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ENGINEERING | SITE WORK | LAND SURVEYING

STORMWATER REPORT

SITE PLAN

ASSESSORS MAP 130G – LOT 164
59 TARKILN PLACE
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR:

Dave Rodrigues
JAZ BRUSH USA, INC.
59 Tarkiln Place
New Bedford, MA 02745

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STORMWATER MANAGEMENT REPORT
AND
HYDROLOGIC ANALYSIS

SECTION 1: Project Summary

The project area associated with the proposed building addition is located on the west side of Tarkiln Place. The site is identified as Assessors Map 130G, Lot 164, and is located at #59 Tarkiln Place. The total area of the site is 130,682 square feet. The site is located entirely within the Industrial A (IA) zoning district.

The site is currently in use as a warehouse/office. To the west, the property abuts a-right-of-way railroad parcel. To the south, the property abuts a commercial property. To the north, the property abuts a small residential lot. The site is not located within an area identified by the Natural Heritage and Endangered Species Program as a Priority Habitat of Rare Species or an Estimated Habitat of Rare Wildlife, however, there are wetlands over the westerly portion of the locus. The site is not located within a mapped FEMA Special Flood Hazard Area Zone.

The applicant is seeking permission to construct a 5,000 s.f. warehouse addition and a subsurface recharge system for the above existing commercial warehouse as shown on Definitive Site Plan dated October 5, 2021. In order to provide water quality treatment and recharge of stormwater runoff generated by the proposed impervious site coverage, stormwater best management practices (BMPs) have been proposed.

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SECTION 2: Methodology

Drainage computations were performed using the Natural Resources Conservation Services (NRCS) TR-20 method and HydroCAD® Drainage Calculation Software to determine the change in the existing and post-development runoff rates from each drainage area for the 2-, 10-, and 100-year 24 hour storm events. The limits of the work proposed to complete the project fall within an area subject to protection by the Wetlands Protection Act, therefor, compliance with DEP Stormwater Management Standards is required. Sketches of the existing and proposed watershed areas, HydroCAD® Report, and copies of the calculation sheets are included as appendices to this report.

SECTION 3: Existing Conditions

The soils underlying the proposed site are identified in the Natural Resources Conservation Service (NRCS) Soil Survey of Bristol County ***(see Exhibit D)***. The site soils are classified as 73A (Whitman Fine Sandy Loam, 0 to 3 percent slopes, extremely stony [Hydrologic Soils Group “D”]), 307B (Paxton Fine Sandy Loam, 0 to 8 percent slopes, extremely stony [HSG “C”]).

SECTION 4: Stormwater Management Overview

Existing Conditions:

Two design points have been analyzed for this project: (1) the limit of the bordering vegetated wetlands on the westerly side of the site. The design point receives runoff from subcatchment area (S1). (2) Catch basin at the northerly loading dock. The design point receives runoff from subcatchment area (S2). There are currently two catch basins at the low point of each loading dock that are currently silted in with no visible pipes. There is no record of pipes connecting to these structures. Two catch basins also exist at the low points of a detention area between the building and the street. The catch basin rims are 0.3' above grade. The pipes from these catch basins run northerly. It is unknown where they flow. Stormwater runoff from the site, not directed to the catch basins, flow overland westerly toward the wetlands.

Proposed Conditions:

Under proposed conditions two design points have been analyzed: (1) The same design point of bordering vegetated wetlands on the westerly side of the site for subcatchment area (S1) has been analyzed. (2) The catch basin at the northerly loading dock has been removed. Alternatively, a subsurface infiltration system receives roof runoff from the proposed roof drains connected to the warehouse addition subcatchment area (S2).

The proposed infiltration basin has been designed in accordance with the DEP Stormwater Handbook to provide appropriate water quality treatment, groundwater recharge, and peak rate attenuation for all storms, including the 100-year storm event.

SECTION 5: Stormwater Management Standards

Standard 1:

- Under proposed conditions, there will be no new untreated discharges or erosion in wetland areas. All proposed roof runoff will be collected in the subsurface infiltration system with no proposed outlet. There are no new stormwater discharges proposed. This standard has been met.

Standard 2:

- The results of site drainage calculations are presented in the following Table. The results are based upon evaluation of Pre-development conditions and the design of proposed subsurface drainage systems for the Post-development condition. These results show the Post-Development offsite runoff rates are reduced to less than the Pre-development conditions, thus meeting the BMP guidelines for this site development. This standard has been met.

Table 1 - Comparison of Pre- versus Post-Development Offsite Runoff				
	Pre-Development		Post-Development	
Storm Frequency	Rate (cfs)	Volume (af)	Rate (cfs)	Volume (af)
2-Year Storm				
To Wetlands	1.82	0.211	1.69	0.197
10-Year Storm				
To Wetlands	3.16	0.364	2.99	0.343
100-Year Storm				
To Wetlands	5.37	0.622	5.12	0.592

Standard 3:

- The site is comprised of soils belonging to Hydrologic Soils Groups "B" per on site soil testing and is therefore required to meet the recharge requirements of Standard 3. The proposed infiltration basin has been designed to recharge all of the anticipated stormwater runoff from the new impervious areas. The required Recharge Volume has been calculated using the Static Method and calculations are provided in ***Exhibit F***. Drawdown calculations have also been provided in ***Exhibit G***. Soil test pit data, provided in ***Exhibit I***, indicates that the vertical separation from the bottom of the infiltration basins is greater than 2 feet and less than four feet. Groundwater mounding calculations ***(Exhibit H)*** have been provided demonstrating that the groundwater mounds that forms under the proposed recharge system will not break out above the land or surface of a wetland. This standard has been met.

Standard 4:

- The only proposed impervious area is the roof of the warehouse addition. The proposed roof drains connect directly to the subsurface infiltration system which was designed to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook. This standard has been met.

Standard 5:

- The use associated with this project is not classified as a Land Use with Higher Potential Pollutant Load (LUHPPL); therefore, this standard does not apply.

Standard 6:

- The site does not discharge within the Zone II or IWPA of a public water supply, nor does it discharge near or to any critical areas. This standard does not apply.

Standard 7:

- The project is not a redevelopment project. This standard does not apply.

Standard 8:

- There will be less than 1 acre of disturbance. Erosion control is proposed along limit of disturbance.

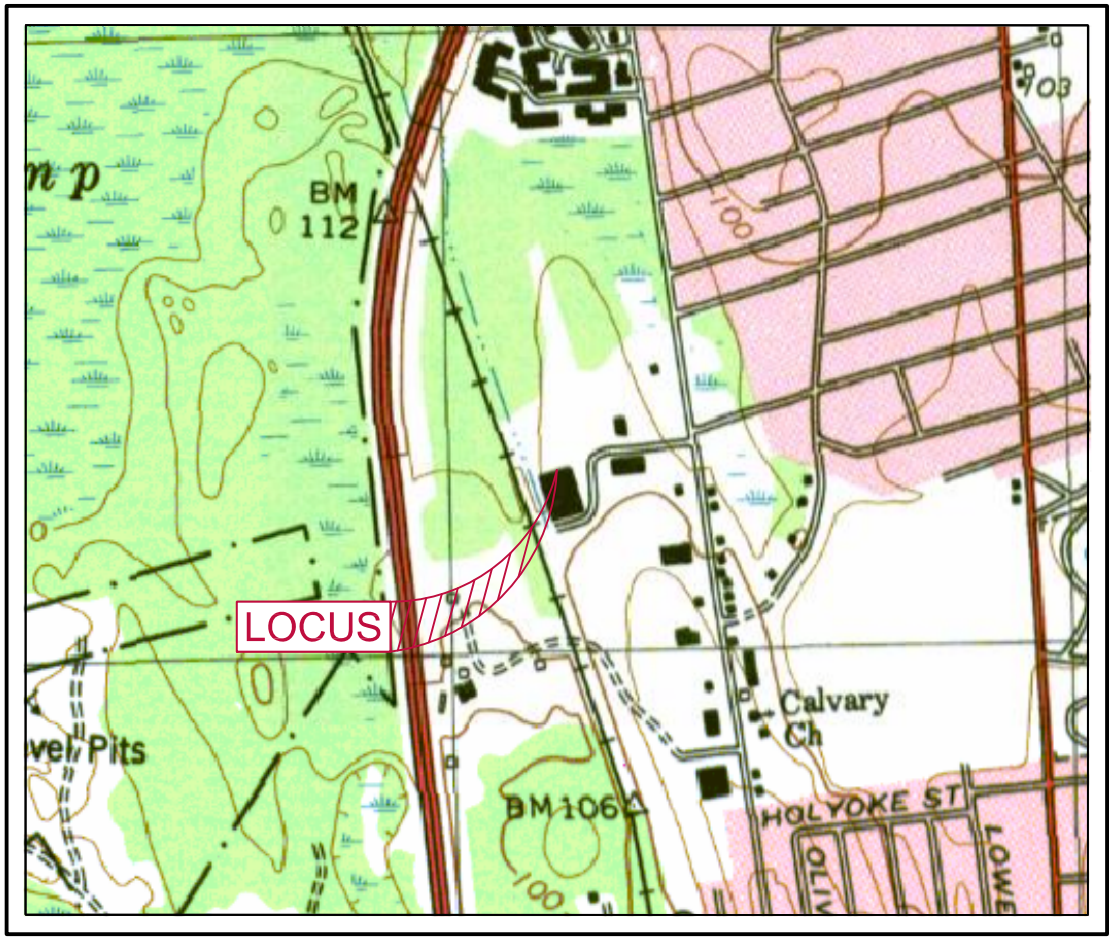
Standard 9:

- A long-term operation and maintenance plan has been prepared to ensure that stormwater management systems function as designed. ***(Exhibit N)***

Standard 10:

- We are not proposing any illicit discharges as defined in the Stormwater Management Regulations. See attached letter in **Exhibit O**

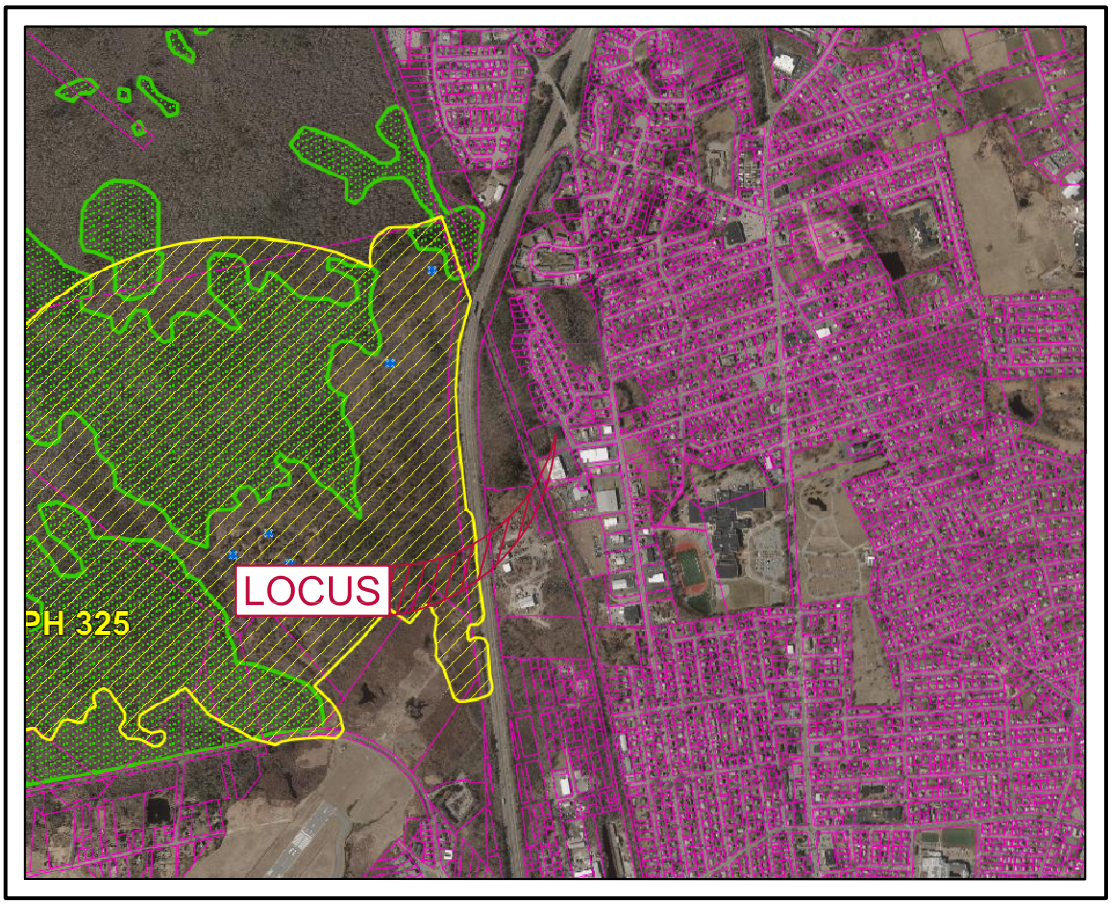
TOPO! VERSION 2.1.0



FIRM MAP
PANEL # 25005C0387G
EFFECTIVE DATE: JULY 6, 2021

EXHIBIT "C"

NHESP PRIORITY & ESTIMATED HABITAT MAP



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NRCS SOIL MAP

HYDROLOGIC CALCULATIONS

Subcatchment to Wetlands

Subcatchment Loading Dock Catchbasin

Subcat Reach Pond Link

Routing Diagram for 18391PRE
Prepared by Farland Corp. Inc., Printed 10/19/2021

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S1: Subcatchment to Runoff Area=67,686 sf 35.84% Impervious Runoff Depth=1.63"
Flow Length=167' Tc=24.6 min CN=81 Runoff=1.82 cfs 0.211 af

Subcatchment S2: Subcatchment Loading Runoff Area=3,286 sf 100.00% Impervious Runoff Depth=3.17"
Tc=6.0 min CN=98 Runoff=0.25 cfs 0.020 af

Total Runoff Area = 1.629 ac Runoff Volume = 0.231 af Average Runoff Depth = 1.70"
61.18% Pervious = 0.997 ac 38.82% Impervious = 0.632 ac

