

FORM I

SOIL EROSION AND SEDIMENTATION CONTROLS

Date Prepared/Revised <i>January 2023</i>
DEP USE ONLY
Date Received

FORM I SOIL EROSION AND SEDIMENTATION CONTROLS

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form I, reference the item number and identify the date prepared. The “date prepared/revised” on any attached sheets needs to match the “date prepared/revised” on this page.

General References: 273.151, 275.205, 277.151, 279.232, 281.132, 283.106, 288.151, 289.252, 291.205, 293.232, 295.132, 297.106

SECTION A. SITE IDENTIFIER

Applicant/permittee: **North East Waste Systems, LLC**

Site Name: **North East Waste Systems Transfer Facility**

Facility ID (as issued by DEP): **TBD by PaDEP**

SECTION B. EROSION AND SEDIMENT CONTROL

Provide a plan for the control of erosion and sedimentation on land within the permit area, all borrow areas and adjacent areas to be disturbed by construction activities. Include a narrative describing the implementation of the plan, its relationship to the overall staging of earth moving activities, and detailed design and construction plans and specifications for each structure or facility used in the plan. The plan must be site specific for each phase of construction. Include design assumptions, runoff calculations, channel profiles, cross sections, channel linings, and applicable details on attached Data Sheet for all collection and interceptor ditches. Provide documentation on the capacity of existing drainage system and the effect that storage or disposal activities will have on the drainage. Show discharge points to natural drainageways and all culverts that carry drainage away from the site. Plans and maps shall contain all details necessary for construction of the structures. **Refer to Attachments I-1, I-2, I-3, and I-6**

SECTION C. DIVERSION CONTROLS

Provide a plan for the collection and conveyance to a natural drainageway of the runoff from up slope undisturbed areas. Include design calculations, profiles, cross sections, and applicable details for each structure, ditch, or channel used for diverting runoff. The diversion control and erosion and sedimentation control plan shall be based on the requirements of Chapter 102 (Erosion and Sedimentation Control) of the Department's regulations. Calculations indicating water quantities shall be based on a 24-hour precipitation event with a frequency of once in 25 years. More stringent criteria may be required by the Department based on the most recent edition of the USDA-SCS, *Engineering Field Manual for conservation Practices*, or as otherwise determined necessary by the Department. **Refer to Attachment I-1**

SECTION D. ACCESS ROADS (Residual Waste Facilities Must Submit Form 23R)

Access roads shall have drainage system that is compatible with the natural contours, structurally stable, and capable of passing safely the peak flow from a 25-year, 24-hour precipitation event. **Refer to Attachments I-1 & I-6**

Provide the following information for each haul road to be used in the operation.

- a) Show the location on the application's topographic maps;
- b) Description and typical cross sections showing the construction of each access road including existing and proposed contours, grades, slopes, culvert locations, outlet protection, and other drainage control;
- c) Measures to control and prevent erosion and sedimentation; include proposed spacing of sediment traps, turnouts, cross drains, culverts, check dams, stabilized ditches, erosion resistant surfacing, etc.;
- d) Plan for reclamation after the operation is completed;

SECTION E. SEDIMENTATION PONDS – Not Applicable

Sedimentation ponds and other impoundments must be constructed in accordance with the requirements of Chapter 102 and this permit before any earthmoving activities start in the drainage area. Each impoundment must be inspected during construction by or under the supervision of a registered professional engineer, licensed in Pennsylvania, and certified by the Department upon completion of construction.

Any enlargement, reduction in size, reconstruction, or other modification that may affect the stability or operation must be approved by the Department. Ponds must be certified and approved by the Department prior to the start of storage or disposal activities.

Identification _____
 U.S.G.S. Quadrangle _____ Location: Latitude _____; Longitude _____
 Or Location from Bottom Right corner of U.S.G.S. Quadrangle; inches North: _____ inches West: _____
 HYDROLOGY: Drainage area _____ acres; Design Storm _____ Average Watershed Slope _____

