STORMWATER MANAGEMENT REPORT

KCE CT8 BESS
East Hampton

Skinner Street
East Hampton, Connecticut

PREPARED FOR

Flycatcher LLC
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Yarmouth, ME 04096

PREPARED BY

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Suite 200
Wethersfield, Connecticut 06109
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June 23, 2023

Table of Contents

List of Tables

Stormwater Report Narrative

The Project was designed to incorporate measures provided in the Connecticut Stormwater Quality Manual (CTDEEP 2004) as well as the CTDEEP Stormwater General Permit effective December 31, 2020. The conclusion of this analysis is that the proposed improvements will not increase the post-development peak runoff rates in comparison to existing predevelopment rates at any of the critical design points analyzed and the quality of stormwater runoff leaving the Site will be treated prior to discharge from the Site.

Project Description

The Petitioner, Flycatcher LLC, is proposing to construct a ±4.9 MW battery energy storage system on roughly ±1.9 acres of previously undeveloped land along with all associated utilities, access paths, fencing and landscaping to support this use (the Project). The ±1.9 acre site is considered to be a leased portion of a larger parcel totaling 27 acres.

Site Description

The Project Site will be comprised on approximately ±1.9 acre on the parcel of 44 Skinner St, (Map, Block, Lot: 20-48C-9) in East Hampton, Connecticut (see Figure 1). The site is bounded by residential development to the north and east, and a solar array exists on the southwest portion of the parcel. The development site is all within the I zone (Industrial).

The project area under existing conditions is a segment of woodland alongside a previously installed gravel access road. The east side of the site consists of a manmade berm along the edge of the access road. An 18" concrete pipe that conveys water downgradient crosses the road. Under existing conditions, runoff from the project area generally flows overland to a swale on the north side of the road and then through this pipe to a brook that flows down to Skinner St.

According to available soil mapping[1], the majority of on-Site soils within the Project area belong to the Hydraulic Soil Group "B", indicating that the soils have a fairly good infiltration rate when thoroughly wet. See Appendix B for NRCS Web Soil Survey output.

[1] https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

According to available CTDEEP Groundwater Classification maps, the site is not located within an area of concern (see Appendix B). The CTDEEP Aquifer Protection Areas Mapping website displays that the Town of East Hampton does not contain any listed Aquifer Protection Areas.

According to FEMA Flood Insurance Rate Map Community Panel Number 09007C0134G dated August 28, 2008, the site is not located within a Flood Hazard Area.

Existing Drainage Conditions

Under existing conditions, runoff from the project area flows overland to the southeast of the site through woodland. The Site is generally at its highest elevation to the north of the project area. The majority of the Project area is comprised of undeveloped forest. Terrain slopes in the Project area range from 3% to approximately 10%. Figure 2 illustrates the existing drainage patterns on the Site. Only areas of the Site that are proposed to be disturbed by construction have been included in this drainage analysis, while portions of the Site unaffected by construction have been excluded.

For the existing conditions hydrologic analysis, the project area is encompassed by 1 watershed area, which has been identified as an area around the Project limits where flow is directed naturally to the southeast. Table 1 provides a summary of the existing conditions hydrologic data. Figure 2 illustrates the existing drainage patterns on the Site. All portions of the Project area have been considered in the hydrologic analysis.

Drainage Area 1 - This ±2.25-acre area encompasses the Project area. Untreated stormwater in this area flows southeast to an existing swale.

Table 1 provides a summary of the existing conditions hydrologic data.

Table 1 Existing Conditions Hydrologic Data

Drainage Area	Discharge Location	Area (Acres)	Curve Number	Time of Concentration (min)
1	Southeast	2.29	60	15.5

Proposed Drainage Conditions

The Site has been designed to maintain existing topography and mimic existing drainage patterns to the maximum extents feasible. Across the proposed development area, the Project proposes to install a permanent battery facility with gravel access road and pad along with a permanent stormwater basin which will assist in lowering runoff rates from the facility to the surrounding discharge points. As a result, the Project will have minimal impact to surrounding ecologically sensitive or offsite areas.

The only impervious surfaces proposed to be constructed are access roads and small concrete pads for utility equipment. Once operational, vehicular access to the Project will be limited to infrequent maintenance visits. The vegetated buffers and proposed stormwater basin will provide water quality treatment for the Project.

Figure 3 illustrates the proposed "post construction" drainage conditions for the project. The proposed conditions analysis utilizes the same one (1) drainage area from existing conditions.

Natural drainage patterns will be maintained throughout the Site so that the proposed hydrologic conditions will closely match existing conditions. The proposed conditions analysis utilizes the same drainage area from existing conditions. Only areas of the Site that are proposed to be disturbed by construction have been included in this drainage analysis, while portions of the Site unaffected by construction have been excluded.

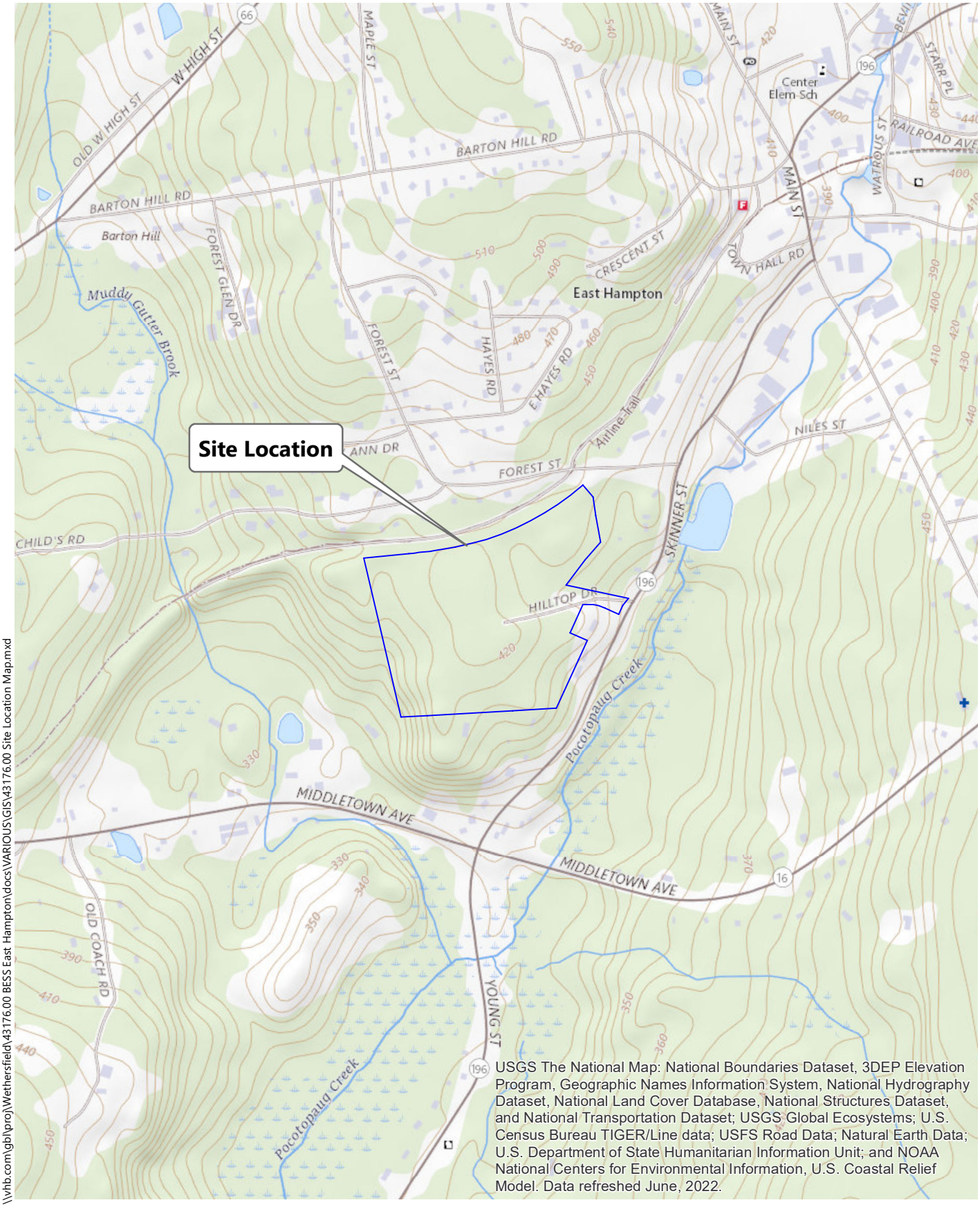
Drainage Area 1 - This ±2.25-acre area encompasses the Project. Stormwater will flow into a proposed stormwater basin. After being treated by this basin, stormwater will be conveyed to the southeast.

Table 2 below provides a summary of the proposed conditions hydrologic data.

Table 2 Proposed Conditions Hydrologic Data

Drainage Area	Discharge Location	Area (Acres)	Curve Number	Time of Concentration (min)
1	Southeast	2.29	69	13.7

Figure 1 Site Location Map



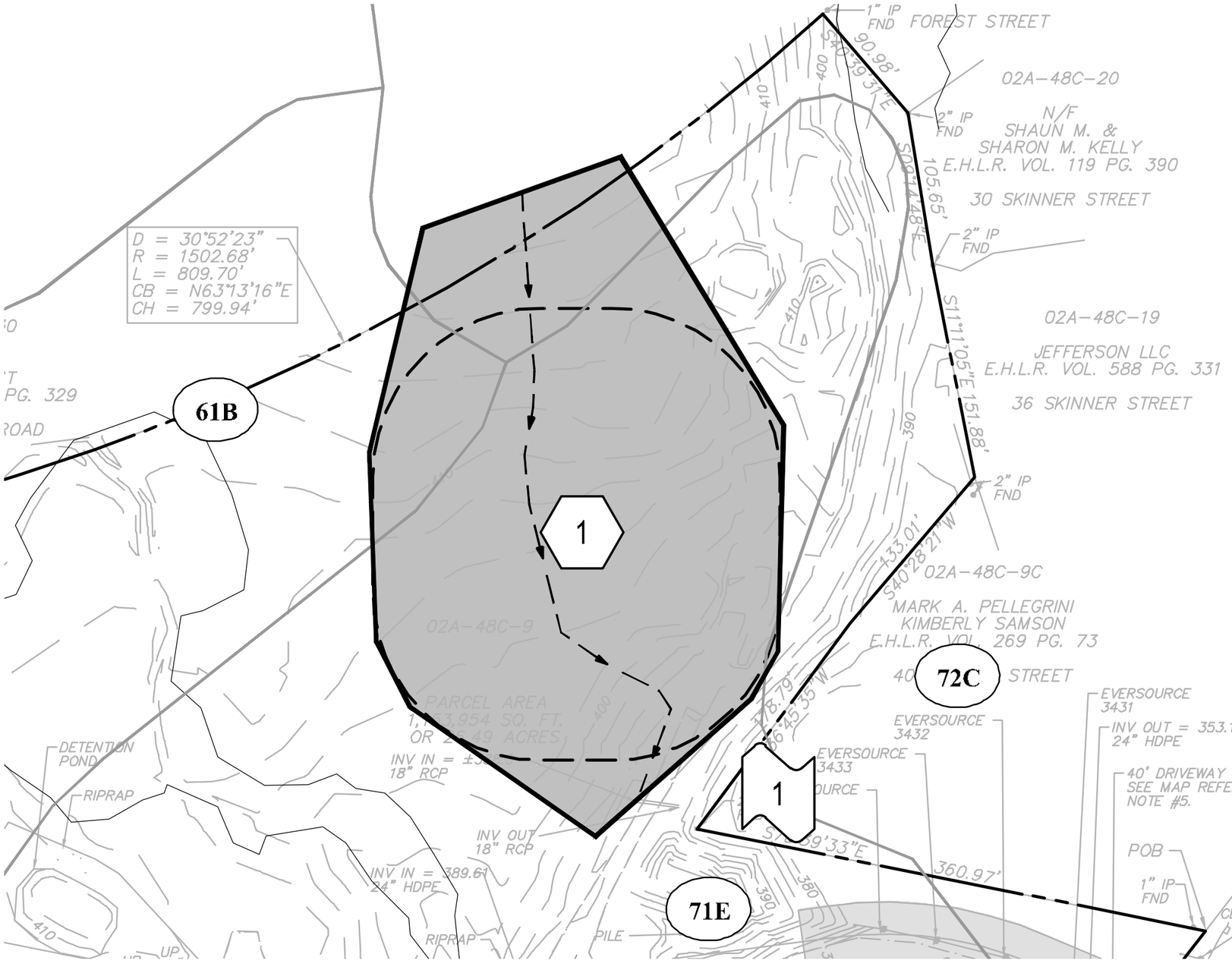
\\vhb.com\gbl\proj\Wethersfield\43176.00 BESS East Hampton\docs\VARIOUS\GIS\43176.00 Site Location Map.mxd

0 250 500 1000 Feet

Site Location Map

Flycatcher BESS East Hampton
Skinner Road
East Hampton, Connectiuct

Figure 2 Existing Drainage Area



Legend

SYMBOLS

- DESIGN POINT
- DRAINAGE AREA DESIGNATION
- POND

LINETYPES

- DRAINAGE AREA BOUNDARY
- SOIL TYPE BOUNDARY
- WETLAND BOUNDARY
- TIME OF CONCENTRATION

SCS SOIL CLASSIFICATIONS

61B	CANTON AND CHARLTON FINE SANDY LOAMS, 0 TO 8 PERCENT SLOPES, HSG B
71E	NIPMUCK-BRIMFIELD-ROCK OUTCROP COMPLEX, 15 TO 45 PERCENT SLOPES, HSG B
72C	NIPMUCK-BROOKFIELD COMPLEX, 15 TO 45 PERCENT SLOPES, VERY ROCKY, HSG B