Summary for Subcatchment S1: Subcatchment to Wetlands

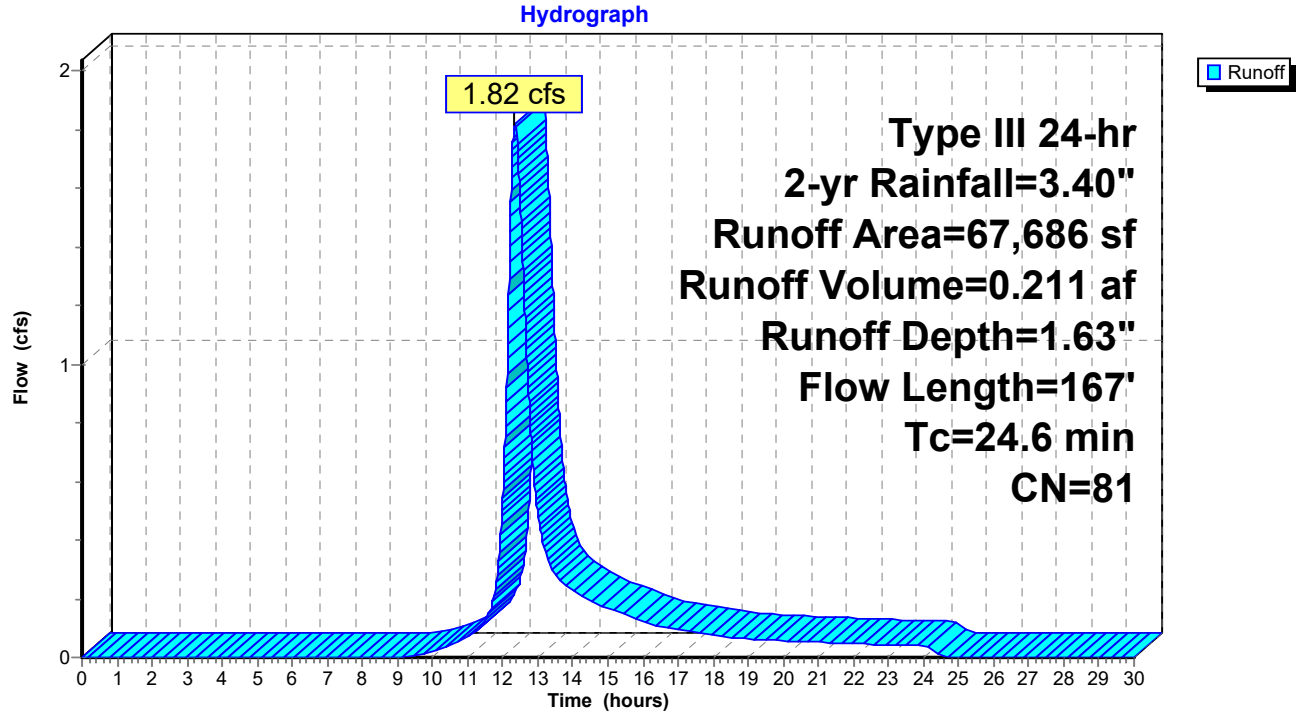
Runoff = 1.82 cfs @ 12.35 hrs, Volume= 0.211 af, Depth= 1.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	24,262	98	Paved parking & roofs, HSG C
	31,088	70	Woods, Good, HSG C
	12,336	74	>75% Grass cover, Good, HSG C
	67,686	81	Weighted Average
	43,424		64.16% Pervious Area
	24,262		35.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.8	50	0.0160	0.04		**Sheet Flow, Woods Sheet** Woods: Dense underbrush n= 0.800 P2= 3.40"
1.8	117	0.0487	1.10		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
24.6	167	Total			

Subcatchment S1: Subcatchment to Wetlands



Summary for Subcatchment S2: Subcatchment Loading Dock Catchbasin

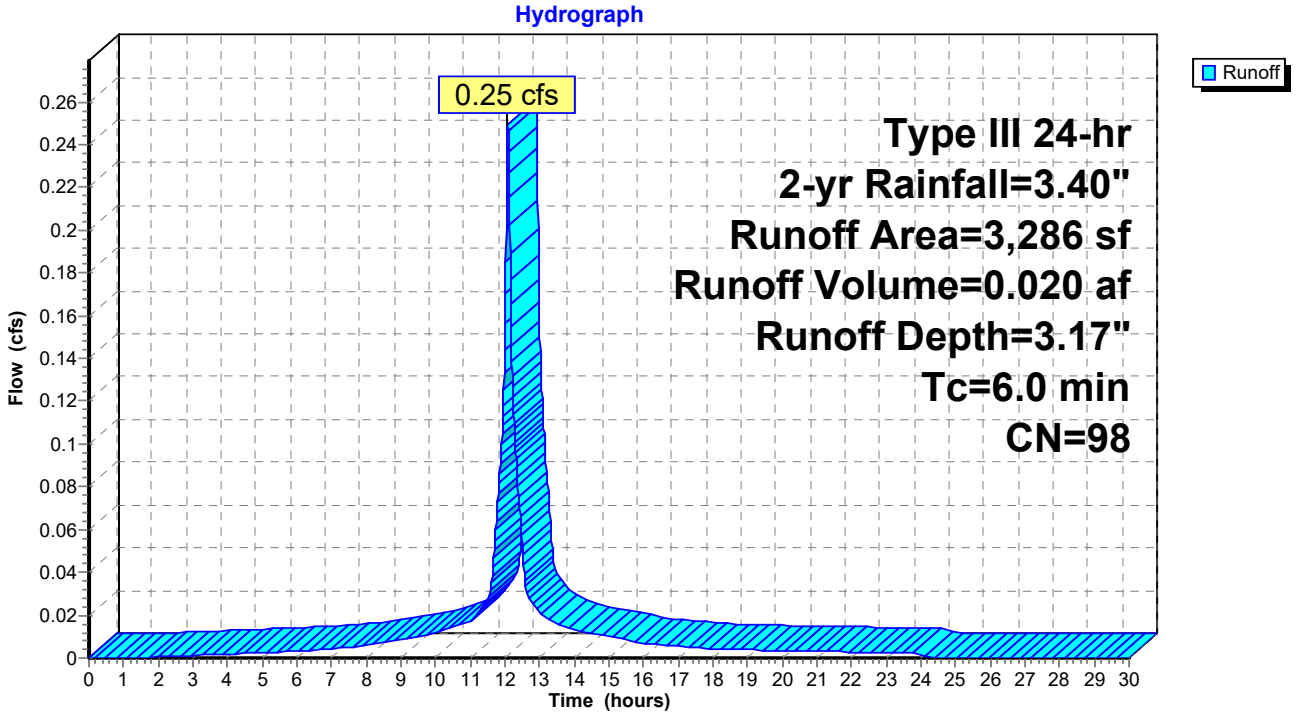
Runoff = 0.25 cfs @ 12.08 hrs, Volume= 0.020 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	3,286	98	Paved parking, HSG C
	3,286		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 MINIMUM**

Subcatchment S2: Subcatchment Loading Dock Catchbasin



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S1: Subcatchment to Runoff Area=67,686 sf 35.84% Impervious Runoff Depth=2.81"
Flow Length=167' Tc=24.6 min CN=81 Runoff=3.16 cfs 0.364 af

Subcatchment S2: Subcatchment Loading Runoff Area=3,286 sf 100.00% Impervious Runoff Depth=4.56"
Tc=6.0 min CN=98 Runoff=0.35 cfs 0.029 af

Total Runoff Area = 1.629 ac Runoff Volume = 0.392 af Average Runoff Depth = 2.89"
61.18% Pervious = 0.997 ac 38.82% Impervious = 0.632 ac

Summary for Subcatchment S1: Subcatchment to Wetlands

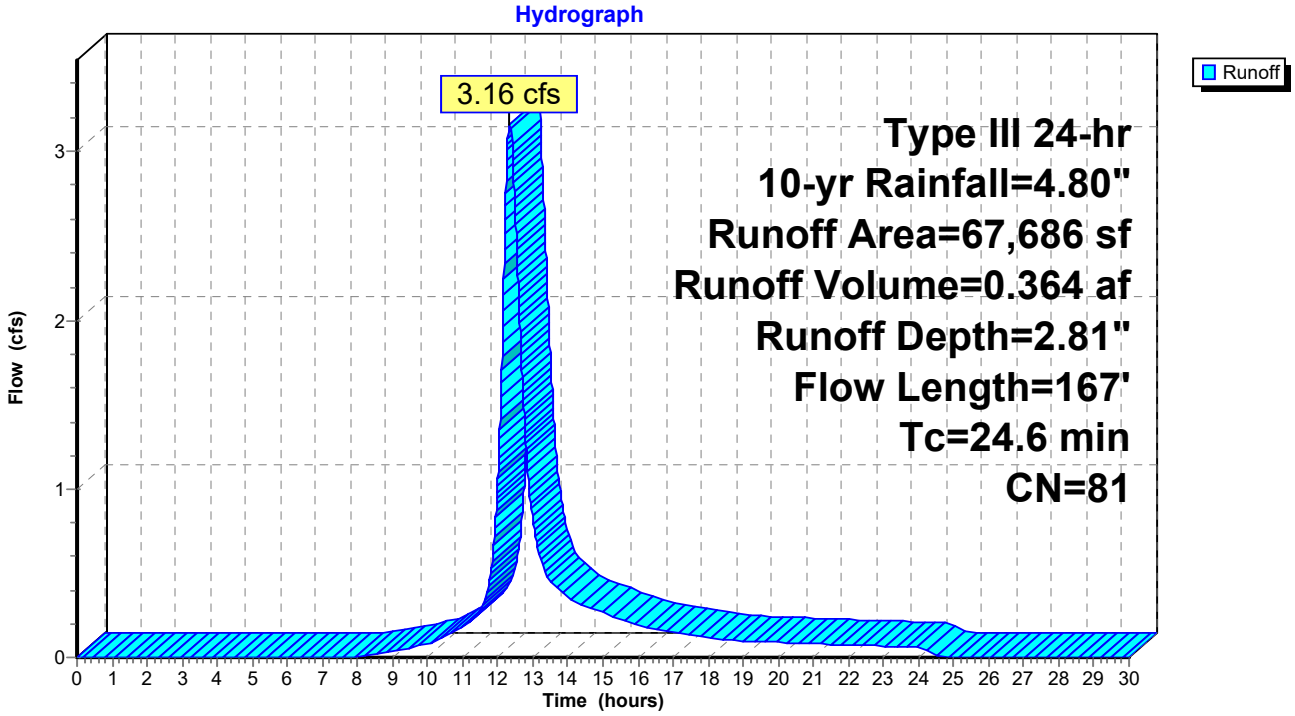
Runoff = 3.16 cfs @ 12.33 hrs, Volume= 0.364 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	24,262	98	Paved parking & roofs, HSG C
	31,088	70	Woods, Good, HSG C
	12,336	74	>75% Grass cover, Good, HSG C
	67,686	81	Weighted Average
	43,424		64.16% Pervious Area
	24,262		35.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.8	50	0.0160	0.04		**Sheet Flow, Woods Sheet** Woods: Dense underbrush n= 0.800 P2= 3.40"
1.8	117	0.0487	1.10		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
24.6	167	Total			

Subcatchment S1: Subcatchment to Wetlands



Summary for Subcatchment S2: Subcatchment Loading Dock Catchbasin

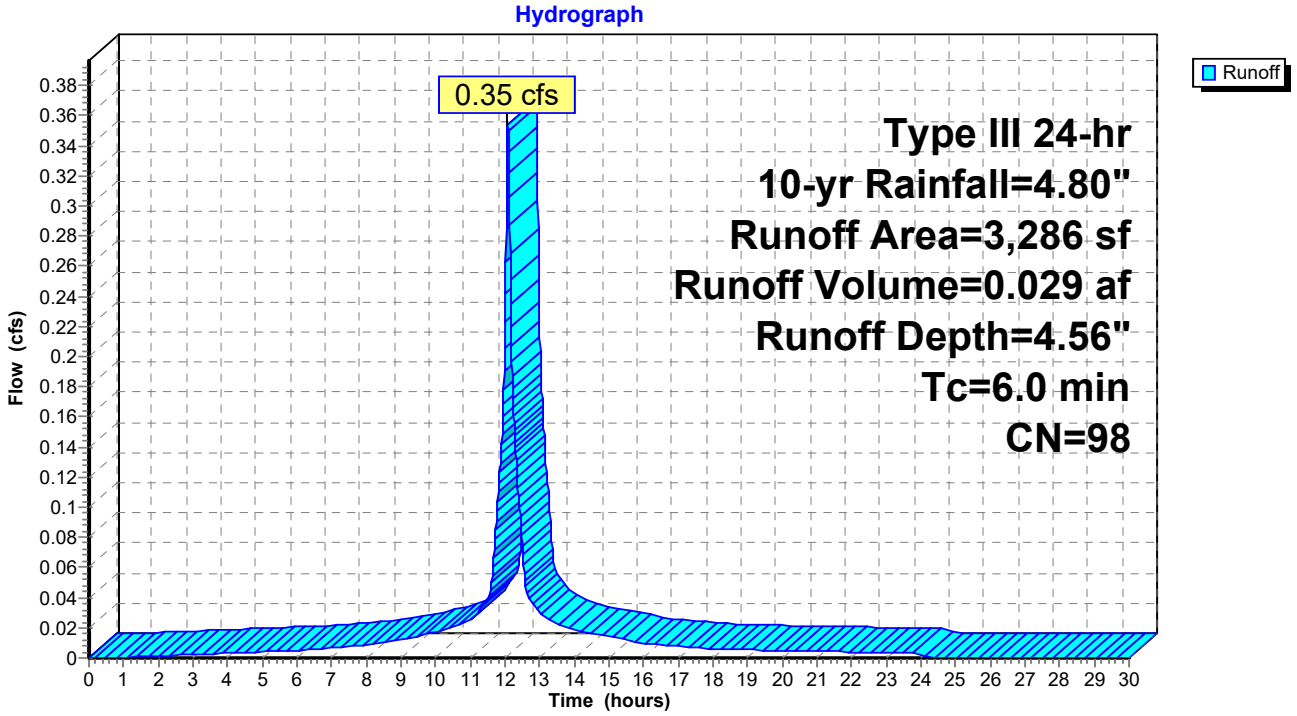
Runoff = 0.35 cfs @ 12.08 hrs, Volume= 0.029 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	3,286	98	Paved parking, HSG C
	3,286		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 MINIMUM**