Land Use _____ Soil Type _____ Curve Number _____ Peak Discharge _____

Embankment	Top Width (Minimum) _____ Outside Slope (Maximum) _____ Inside Slope (Maximum) _____ Top Elevation _____ Upstream Toe Elevation _____ Liner Material (earthen, synthetic, etc.) _____
Impoundment Dimensions and Capacities	Length at Bottom _____ Width at Bottom _____ Length at Crest of Principal Spillway _____ Width at Crest of Principal Spillway _____ Depth from Crest of Principal Spillway _____ Length at Crest of Emergency Spillway _____ Width at Crest of Emergency Spillway _____ Volume at Crest of Principle Spillway _____
Principal Spillway	Time of Detention _____ Maximum Sediment Storage Volume _____ Shape (Circular, semi-circular, trapezoid, etc.) _____ Dimensions (W x H x L) _____ Inlet Elevation _____ Slope and Length _____ Discharge Elevation _____ Spillway Capacity _____ Construction Material _____
Dewatering Device	Type/Size _____ Inlet Elevation _____ Discharge Controls (i.e. self -draining or -valved) _____ Discharge Capacity (maximum) _____ Time to Dewater Full Pond _____
Emergency Spillway	Shape _____ Dimensions (W x H x L) _____ Slope _____ Discharge Elevation _____ Type of Lining/Protection _____ Spillway Capacity (provide design calculations) _____

SECTION F. STORMWATER

1. Does the host county or municipality have any stormwater ordinance or requirements? Yes No

If "yes," attach a copy of the ordinance or requirements. **Refer to Attachment I-4**

2. Are stormwater controls located in a Special Protection Watershed? Yes No

If "yes," attach a copy of relevant ordinances or requirements. **HQ-CWF**

3. Does the receiving waterway have any designated use? Yes No

HQ-CWF

4. Does the facility have an NPDES Permit or Stormwater NPDES General Permit? Yes No

If "yes," attach a copy of the permit and a drawing showing how the regulated controls are related to the permitted discharge permit.

An NPDES PAG-02 permit is anticipated for construction activities. This permit will be obtained prior to earth disturbance.

An NPDES PAG-03 permit for industrial discharges is also anticipated. This permit will be obtained prior to commencement of operations at the facility.

ATTACHMENT I-1
FORM I NARRATIVE RESPONSES

NORTH EAST WASTE SYSTEMS, LLC
NORTH EAST WASTE SYSTEMS TRANSFER FACILITY

FORM I: SOIL EROSION AND SEDIMENTATION CONTROLS
ATTACHMENT I-1: SOIL EROSION AND SEDIMENTATION CONTROLS NARRATIVE

1.0 INTRODUCTION

North East Waste Systems, LLC (NEWS) is proposing to construct a transfer facility for the transfer of municipal solid waste (MSW) and construction/demolition (C&D) into railcars or transfer trailer trucks. The property is currently/historically used for coal mining operations, and is located off East Broad Street in the City of Hazleton, PA, as shown on the Site Location Map in Form A of this permit application.

The proposed facility will be referred to as the North East Waste Transfer Facility (NEWT), and it will handle waste collected from communities throughout Luzerne County and other surrounding counties at a maximum rate of 700 tons per day. NEWS personnel and equipment, public and private haulers, local industries, and private citizens will collect and deliver solid waste to the facility to be transferred to an approved disposal site. In addition to providing space for the unloading and loading of waste, the transfer facility will accommodate the maintenance facilities.

2.0 TOPOGRAPHIC FEATURES OF THE SITE

The Site Location Map shows the topographic features for the general site vicinity and is based on the USGS 7½-Minute Series for Hazleton, Pennsylvania Quadrangle. The Site Plan, Permit Drawing Number 002D005A, shows more detailed topographic features of the immediate property area. The base topography for the permit drawings was prepared by Spotts, Stevens, & McCoy from drone aerial mapping and ground survey conducted in November 2021. As a current/historic coal mine site, the existing ground cover is primarily unstabilized surfaces of coal reserve stockpiles and strippings with minimal vegetation.

3.0 TYPES, DEPTH, SLOPE, LOCATIONS AND LIMITATIONS OF THE SOILS

The soil on the site is listed by the United States Department of Agriculture, and the Natural Resource Conservation Service as the following units: Mg - mine dump, Mm - mine wash, and Sm - strip mine. A soil map is provided in Exhibit D-2.4 in Attachment D-2, contained in Form D of this permit application.

4.0 PROPOSED ALTERATION TO THE PROPERTY

The proposed transfer facility will require construction of a new building for transfer operations, a scalehouse with inbound and outbound scales, and a rail spur through the building. The facility will be accessed from a new privately owned road from State Route 93 to the NEWT's driveway entrance at the permit boundary. The private roadway and utilities are being developed through the property by Inter Port Commerce Centre, Inc. as part of the overall development plan for the property. The private roadway, as well as access road within the site that will be utilized for delivery and transfer operations hauling, will be paved. Other operational areas of the site will likely also be paved or at minimum will be stabilized with gravel.