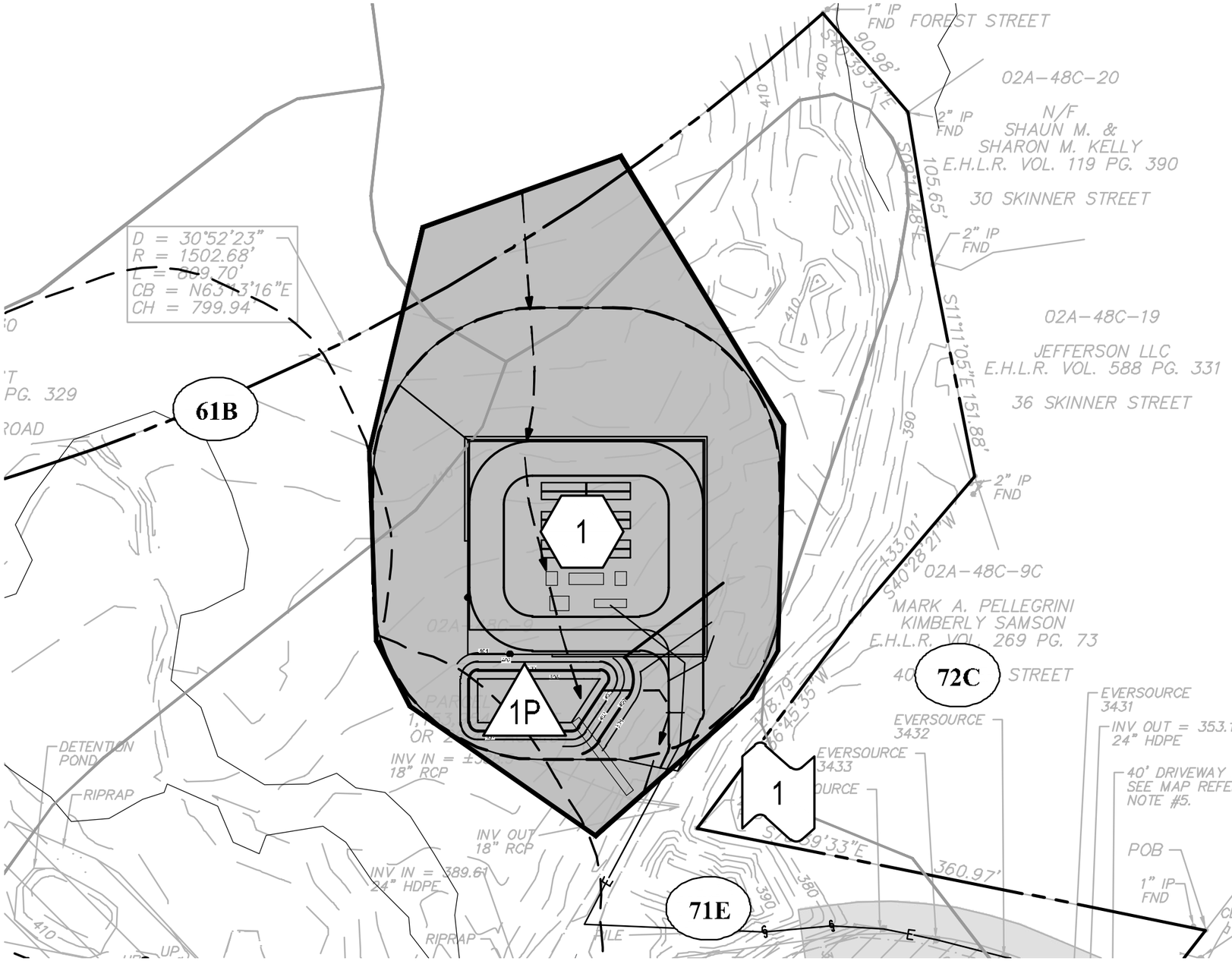
0 40 80 160 Feet

Existing Drainage Conditions
Proposed Battery Facility KCE CT8
Skinner Street
East Hampton, CT

Figure 2

June 2023

Figure 3 Proposed Drainage Area



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- DESIGN POINT
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LINETYPES

- DRAINAGE AREA BOUNDARY
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0 40 80 160 Feet

Proposed Drainage Conditions
Proposed Battery Facility KCE CT8
Skinner Street
East Hampton, CT

Figure 3

June 2023

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Appendix A: Hydrologic Computations and Supporting Information

The rainfall-runoff response of the Site under existing and proposed conditions was evaluated for storm events with recurrence intervals of 2, 25, 50 and 100-years. Rainfall volumes used for this analysis were based on the NOAA National Weather Service Hydrometeorological Design Studies Center volumes Type III, 24-hour storm event: 3.39, 6.33, 7.16, and 8.07 inches, respectively. Runoff coefficients for the pre- and post-development conditions, as previously shown in Tables 1 and 2 respectively, were determined using NRCS Technical Release 55 (TR-55) methodology as provided in HydroCAD. Drainage areas used in the analyses were described in previous sections and shown on Figures 2 and 3. The HydroCAD model is based on the NRCS Technical Release 20 (TR-20) Model for Project Formulation Hydrology.

The results of the pre- and post-development hydrologic models indicate that peak runoff rates from the Site will be reduced for all design storms. Conservatively, no infiltration during storm events has been included in the hydrologic model.

Drainage area used in the analyses were described in previous sections and shown on Figures 2 and 3. Detailed printouts of the HydroCAD analyses are included in this Appendix.

Table 3 presents a summary of the existing and proposed conditions peak discharge rates.

Table 3 Peak Discharge Rates (cfs*)

Watershed	2-year	25-year	50-year	100-year
Drainage Area 1				
Existing	0.63	4.07	5.28	6.67
Proposed	0.00	2.17	4.15	6.53

*expressed in cubic feet per second

Water Quality Volume

Water Quality Volume (WQV) is based upon the first inch of rainfall, or a 1-inch rainfall event, over the acreage of proposed impervious surfaces for the development. The crushed stone access paths will be trafficked infrequently and the existing woodland downstream of the paths will provide residence time of stormwater runoff to remove the small amount of sediment from runoff.

To be conservative, water quality computations have been performed using 2004 CTDEEP Stormwater Quality Manual for the access roads and equipment pads to determine required water quality volumes. These water quality volumes are addressed in the design of the proposed permanent stormwater basin.

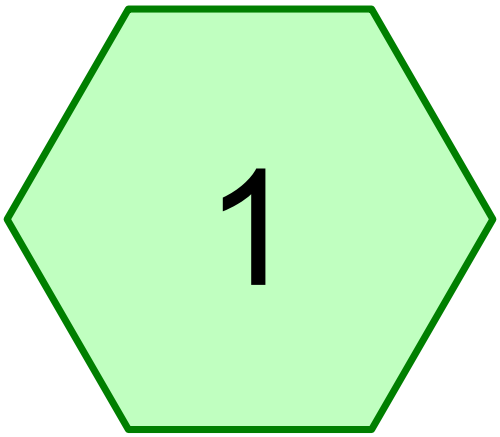
Water Quality Flow

Water Quality Flow (WQF) is a rate of stormwater runoff based upon the first inch of rainfall, or a 1-inch rainfall event. This regulation is generally followed for "flow-through" treatment devices. As the proposed development does not incorporate any "flow-through" water quality treatment devices, WQF is not applicable to this project.

Appendix A: Attachments

- HydroCAD Analysis: Existing Conditions
- HydroCAD Analysis: Proposed Conditions
- NOAA Rainfall Data
- Water Quality Volume Calculations
- Sediment Trap Sizing Calculations

HydroCAD Analysis: Existing Conditions



Existing Drainage Area

Subcat Reach Pond Link

Routing Diagram for 43176.00EXHydroCAD
Prepared by VHB, Printed 6/26/2023

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 YEAR	Type III 24-hr		Default	24.00	1	3.39	2
2	25 YEAR	Type III 24-hr		Default	24.00	1	6.33	2
3	50 YEAR	Type III 24-hr		Default	24.00	1	7.16	2
4	100 YEAR	Type III 24-hr		Default	24.00	1	8.07	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.294	60	Woods, Fair, HSG B (1)
2.294	**60**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
2.294	HSG B	1
0.000	HSG C	
0.000	HSG D	
0.000	Other	
2.294		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	2.294	0.000	0.000	0.000	2.294	Woods, Fair	1
0.000	**2.294**	**0.000**	**0.000**	**0.000**	**2.294**	**TOTAL AREA**	

Time span=0.00-30.00 hrs, dt=0.03 hrs, 1001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Existing Drainage Area Runoff Area=2.294 ac 0.00% Impervious Runoff Depth=0.48"
Flow Length=440' Tc=15.5 min CN=60 Runoff=0.63 cfs 0.093 af

Total Runoff Area = 2.294 ac Runoff Volume = 0.093 af Average Runoff Depth = 0.48"
100.00% Pervious = 2.294 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1: Existing Drainage Area

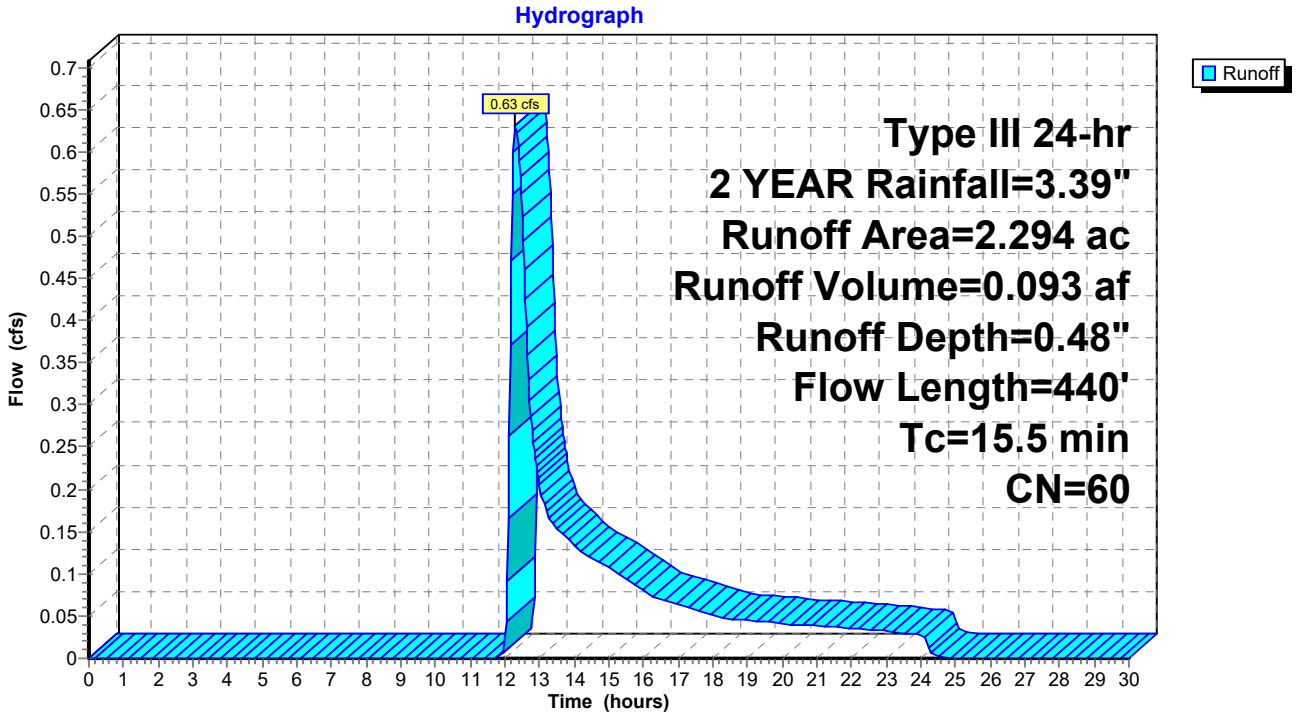
Runoff = 0.63 cfs @ 12.30 hrs, Volume= 0.093 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 YEAR Rainfall=3.39"

Area (ac)	CN	Description
2.294	60	Woods, Fair, HSG B
2.294		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	50	0.0400	0.08		**Sheet Flow, 0-50** Woods: Light underbrush n= 0.400 P2= 2.78"
1.1	75	0.0530	1.15		**Shallow Concentrated Flow, 50-125** Woodland Kv= 5.0 fps
0.3	26	0.0769	1.39		**Shallow Concentrated Flow, 125-151** Woodland Kv= 5.0 fps
0.5	34	0.0588	1.21		**Shallow Concentrated Flow, 151-185** Woodland Kv= 5.0 fps
0.5	34	0.0580	1.20		**Shallow Concentrated Flow, 185-219** Woodland Kv= 5.0 fps
0.4	33	0.0600	1.22		**Shallow Concentrated Flow, 219-33** Woodland Kv= 5.0 fps
1.1	60	0.0330	0.91		**Shallow Concentrated Flow, 219-279** Woodland Kv= 5.0 fps
0.6	39	0.0512	1.13		**Shallow Concentrated Flow, 279-318** Woodland Kv= 5.0 fps
0.4	41	0.1400	1.87		**Shallow Concentrated Flow, 318-359** Woodland Kv= 5.0 fps
0.6	48	0.0833	1.44		**Shallow Concentrated Flow, 359-407** Woodland Kv= 5.0 fps
15.5	440	Total			

Subcatchment 1: Existing Drainage Area



Time span=0.00-30.00 hrs, dt=0.03 hrs, 1001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Existing Drainage Area Runoff Area=2.294 ac 0.00% Impervious Runoff Depth=2.14"
Flow Length=440' Tc=15.5 min CN=60 Runoff=4.07 cfs 0.409 af

Total Runoff Area = 2.294 ac Runoff Volume = 0.409 af Average Runoff Depth = 2.14"
100.00% Pervious = 2.294 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1: Existing Drainage Area

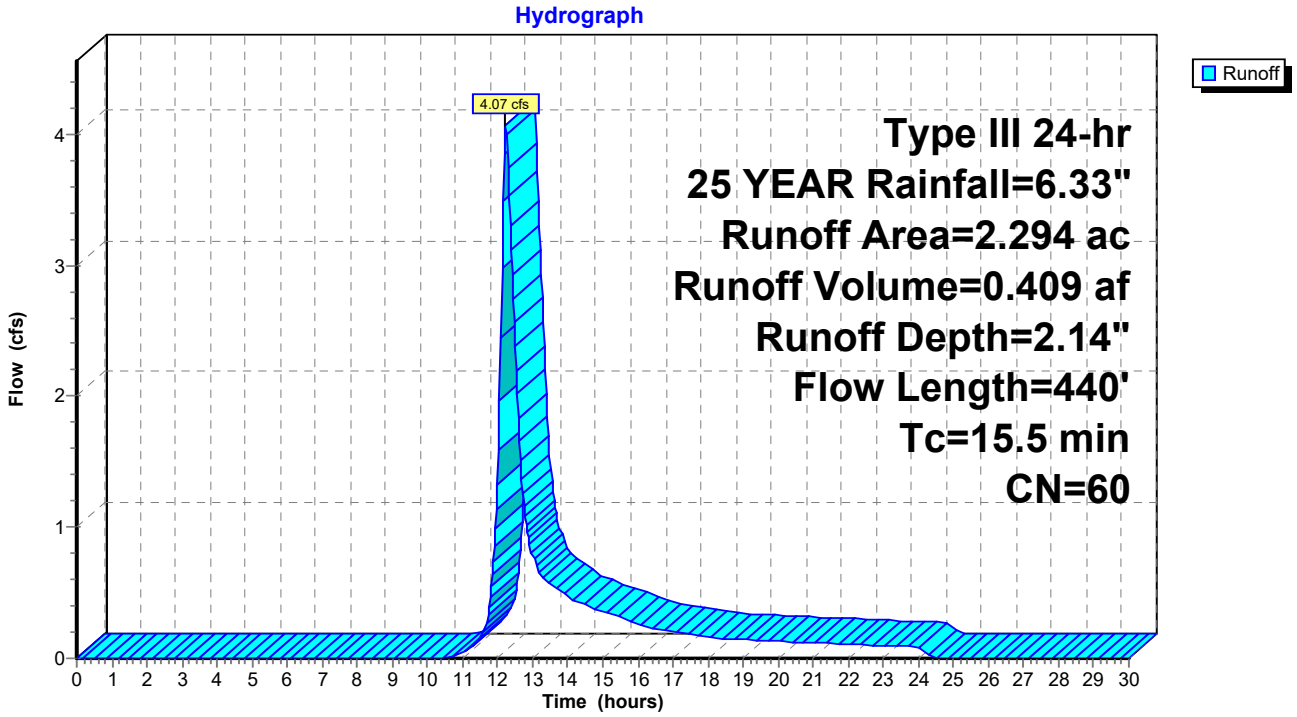
Runoff = 4.07 cfs @ 12.23 hrs, Volume= 0.409 af, Depth= 2.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 25 YEAR Rainfall=6.33"