Subcatchment S2: Subcatchment Loading Dock Catchbasin



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S1: Subcatchment to Runoff Area=67,686 sf 35.84% Impervious Runoff Depth=4.81"
Flow Length=167' Tc=24.6 min CN=81 Runoff=5.37 cfs 0.622 af

Subcatchment S2: Subcatchment Loading Runoff Area=3,286 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=0.52 cfs 0.043 af

Total Runoff Area = 1.629 ac Runoff Volume = 0.665 af Average Runoff Depth = 4.90"
61.18% Pervious = 0.997 ac 38.82% Impervious = 0.632 ac

Summary for Subcatchment S1: Subcatchment to Wetlands

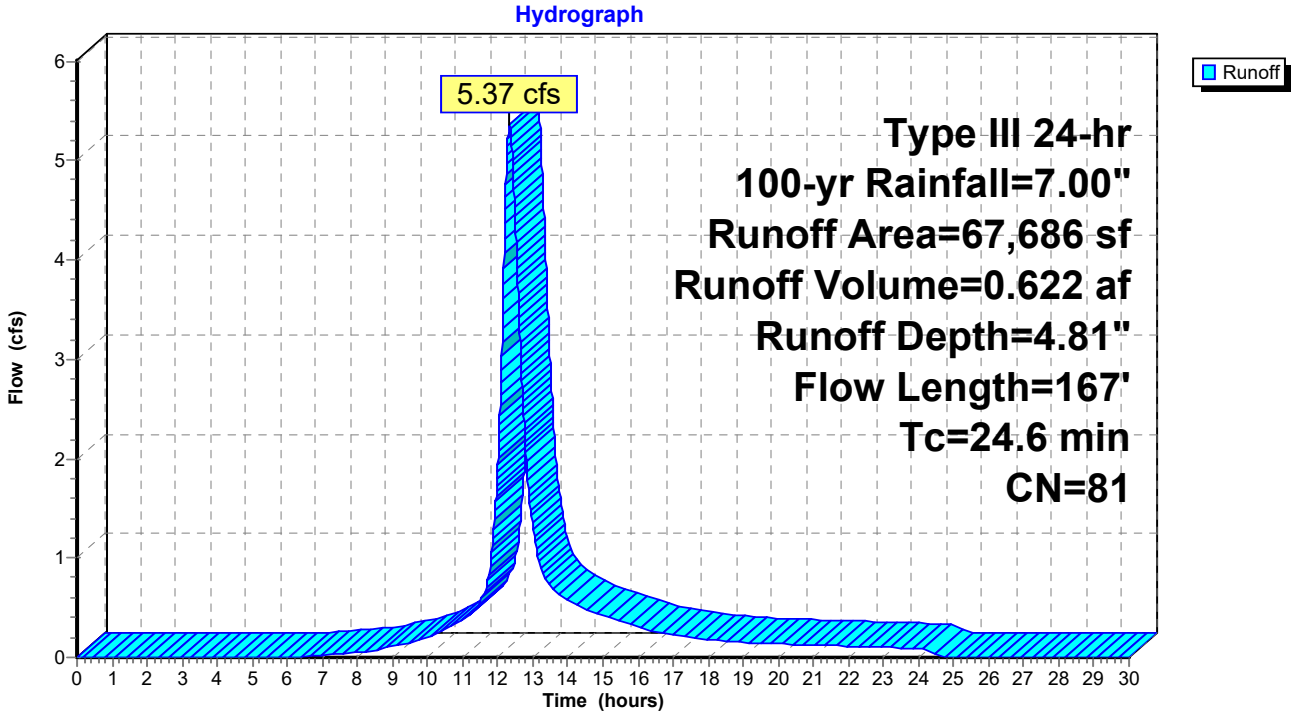
Runoff = 5.37 cfs @ 12.33 hrs, Volume= 0.622 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
*	24,262	98	Paved parking & roofs, HSG C
	31,088	70	Woods, Good, HSG C
	12,336	74	>75% Grass cover, Good, HSG C
	67,686	81	Weighted Average
	43,424		64.16% Pervious Area
	24,262		35.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.8	50	0.0160	0.04		**Sheet Flow, Woods Sheet** Woods: Dense underbrush n= 0.800 P2= 3.40"
1.8	117	0.0487	1.10		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
24.6	167	Total			

Subcatchment S1: Subcatchment to Wetlands



Summary for Subcatchment S2: Subcatchment Loading Dock Catchbasin

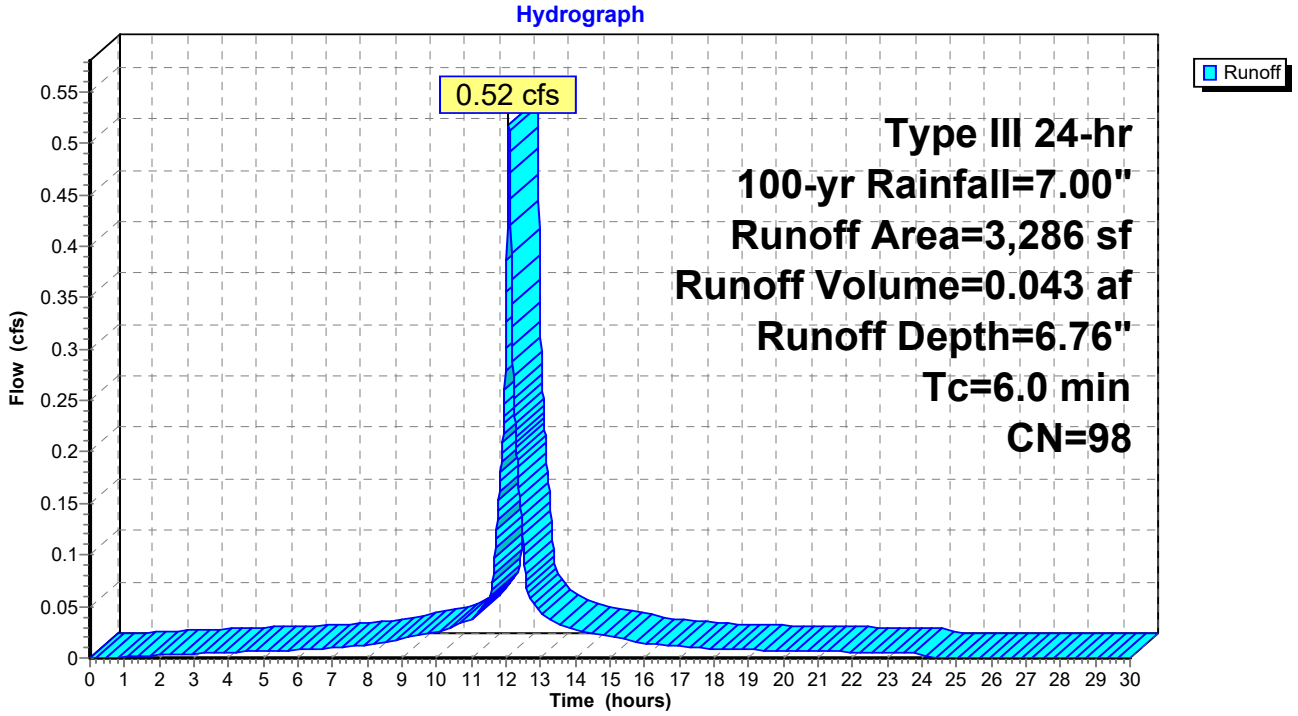
Runoff = 0.52 cfs @ 12.08 hrs, Volume= 0.043 af, Depth= 6.76"

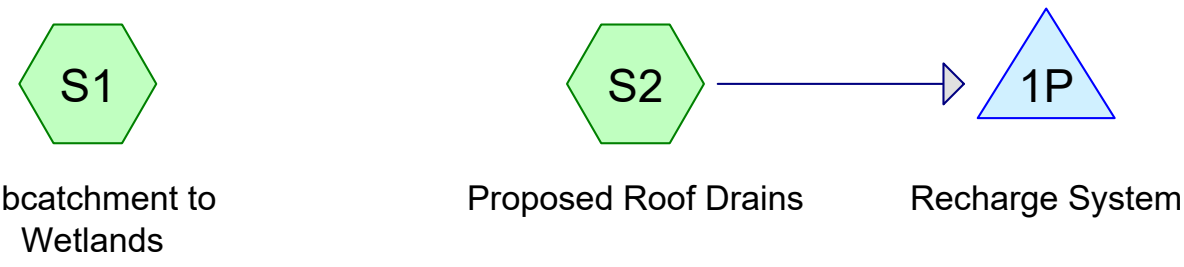
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
*	3,286	98	Paved parking, HSG C
	3,286		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 MINIMUM**

Subcatchment S2: Subcatchment Loading Dock Catchbasin





Subcat Reach Pond Link

Routing Diagram for 18391POST
Prepared by Farland Corp. Inc., Printed 10/19/2021

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S1: Subcatchment to Runoff Area=65,972 sf 30.66% Impervious Runoff Depth=1.56"
Flow Length=167' Tc=24.6 min CN=80 Runoff=1.69 cfs 0.197 af

Subcatchment S2: Proposed Roof Drains Runoff Area=5,000 sf 100.00% Impervious Runoff Depth=3.17"
Tc=6.0 min CN=98 Runoff=0.38 cfs 0.030 af

Pond 1P: Recharge System Peak Elev=89.90' Storage=540 cf Inflow=0.38 cfs 0.030 af
Outflow=0.02 cfs 0.030 af

Total Runoff Area = 1.629 ac Runoff Volume = 0.227 af Average Runoff Depth = 1.67"
64.45% Pervious = 1.050 ac 35.55% Impervious = 0.579 ac

Summary for Subcatchment S1: Subcatchment to Wetlands

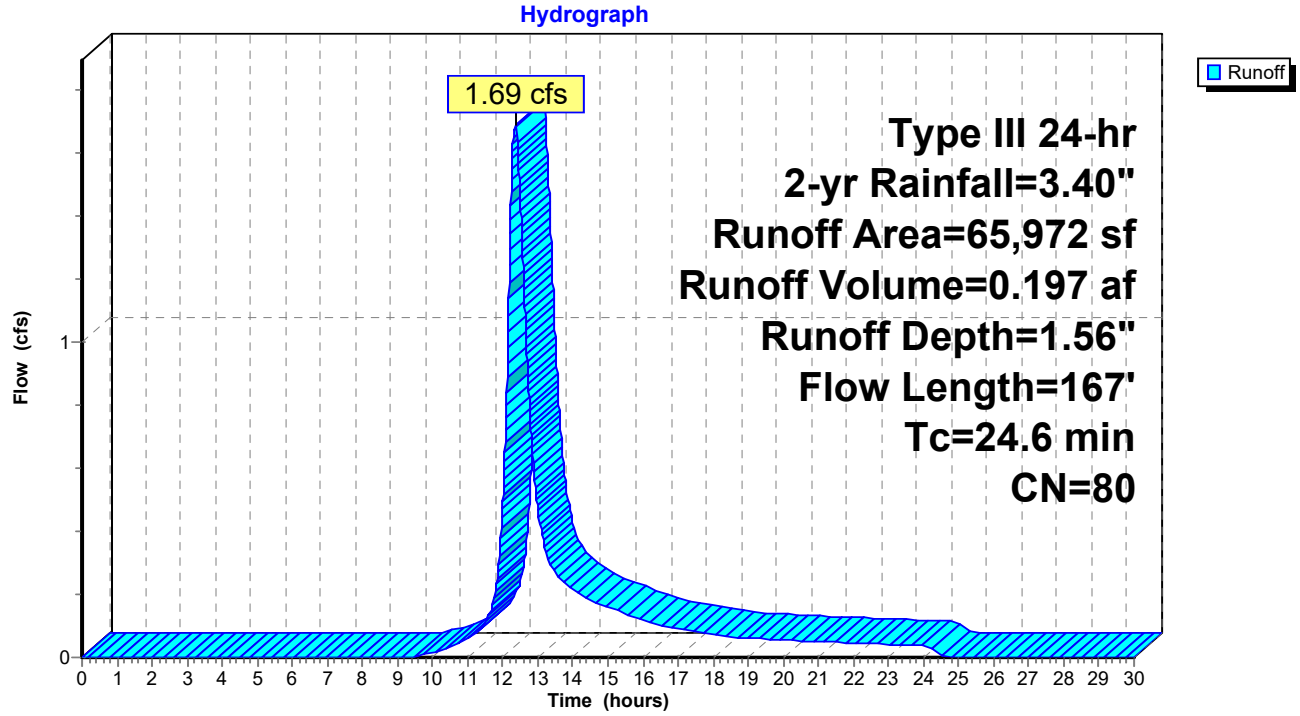
Runoff = 1.69 cfs @ 12.35 hrs, Volume= 0.197 af, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	20,227	98	Paved parking & roofs, HSG C
	28,820	70	Woods, Good, HSG C
	16,925	74	>75% Grass cover, Good, HSG C
	65,972	80	Weighted Average
	45,745		69.34% Pervious Area
	20,227		30.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.8	50	0.0160	0.04		**Sheet Flow, Woods Sheet** Woods: Dense underbrush n= 0.800 P2= 3.40"
1.8	117	0.0487	1.10		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
24.6	167	Total			