5.0 STORMWATER CONTROLS

Roof drains/gutters will be constructed on the proposed transfer building. A network of stormwater drains, piping, catch basins, and culverts collect and convey runoff from the onsite

paved/gravel surfaces. Stormwater from infrastructure outside of the permit boundary (e.g. main access road and adjacent development areas) will be collected and addressed by the developer of the overall industrial complex being proposed in this area, Inter Port Commerce. Stormwater within the facility will be collected by a series of catch basins and culverts and conveyed to a subsurface infiltration area. Additionally, the site will be developed such that upgradient run-on drainage is diverted around the site using infrastructure implemented by the developer (outside of this permit).

6.0 TEMPORARY E&S CONTROL MEASURES

The following control measures shall be used to minimize and control erosion and sedimentation during installation of the transfer building.

6.1 ROCK CONSTRUCTION ENTRANCE

A rock construction entrance will be installed at the entrance to the facility to minimize sediment accumulation on public roads. The construction entrance will be maintained until the site is stabilized and the area is ready to be paved. The installation of the rock construction entrance will comply with the standard construction details provided in Chapter 102 of the PaDEP's regulations.

6.2 SILT SOCK

Silt sock will be installed at the down-gradient perimeter of the disturbance area. Silt sock will be installed on a level grade, with the ends turned at 45° at the ends.

Sediment deposits will be cleaned when accumulation reaches ½ the height of the socks. The installation of silt sock will comply with the standard construction details provided in Chapter 102 of the PaDEP's regulations.

6.3 ROCK FILTER OUTLETS

Rock filter outlets are used to repair sections of silt sock that have been overtaken by runoff or undermined. In the unlikely event that a section of silt sock is overtaken or undermined, the rock filter outlet provides a stronger device to filter sediment. Sediment deposits will be cleaned when accumulation reaches 1/3 the height for the filter outlet. Construction details for rock filters are shown in Chapter 102 of the PaDEP's regulations.

6.4 STONE INLET PROTECTION

Once culverts are installed, stone inlet protection will be installed around the catch basin inlets to minimize sediment entering the piping system. Sediment deposits will be cleaned when accumulation reaches 1/2 the height of the stone. Construction details for stone inlet protection are shown in Chapter 102 of the PaDEP's regulations, and will be specific to Type M Inlets.

6.5 MAINTENANCE OF E&S CONTROL FACILITIES

Construction and installation of the E&S controls is only one step towards proper storm water management and E&S control. Another necessary step towards minimizing erosion and controlling sediment pollution is maintaining the E&S control facilities, which

NORTH EAST WASTE SYSTEMS, LLC – NORTH EAST WASTE SYSTEM TRANSFER FACILITY
ATTACHMENT I-1: SOIL EROSION AND SEDIMENTATION CONTROLS NARRATIVE

have been previously installed. Therefore, the applicant will follow the maintenance procedures outlined in the E&S Maintenance Program (Section 8.0, below).

7.0 PERMANENT E&S CONTROL MEASURES

Permanent E&S control measures are not proposed for the facility since the site will be stabilized with vegetation, paving and/or gravel. A system of catch basins and culvert piping is proposed to convey stormwater runoff from the site to a subsurface infiltration bed for infiltration. The infiltration bed will consist of a subsurface aggregate bonnet with perforated piping connecting catch basin inlets.

8.0 E&S MAINTENANCE PROGRAM

The operator will inspect the site on a regular basis to assess the working condition of the temporary E&S controls. A thorough inspection of the silt sock will be performed on a weekly basis and after each significant storm event. Damaged structures, blocked structures, or other problems identified during the inspections will be promptly repaired. Silt Sock will be inspected to confirm it has not been dislodged or broken. Accumulated sediments will be removed where deposits reach 1/2 the aboveground height silt sock. Erosion and undercutting of the silt socks will promptly be repaired using a rock filter outlet.

Public roads will be cleaned using a street sweeper as needed to minimize the discharge of sediment resulting from construction. The temporary rock construction entrance will also be maintained to reduce sediment to the public roads until the site is stabilized.

9.0 RECYCLING AND DISPOSAL OF MATERIALS

All individuals responsible for earth disturbance activities will ensure that waste materials are controlled onsite. Construction wastes such as soil materials and building materials, when possible, shall be sorted and sent to a permitted disposal facility or recycling center. Wash water and sanitary waste shall be properly disposed.

