ENGINEERING & CONSULTING, P.C.

SITE ADDRESS: _____

TOWN/VILLAGE: _____

DATE: _____ TIME: _____

WEATHER: _____ TEMP. ____ °F

WITNESSED BY: _____

PERCOLATION TEST HOLE DATA SHEET – STORMWATER MANAGEMENT SYSTEM

Owner _____

HOLE #	CLOCK TIME			PERCOLATION				
				Depth to Water From Ground Surface			Soil Rate	
Hole Number	Run No.	Start	Stop	Elapse Time (Min.)	Start Inches	Stop Inches	Water Level in Inches Drop in inches	Min. per inch	Inches per Hour
# 4	1	1:57	2:27	30	8.5	10	1.5	20	3
	2	2:27	2:57	30	8.5	9.5	1	30	2
___" Ø	3	2:57	3:27	30	8	8.75	0.75	40	1.5
	4								
	5								
# 5	1	1:45	2:15	30	14.25	16	1.75	17.1	3.5
	2	2:16	2:46	30	14.25	16	1.75	17.1	3.5
___" Ø	3	2:47	3:17	30	14.25	15.875	1.625	18.5	3.25
	4								
	5								
# ____	1								
	2								
___" Ø	3								
	4								
	5								

Notes:

1) Tests to be repeated at the same depth until approximately equal soil rates are obtained at each percolation test hole. All data to be submitted for review.
2) Depth measurements to be made from top of hole.