Subcatchment S1: Subcatchment to Wetlands



Summary for Subcatchment S2: Proposed Roof Drains

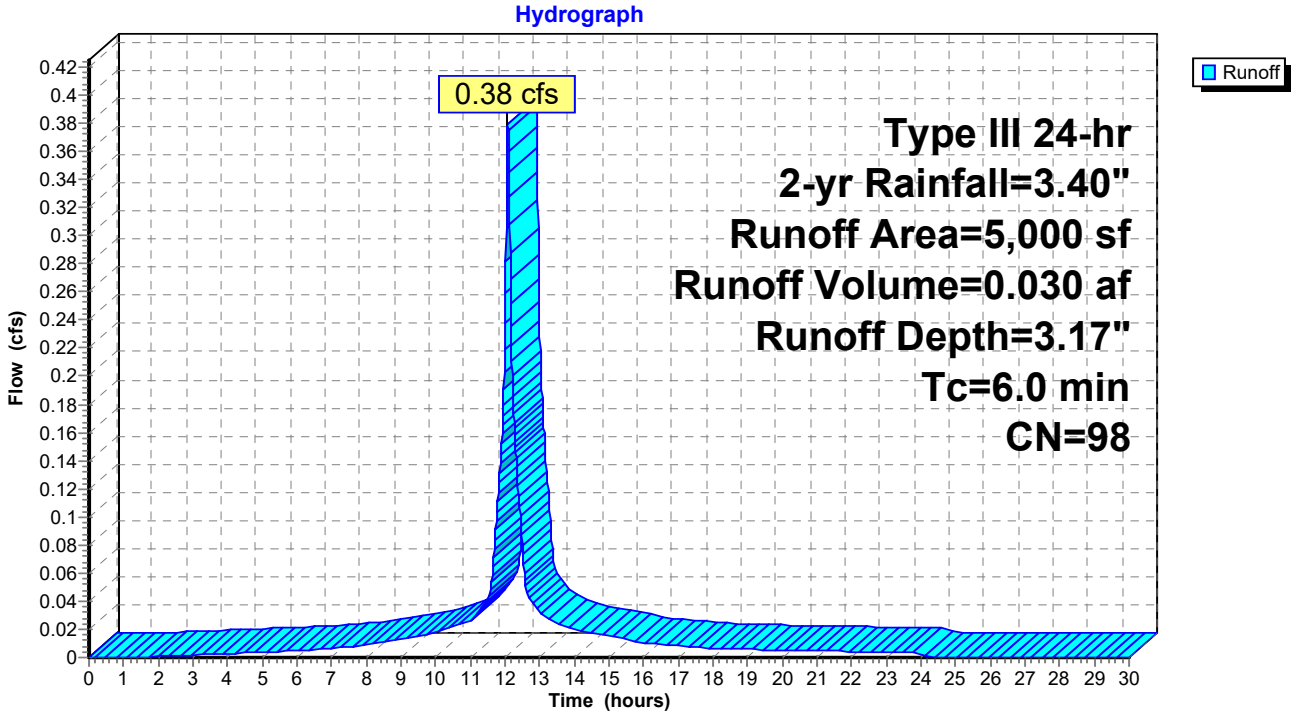
Runoff = 0.38 cfs @ 12.08 hrs, Volume= 0.030 af, Depth= 3.17"
Routed to Pond 1P : Recharge System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

Area (sf)	CN	Description
5,000	98	Roofs, HSG C
5,000		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 MINIMUM**

Subcatchment S2: Proposed Roof Drains



Summary for Pond 1P: Recharge System

Inflow Area = 0.115 ac,100.00% Impervious, Inflow Depth = 3.17" for 2-yr event
Inflow = 0.38 cfs @ 12.08 hrs, Volume= 0.030 af
Outflow = 0.02 cfs @ 11.30 hrs, Volume= 0.030 af, Atten= 94%, Lag= 0.0 min
Discarded = 0.02 cfs @ 11.30 hrs, Volume= 0.030 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 89.90' @ 13.63 hrs Surf.Area= 997 sf Storage= 540 cf

Plug-Flow detention time= 179.7 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 179.7 min (934.8 - 755.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	89.00'	793 cf	**19.17'W x 52.00'L x 3.21'H Field A** 3,198 cf Overall - 1,214 cf Embedded = 1,983 cf x 40.0% Voids
#2A	89.50'	1,214 cf	**Cultec R-280HD** x 28 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 4 rows
		2,008 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	89.00'	**1.020 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.02 cfs @ 11.30 hrs HW=89.03' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Pond 1P: Recharge System - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)
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 4 rows

47.0" Wide + 6.0" Spacing = 53.0" C-C Row Spacing

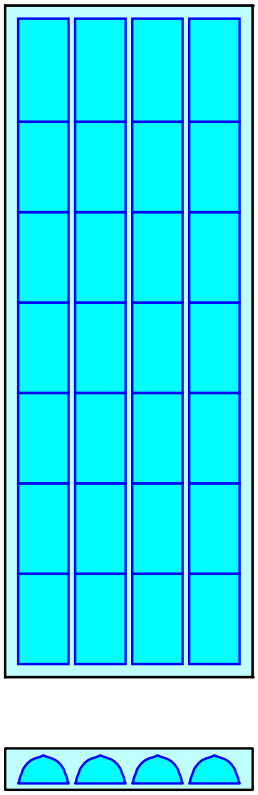
7 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 50.00' Row Length +12.0" End Stone x 2 = 52.00' Base Length
4 Rows x 47.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 19.17' Base Width
6.0" Stone Base + 26.5" Chamber Height + 6.0" Stone Cover = 3.21' Field Height

28 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 4 Rows = 1,214.3 cf Chamber Storage

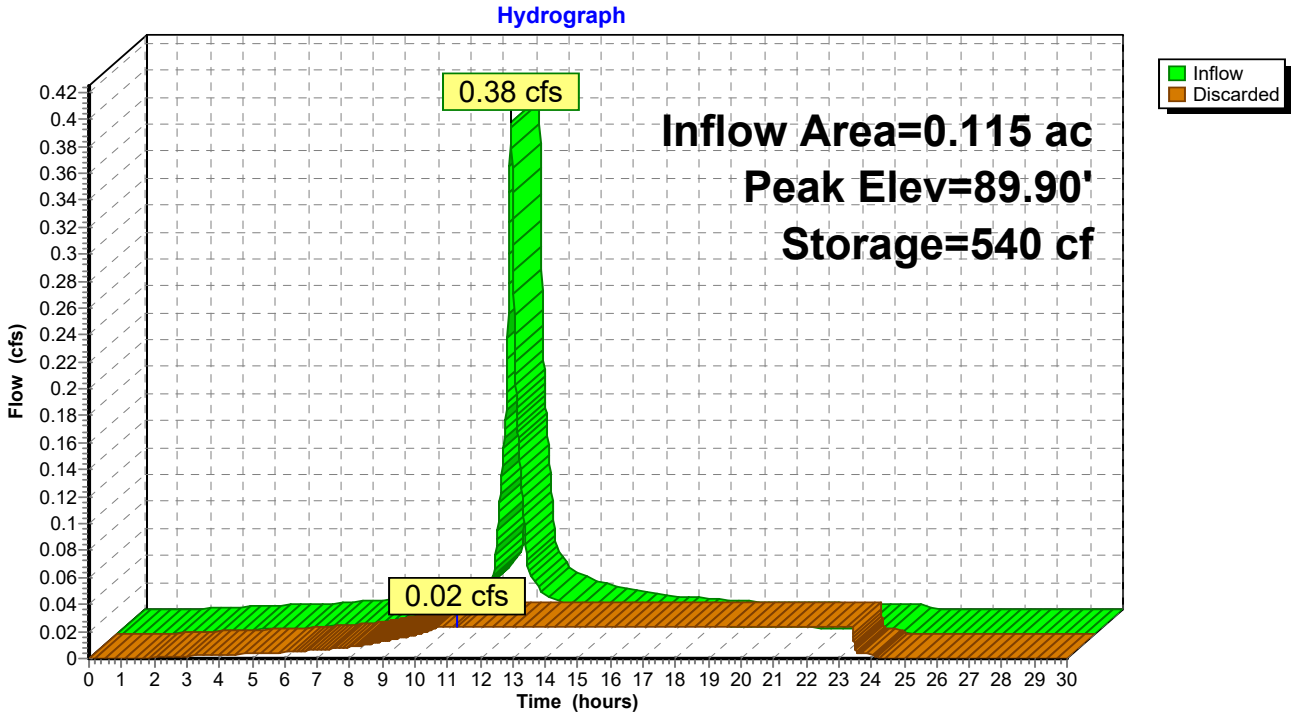
3,197.6 cf Field - 1,214.3 cf Chambers = 1,983.3 cf Stone x 40.0% Voids = 793.3 cf Stone Storage

Chamber Storage + Stone Storage = 2,007.7 cf = 0.046 af
Overall Storage Efficiency = 62.8%
Overall System Size = 52.00' x 19.17' x 3.21'

28 Chambers
118.4 cy Field
73.5 cy Stone



Pond 1P: Recharge System



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S1: Subcatchment to Runoff Area=65,972 sf 30.66% Impervious Runoff Depth=2.72"
Flow Length=167' Tc=24.6 min CN=80 Runoff=2.99 cfs 0.343 af

Subcatchment S2: Proposed Roof Drains Runoff Area=5,000 sf 100.00% Impervious Runoff Depth=4.56"
Tc=6.0 min CN=98 Runoff=0.54 cfs 0.044 af

Pond 1P: Recharge System Peak Elev=90.34' Storage=903 cf Inflow=0.54 cfs 0.044 af
Outflow=0.02 cfs 0.044 af

Total Runoff Area = 1.629 ac Runoff Volume = 0.387 af Average Runoff Depth = 2.85"
64.45% Pervious = 1.050 ac 35.55% Impervious = 0.579 ac

Summary for Subcatchment S1: Subcatchment to Wetlands

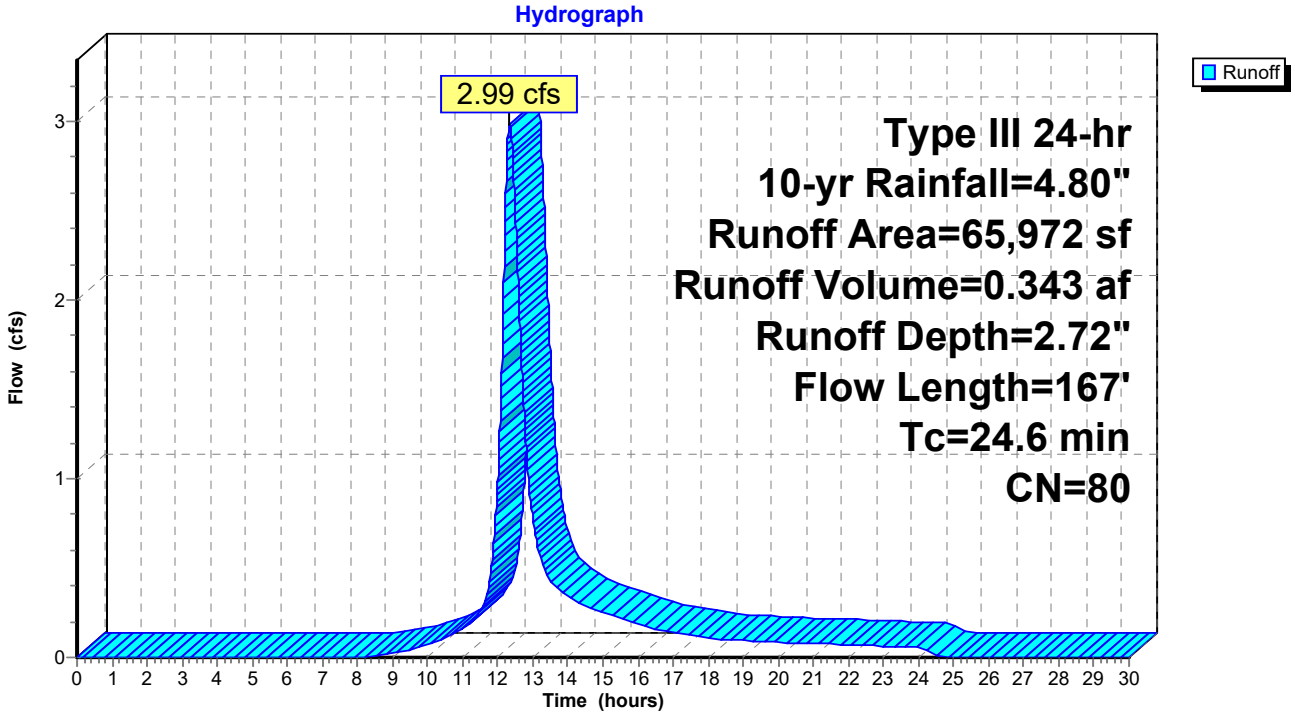
Runoff = 2.99 cfs @ 12.33 hrs, Volume= 0.343 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	20,227	98	Paved parking & roofs, HSG C
	28,820	70	Woods, Good, HSG C
	16,925	74	>75% Grass cover, Good, HSG C
	65,972	80	Weighted Average
	45,745		69.34% Pervious Area
	20,227		30.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.8	50	0.0160	0.04		**Sheet Flow, Woods Sheet** Woods: Dense underbrush n= 0.800 P2= 3.40"
1.8	117	0.0487	1.10		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
24.6	167	Total			