10.0 POST CONSTRUCTION STORMWATER MANAGEMENT

Post construction stormwater management (PCSM) controls will be constructed in accordance with Luzerne County's existing Act 167 Stormwater Management Ordinance. Due to the topography of the area, a subsurface infiltration bed is proposed. The infiltration bed will rely on infiltration to mitigate increases in the pre- and post-construction stormwater flows at the facility. A summary of the pre- and post-construction stormwater management volumes and peak rates is summarized below.

Prior to construction, onsite infiltration testing and soil evaluation will be completed to verify the assumptions of this design, and the stormwater management controls may be redesigned during architectural planning, NPDES permitting, and land development applications.

**NORTH EAST WASTE SYSTEMS, LLC – NORTH EAST WASTE SYSTEM TRANSFER FACILITY
ATTACHMENT I-1: SOIL EROSION AND SEDIMENTATION CONTROLS NARRATIVE**

Pre- and Post-Construction Stormwater Volume for 2-yr Rainfall event

Pre-construction (cf)	Post-construction before BMPs (cf)	Post-construction after BMPs (cf)	Net (cf)
0	46,827	0	0

Pre-Construction Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
0.00	0.00	0.00	0.04	0.16	0.66

Post-Construction Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
13.50	15.89	23.51	29.21	33.52	39.63

Post-Construction w/ BMPs Peak Discharge Rates (cfs)

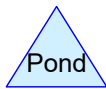
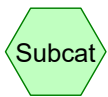
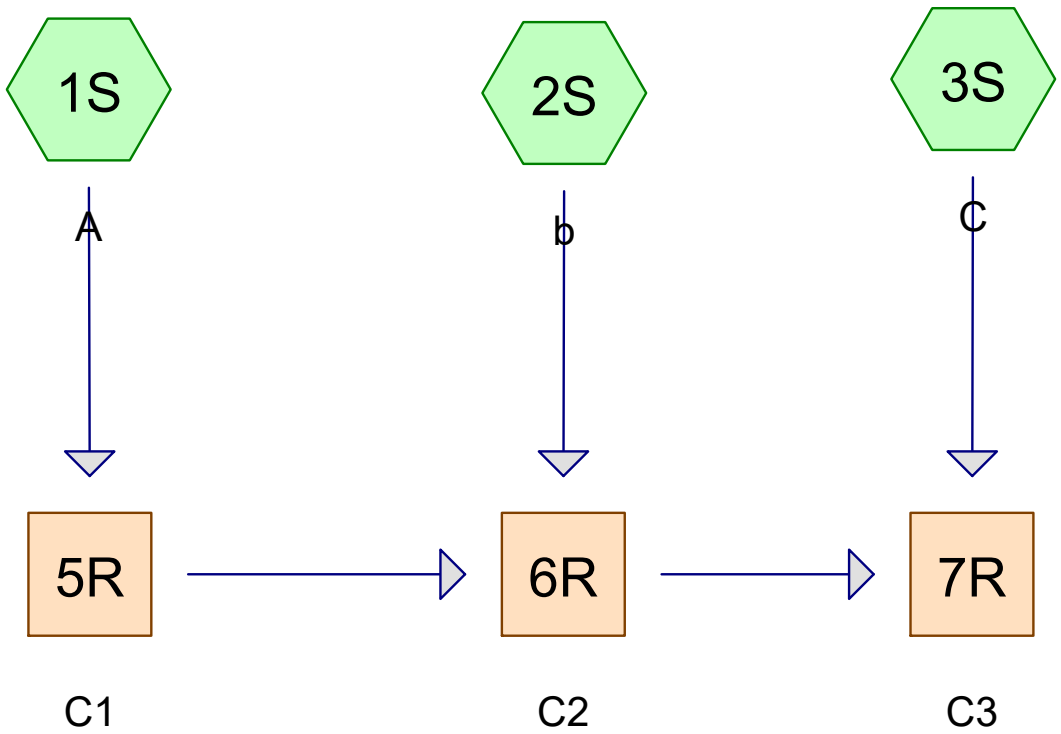
1-year	2-year	10-year	25-year	50-year	100-year
0.00	0.00	0.00	0.00	0.00	0.00

Difference between Pre-Construction and Post-Construction w/ BMPs

	1-year	2-year	10-year	25-year	50-year	100-year
NET Difference	0.00	0.00	0.00	-0.04	-0.16	-0.66