Area (ac)	CN	Description
2.294	60	Woods, Fair, HSG B
2.294		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	50	0.0400	0.08		**Sheet Flow, 0-50** Woods: Light underbrush n= 0.400 P2= 2.78"
1.1	75	0.0530	1.15		**Shallow Concentrated Flow, 50-125** Woodland Kv= 5.0 fps
0.3	26	0.0769	1.39		**Shallow Concentrated Flow, 125-151** Woodland Kv= 5.0 fps
0.5	34	0.0588	1.21		**Shallow Concentrated Flow, 151-185** Woodland Kv= 5.0 fps
0.5	34	0.0580	1.20		**Shallow Concentrated Flow, 185-219** Woodland Kv= 5.0 fps
0.4	33	0.0600	1.22		**Shallow Concentrated Flow, 219-33** Woodland Kv= 5.0 fps
1.1	60	0.0330	0.91		**Shallow Concentrated Flow, 219-279** Woodland Kv= 5.0 fps
0.6	39	0.0512	1.13		**Shallow Concentrated Flow, 279-318** Woodland Kv= 5.0 fps
0.4	41	0.1400	1.87		**Shallow Concentrated Flow, 318-359** Woodland Kv= 5.0 fps
0.6	48	0.0833	1.44		**Shallow Concentrated Flow, 359-407** Woodland Kv= 5.0 fps
15.5	440	Total			

Subcatchment 1: Existing Drainage Area



Time span=0.00-30.00 hrs, dt=0.03 hrs, 1001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Existing Drainage Area Runoff Area=2.294 ac 0.00% Impervious Runoff Depth=2.72"
Flow Length=440' Tc=15.5 min CN=60 Runoff=5.28 cfs 0.519 af

Total Runoff Area = 2.294 ac Runoff Volume = 0.519 af Average Runoff Depth = 2.72"
100.00% Pervious = 2.294 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1: Existing Drainage Area

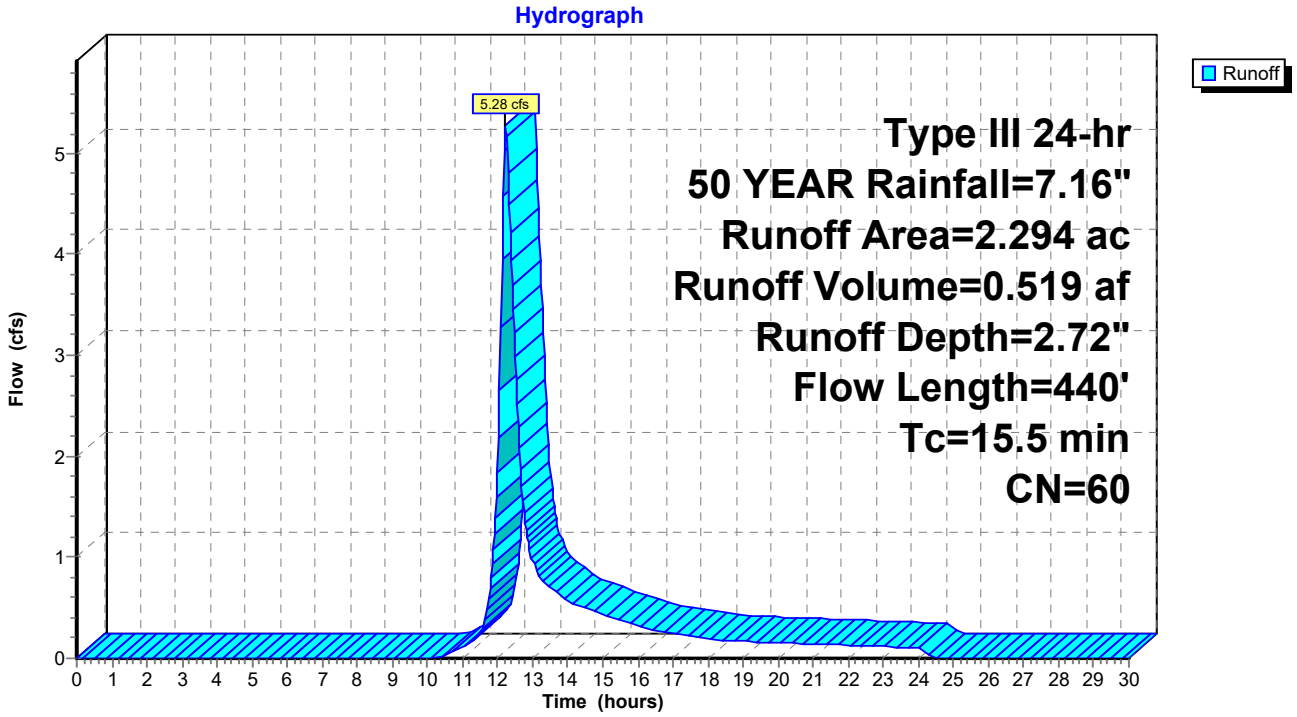
Runoff = 5.28 cfs @ 12.22 hrs, Volume= 0.519 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 YEAR Rainfall=7.16"

Area (ac)	CN	Description
2.294	60	Woods, Fair, HSG B
2.294		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	50	0.0400	0.08		**Sheet Flow, 0-50** Woods: Light underbrush n= 0.400 P2= 2.78"
1.1	75	0.0530	1.15		**Shallow Concentrated Flow, 50-125** Woodland Kv= 5.0 fps
0.3	26	0.0769	1.39		**Shallow Concentrated Flow, 125-151** Woodland Kv= 5.0 fps
0.5	34	0.0588	1.21		**Shallow Concentrated Flow, 151-185** Woodland Kv= 5.0 fps
0.5	34	0.0580	1.20		**Shallow Concentrated Flow, 185-219** Woodland Kv= 5.0 fps
0.4	33	0.0600	1.22		**Shallow Concentrated Flow, 219-33** Woodland Kv= 5.0 fps
1.1	60	0.0330	0.91		**Shallow Concentrated Flow, 219-279** Woodland Kv= 5.0 fps
0.6	39	0.0512	1.13		**Shallow Concentrated Flow, 279-318** Woodland Kv= 5.0 fps
0.4	41	0.1400	1.87		**Shallow Concentrated Flow, 318-359** Woodland Kv= 5.0 fps
0.6	48	0.0833	1.44		**Shallow Concentrated Flow, 359-407** Woodland Kv= 5.0 fps
15.5	440	Total			

Subcatchment 1: Existing Drainage Area



Time span=0.00-30.00 hrs, dt=0.03 hrs, 1001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Existing Drainage Area Runoff Area=2.294 ac 0.00% Impervious Runoff Depth=3.39"
Flow Length=440' Tc=15.5 min CN=60 Runoff=6.67 cfs 0.647 af

Total Runoff Area = 2.294 ac Runoff Volume = 0.647 af Average Runoff Depth = 3.39"
100.00% Pervious = 2.294 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1: Existing Drainage Area

Runoff = 6.67 cfs @ 12.22 hrs, Volume= 0.647 af, Depth= 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 100 YEAR Rainfall=8.07"

Area (ac)	CN	Description
2.294	60	Woods, Fair, HSG B
2.294		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	50	0.0400	0.08		**Sheet Flow, 0-50** Woods: Light underbrush n= 0.400 P2= 2.78"
1.1	75	0.0530	1.15		**Shallow Concentrated Flow, 50-125** Woodland Kv= 5.0 fps
0.3	26	0.0769	1.39		**Shallow Concentrated Flow, 125-151** Woodland Kv= 5.0 fps
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1.1	60	0.0330	0.91		**Shallow Concentrated Flow, 219-279** Woodland Kv= 5.0 fps
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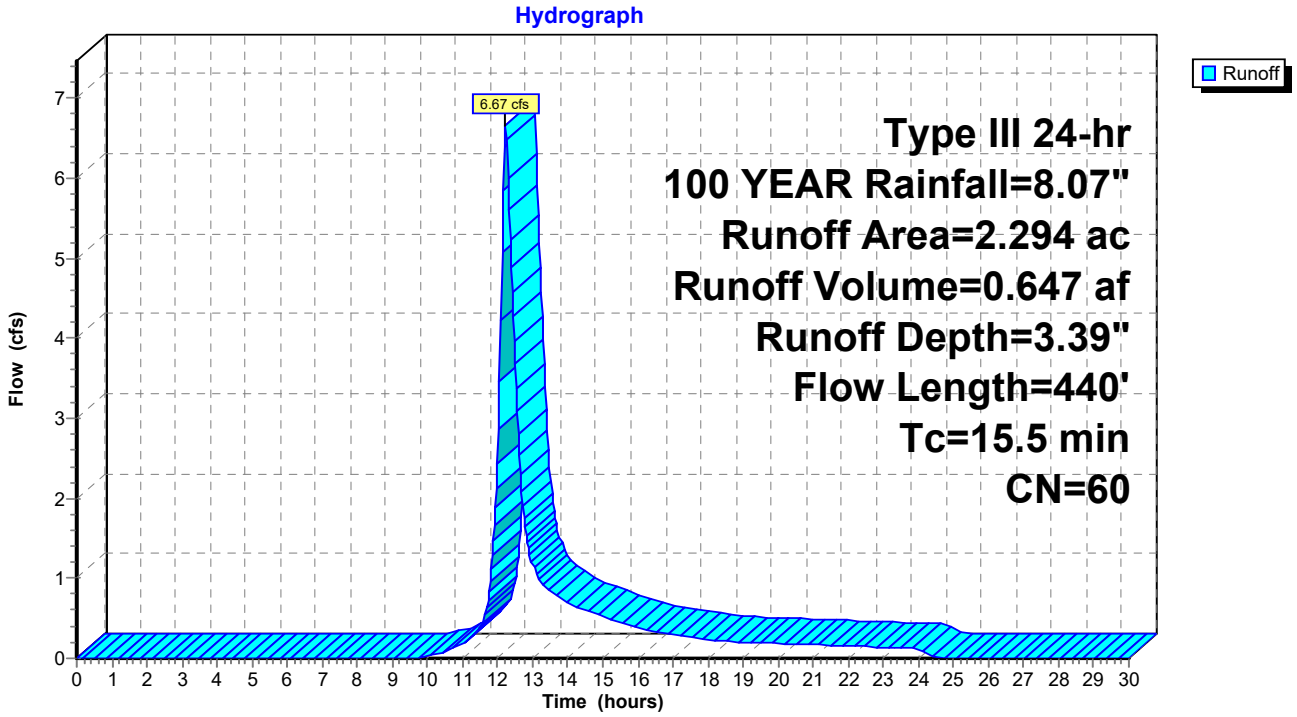
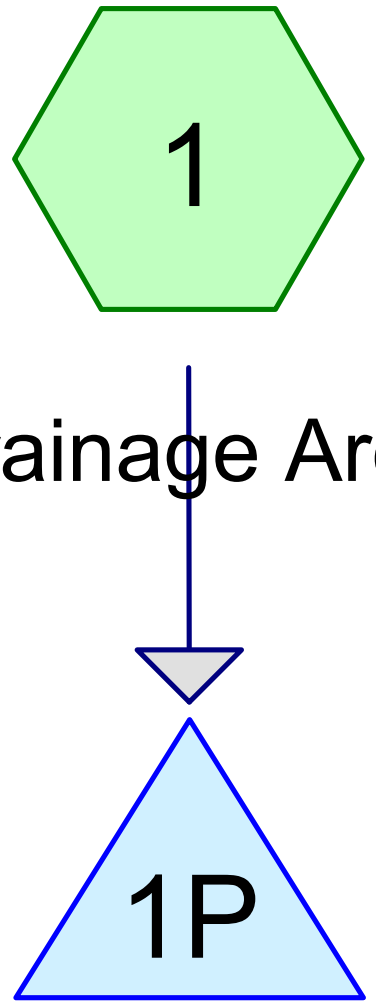
0.6	48	0.0833	1.44		**Shallow Concentrated Flow, 359-407** Woodland Kv= 5.0 fps
15.5	440	Total			

Subcatchment 1: Existing Drainage Area



HydroCAD Analysis: Proposed Conditions



Subcat Reach Pond Link

Routing Diagram for 43176.00PRHydroCAD
Prepared by VHB, Printed 6/26/2023

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 YEAR	Type III 24-hr		Default	24.00	1	3.39	2
2	25 YEAR	Type III 24-hr		Default	24.00	1	6.33	2
3	50 YEAR	Type III 24-hr		Default	24.00	1	7.16	2
4	100 YEAR	Type III 24-hr		Default	24.00	1	8.07	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.247	61	>75% Grass cover, Good, HSG B (1)
0.537	96	Gravel surface, HSG B (1)
0.510	60	Woods, Fair, HSG B (1)
2.294	**69**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
2.294	HSG B	1
0.000	HSG C	
0.000	HSG D	
0.000	Other	
2.294		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.247	0.000	0.000	0.000	1.247	>75% Grass cover, Good	1
0.000	0.537	0.000	0.000	0.000	0.537	Gravel surface	1
0.000	0.510	0.000	0.000	0.000	0.510	Woods, Fair	1
0.000	**2.294**	**0.000**	**0.000**	**0.000**	**2.294**	**TOTAL AREA**	

Time span=0.00-30.00 hrs, dt=0.03 hrs, 1001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Drainage Area Runoff Area=2.294 ac 0.00% Impervious Runoff Depth=0.89"
Flow Length=437' Tc=13.7 min CN=69 Runoff=1.66 cfs 0.170 af

Pond 1P: Stormwater Basin Peak Elev=400.41' Storage=0.170 af Inflow=1.66 cfs 0.170 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 2.294 ac Runoff Volume = 0.170 af Average Runoff Depth = 0.89"
100.00% Pervious = 2.294 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1: Drainage Area