Subcatchment S1: Subcatchment to Wetlands



Summary for Subcatchment S2: Proposed Roof Drains

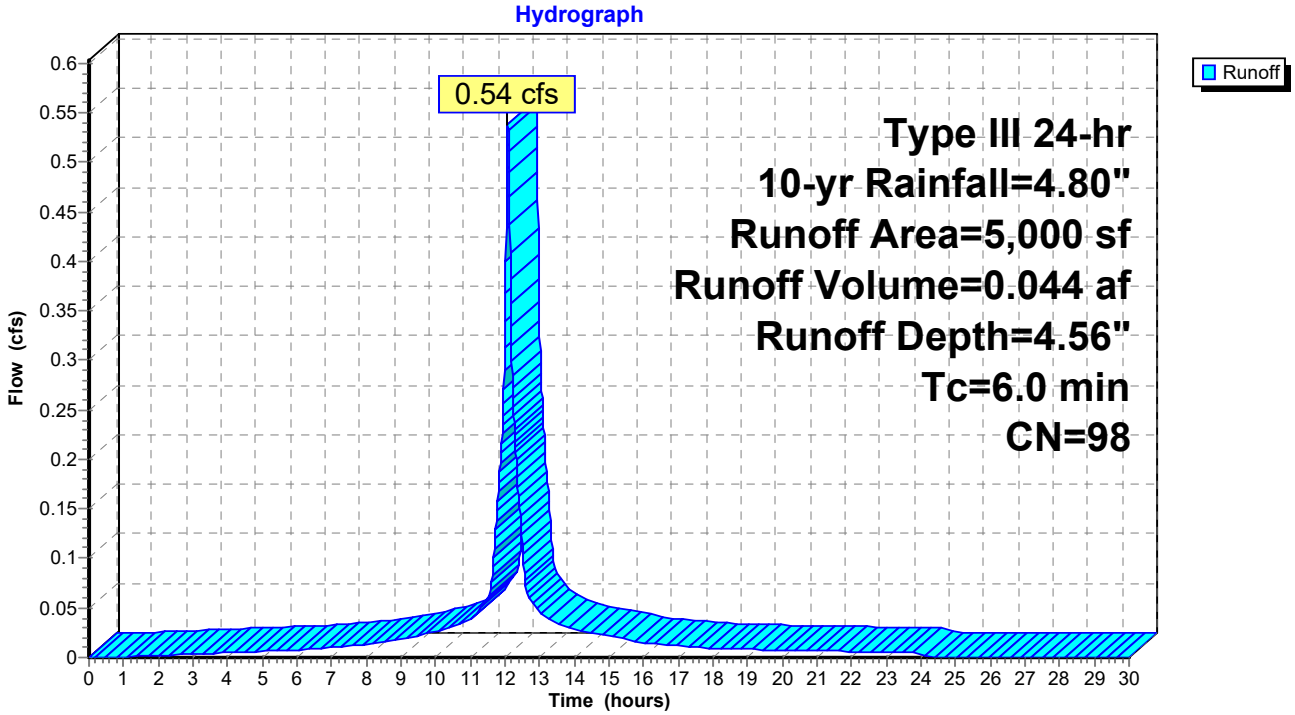
Runoff = 0.54 cfs @ 12.08 hrs, Volume= 0.044 af, Depth= 4.56"
Routed to Pond 1P : Recharge System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

Area (sf)	CN	Description
5,000	98	Roofs, HSG C
5,000		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 MINIMUM**

Subcatchment S2: Proposed Roof Drains



Summary for Pond 1P: Recharge System

Inflow Area = 0.115 ac,100.00% Impervious, Inflow Depth = 4.56" for 10-yr event
Inflow = 0.54 cfs @ 12.08 hrs, Volume= 0.044 af
Outflow = 0.02 cfs @ 10.47 hrs, Volume= 0.044 af, Atten= 96%, Lag= 0.0 min
Discarded = 0.02 cfs @ 10.47 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 90.34' @ 14.66 hrs Surf.Area= 997 sf Storage= 903 cf

Plug-Flow detention time= 318.4 min calculated for 0.044 af (100% of inflow)
Center-of-Mass det. time= 318.4 min (1,067.1 - 748.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	89.00'	793 cf	**19.17'W x 52.00'L x 3.21'H Field A** 3,198 cf Overall - 1,214 cf Embedded = 1,983 cf x 40.0% Voids
#2A	89.50'	1,214 cf	**Cultec R-280HD** x 28 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 4 rows
		2,008 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	89.00'	**1.020 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.02 cfs @ 10.47 hrs HW=89.03' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.02 cfs)

Pond 1P: Recharge System - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)
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 4 rows

47.0" Wide + 6.0" Spacing = 53.0" C-C Row Spacing

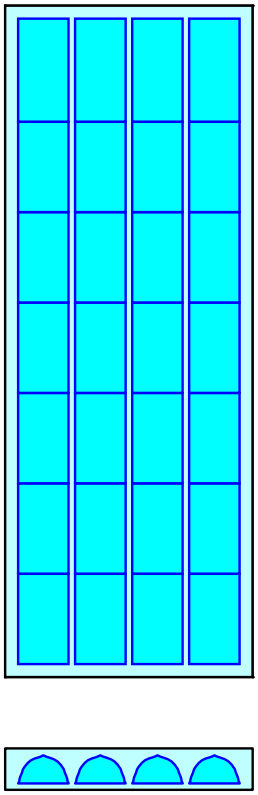
7 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 50.00' Row Length +12.0" End Stone x 2 = 52.00' Base Length
4 Rows x 47.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 19.17' Base Width
6.0" Stone Base + 26.5" Chamber Height + 6.0" Stone Cover = 3.21' Field Height

28 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 4 Rows = 1,214.3 cf Chamber Storage

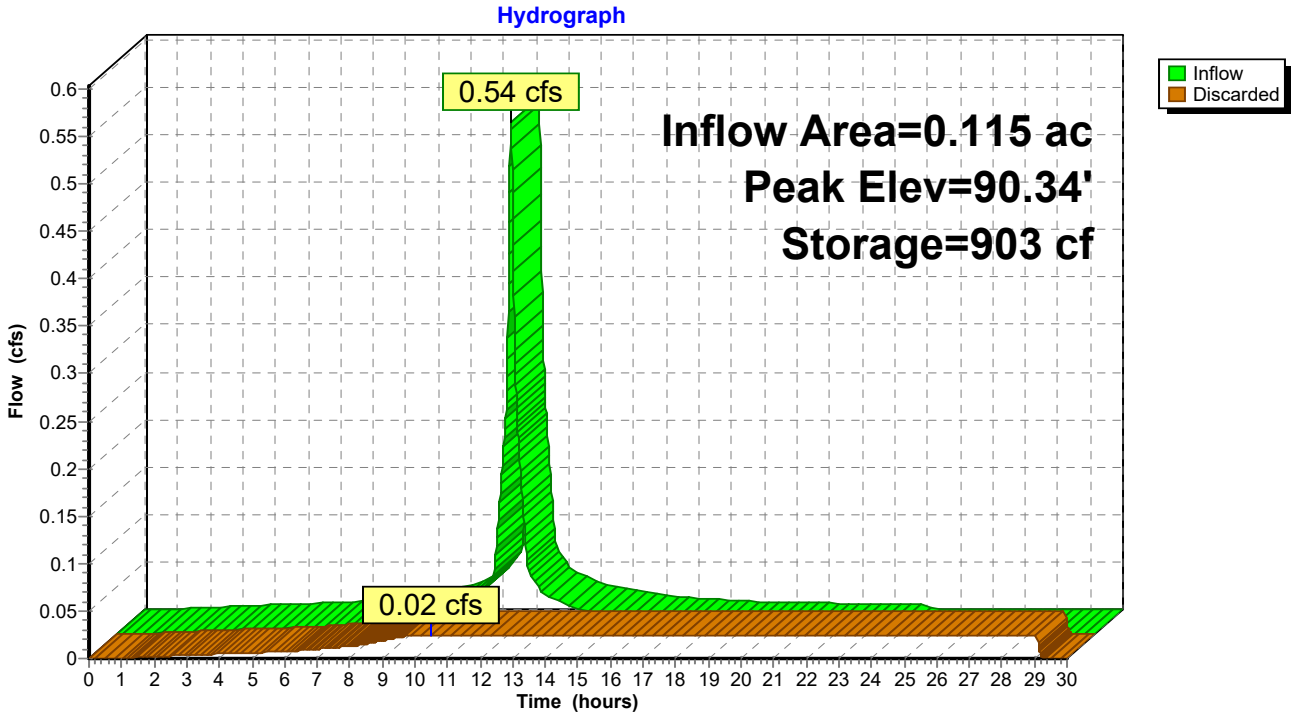
3,197.6 cf Field - 1,214.3 cf Chambers = 1,983.3 cf Stone x 40.0% Voids = 793.3 cf Stone Storage

Chamber Storage + Stone Storage = 2,007.7 cf = 0.046 af
Overall Storage Efficiency = 62.8%
Overall System Size = 52.00' x 19.17' x 3.21'

28 Chambers
118.4 cy Field
73.5 cy Stone



Pond 1P: Recharge System



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S1: Subcatchment to Runoff Area=65,972 sf 30.66% Impervious Runoff Depth=4.69"
Flow Length=167' Tc=24.6 min CN=80 Runoff=5.12 cfs 0.592 af

Subcatchment S2: Proposed Roof Drains Runoff Area=5,000 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=0.79 cfs 0.065 af

Pond 1P: Recharge System Peak Elev=91.24' Storage=1,566 cf Inflow=0.79 cfs 0.065 af
Outflow=0.02 cfs 0.048 af

Total Runoff Area = 1.629 ac Runoff Volume = 0.657 af Average Runoff Depth = 4.84"
64.45% Pervious = 1.050 ac 35.55% Impervious = 0.579 ac

Summary for Subcatchment S1: Subcatchment to Wetlands

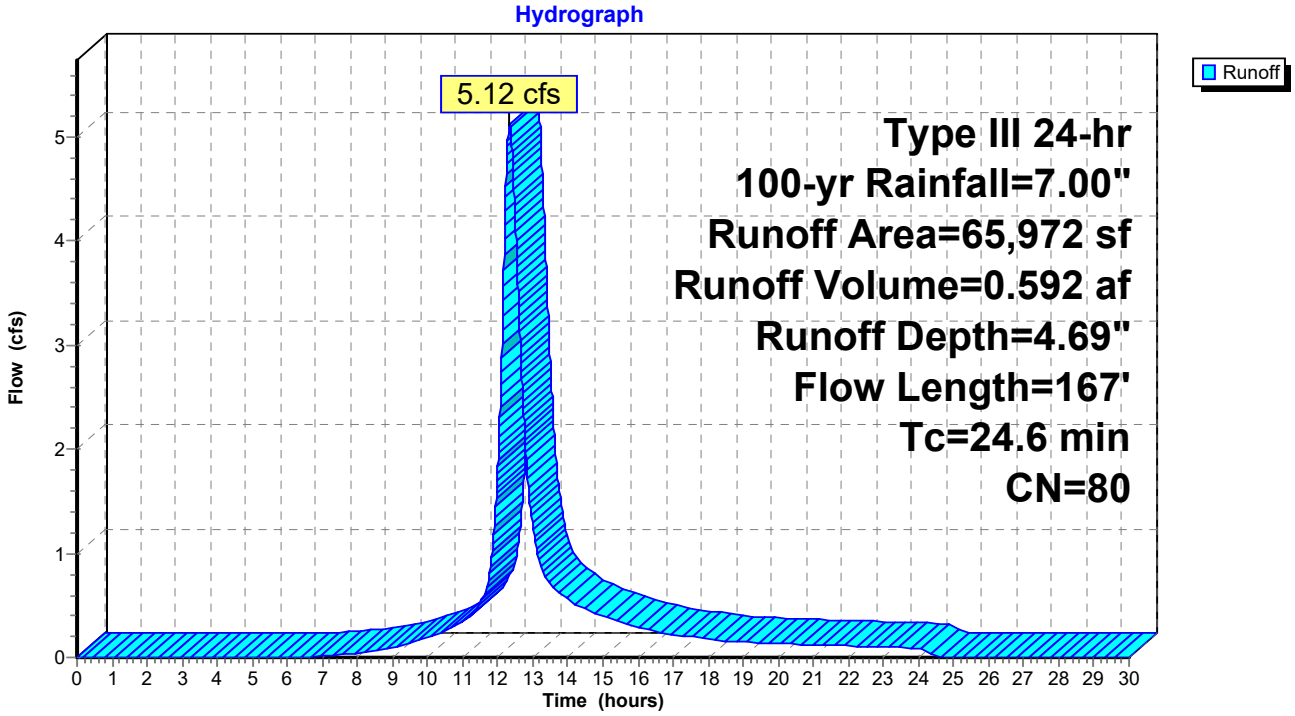
Runoff = 5.12 cfs @ 12.33 hrs, Volume= 0.592 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
*	20,227	98	Paved parking & roofs, HSG C
	28,820	70	Woods, Good, HSG C
	16,925	74	>75% Grass cover, Good, HSG C
	65,972	80	Weighted Average
	45,745		69.34% Pervious Area
	20,227		30.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.8	50	0.0160	0.04		**Sheet Flow, Woods Sheet** Woods: Dense underbrush n= 0.800 P2= 3.40"
1.8	117	0.0487	1.10		**Shallow Concentrated Flow, Woods Shallow** Woodland Kv= 5.0 fps
24.6	167	Total			

Subcatchment S1: Subcatchment to Wetlands



Summary for Subcatchment S2: Proposed Roof Drains

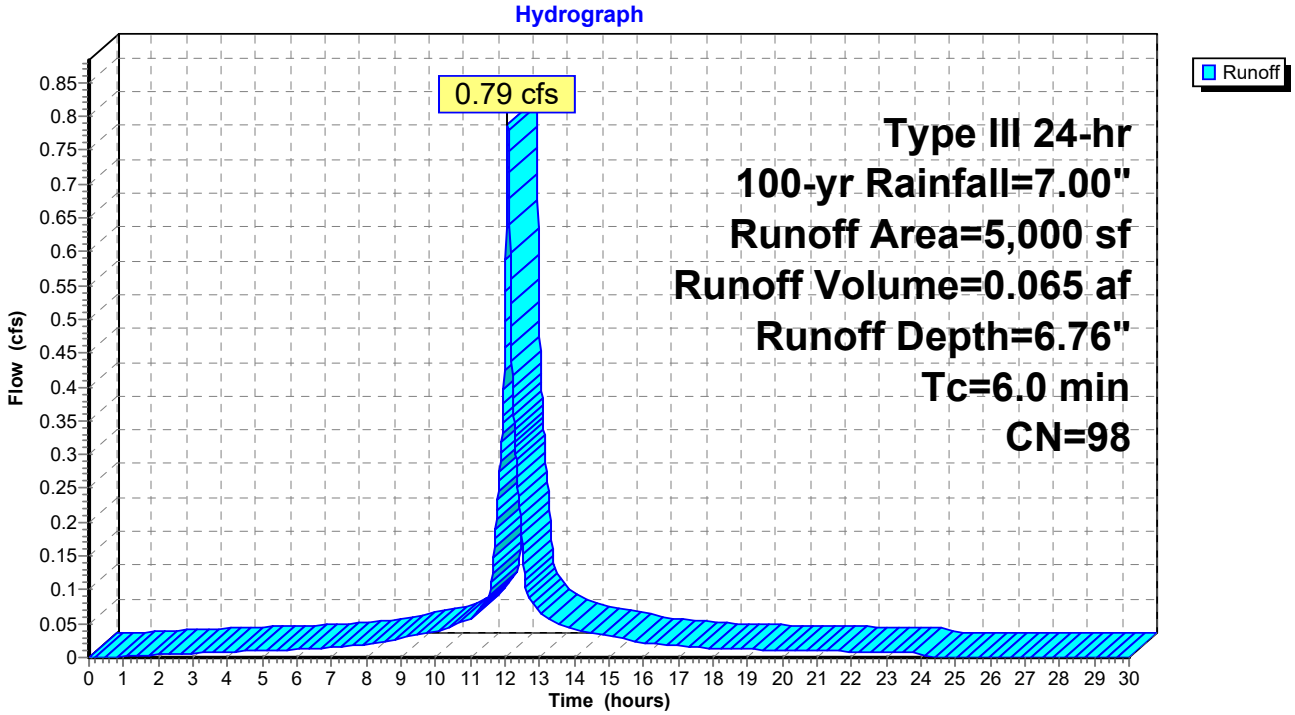
Runoff = 0.79 cfs @ 12.08 hrs, Volume= 0.065 af, Depth= 6.76"
Routed to Pond 1P : Recharge System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