ATTACHMENT I-2
SILT SOCK CALCULATIONS

ATTACHMENT I-3
STORMWATER CULVERT CALCULATIONS



Pipe Design

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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.870	98	(1S, 2S, 3S)
1.870	98	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
1.870	Other	1S, 2S, 3S
1.870		TOTAL AREA

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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	0.000	0.000	0.000	1.870	1.870		1S, 2S, 3S
0.000	0.000	0.000	0.000	1.870	1.870	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	5R	1,578.00	1,571.00	177.5	0.0394	0.013	12.0	0.0	0.0
2	6R	1,571.00	1,569.00	115.5	0.0173	0.013	18.0	0.0	0.0
3	7R	1,569.00	1,565.50	65.0	0.0538	0.013	18.0	0.0	0.0

Pipe Design

NOAA 24-hr C 25-Year Rainfall=6.20"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: A Runoff Area=0.400 ac 100.00% Impervious Runoff Depth>5.44"
Tc=5.0 min CN=98 Runoff=2.65 cfs 0.181 af

Subcatchment 2S: b Runoff Area=0.730 ac 100.00% Impervious Runoff Depth>5.44"
Tc=5.0 min CN=98 Runoff=4.83 cfs 0.331 af

Subcatchment 3S: C Runoff Area=0.740 ac 100.00% Impervious Runoff Depth>5.44"
Tc=5.0 min CN=98 Runoff=4.89 cfs 0.335 af

Reach 5R: C1 Avg. Flow Depth=0.42' Max Vel=8.28 fps Inflow=2.65 cfs 0.181 af
12.0" Round Pipe n=0.013 L=177.5' S=0.0394 '/ Capacity=7.08 cfs Outflow=2.55 cfs 0.181 af

Reach 6R: C2 Avg. Flow Depth=0.77' Max Vel=7.88 fps Inflow=7.36 cfs 0.512 af
18.0" Round Pipe n=0.013 L=115.5' S=0.0173 '/ Capacity=13.82 cfs Outflow=7.19 cfs 0.512 af

Reach 7R: C3 Avg. Flow Depth=0.74' Max Vel=13.67 fps Inflow=12.06 cfs 0.847 af
18.0" Round Pipe n=0.013 L=65.0' S=0.0538 '/ Capacity=24.38 cfs Outflow=11.97 cfs 0.847 af

Total Runoff Area = 1.870 ac Runoff Volume = 0.847 af Average Runoff Depth = 5.44"
0.00% Pervious = 0.000 ac 100.00% Impervious = 1.870 ac

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Summary for Subcatchment 1S: A

[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 2.65 cfs @ 12.11 hrs, Volume= 0.181 af, Depth> 5.44"

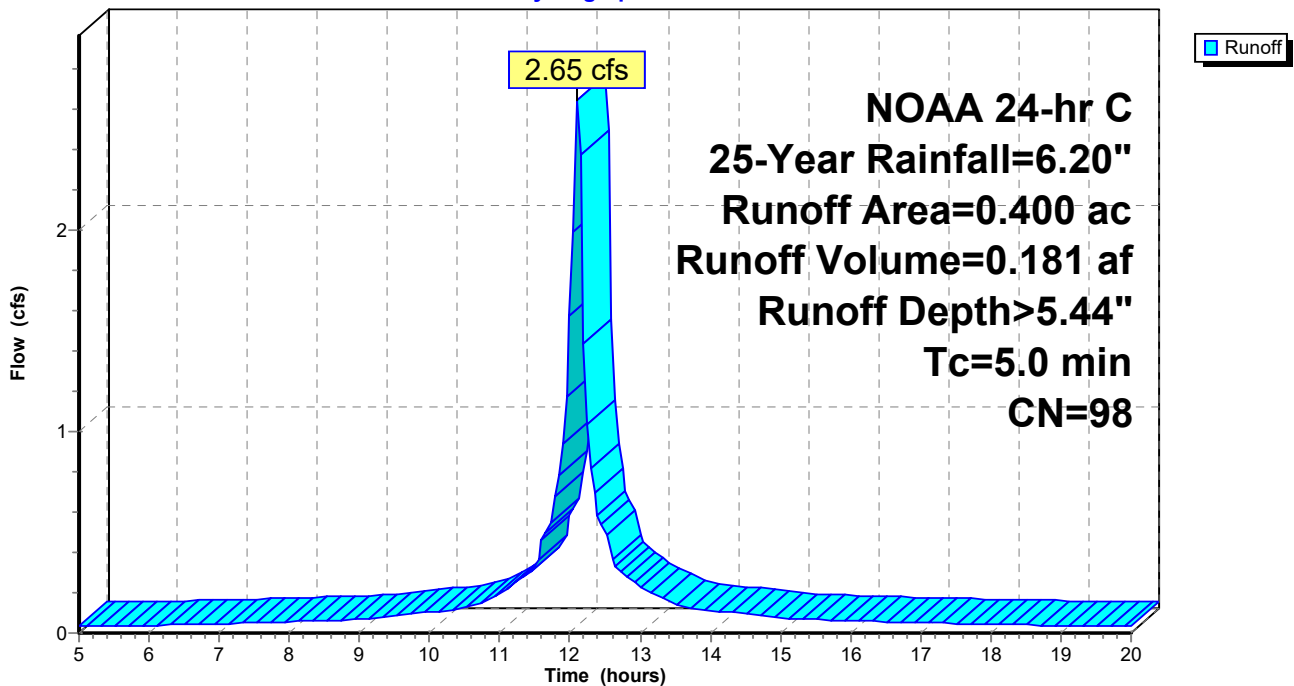
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 25-Year Rainfall=6.20"