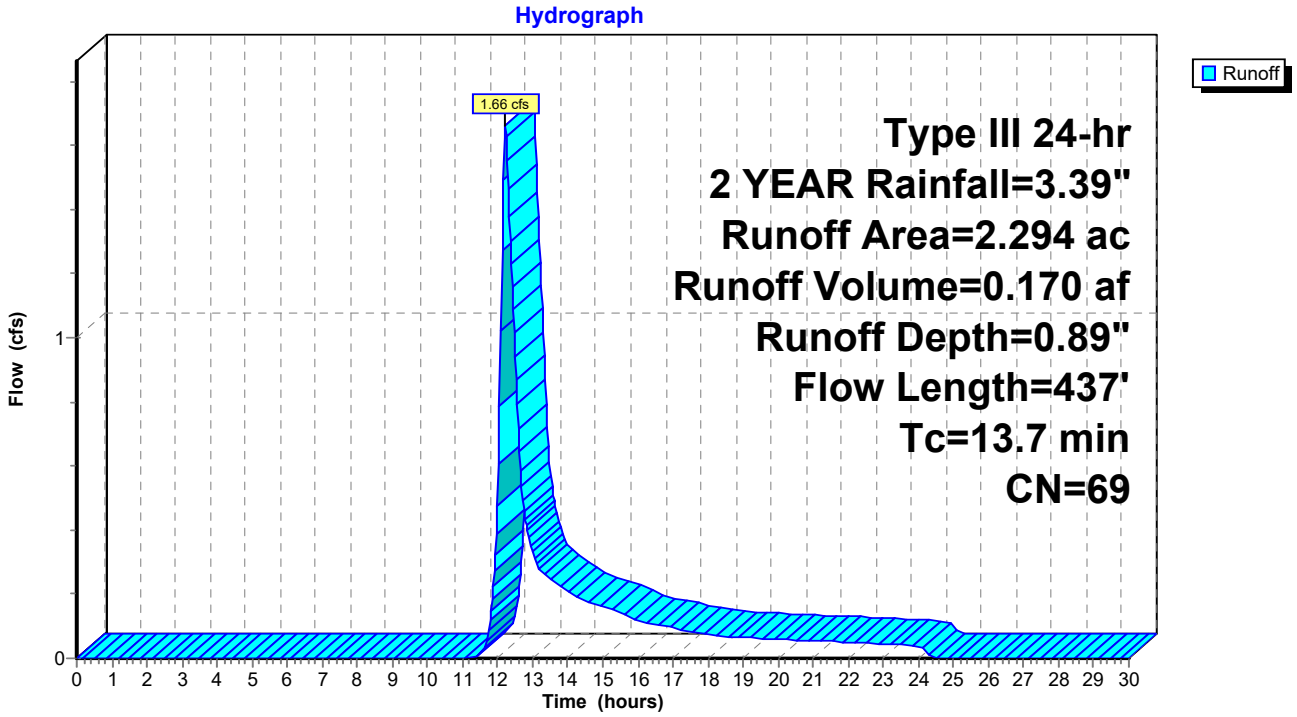
Runoff = 1.66 cfs @ 12.21 hrs, Volume= 0.170 af, Depth= 0.89"
Routed to Pond 1P : Stormwater Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 2 YEAR Rainfall=3.39"

Area (ac)	CN	Description
1.247	61	>75% Grass cover, Good, HSG B
0.537	96	Gravel surface, HSG B
0.510	60	Woods, Fair, HSG B
2.294	69	Weighted Average
2.294		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	50	0.0400	0.08		**Sheet Flow, 0-50** Woods: Light underbrush n= 0.400 P2= 2.78"
0.4	32	0.0625	1.25		**Shallow Concentrated Flow, 50-82** Woodland Kv= 5.0 fps
0.5	44	0.0450	1.48		**Shallow Concentrated Flow, 82-126** Short Grass Pasture Kv= 7.0 fps
0.2	26	0.0769	1.94		**Shallow Concentrated Flow, 126-152** Short Grass Pasture Kv= 7.0 fps
0.2	25	0.0600	1.71		**Shallow Concentrated Flow, 152-177** Short Grass Pasture Kv= 7.0 fps
0.1	10	0.0500	1.57		**Shallow Concentrated Flow, 177-187** Short Grass Pasture Kv= 7.0 fps
0.3	34	0.0580	1.69		**Shallow Concentrated Flow, 187-221** Short Grass Pasture Kv= 7.0 fps
0.3	33	0.0600	1.71		**Shallow Concentrated Flow, 221-254** Short Grass Pasture Kv= 7.0 fps
0.8	60	0.0330	1.27		**Shallow Concentrated Flow, 254-314** Short Grass Pasture Kv= 7.0 fps
0.4	39	0.0510	1.58		**Shallow Concentrated Flow, 314-353** Short Grass Pasture Kv= 7.0 fps
0.2	40	0.1460	2.67		**Shallow Concentrated Flow, 353-393** Short Grass Pasture Kv= 7.0 fps
0.3	44	0.0900	2.10		**Shallow Concentrated Flow, 393-437** Short Grass Pasture Kv= 7.0 fps
13.7	437	Total			

Subcatchment 1: Drainage Area



Summary for Pond 1P: Stormwater Basin

Inflow Area = 2.294 ac, 0.00% Impervious, Inflow Depth = 0.89" for 2 YEAR event
Inflow = 1.66 cfs @ 12.21 hrs, Volume= 0.170 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 400.41' @ 24.81 hrs Surf.Area= 0.091 ac Storage= 0.170 af

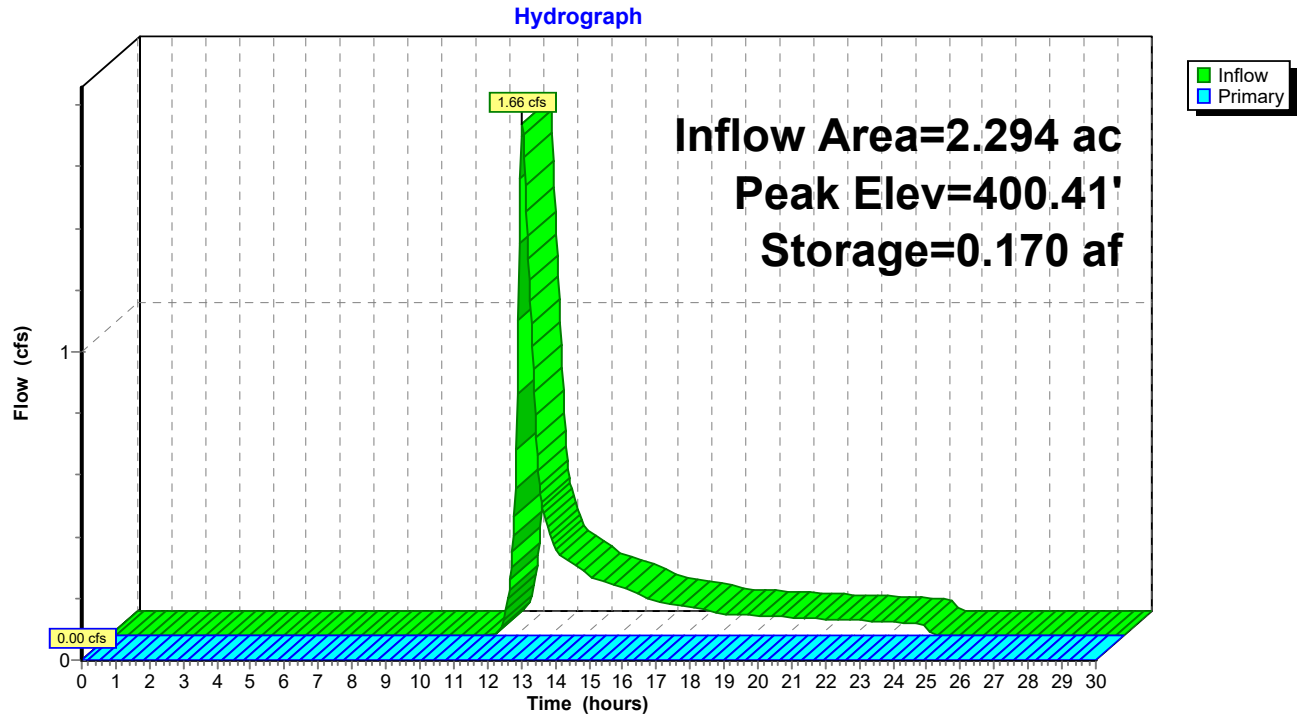
Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	398.00'	0.340 af	**30.00'W x 75.00'L x 4.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	401.00'	**6.0' long + 1.0 '/' SideZ x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=398.00' (Free Discharge)
1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: Stormwater Basin



Time span=0.00-30.00 hrs, dt=0.03 hrs, 1001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Drainage Area Runoff Area=2.294 ac 0.00% Impervious Runoff Depth=2.97"
Flow Length=437' Tc=13.7 min CN=69 Runoff=6.20 cfs 0.568 af

Pond 1P: Stormwater Basin Peak Elev=401.28' Storage=0.256 af Inflow=6.20 cfs 0.568 af
Outflow=2.17 cfs 0.341 af

Total Runoff Area = 2.294 ac Runoff Volume = 0.568 af Average Runoff Depth = 2.97"
100.00% Pervious = 2.294 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1: Drainage Area

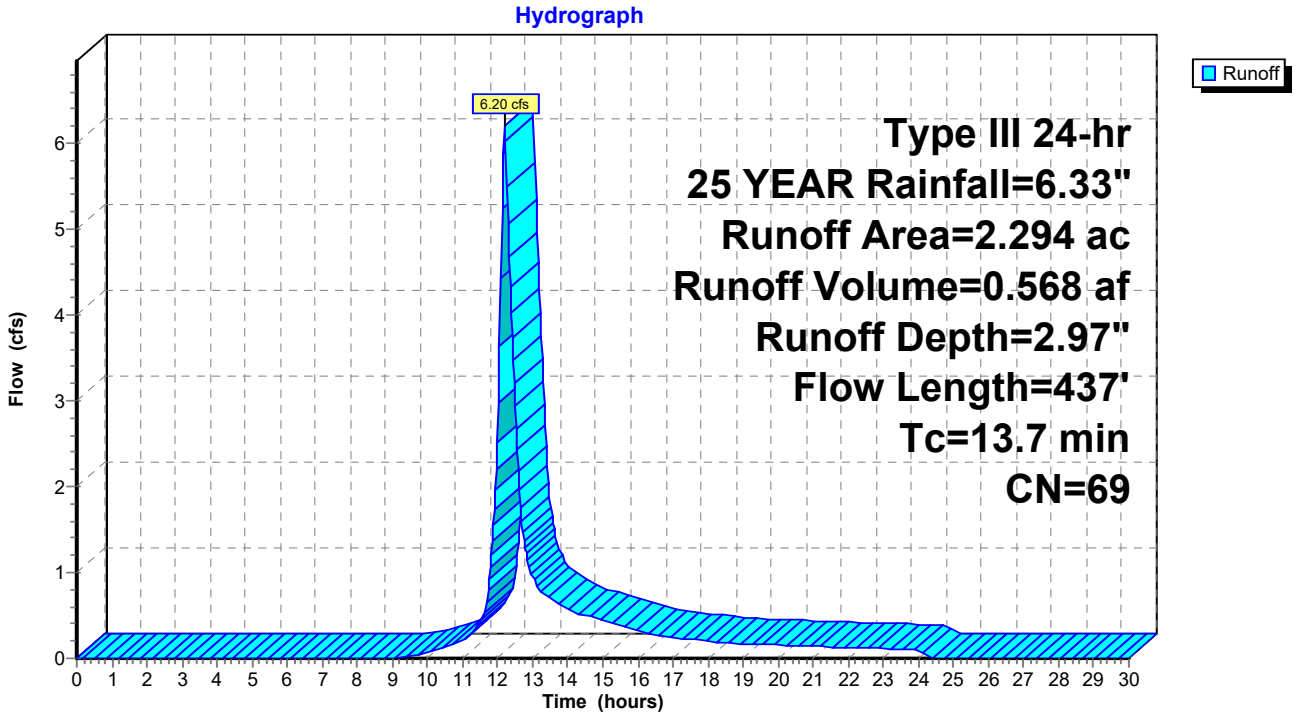
Runoff = 6.20 cfs @ 12.19 hrs, Volume= 0.568 af, Depth= 2.97"
Routed to Pond 1P : Stormwater Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 25 YEAR Rainfall=6.33"

Area (ac)	CN	Description
1.247	61	>75% Grass cover, Good, HSG B
0.537	96	Gravel surface, HSG B
0.510	60	Woods, Fair, HSG B
2.294	69	Weighted Average
2.294		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	50	0.0400	0.08		**Sheet Flow, 0-50**
					Woods: Light underbrush n= 0.400 P2= 2.78"
0.4	32	0.0625	1.25		**Shallow Concentrated Flow, 50-82**
					Woodland Kv= 5.0 fps
0.5	44	0.0450	1.48		**Shallow Concentrated Flow, 82-126**
					Short Grass Pasture Kv= 7.0 fps
0.2	26	0.0769	1.94		**Shallow Concentrated Flow, 126-152**
					Short Grass Pasture Kv= 7.0 fps
0.2	25	0.0600	1.71		**Shallow Concentrated Flow, 152-177**
					Short Grass Pasture Kv= 7.0 fps
0.1	10	0.0500	1.57		**Shallow Concentrated Flow, 177-187**
					Short Grass Pasture Kv= 7.0 fps
0.3	34	0.0580	1.69		**Shallow Concentrated Flow, 187-221**
					Short Grass Pasture Kv= 7.0 fps
0.3	33	0.0600	1.71		**Shallow Concentrated Flow, 221-254**
					Short Grass Pasture Kv= 7.0 fps
0.8	60	0.0330	1.27		**Shallow Concentrated Flow, 254-314**
					Short Grass Pasture Kv= 7.0 fps
0.4	39	0.0510	1.58		**Shallow Concentrated Flow, 314-353**
					Short Grass Pasture Kv= 7.0 fps
0.2	40	0.1460	2.67		**Shallow Concentrated Flow, 353-393**
					Short Grass Pasture Kv= 7.0 fps
0.3	44	0.0900	2.10		**Shallow Concentrated Flow, 393-437**
					Short Grass Pasture Kv= 7.0 fps
13.7	437	Total			

Subcatchment 1: Drainage Area



Summary for Pond 1P: Stormwater Basin

Inflow Area = 2.294 ac, 0.00% Impervious, Inflow Depth = 2.97" for 25 YEAR event
Inflow = 6.20 cfs @ 12.19 hrs, Volume= 0.568 af
Outflow = 2.17 cfs @ 12.60 hrs, Volume= 0.341 af, Atten= 65%, Lag= 24.7 min
Primary = 2.17 cfs @ 12.60 hrs, Volume= 0.341 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 401.28' @ 12.60 hrs Surf.Area= 0.108 ac Storage= 0.256 af