Area (sf)	CN	Description
5,000	98	Roofs, HSG C
5,000		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR-55 MINIMUM**

Subcatchment S2: Proposed Roof Drains



Summary for Pond 1P: Recharge System

Inflow Area = 0.115 ac,100.00% Impervious, Inflow Depth = 6.76" for 100-yr event
Inflow = 0.79 cfs @ 12.08 hrs, Volume= 0.065 af
Outflow = 0.02 cfs @ 9.19 hrs, Volume= 0.048 af, Atten= 97%, Lag= 0.0 min
Discarded = 0.02 cfs @ 9.19 hrs, Volume= 0.048 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.24' @ 15.83 hrs Surf.Area= 997 sf Storage= 1,566 cf

Plug-Flow detention time= 394.6 min calculated for 0.048 af (74% of inflow)
Center-of-Mass det. time= 306.1 min (1,049.1 - 743.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	89.00'	793 cf	**19.17'W x 52.00'L x 3.21'H Field A** 3,198 cf Overall - 1,214 cf Embedded = 1,983 cf x 40.0% Voids
#2A	89.50'	1,214 cf	**Cultec R-280HD** x 28 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 4 rows
		2,008 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	89.00'	**1.020 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.02 cfs @ 9.19 hrs HW=89.03' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Pond 1P: Recharge System - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)
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 4 rows

47.0" Wide + 6.0" Spacing = 53.0" C-C Row Spacing

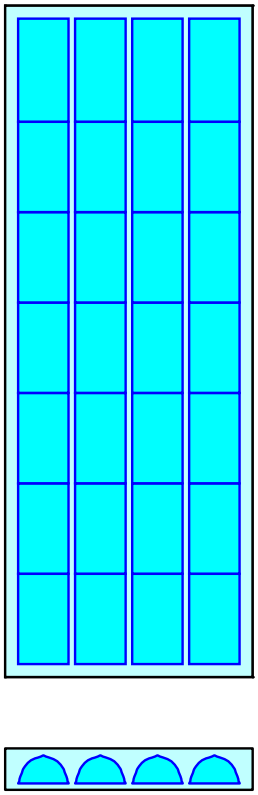
7 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 50.00' Row Length +12.0" End Stone x 2 = 52.00' Base Length
4 Rows x 47.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 19.17' Base Width
6.0" Stone Base + 26.5" Chamber Height + 6.0" Stone Cover = 3.21' Field Height

28 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 4 Rows = 1,214.3 cf Chamber Storage

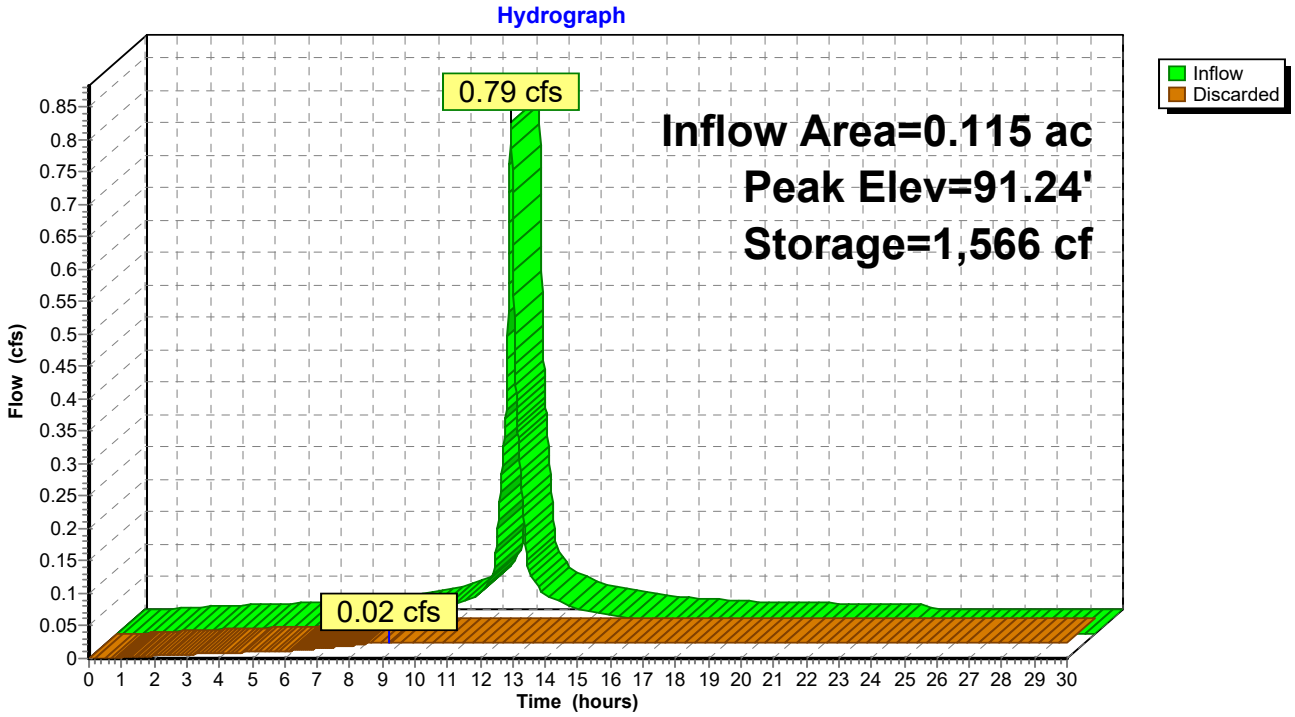
3,197.6 cf Field - 1,214.3 cf Chambers = 1,983.3 cf Stone x 40.0% Voids = 793.3 cf Stone Storage

Chamber Storage + Stone Storage = 2,007.7 cf = 0.046 af
Overall Storage Efficiency = 62.8%
Overall System Size = 52.00' x 19.17' x 3.21'

28 Chambers
118.4 cy Field
73.5 cy Stone



Pond 1P: Recharge System



RECHARGE CALCULATIONS (STANDARD #3)

STANDARD 3: RECHARGE CALCULATIONS

REQUIRED:

Recharge Volume Required ("A" Soils) = [Impervious Area x (Recharge Depth inches/12)]
= [0 sf x (0.60"/12)]
= 0 cf (Required Volume)

Recharge Volume Required ("B" Soils) = [Impervious Area x (Recharge Depth inches/12)]
= [5,000 sf x (0.35"/12)]
= 146 cf (Required Volume)

Recharge Volume Required ("C" Soils) = [Impervious Area x (Recharge Depth inches/12)]
= [0 sf x (0.25"/12)]
= 0 cf (Required Volume)

Recharge Volume Required ("D" Soils) = [Impervious Area x (Recharge Depth inches/12)]
= [0 sf x (0.10"/12)]
=0 cf (Required Volume)

Total Required Recharge Volume = 146 cf

CAPTURE AREA ADUSTMENT:

Proposed On-Site Impervious Area = 0.115 acres
Proposed On-Site Impervious Area Directed to Infiltration BMP= 0.115 acres
Adjustment Ratio (0.115 ac. / 0.115 ac.) = 1
Adjusted Required Recharge Volume (146 c.f. x 1) = 146 cf
= 0.0033 acre-feet

STATIC METHOD:

- Assume the entire Required Recharge Volume is discharged into the infiltration device before infiltration begins.

PROVIDED:

Infiltration Basin #1:

- Cumulative Volume below the lowest outlet = 2,008 c.f.

Total Recharge Volume Provided = 2,008 c.f. (0.046 acre-feet)

DRAWDOWN CALCULATIONS (STANDARD #3)

STANDARD 3: DRAWDOWN CALCULATIONS

$$Time_{drawdown} = \frac{Rv}{(K)(Bottom\ Area)}$$

Where:

Rv = Required Storage Volume = (F)(impervious area)

K = Saturated Hydraulic Conductivity

For "Static" and "Simple Dynamic" Methods, use Rawls Rate (see Table 2.3.3).

For "Dynamic Field" Method, use 50% of the in-situ saturated hydraulic conductivity.

INFILTRATION BASIN #1

$$Time_{drawdown} = \frac{Rv}{(K)(Bottom\ Area)} = 23.72 \text{ hours}$$

Rv =	*2,008*	*C.F.*	*(Recharge Volume Provided)*
K =	*1.02*	*inch/hr.*	
BA =	*996*	*S.F.*	*(Max bottom area at outlet elevation)*

TABLE 2.3.3

Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate Inches/Hour
Sand	A	8.27
Loamy Sand	A	2.41
Sandy Loam	B	1.02
Loam	B	0.52
Silt Loam	C	0.27
Sandy Clay	C	0.17
Clay Loam	D	0.09
Silty Clay Loam	D	0.06
Sandy Clay	D	0.05
Silty Clay	D	0.04
Clay	D	0.02

GROUNDWATER MOUNDING CALCULATIONS (STANDARD #3)

Groundwater Mounding Analysis

We are pleased to submit this mounding evaluation report for the proposed Site Plan at 59 Tarkiln Place in New Bedford, Massachusetts. As required, we have performed model simulations of the mounding effects associated with runoff discharge to groundwater, from the proposed stormwater infiltration basin. The mounding evaluation was generated using the Hantush method of groundwater modeling by using site specific information.

To complete the analysis for this project, a mounding program created to solve the Glover's solution to the Hantush method, by GeoHydroCycle, was utilized. This program uses several site-specific soil parameters and basin configuration parameters to estimate the maximum mound height and extents of mounding which can be anticipated under the infiltration surface area. These include the hydraulic conductivity of the soil, the soil's porosity, the discharge time until stabilization, the initial saturated thickness, the bottom area of the infiltration area and the total loading rate over that area.

In accordance with the Massachusetts Stormwater Handbook, the mounding analysis must demonstrate that the mound which forms under the recharge system from the required recharge volume, which is associated with Standard 3 of the Stormwater Management Regulations, will not breakout above the land or wetland resource area. For the purposes of our calculation, a 100-year 24-hour storm event was modeled.

The following input parameters were used in the mounding calculations:

- Length of application area: The length of the bottom area of the infiltration BMP at the 100-year 24-hour storm elevation.
- Width of application area: The width of the bottom area of the infiltration BMP at the 100-year 24-hour storm elevation.
- Rate of Application: The volume of water infiltrated by the Infiltration BMP during the 100-year 24-hour storm event ("Discarded" volume as denoted on HydroCAD calculations), divided by the bottom area of the Infiltration BMP.
- Aquifer Hydraulic Conductivity: Consistent with the USGS model documentation, hydraulic conductivity is generally applied as 10 times the Rawls rate.
- Initial Saturated Thickness: The saturated thickness value represents the depth of saturated soil between estimated seasonal high groundwater and the highest natural restrictive layer (clay or bedrock). On-site soil logs did not indicate a natural restrictive layer. Well completion reports from the MassDEP Well Driller Program database on nearby properties were utilized to estimate the depth of the natural restrictive layer. A well log at 867 Church Street indicated a well depth of 28 feet without encountering bedrock. The initial saturated thickness was calculated to be the difference between the estimated seasonal high groundwater depth (6.0 ft) and the 28 foot well depth encountered at 867 Church Street. An initial saturated thickness of 22 feet was utilized for all calculations.

- Fillable porosity: The porosity value for the sandy loam encountered during on-site soil investigations was estimated at 0.2 as is typically found in New England.

The results of these models are attached.

During the 100-year 24-hour storm event, the maximum mound height under the proposed subsurface recharge system is calculated to be 2.86 feet. The resulting mound elevation is 89.86, which is completely contained within the storage area of the basin and will not breakout above the surrounding natural grade. At approximately 32 feet to the west of the center of the infiltration device the existing natural grade is approximately 90' +/-, the resulting mound is calculated to be approximately 0.8' (elev.= 87.8). At approximately 52 feet to the west of the center of the infiltration device is the edge of the bordering vegetative wetland, where the existing natural grade is approximately 87.9' +/-, the resulting mound is calculated to be approximately 0' (elev.= 87.0).