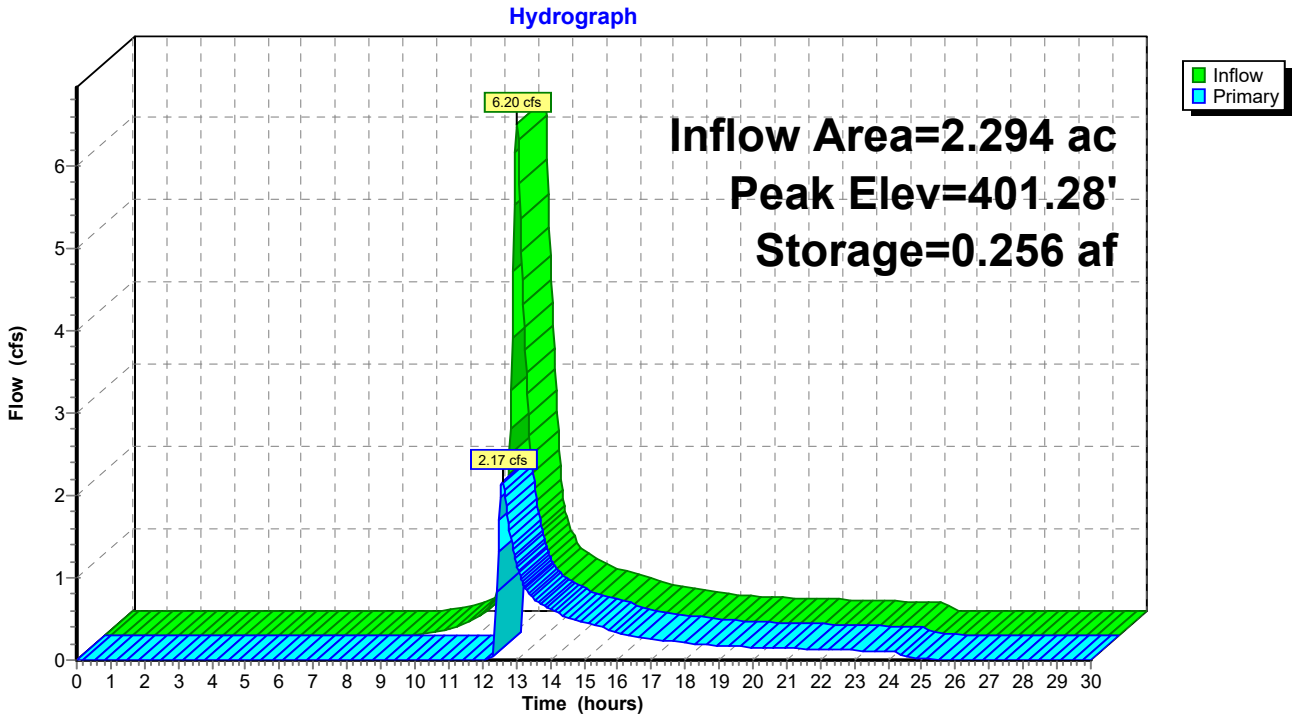
Plug-Flow detention time= 212.5 min calculated for 0.340 af (60% of inflow)
Center-of-Mass det. time= 101.0 min (946.1 - 845.1)

Volume	Invert	Avail.Storage	Storage Description
#1	398.00'	0.340 af	**30.00'W x 75.00'L x 4.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	401.00'	**6.0' long + 1.0 '/' SideZ x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=2.16 cfs @ 12.60 hrs HW=401.28' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 2.16 cfs @ 1.25 fps)

Pond 1P: Stormwater Basin



Time span=0.00-30.00 hrs, dt=0.03 hrs, 1001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Drainage Area Runoff Area=2.294 ac 0.00% Impervious Runoff Depth=3.65"
Flow Length=437' Tc=13.7 min CN=69 Runoff=7.65 cfs 0.697 af

Pond 1P: Stormwater Basin Peak Elev=401.41' Storage=0.271 af Inflow=7.65 cfs 0.697 af
Outflow=4.15 cfs 0.469 af

Total Runoff Area = 2.294 ac Runoff Volume = 0.697 af Average Runoff Depth = 3.65"
100.00% Pervious = 2.294 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1: Drainage Area

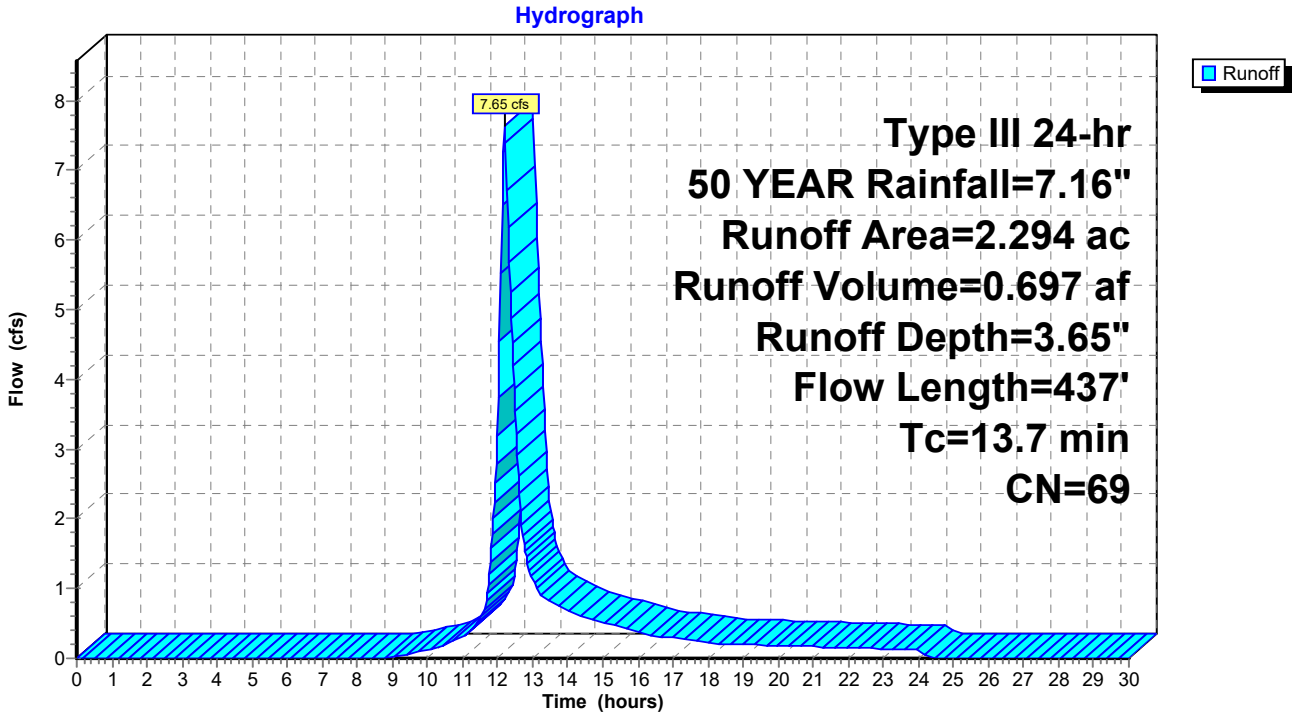
Runoff = 7.65 cfs @ 12.19 hrs, Volume= 0.697 af, Depth= 3.65"
Routed to Pond 1P : Stormwater Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 50 YEAR Rainfall=7.16"

Area (ac)	CN	Description
1.247	61	>75% Grass cover, Good, HSG B
0.537	96	Gravel surface, HSG B
0.510	60	Woods, Fair, HSG B
2.294	69	Weighted Average
2.294		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	50	0.0400	0.08		**Sheet Flow, 0-50** Woods: Light underbrush n= 0.400 P2= 2.78"
0.4	32	0.0625	1.25		**Shallow Concentrated Flow, 50-82** Woodland Kv= 5.0 fps
0.5	44	0.0450	1.48		**Shallow Concentrated Flow, 82-126** Short Grass Pasture Kv= 7.0 fps
0.2	26	0.0769	1.94		**Shallow Concentrated Flow, 126-152** Short Grass Pasture Kv= 7.0 fps
0.2	25	0.0600	1.71		**Shallow Concentrated Flow, 152-177** Short Grass Pasture Kv= 7.0 fps
0.1	10	0.0500	1.57		**Shallow Concentrated Flow, 177-187** Short Grass Pasture Kv= 7.0 fps
0.3	34	0.0580	1.69		**Shallow Concentrated Flow, 187-221** Short Grass Pasture Kv= 7.0 fps
0.3	33	0.0600	1.71		**Shallow Concentrated Flow, 221-254** Short Grass Pasture Kv= 7.0 fps
0.8	60	0.0330	1.27		**Shallow Concentrated Flow, 254-314** Short Grass Pasture Kv= 7.0 fps
0.4	39	0.0510	1.58		**Shallow Concentrated Flow, 314-353** Short Grass Pasture Kv= 7.0 fps
0.2	40	0.1460	2.67		**Shallow Concentrated Flow, 353-393** Short Grass Pasture Kv= 7.0 fps
0.3	44	0.0900	2.10		**Shallow Concentrated Flow, 393-437** Short Grass Pasture Kv= 7.0 fps
13.7	437	Total			

Subcatchment 1: Drainage Area



Summary for Pond 1P: Stormwater Basin

Inflow Area = 2.294 ac, 0.00% Impervious, Inflow Depth = 3.65" for 50 YEAR event
Inflow = 7.65 cfs @ 12.19 hrs, Volume= 0.697 af
Outflow = 4.15 cfs @ 12.46 hrs, Volume= 0.469 af, Atten= 46%, Lag= 15.9 min
Primary = 4.15 cfs @ 12.46 hrs, Volume= 0.469 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 401.41' @ 12.46 hrs Surf.Area= 0.111 ac Storage= 0.271 af

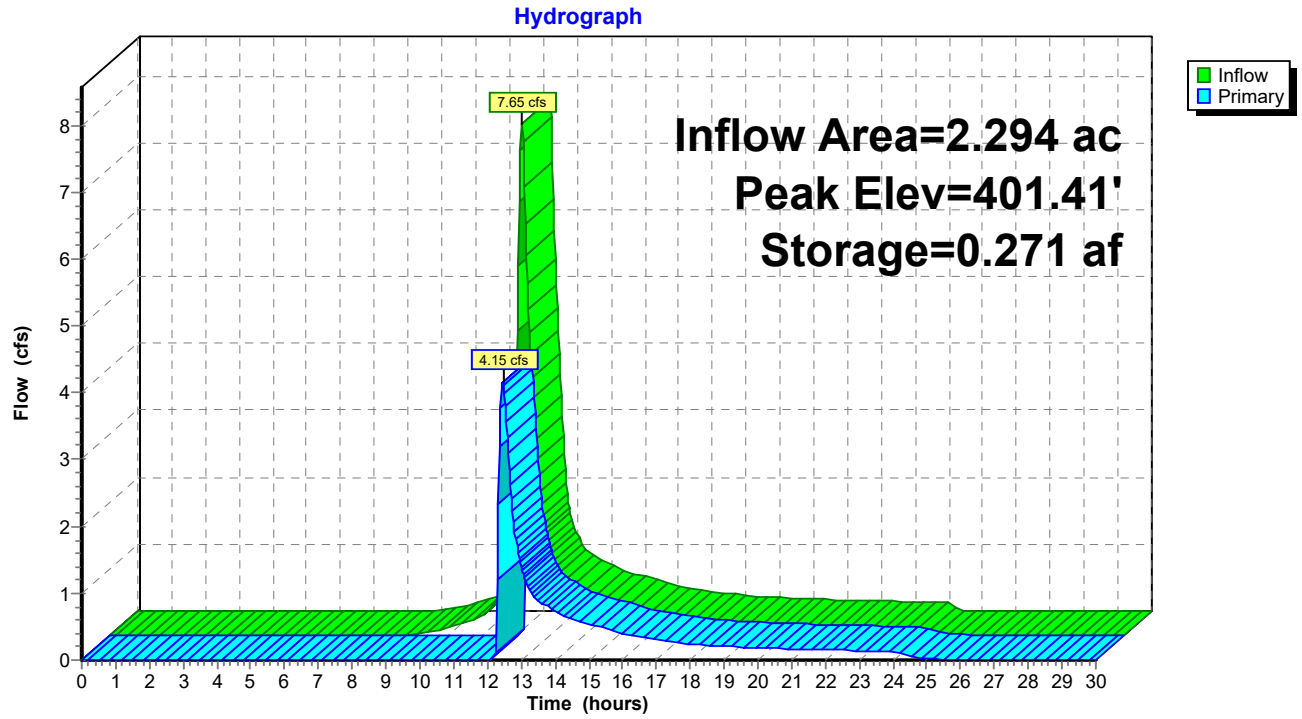
Plug-Flow detention time= 178.5 min calculated for 0.469 af (67% of inflow)
Center-of-Mass det. time= 77.6 min (916.7 - 839.1)

Volume	Invert	Avail.Storage	Storage Description
#1	398.00'	0.340 af	**30.00'W x 75.00'L x 4.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	401.00'	**6.0' long + 1.0 '/' SideZ x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=4.14 cfs @ 12.46 hrs HW=401.41' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 4.14 cfs @ 1.58 fps)

Pond 1P: Stormwater Basin



Time span=0.00-30.00 hrs, dt=0.03 hrs, 1001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Drainage Area Runoff Area=2.294 ac 0.00% Impervious Runoff Depth=4.41"
Flow Length=437' Tc=13.7 min CN=69 Runoff=9.27 cfs 0.843 af

Pond 1P: Stormwater Basin Peak Elev=401.53' Storage=0.285 af Inflow=9.27 cfs 0.843 af
Outflow=6.53 cfs 0.615 af

Total Runoff Area = 2.294 ac Runoff Volume = 0.843 af Average Runoff Depth = 4.41"
100.00% Pervious = 2.294 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1: Drainage Area

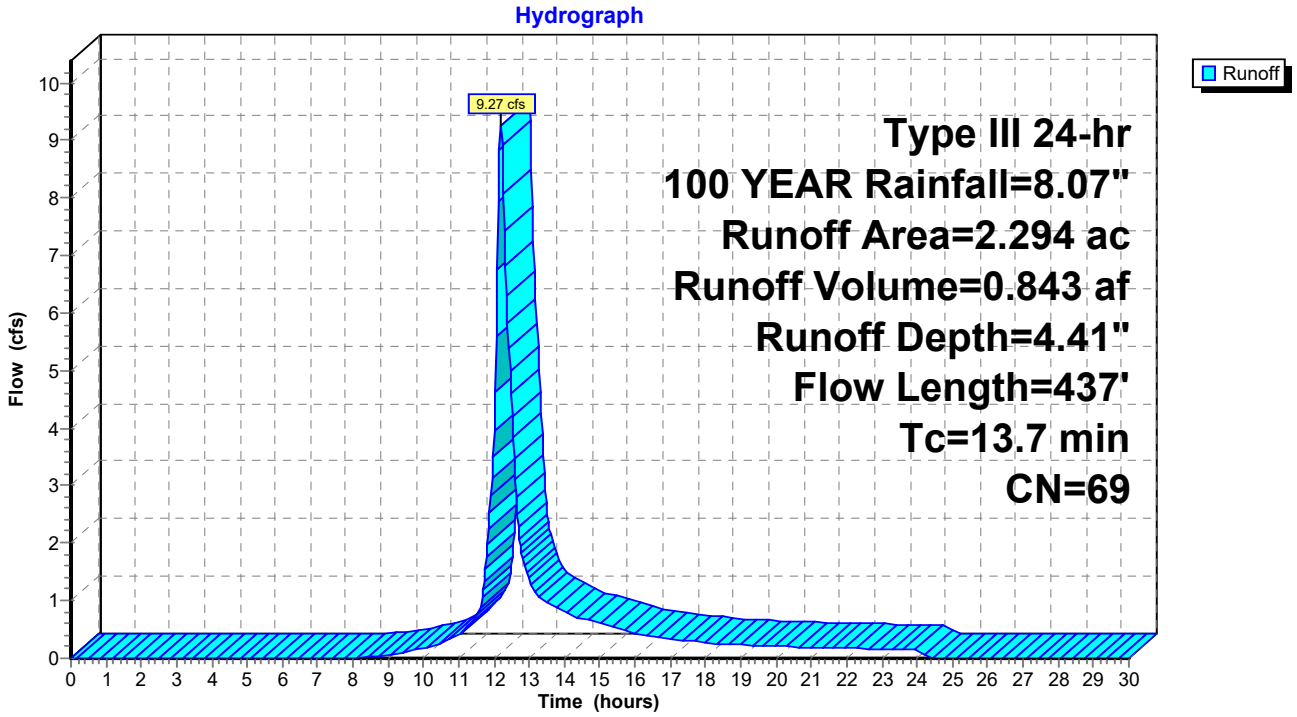
Runoff = 9.27 cfs @ 12.19 hrs, Volume= 0.843 af, Depth= 4.41"
Routed to Pond 1P : Stormwater Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Type III 24-hr 100 YEAR Rainfall=8.07"

Area (ac)	CN	Description
1.247	61	>75% Grass cover, Good, HSG B
0.537	96	Gravel surface, HSG B
0.510	60	Woods, Fair, HSG B
2.294	69	Weighted Average
2.294		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	50	0.0400	0.08		**Sheet Flow, 0-50** Woods: Light underbrush n= 0.400 P2= 2.78"
0.4	32	0.0625	1.25		**Shallow Concentrated Flow, 50-82** Woodland Kv= 5.0 fps
0.5	44	0.0450	1.48		**Shallow Concentrated Flow, 82-126** Short Grass Pasture Kv= 7.0 fps
0.2	26	0.0769	1.94		**Shallow Concentrated Flow, 126-152** Short Grass Pasture Kv= 7.0 fps
0.2	25	0.0600	1.71		**Shallow Concentrated Flow, 152-177** Short Grass Pasture Kv= 7.0 fps
0.1	10	0.0500	1.57		**Shallow Concentrated Flow, 177-187** Short Grass Pasture Kv= 7.0 fps
0.3	34	0.0580	1.69		**Shallow Concentrated Flow, 187-221** Short Grass Pasture Kv= 7.0 fps
0.3	33	0.0600	1.71		**Shallow Concentrated Flow, 221-254** Short Grass Pasture Kv= 7.0 fps
0.8	60	0.0330	1.27		**Shallow Concentrated Flow, 254-314** Short Grass Pasture Kv= 7.0 fps
0.4	39	0.0510	1.58		**Shallow Concentrated Flow, 314-353** Short Grass Pasture Kv= 7.0 fps
0.2	40	0.1460	2.67		**Shallow Concentrated Flow, 353-393** Short Grass Pasture Kv= 7.0 fps
0.3	44	0.0900	2.10		**Shallow Concentrated Flow, 393-437** Short Grass Pasture Kv= 7.0 fps
13.7	437	Total			

Subcatchment 1: Drainage Area



Summary for Pond 1P: Stormwater Basin

Inflow Area = 2.294 ac, 0.00% Impervious, Inflow Depth = 4.41" for 100 YEAR event
Inflow = 9.27 cfs @ 12.19 hrs, Volume= 0.843 af
Outflow = 6.53 cfs @ 12.35 hrs, Volume= 0.615 af, Atten= 30%, Lag= 9.5 min
Primary = 6.53 cfs @ 12.35 hrs, Volume= 0.615 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 401.53' @ 12.35 hrs Surf.Area= 0.113 ac Storage= 0.285 af

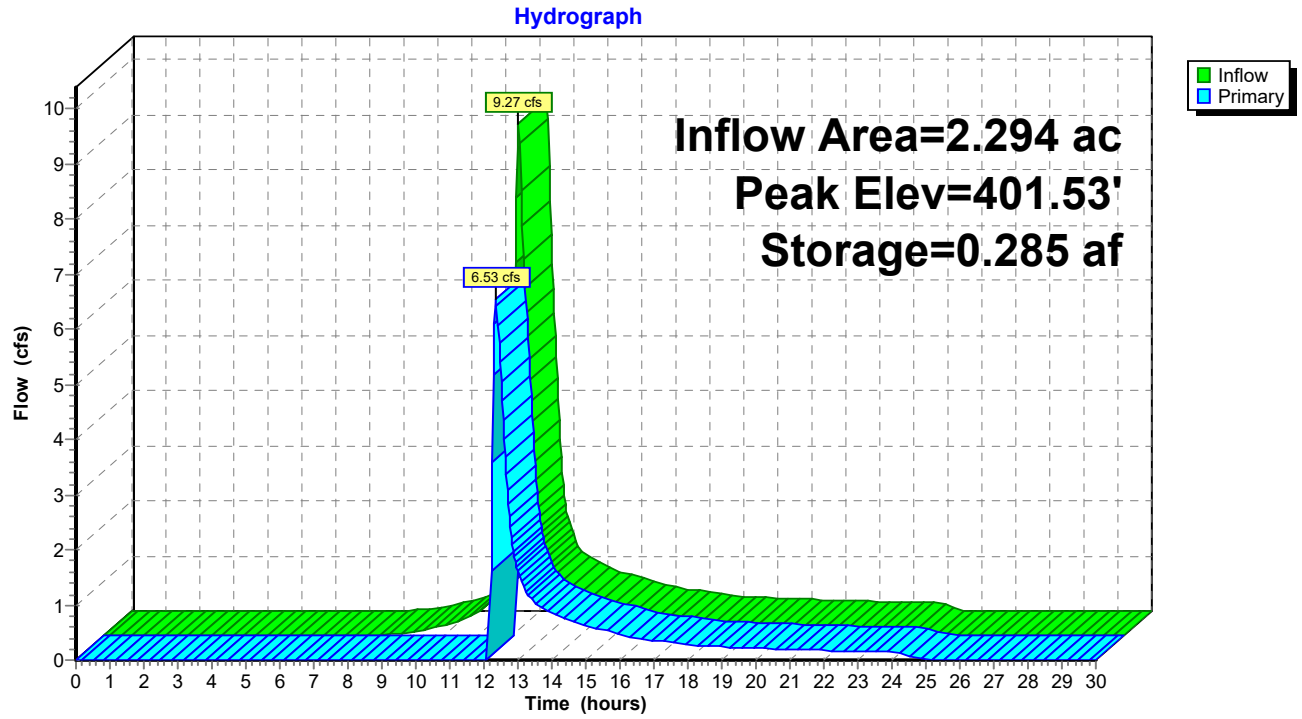
Plug-Flow detention time= 154.8 min calculated for 0.615 af (73% of inflow)
Center-of-Mass det. time= 63.0 min (896.6 - 833.7)

Volume	Invert	Avail.Storage	Storage Description
#1	398.00'	0.340 af	**30.00'W x 75.00'L x 4.00'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	401.00'	**6.0' long + 1.0 '/' SideZ x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=6.50 cfs @ 12.35 hrs HW=401.53' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 6.50 cfs @ 1.88 fps)

Pond 1P: Stormwater Basin



NOAA Rainfall Data

NOAA Atlas 14, Volume 10, Version 3
Location name: East Hampton, Connecticut, USA*
Latitude: 41.5694°, Longitude: -72.5073°
Elevation: m/ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.334** (0.259-0.419)	**0.405** (0.314-0.508)	**0.521** (0.403-0.656)	**0.617** (0.474-0.780)	**0.750** (0.559-0.990)	**0.850** (0.621-1.15)	**0.955** (0.677-1.33)	**1.07** (0.721-1.53)	**1.24** (0.804-1.83)	**1.38** (0.872-2.07)
10-min	**0.473** (0.367-0.593)	**0.574** (0.445-0.720)	**0.739** (0.572-0.930)	**0.875** (0.672-1.11)	**1.06** (0.791-1.40)	**1.20** (0.879-1.62)	**1.35** (0.959-1.89)	**1.52** (1.02-2.16)	**1.76** (1.14-2.59)	**1.95** (1.24-2.93)
15-min	**0.557** (0.432-0.698)	**0.675** (0.524-0.847)	**0.868** (0.670-1.09)	**1.03** (0.791-1.30)	**1.25** (0.931-1.65)	**1.42** (1.03-1.91)	**1.59** (1.13-2.22)	**1.79** (1.20-2.54)	**2.07** (1.34-3.04)	**2.30** (1.45-3.44)
30-min	**0.761** (0.591-0.954)	**0.922** (0.715-1.16)	**1.19** (0.917-1.49)	**1.41** (1.08-1.78)	**1.71** (1.27-2.25)	**1.93** (1.41-2.60)	**2.17** (1.54-3.03)	**2.44** (1.64-3.47)	**2.82** (1.83-4.15)	**3.13** (1.98-4.70)
60-min	**0.965** (0.749-1.21)	**1.17** (0.907-1.47)	**1.50** (1.16-1.89)	**1.78** (1.37-2.26)	**2.16** (1.61-2.85)	**2.45** (1.79-3.30)	**2.75** (1.95-3.84)	**3.09** (2.08-4.40)	**3.57** (2.31-5.26)	**3.97** (2.51-5.95)
2-hr	**1.28** (1.00-1.59)	**1.54** (1.20-1.91)	**1.96** (1.52-2.44)	**2.31** (1.79-2.90)	**2.79** (2.09-3.66)	**3.15** (2.32-4.21)	**3.53** (2.53-4.90)	**3.97** (2.68-5.61)	**4.62** (3.01-6.75)	**5.17** (3.28-7.69)
3-hr	**1.49** (1.17-1.85)	**1.79** (1.41-2.22)	**2.27** (1.78-2.83)	**2.67** (2.08-3.34)	**3.22** (2.43-4.21)	**3.63** (2.69-4.85)	**4.07** (2.93-5.65)	**4.59** (3.11-6.46)	**5.36** (3.49-7.79)	**6.01** (3.82-8.90)
6-hr	**1.91** (1.52-2.35)	**2.29** (1.81-2.82)	**2.90** (2.29-3.59)	**3.41** (2.68-4.24)	**4.12** (3.13-5.35)	**4.64** (3.46-6.16)	**5.20** (3.77-7.17)	**5.87** (4.00-8.19)	**6.88** (4.50-9.91)	**7.73** (4.93-11.3)
12-hr	**2.37** (1.90-2.90)	**2.85** (2.28-3.49)	**3.64** (2.90-4.47)	**4.30** (3.40-5.30)	**5.20** (3.99-6.70)	**5.87** (4.41-7.73)	**6.59** (4.81-9.01)	**7.45** (5.09-10.3)	**8.74** (5.73-12.5)	**9.84** (6.30-14.3)
24-hr	**2.78** (2.25-3.38)	**3.39** (2.74-4.12)	**4.38** (3.52-5.33)	**5.20** (4.15-6.36)	**6.33** (4.89-8.11)	**7.16** (5.43-9.38)	**8.07** (5.94-11.0)	**9.17** (6.30-12.6)	**10.9** (7.15-15.4)	**12.3** (7.90-17.7)
2-day	**3.12** (2.55-3.76)	**3.86** (3.14-4.65)	**5.05** (4.10-6.11)	**6.04** (4.87-7.35)	**7.41** (5.78-9.45)	**8.41** (6.43-11.0)	**9.52** (7.09-12.9)	**10.9** (7.51-14.9)	**13.1** (8.65-18.4)	**15.0** (9.66-21.4)
3-day	**3.39** (2.78-4.07)	**4.19** (3.43-5.03)	**5.50** (4.49-6.63)	**6.59** (5.34-7.98)	**8.09** (6.34-10.3)	**9.18** (7.06-11.9)	**10.4** (7.78-14.1)	**11.9** (8.24-16.2)	**14.4** (9.50-20.1)	**16.5** (10.6-23.5)
4-day	**3.64** (2.99-4.35)	**4.49** (3.69-5.37)	**5.88** (4.81-7.06)	**7.04** (5.72-8.49)	**8.63** (6.79-10.9)	**9.79** (7.54-12.7)	**11.1** (8.31-15.0)	**12.7** (8.80-17.2)	**15.3** (10.1-21.3)	**17.6** (11.3-24.9)
7-day	**4.32** (3.58-5.14)	**5.27** (4.37-6.28)	**6.83** (5.63-8.15)	**8.12** (6.65-9.74)	**9.90** (7.83-12.4)	**11.2** (8.67-14.4)	**12.6** (9.50-16.9)	**14.4** (10.0-19.4)	**17.2** (11.5-23.8)	**19.7** (12.8-27.7)
10-day	**5.01** (4.18-5.94)	**6.02** (5.01-7.14)	**7.67** (6.35-9.12)	**9.04** (7.44-10.8)	**10.9** (8.66-13.6)	**12.3** (9.55-15.7)	**13.8** (10.4-18.3)	**15.7** (10.9-20.9)	**18.5** (12.3-25.5)	**21.0** (13.6-29.4)
20-day	**7.19** (6.05-8.46)	**8.28** (6.95-9.74)	**10.1** (8.40-11.9)	**11.5** (9.57-13.7)	**13.6** (10.8-16.7)	**15.1** (11.7-18.9)	**16.7** (12.5-21.6)	**18.5** (13.0-24.4)	**21.1** (14.1-28.7)	**23.2** (15.1-32.2)
30-day	**9.04** (7.64-10.6)	**10.2** (8.58-11.9)	**12.0** (10.1-14.1)	**13.5** (11.3-16.0)	**15.6** (12.5-19.1)	**17.2** (13.4-21.4)	**18.9** (14.1-24.1)	**20.6** (14.5-27.0)	**22.9** (15.4-31.0)	**24.8** (16.1-34.2)
45-day	**11.3** (9.64-13.2)	**12.5** (10.6-14.6)	**14.4** (12.2-16.9)	**16.0** (13.4-18.8)	**18.2** (14.6-22.0)	**19.9** (15.5-24.5)	**21.6** (16.1-27.2)	**23.2** (16.4-30.2)	**25.3** (17.0-34.0)	**26.8** (17.5-36.7)
60-day	**13.3** (11.3-15.4)	**14.5** (12.3-16.8)	**16.5** (14.0-19.2)	**18.1** (15.2-21.2)	**20.4** (16.4-24.5)	**22.1** (17.3-27.1)	**23.8** (17.8-29.8)	**25.4** (18.0-33.0)	**27.3** (18.5-36.5)	**28.6** (18.7-39.0)