MassDEP

Well Completion Report

WELL LOCATION

GPS North: 41.690370 **GPS West:** -70.941520 **Assessors Map:**

Address: 867 CHURCH ST **Assessors Lot:**

Sub Division: **Permit Number:**

City/Town: NEW BEDFORD **Date Issued:**

Board Of Health Permit Obtained: NR

Work Performed	Well Type	Drilling Method Overburden	Drilling Method Bedrock
New Well	Monitoring	Direct Push	

ADDITIONAL WELL INFORMATION

Developed: No

Disinfected:

Total Well Depth: 28.00

Fracture Enhancement:

Well Seal Type: Concrete

Depth to Bedrock:

PERMANENT PUMP (IF AVAILABLE)

Pump Description:

Type:

Nominal Pump Capacity:

Intake Depth:

Horsepower:

Comments: THREE MONITORING WELLS INSTALLED. BRONSON DRILLING 617-610-1801

CASING

From(ft)	To(ft)	Type	Thickness	Diameter
0.00	18.00	PVC	Schedule 40	1

SCREEN

From(ft)	To(ft)	Type	slotsize	Diameter
18.00	28.00	Slotted PVC	0.01	1

WELL SEAL / FILTER PACK / ABANDONMENT MATERIAL

From(ft)	To(ft)	Material Description	Purpose
0.00	16.00	Sand	
16.00	17.00	Bentonite Chips/Pellets	
17.00	28.00	Sand	

STATIC WATER LEVEL(ALL WELLS)

Date Measured	Depth Below Ground Surface
01/08/2018	18.00

WELL TEST DATA (ALL SECTIONS MANDATORY FOR PRODUCTION WELLS)

Date	Method	Yield(GPM)	Time Pumped (hrs & min)	Pumping Level (Ft. BGS)	Time To Recoover (Hrs & min)	Recovery

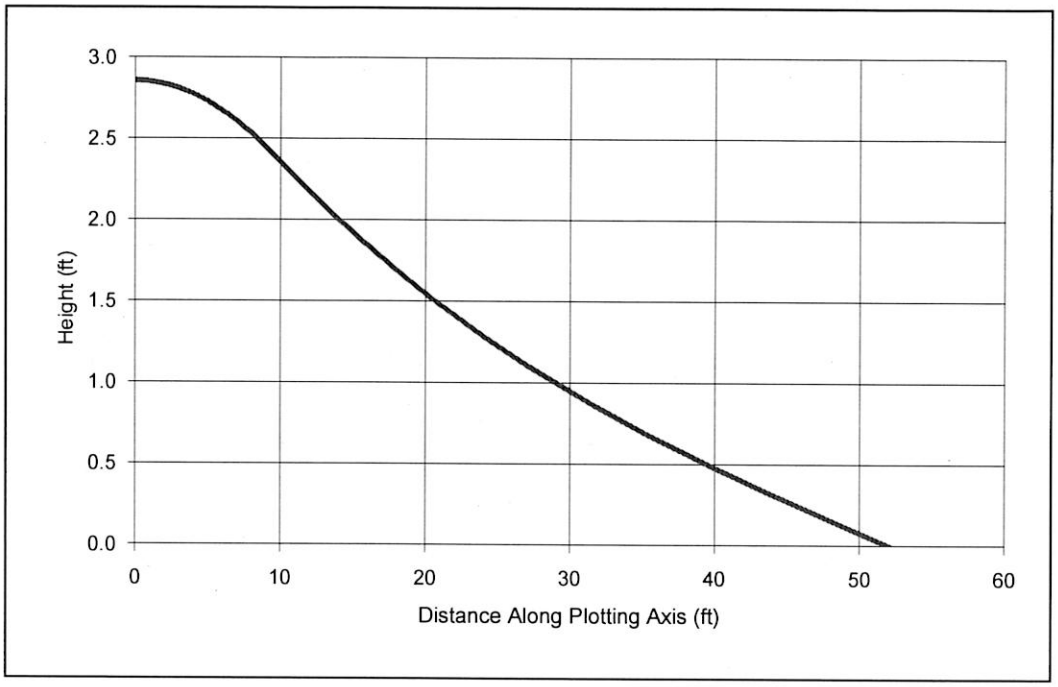
OVER BURDEN

From(ft)	To(ft)	Lithology	Color	Comment	Water Zone	Loss / Add of Fluid	Drill Stem Drop	Drill Rate
0.00	10.00		Brown					
10.00	28.00	Medium Sand	Brown					

BEDROCK

From(ft)	To(ft)	Lithology	Comment	Water Zone	Drill Stem Drop	Extra Large	Drill Rate	Rust Stain	Loss / Add Of Fluid	# of Fract Per Ft
						No		No		

Groundwater Mounding Analysis (Hantush's Method using Glover's Solution)



COMPANY: Farland Corp. Inc.

PROJECT: 18-391

ANALYST: CKG

DATE: 10/19/2021 TIME: 4:35:06 PM

INPUT PARAMETERS

Application rate: 2.84 c.ft/day/sq. ft
Duration of application: 1 days
Fillable porosity: 0.2
Hydraulic conductivity: 10 ft/day
Initial saturated thickness: 22 ft
Length of application area: 52 ft
Width of application area: 19.17 ft
Constant head boundary used at: 52 ft
Plotting axis from Y-Axis: 90 degrees
Edge of recharge area:
positive X: 9.6 ft
positive Y: 0 ft
Total volume applied: 2831.026 c.ft

MODEL RESULTS

X (ft)	Y (ft)	Plot Axis (ft)	Mound Height (ft)
0	0	0	2.86
0	0	0	2.86
0	0	0	2.86
0	0	0	2.86
0	0	0	2.86
0	0	0	2.86
0	0	0	2.86
0	0	0	2.86
0	0	0	2.86
0	0	0	2.86
0	0	0	2.86
0	0	0	2.86
1.6	0	2	2.84
3	0	3	2.81
5	0	5	2.73
8.1	0	8	2.53
11.5	0	12	2.22
15.7	0	16	1.87
20.7	0	21	1.5
27.2	0	27	1.1
35.5	0	35	0.68
43.7	0	44	0.32
52	0	52	0

SOIL LOGS
(STANDARD #3)

FARLAND CORP.

ENGINEERING A BETTER TOMORROW

ENGINEERING | SITE WORK | LAND SURVEYING

LOCATION: 59 Tarkiln Place - New Bedford, MA

PROJECT #: 18-391

DATE: 4/8/21

REV:

SOIL LOGS:

Test Hole #1 Elevation=122.0	Test Hole #2 Elevation=115.5
0-40" FILL MATERIAL	0-36" FILL MATERIAL
40-50" Ab HORIZON SANDY LOAM	36-44" Ab HORIZON SANDY LOAM
50-60" B HORIZON SANDY LOAM	44-64" B HORIZON SANDY LOAM
60-120" C HORIZON GRAVELLY SANDY LOAM	64-144" C HORIZON GRAVELLY SANDY LOAM
REDOX @ 60" ELEV.=87.5	REDOX @ 72" ELEV.=87.0
Date: 4/8/21	4/8/21
Performed By: Christopher Gilbert	Christopher Gilbert
Witness:	

WATER QUALITY VOLUME CALCULATIONS (STANDARD #4)

FARLAND CORP.

ENGINEERING A BETTER TOMORROW

ENGINEERING | SITE WORK | LAND SURVEYING

LOCATION:	59 Tarkiln Place - New Bedford, MA 02745	PROJECT #:	18-391	DATE:	10/6/21
				REV:	

STANDARD 4: WATER QUALITY VOLUME:

Note:
Water Quality Volume calculations are based on new impervious areas only. Existing impervious areas have not been included.

Water Quality Treament Volume Formula:
$V_{WQ} = D_{WQ}$ X (1 ft. / 12 in.) X A_{IMP}
Where,
V_{WQ} = *Required Water Quality Volume* (in cubic feet)
D_{WQ} = Water Quality Depth: one-inch for discharges within a Zone II or IWPA, to or near another critical area, runoff from a LUHPPL, or exfiltration to soils with infiltration rate greater than 2.4 inches/hour; 1/2 -inch for discharges near or to other areas
A_{IMP} = Impervious Area (in cubic feet)

STORM WATER OUTFALL: Outlet from Subsurface Recharge System

CONTRIBUTING IMPERVIOUS AREA (A_{IMP}) = 5,000 S.F.

V_{WQ}	=	**0.5**	inch	X	1 ft/ 12 in.	X	5,000	s.f.	=	**208**	c.f.

STRUCTURAL BMP TREATMENT:
Subsurface Recharge System (Below lowest outlet invert)

*Refer to Hydrology Calculations	=	2,008	c.f.
TOTAL WATER QUALITY VOLUME PROVIDED IN BMP TREATMENT	=	**2,008**	c.f.

TSS REMOVAL CALCULATIONS (STANDARD #4)

FARLAND CORP.

ENGINEERING A BETTER TOMORROW

ENGINEERING | SITE WORK | LAND SURVEYING

LOCATION: 59 Tarkiln Place - New Bedford, MA 02745 PROJECT #: 18-391 DATE: 10/6/21

REV:

STANDARD 4: TSS REMOVAL CALCULATIONS:

STORM WATER OUTFALL: EXFILTRATION FROM SUBSURFACE INFILTRATION BASIN

PRETREATMENT (for infiltration BMP in area with rapid infiltration, Zone II or IWPA, discharges to crital areas, and LUHPPL's)

TREATMENT

A BMP	B TSS Removal Rate	C Starting TSS Load*	D Amount Removed (BXC)	E Remaining Load (C-D)
Dry Well	80%	1.00	0.80	0.20
		Total TSS Removal=	0.80	

LONG TERM POLLUTION PREVENTION PLAN (STANDARD #4)

FARLAND CORP.

ENGINEERING A BETTER TOMORROW

ENGINEERING | SITE WORK | LAND SURVEYING

Long Term Pollution Prevention Plan

Site Plan
59 Tarkiln Place
New Bedford, MA 02745

October 5, 2021

Record Owner:

Assessor's Map 130G Lot 164
JAZ Brush U.S.A., Inc.
59 Tarkiln Place
New Bedford, MA 02745

Prepared For:

Dave Rodriques
JAZ USA, Inc.

Prepared By:

Farland Corp., Inc.
Project No. 18-391

Long Term Pollution Prevention Plan

This Long Term Pollution Prevention Plan serves to outline good housekeeping practices in order to prevent pollution of the wetland resource areas and surrounding environment. The Long Term Operation & Maintenance Plan shall be taken as part of this document as it is a critical part of this plan and shall be adhered to. Proper operation and maintenance records shall be kept on file at all times.

Snow disposal shall be carried out by the owner. The owner should follow DEP guideline #BWR G2015-01 for all snow removal requirements. For this site, it is anticipated that snow will be plowed from the parking areas and piled along the shoulders of the parking areas.

Snow disposal in the following areas are prohibited:

- Dumping snow in the bordering vegetated wetlands is prohibited.
- Dumping of snow on top of storm drain catch basins or in stormwater drainage basin is prohibited. Snow combined with sand and debris may block a storm drainage system, causing localized flooding. A high volume of sand, sediment, and litter released from melting snow also may be quickly transported through the system into surface water.

Illicit discharges to the stormwater management system are prohibited. Illicit discharges are those that are not entirely comprised of stormwater. Notwithstanding the foregoing, an illicit discharge does not include discharges from the following activities or facilities; firefighting, water line flushing, landscape irrigation, uncontaminated groundwater, potable water sources, foundation drains, air conditioning condensation, footing drains, individual residence car washing, flows from riparian habitats and wetlands, de-chlorinated water from swimming pools, water used for street washing, and water used to clean residential buildings without detergents. Measures are provided below to prevent illicit discharges to the stormwater management system.

In the event of oil, gasoline or other hazardous waste spill on-site, the New Bedford Fire Department, DEP and the Conservation Agent shall be notified immediately. For spills of less than ¼ gallon, clean-up with absorbent materials or other appropriate means, unless circumstances dictate that the spill should be treated by a professional emergency response contractor. Spills which exceed the reportable quantities of substances mentioned in 40 CFR 110, 40 CFR 117, or 40 CFG 302 must be immediately reported to the EPA National Response Center (800) 242-8802. Any drainage inlet that may be affected by the spill shall be covered immediately with a spill protector drain cover or similar product, or a spill berm placed around the perimeter of the opening to prevent any contamination into the drainage system. Proper cleanup and disposal of hazardous wastes must follow all applicable local and state regulations and must be carried out by a qualified contractor.

The maintenance of all lawns, gardens and landscaped areas shall be performed by the owner. Good housekeeping practices should include proper storage and minimal use of

cleaning products and fertilizers. Homeowners should consult with a professional landscaper for proper maintenance of lawns and landscaped areas.

OPERATION & MAINTENANCE PLAN & LOGS (STANDARD #9)

Long Term Operation and Maintenance Plan

Site Plan
59 Tarkiln Place
New Bedford, MA 02745

October 5, 2021

Record Owner:

Assessor's Map 130G Lot 164
JAZ Brush U.S.A., Inc.
59 Tarkiln Place
New Bedford, MA 02745

Prepared For:

Dave Rodriques
JAZ Brush USA, Inc.

Prepared By:

Farland Corp., Inc.
Project No. 18-391

The Operator, Owner, and Party Responsible for Operation and Maintenance of the Stormwater BMP's will be the owner of the Locus Property.
The responsible party shall:

a) Maintain an operation and maintenance log for at least three years, including inspections, repairs, replacement and disposal (for disposal, the log shall indicate the type of material and disposal location);
b) Make this log available to MassDEP and the Conservation Commission upon request during normal business hours; and

c) Allow members and agents of the MassDEP and the Conservation Commission to enter and inspect the premises to evaluate and ensure that the responsible party complies with the Operation and Maintenance Plan requirements for each BMP.

Subsurface Infiltration Chambers

The subsurface infiltration chambers are to be inspected and maintained by the owner. Subsurface infiltration chambers do not rely on standing pool of water, and have been designed to dewater within 72 hours after precipitation. Therefore, mosquito control is not required for the drainage system.

It shall be the responsibility of the owner to:

Inspections:

Inspect subsurface structures at least twice annually.

Maintenance:

If inspection of infiltration system shows that it does not dewater completely within 72 hours of a storm event, the owner shall take immediate steps to restore the function of the system, based on the recommendations of a qualified stormwater professional. Notice shall be provided to the Town of any such corrective action.

Any debris which may clog the system must be removed. Cleaning may be done by vacuum truck. All sediment and hydrocarbons shall be properly disposed of in accordance with local, state, and federal guidelines and regulations.