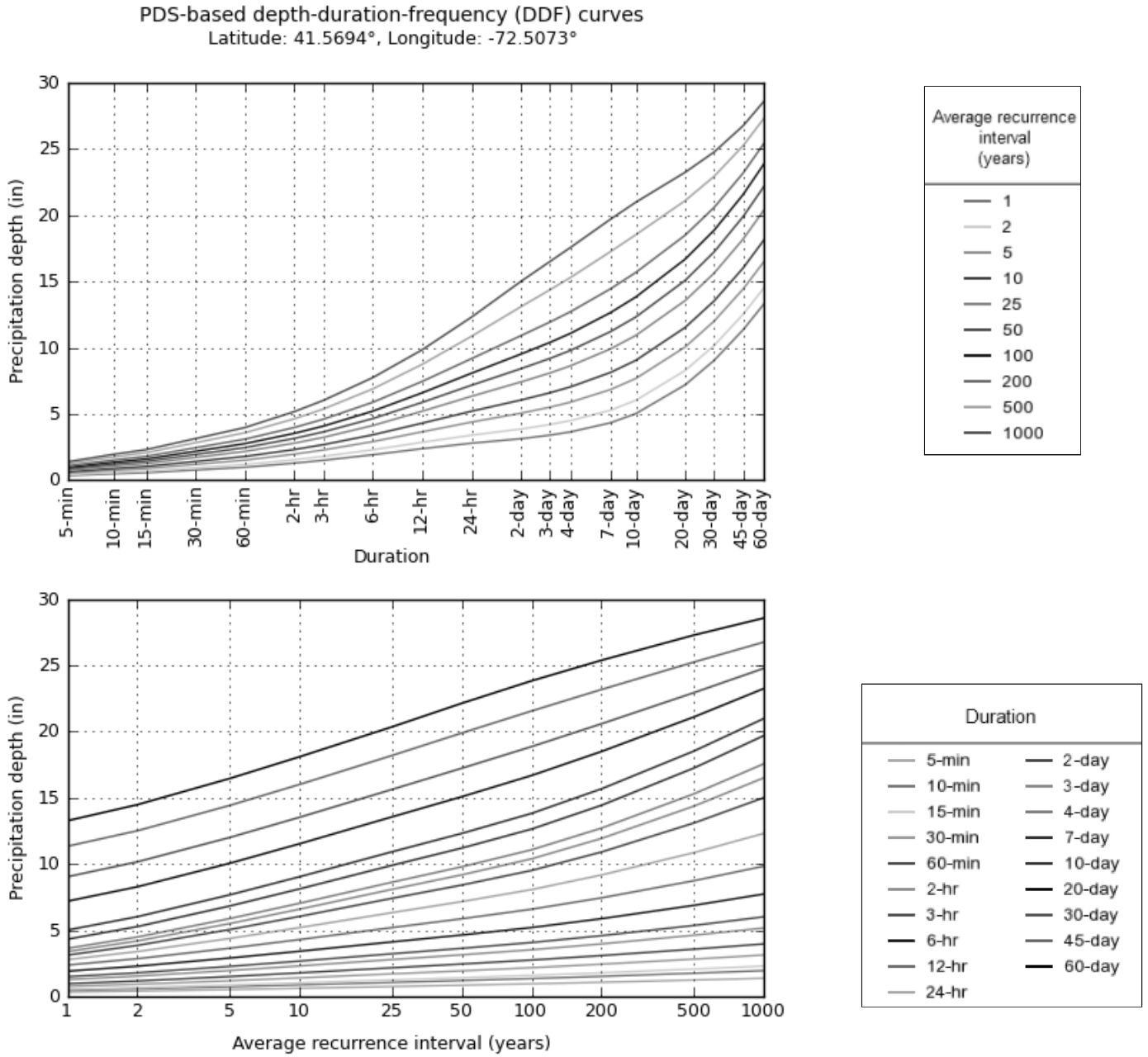
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical



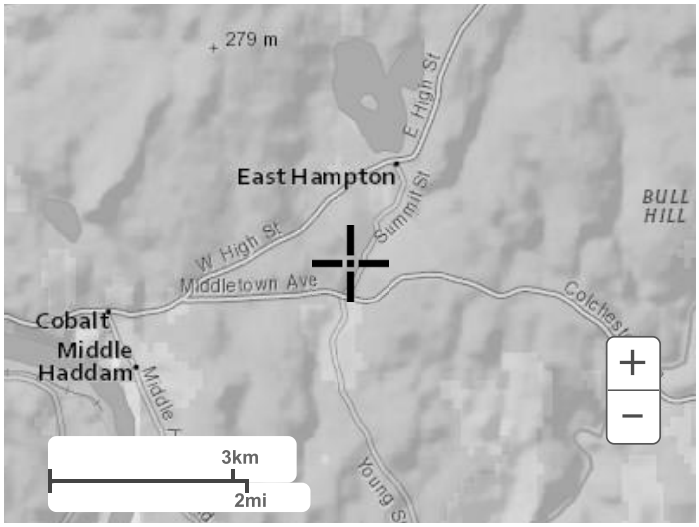
NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Mon May 15 14:15:32 2023

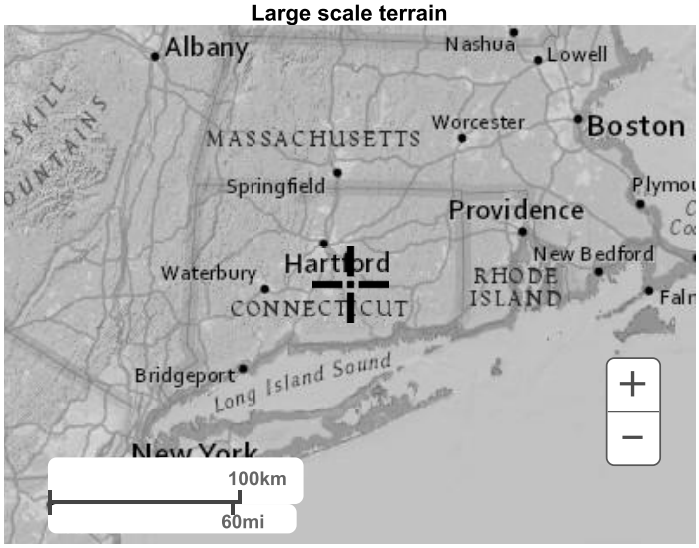
Back to Top

Maps & aerials

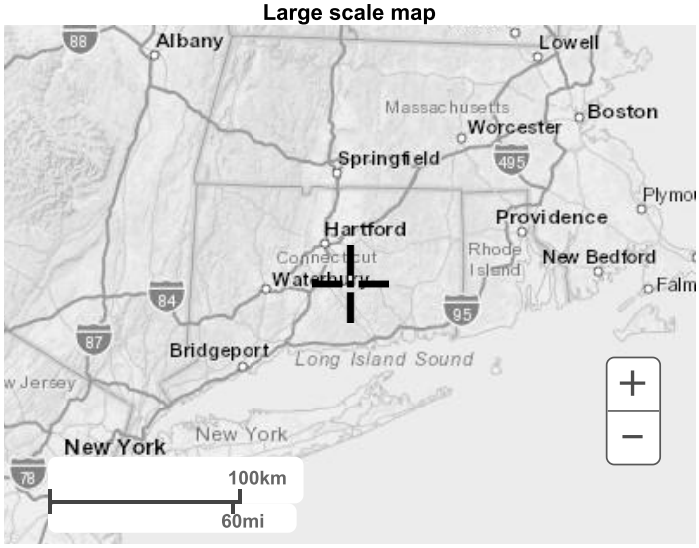
Small scale terrain



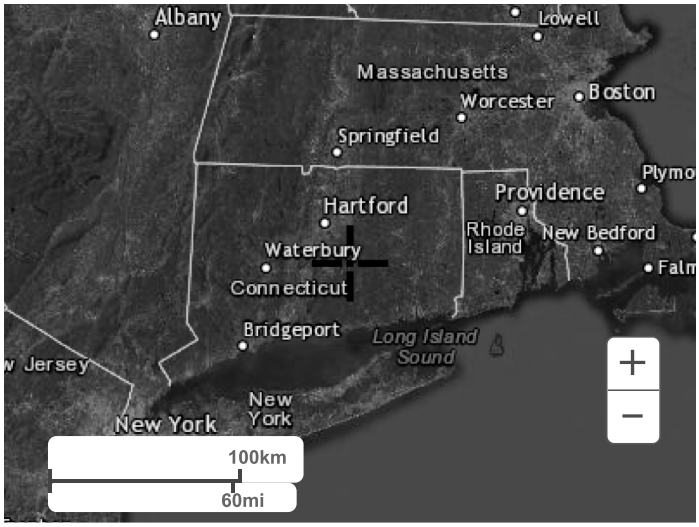
Large scale terrain



Large scale map



Large scale aerial



Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Water Quality Volume Calculations

Water Quality Volume Calculations

Project: Flycatcher BESS East Hampton By: AMK Date: 5/15/23
Location: Skinner Street Checked: Date:

Basin Name	Drainage Area 1	
Rainfall, P	1.0 in.	a
Area, A	2.29 ac	b
Impervious Cover Area	0.54 ac	c
% Impervious, I	23 %	
Volumetric Runoff Coeff., R	0.261	d
Water Quality Volume, WQV	0.050 ac-ft	e
	2,170 cf	

a First one inch of rainfall; 2004 Connecticut Stormwater Quality Manual

b Area tributary to the stormwater management basin

c Impervious cover area tributary to the stormwater management basin

d R=0.05+0.009*I; Section 7.4.1 from 2004 Connecticut Stormwater Quality Manual

e WQV=P*R*A/12; Section 7.4.1 from 2004 Connecticut Stormwater Quality Manual

Sediment Trap Sizing Calculations

Sediment Trap Sizing

Project: Project: Flycatcher BESS East Hampton By: AMK Date: 5/15/2023
Location: Location: Skinner Street Checked: Date:

*(134 cy / acre)**

TST #	Tributary Acreage, ac	Volume Required Below Top of Spillway, cf	Volume Provided in Permanent Basin Below Top of Spillway, cf
1	2.29	8,285	14,810

* Per 2002 Connecticut Guidelines for Soil Erosion and Sediment Control

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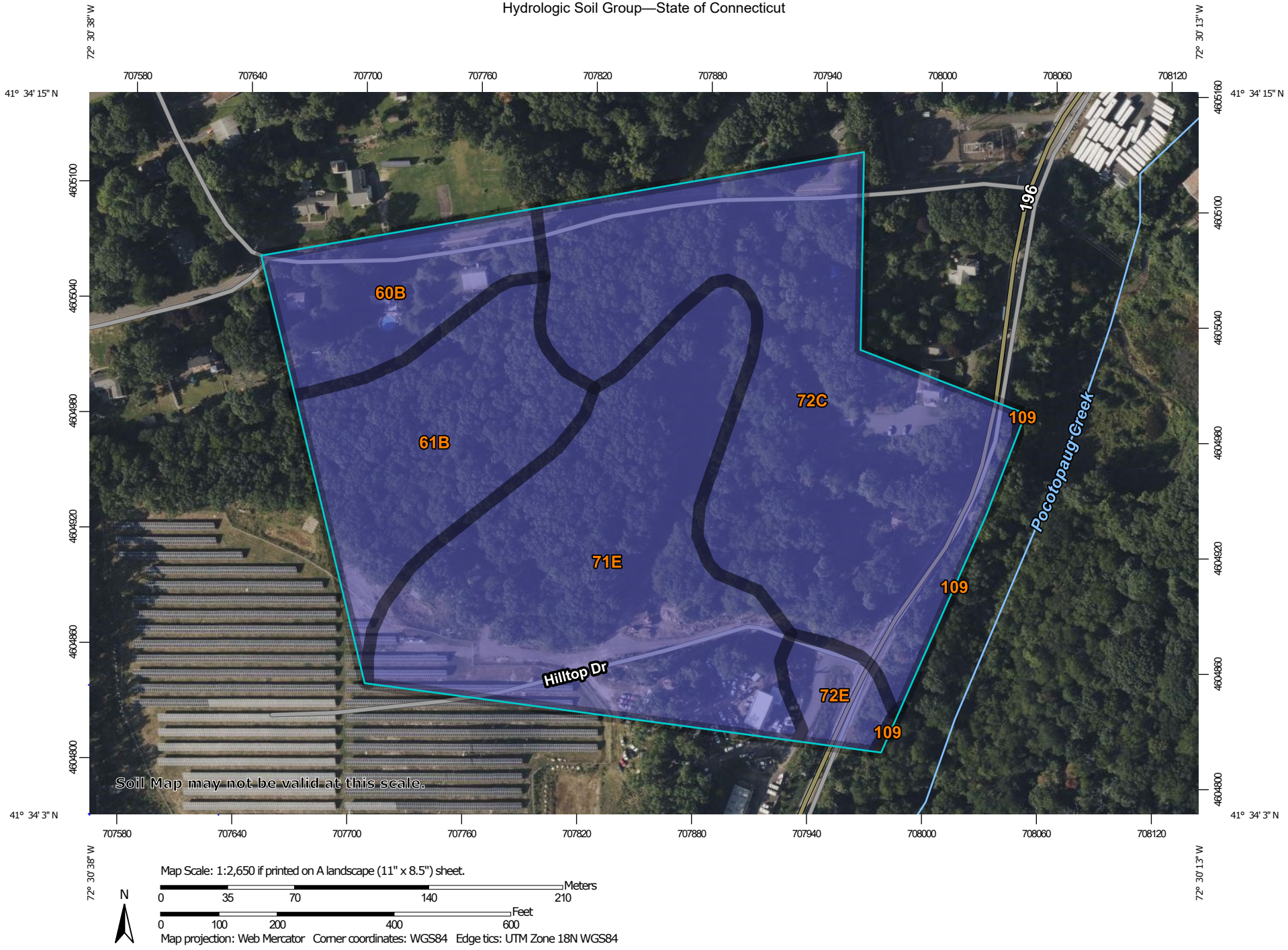
Appendix B: Additional Mapping

- NRCS Web Soil Survey Mapping
- FEMA Flood Insurance Rate Map
- CTDEEP Groundwater Classification Map

NCRS Web Soil Survey Mapping


72° 30' 38" W
72° 30' 13" W
41° 34' 15" N
41° 34' 3" N
707580
707640
707700
707760
707820
707880
707940
708000
708060
708120
4605160
4605100
4605040
4604980
4604920
4604860
4604800
60B
61B
72C
71E
72E
196
109
Pocotopaug Creek
Hilltop Dr
Soil Map may not be valid at this scale.
Map Scale: 1:2,650 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 35 70 140 210
Feet
0 100 200 400 600
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 22, Sep 12, 2022

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

Date(s) aerial images were photographed: Jun 14, 2022—Oct 6, 2022

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
60B	Canton and Charlton fine sandy loams, 3 to 8 percent slopes	B	2.0	9.4%
61B	Canton and Charlton fine sandy loams, 0 to 8 percent slopes, very stony	B	3.5	16.3%
71E	Nipmuck-Brimfield-Rock outcrop complex, 15 to 45 percent slopes	B	6.9	32.3%
72C	Nipmuck-Brookfield complex, 3 to 15 percent slopes, very rocky	B	8.4	39.0%
72E	Nipmuck-Brookfield complex, 15 to 45 percent slopes, very rocky	B	0.6	2.9%
109	Fluvaquents-Udifluvents complex, frequently flooded	B/D	0.0	0.1%
Totals for Area of Interest			**21.5**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

FEMA Flood Insurance Rate Map

National Flood Hazard Layer FIRMette

FEMA

72°30'46"W 41°34'21"N

72°30'8"W 41°33'54"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/15/2023 at 10:24 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

CTDEEP Groundwater Classification Map

WATER QUALITY CLASSIFICATIONS
EAST HAMPTON, CT

SURFACE WATER QUALITY CLASSES

A	A
AA	AA
B, B*	B, B*
SA	SA
SB	SB

NOTES:
Surface Water Classifications beginning with S refer to Coastal and Marine Surface Water.
B* is a subset of Class B where no direct wastewater discharges are allowed other than those consistent with Class AA, A and SA surface waters.