Drain Lines

After construction, the drain lines shall be inspected after every major storm for the first few months to ensure proper functions. Presence of accumulated sand and silt would indicate more frequent maintenance of any pre-treatment devices is required. Thereafter, the drain lines shall be inspected at least once per year.

"Site Plan"
"59 Tarkiln Place – New Bedford, MA"
Operation & Maintenance Log Form

STRUCTURAL SEDIMENT CONTROL BMPS

BMP	DATE INSPECTED	SEDIMENT BUILDUP (YES/NO)	IF SEDIMENT BUILDUP, DATE CLEANED
Subsurface Recharge System			
OTHER:			

Maintenance Notes:

_____
_____
_____

TO BE PERFORMED BY:_____ON OR BEFORE:_____

ILLICIT DISCHARGE STATEMENT (STANDARD #10)

Illicit Discharge Compliance Statement (IDCS)

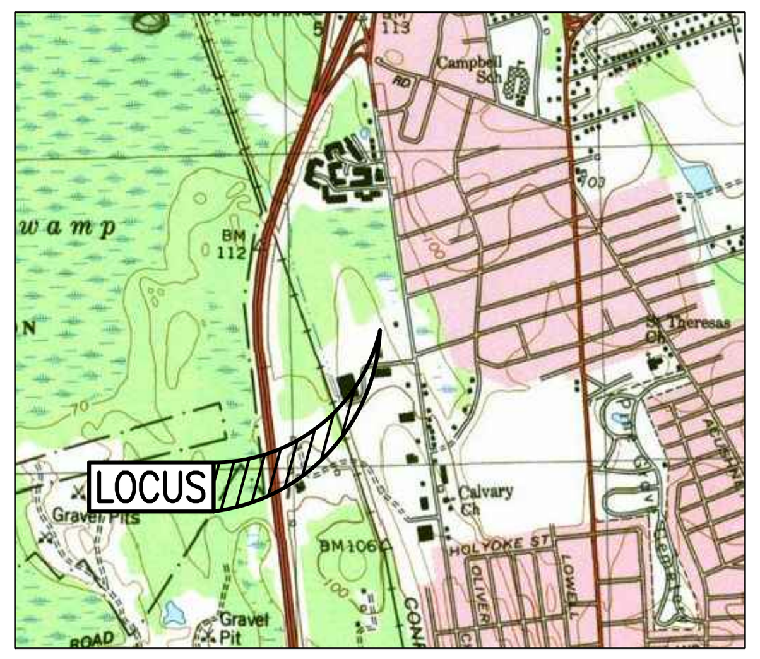
This Illicit Discharge Compliance Statement is intended to verify that no illicit discharges exist on the site or are proposed. We have included, in the pollution prevention plan, measures to prevent illicit discharges to the stormwater management system, including wastewater discharges and discharges of stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease. Notwithstanding the foregoing, an illicit discharge does not include discharges from the following activities or facilities: firefighting, water line flushing, landscape irrigation, uncontaminated groundwater, potable water sources, foundation drains, air conditioning condensation, footing drains, individual resident car washing, flows from riparian habitats and wetlands, dechlorinated water from swimming pools, water used for street washing and water used to clean residential buildings without detergents.

The site plan identifies the location of any systems for conveying wastewater and/or groundwater on the site and show that there are no connections between the stormwater and wastewater management systems and the location of any measures taken to prevent the entry of illicit discharges into the stormwater management system.

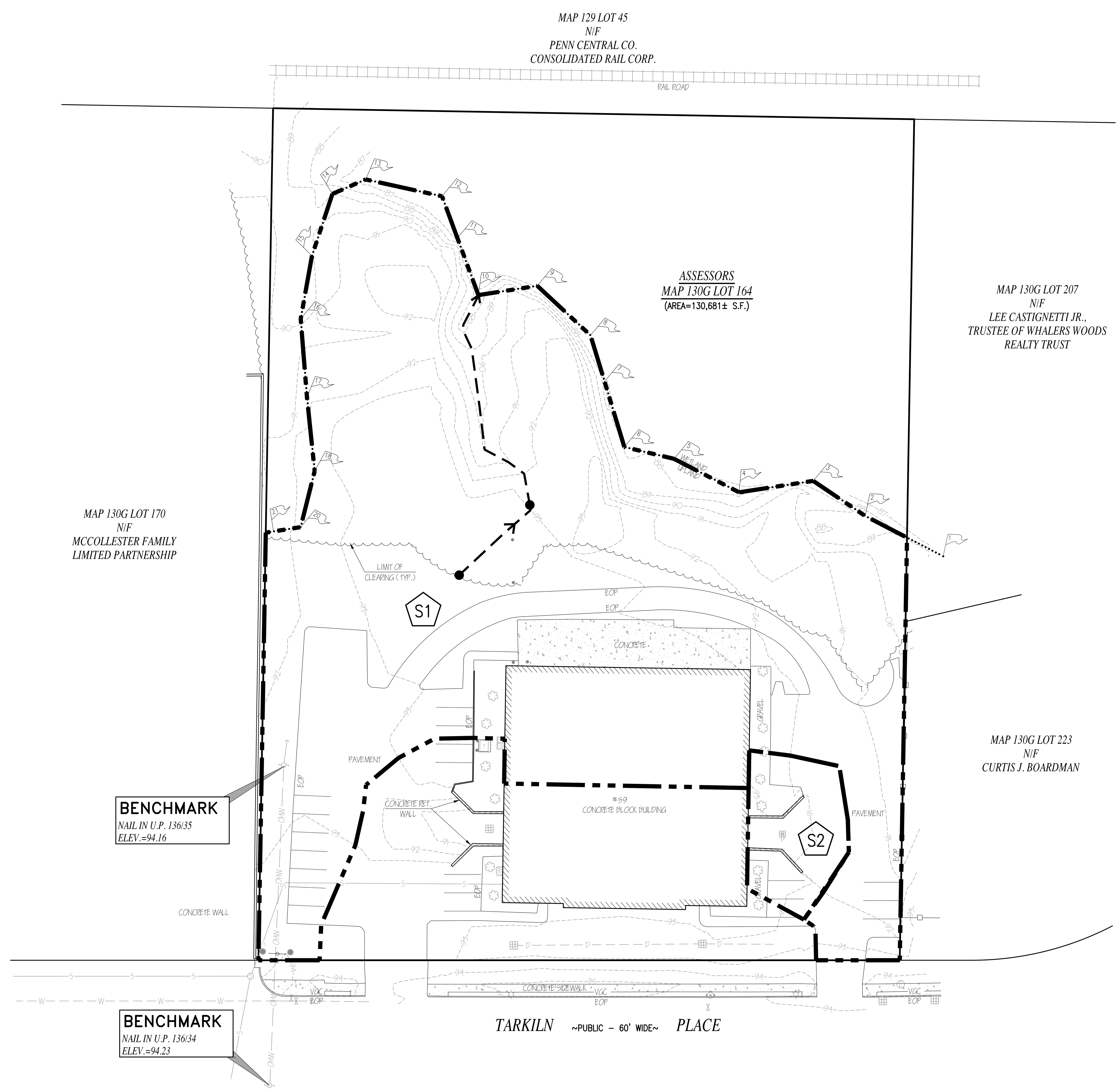
Farland Corporation, Inc.

Christian A. Farland, P.E., LEED AP
Principal Engineer and President

WATERSHED PLANS

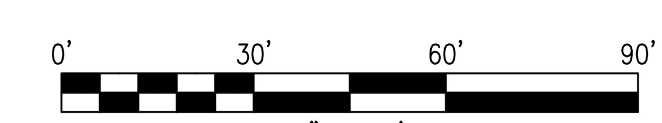


LOCUS MAP SCALE: 1"=2,000'±



LEGEND

EXISTING	DESCRIPTION
	PROPERTY LINE
	CONTOUR LINE
x 99.8	SPOT ELEVATION
EOP	EDGE OF PAVEMENT
VGC	VERTICAL GRANITE CURB
OHW	OVERHEAD WIRES
S	GRAVITY SEWER
	FENCE
	HYDRANT
	WATER GATE
	SIGN
	BOLLARD
	LIGHT
	UTILITY POLE
	CATCH BASIN
	ELECTRIC MANHOLE
	SEWER MANHOLE
	GAS METER
	ELECTRIC METER



REVISIONS

FARLAND CORP.
www.FarlandCorp.com
21 VENTURA DRIVE
DARTMOUTH, MA 02747
P.508.717.3479
- ENGINEERING
- SITEWORK
- LAND SURVEYING
- DEVELOPMENT

DRAWN BY: CKG
CALC'D BY: MOB
CHECKED BY: CAF

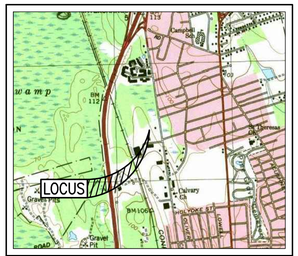
PRE-SUBCATCHMENT PLAN

59 TARKILN PLACE
ASSESSORS MAP 130G LOT 164
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: JAZ BRUSH USA, INC.
59 TARKILN PLACE
NEW BEDFORD, MA

OCTOBER 5, 2021
SCALE: 1"=30'
JOB NO. 18-391
LATEST REVISION:

SHEET 1 OF 1



LOCUS MAP SCALE: 1"=2,000'±

LEGEND

EXISTING	DESCRIPTION
	PROPERTY LINE
	CONTOUR LINE
X 99.8	SPOT ELEVATION
EOP	EDGE OF PAVEMENT
VGC	VERTICAL GRANITE CURB
OHW	OVERHEAD WIRES
S	GRAVITY SEWER
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	WATER GATE
	SIGN
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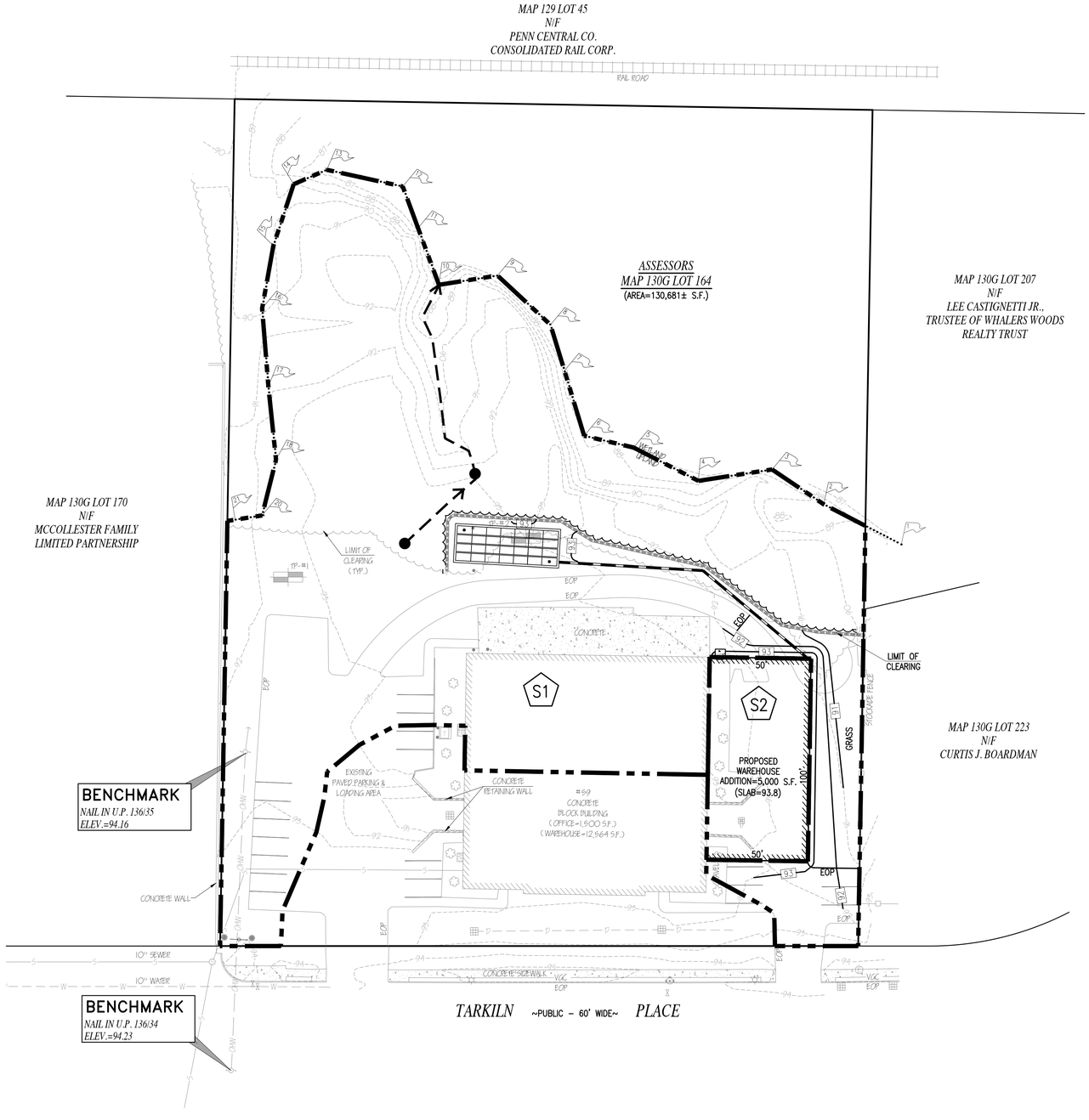
	CATCH BASIN
E	ELECTRIC MANHOLE
S	SEWER MANHOLE
GM	GAS METER
EM	ELECTRIC METER



0' 30' 60' 90'
1" = 30'

REVISIONS

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21 VENTURA DRIVE
DARTMOUTH, MA 02747
P.508.717.3479
- ENGINEERING
- SITEWORK
- LAND SURVEYING
- DEVELOPMENT

DRAWN BY: SB
DESIGNED BY: CKG
CHECKED BY: CAF

POST SUBCATCHMENT PLAN
59 TARKILN PLACE
ASSESSORS MAP 130G LOT 164
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: JAZ BRUSH USA, INC.
59 TARKILN PLACE
NEW BEDFORD, MA

OCTOBER 5, 2021
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SHEET 1 OF 1