GROUND WATER QUALITY CLASSES

GA (white background)

GAA, GAAs

GA, GAA may not meet current standards

GB

GC

Area of Contribution to Public Supply Well

Final Aquifer Protection Area (Level A)

Major Basin Boundary

EXPLANATION

WATER QUALITY CLASSIFICATIONS (WQC) MAPS are one of the elements of the Water Quality Standards (WQS) for the State of Connecticut. The WQS are a part of Connecticut's clean water program and are essential for protecting and improving water quality. The WQS follow the principles of Connecticut's Clean Water Act which is in Chapter 446K of the Connecticut General Statutes. The WQS provide policy guidance in many areas, for example decisions on acceptable discharges to water resources, siting of landfills, remediation or prioritization of municipal sewerage system projects. The first two elements of the WQS are the Standards, which set an overall policy for management of water quality, and the Criteria, which are descriptive and numerical standards that describe the allowable parameters and goals for various water quality classifications. A discussion of these two elements is found in the Water Quality Standards document available on the CT DEEP website. The third element is the Classifications and the Water Quality Classification Maps which show the Classification assigned to each surface and groundwater resource throughout the State. The WQS are adopted using a public participation process. The WQC maps are also adopted using a public participation process but go through hearings separately from the Standards and Criteria hearings. Revision and adoption of the WQC data occurs in accordance with the public participation procedures contained in Section 22a-426 of the Connecticut General Statutes. Ground WQC is subject to Connecticut regulation and changes must be reviewed and adopted. All changes to the Surface WQC require an adoption process which is subject to federal review and approval in addition to CT regulation. The adoption dates for the WQC by major drainage basin are: Housatonic River, Hudson River and Southwest Coastal Basins - March 1999; Connecticut River and South Central Coastal Basins - February 1993; Thames River, Pawcatuck River and Southeast Coastal Basins - December 1986. Surface Water Classifications do not change after the adoption date until the next major revision. Ground Water Classifications may change after the adoption date under specific circumstances. The map may have more than one WQC adoption date because a town may be in more than one major drainage basin.

SURFACE WATERS in Connecticut are divided into freshwater classified as AA, A, B or B* and saline waters classified as SA or SB. Class AA designated uses are existing or proposed drinking water supplies; habitat for fish and other aquatic life and wildlife; recreation; and water supply for industry and agriculture. Class A designated uses are habitat for fish and other aquatic life and wildlife; potential drinking water supplies; recreation; navigation; and water supply for industry and agriculture. Class SA designated uses are habitat for marine fish, other aquatic life and wildlife; shellfish harvesting for direct human consumption; recreation; industrial water supply; and navigation. Class B designated uses are habitat for fish and aquatic life and wildlife; recreation; navigation; and industrial and agricultural water supply. Class B*, applicable to Candlewood Lake, is a subset of Class B and is identical in all ways to the designated uses, criteria and standards for Class B waters except for the restriction on direct discharges. Class SB designated uses are habitat for marine fish and aquatic life and wildlife; commercial shellfish harvesting; recreation; industrial water supply; and navigation.

Surface waters which are not specifically classified shall be considered as Class A or Class AA. Surface waters in GA ground water areas are assumed Class A or Class SA unless otherwise indicated. Surface waters in GAA ground water areas are assumed Class AA unless otherwise indicated.

On the WQC map a surface water quality goal of A is represented by blue colored water bodies. Surface water quality goal of AA is represented by purple colored water bodies. Surface water quality goal of B is represented by gold colored water bodies.

GROUND WATERS in Connecticut are classified as GAA, GA, GB and GC. Class GAA designated uses are existing or potential public supply of water suitable for drinking without treatment and baseflow for hydraulically-connected surface water bodies. The Class GAAs is a subclass of GAA for ground water that is tributary to a public water supply reservoir. The area of contribution to a public water supply well is represented by a 500-foot radius around the well and is assumed to be Class GAA unless otherwise classified. Class GA designated uses are existing private and potential public or private supplies of water suitable for drinking without treatment and baseflow for hydraulically-connected surface water bodies. All ground waters not specifically classified are considered as Class GA. Class GB designated uses are industrial process water and cooling waters and baseflow for hydraulically-connected water bodies and is presumed not suitable for human consumption without treatment. Class GC designated uses are assimilation of discharges authorized by the Commissioner pursuant to Section 22a-430 of the General Statutes.

On the WQC map GA is represented by white colored land areas. Class GAA and class GAAs are represented by blue colored land areas. The area of contribution to a public water supply well is shown by a blue cross-hatch overprint. A notation of GAA followed by a state abbreviation indicates a watershed that contributes to the public water supply for a state other than Connecticut. Class GA or Class GAA areas that currently may not be meeting the GA or GAA standards are represented on the WQC maps by tan colored land areas. Class GB is represented by green colored land areas. Class GC is represented by magenta colored land areas.

FINAL AQUIFER PROTECTION AREAS (Level A) are included on the WQC maps for informational purposes. These areas are anticipated to be reclassified GAA during the next major basin updates, subject to public participation. The Aquifer Protection Program helps protect Connecticut's public drinking water resources by delineating aquifer protection areas (also called wellhead protection areas) for public supply wells and establishing land use regulations within these areas. These areas represent the land area contributing ground water to active public water supply wells or well fields that serve more than 1000 people and are set in sand and gravel aquifers (stratified drift deposits).

DATA SOURCES

WATER QUALITY CLASSIFICATIONS DATA – Water quality classifications shown on this map are based on information from the following digital spatial datasets that are typically shown together – Ground Water Quality Classifications Poly, Surface Water Quality Classifications Line, and Surface Water Quality Classifications Poly. The map legend above reflects the content of these three data sources. These WQC data were initially compiled on 1:24,000-scale 7.5 minute USGS topographic quadrangle maps and later digitized at 1:24,000 scale. For example, the Surface Water Quality Classifications Line and Surface Water Quality Classifications Poly digital data assigns surface water quality classifications to water bodies such as rivers, streams, reservoirs, lakes, ponds and coves found in 1:24,000-scale hydrography data available from CT DEEP. The hydrography may not include all the waterbodies in Connecticut. The Ground Water Quality Classifications Poly data assigns ground water quality classifications, at 1:24,000 scale, to the remaining land areas in Connecticut.

AQUIFER PROTECTION AREA DATA – Aquifer Protection Areas shown on this map are from the Aquifer Protection Area digital dataset which contains polygon data intended to be used at 1:24,000 scale. The dataset contains regulated areas classified as Level A Aquifer Protection Area (Final) and Level B Aquifer Protection Area (Preliminary). The Level B areas are not shown on the WQC maps. The data was collected from 1991 to the present and is actively updated as Final area mapping replaces earlier Preliminary areas. The Aquifer Protection Areas are delineated by the individual water companies owning the well fields and submitted to the CT DEEP for approval. Preliminary mapping provides a general estimate of the area contributing ground water to the well field. Final mapping is based on extensive, site-specific, detailed modeling of the ground water flow system. CT DEEP may adjust Final area boundaries to be consistent with 1:24,000 scale topography and base map data where appropriate during the approval process.

MAJOR DRAINAGE BASIN DATA – Major drainage basins shown on this map are from Major Basin Line data developed by CT DEEP and intended to be used at 1:24,000 scale.

BASE MAP DATA - Based on data originally from 1:24,000-scale USGS 7.5 minute topographic quadrangle maps published between 1969 and 1992. It includes political boundaries, railroads, airports, hydrography, geographic names and geographic places. Streets and street names are from Tele Atlas® copyrighted data. Base map information is neither current nor complete.

RELATED INFORMATION
This map is intended to be printed at its original dimensions in order to maintain the 1:24,000 scale (1 inch = 2000 feet).
WATER QUALITY STANDARDS - Go to the CT DEEP website for a summary and the full text of the "Water Quality Standards" and for other information on water quality.
AQUIFER PROTECTION AREAS - Go to the CT DEEP website for more information.

ADOPTED DATES

Water Quality Standards
February 25, 2011

Thames River, Pawcatuck River and Southeast Coastal Basins: December 1986

Connecticut River and South Central Coastal Basins: February 1993

Housatonic River, Hudson River and Southwest Coastal Basins: March 1999

MAP LOCATION

MAJOR BASINS
1 Pawcatuck
2 Southeast Coast
3 Thames
4 Connecticut
5 South Central Coast
6 Housatonic
7 Southwest Coast
8 Hudson

State Plane Coordinate System of 1983, Zone 3526
Lambert Conformal Conic Projection
North American Datum of 1983

0 0.5 1 Miles
1000 0 1000 2000 3000 4000 5000 6000 7000 Feet
0 0.5 0 1 Kilometers

SCALE 1:24,000 (1 inch = 2000 feet) when map is printed at original size

STATE OF CONNECTICUT
DEPARTMENT OF
ENERGY & ENVIRONMENTAL PROTECTION
79 Elm Street
Hartford, CT 06106-5127

Map created by CT DEEP
October 2018

Map is not colorfast
Protect from light and moisture

Appendix C: Operation and Maintenance Plan

Project Information

Project Name:	KCE CT8 BESS East Hampton
Address or Locus:	Skinner Street
City, State & Zip:	East Hampton, Connecticut

Developer

Client Name:	Key Capture Energy
Client Address:	25 Monroe Street
Client City, State & Zip:	Albany, NY 12210
Client Telephone No.:	
Client Cell Phone:	
Client E-Mail:	

Site Supervisor

Site Manager Name:	TBD
Site Manager Address:	
Site Manager City, State & Zip:	
Site Manager Telephone No.:	
Site Manager Cell Phone:	
Site Manager E-Mail:	

Long Term Stormwater Maintenance Measures

The following maintenance program is proposed to ensure the continued effectiveness of the structural water quality controls:

- Inspect infiltration basins once annually, in the spring, for accumulated sediment. Necessary sediment removal, and/or repair will be performed immediately upon identification.
- Paved areas will be swept, at a minimum, two (2) times per year.
- Routinely pick up and remove litter from the parking areas, islands and perimeter landscape areas in addition to regular pavement sweeping.

Structural Stormwater Management Devices

Stormwater Outfalls

- Inspect outfall locations monthly for the first three months after construction to ensure proper functioning and correct any areas that have settled or experienced washouts.
- Inspect outfalls annually after initial three-month period.
- Annual inspections should be supplemented after large storms when washouts may occur.
- Maintain vegetation around outfalls to prevent blockages at the outfall.
- Maintain rip rap pad below each outfall and replace any washouts.
- Remove and dispose of any trash or debris at the outfall.

Infiltration Basins

- Inspect monthly for the first three months after construction.
- After initial three-month period, basins are to be inspected once per year and cleaned a minimum of at least once per year or when sediment reaches 8" in depth.

Best Management Practices – Maintenance/ Evaluation Checklists

Flycatcher BESS East Hampton – Skinner Street – East Hampton, CT

Best Management Practices – Maintenance/ Evaluation Checklist

Construction Practices

Best Management Practice	Inspection Frequency	Date Inspected	Inspector	Minimum Maintenance and Key Items to Check	Cleaning/Repair Needed ☐yes ☐no (List Items)	Date of Cleaning/ Repair	Performed by
Silt Fencing	Once per week or after a 0.5" or greater storm event						
Compost Filter Sock	Once per week or after a 0.5" or greater storm event						
Straw Wattles	Once per week or after a 0.5" or greater storm event						
Stabilized Construction Entrance/Exit	Once per week or after a 0.5" or greater storm event						

Temporary Sediment Trap/Basin & Diversion Swales	Once per week or after a 0.5" or greater storm event						
Vegetated Slope Stabilization	Once per week or after a 0.5" or greater storm event						
Energy Dissipators	Once per week or after a 0.5" or greater storm event						

Stormwater Control Manager _____

Flycatcher BESS East Hampton – Skinner Street – East Hampton, CT

Best Management Practices – Maintenance/ Evaluation Checklist

Long Term Practices

Best Management Practice	Inspection Frequency	Date Inspected	Inspector	Minimum Maintenance and Key Items to Check	Cleaning/Repair Needed ☐yes ☐no (List Items)	Date of Cleaning/ Repair	Performed by
Trash/Litter	Routinely pick up and remove litter from entire property as required						
Vegetated Areas	Inspect bi-annually Replant bare areas upon identification						
Energy Dissipators	Inspect monthly for the first 3 months and after any rain event exceeding 0.5" Inspect 2x a year thereafter.						
Diversion Swales	Inspect monthly for the first 3 months and after						

	any rain event exceeding 0.5" Inspect 2x a year thereafter.						
Infiltration Basins	Inspect monthly for the first 3 months and after any rain event exceeding 0.5" Inspect 2x a year thereafter.						

Stormwater Control Manager _____

C-1 Appendix C: Operation and Maintenance Plan