Area (ac)	CN	Description
* 0.400	98	
0.400		100.00% Impervious Area

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

Subcatchment 1S: A

Hydrograph



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Summary for Subcatchment 2S: b

[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 4.83 cfs @ 12.11 hrs, Volume= 0.331 af, Depth> 5.44"

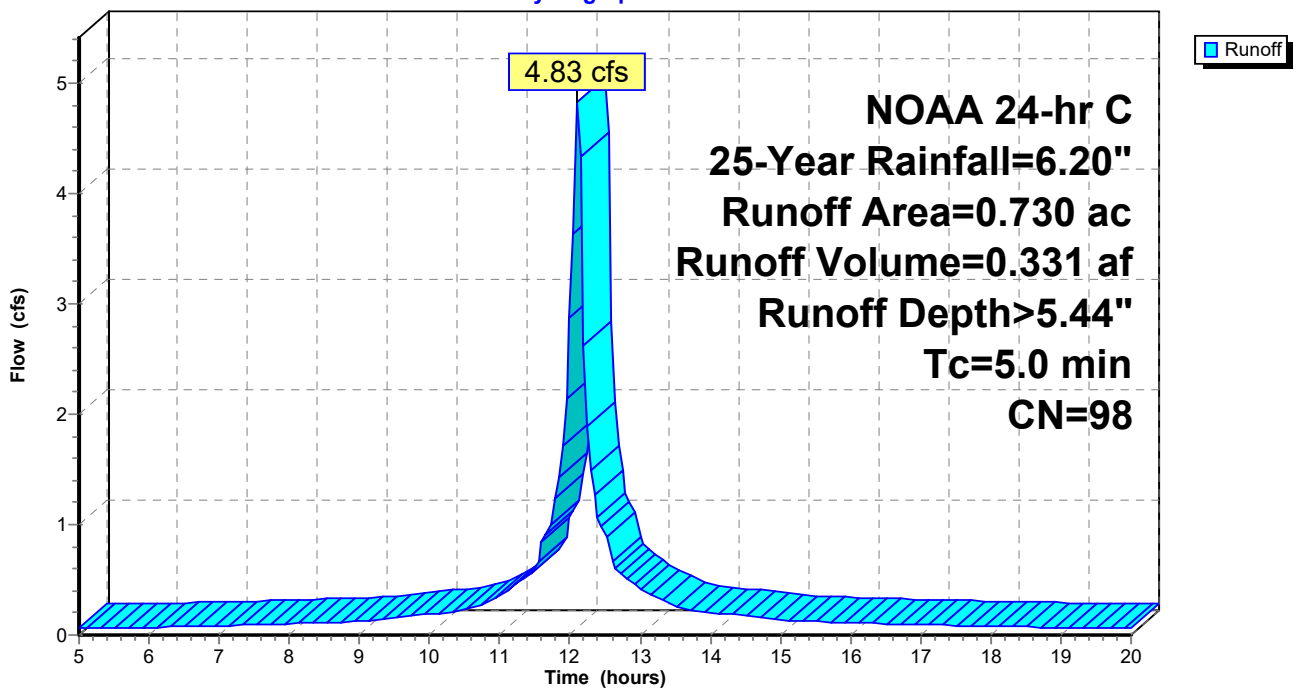
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 25-Year Rainfall=6.20"

Area (ac)	CN	Description
* 0.730	98	
0.730		100.00% Impervious Area

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

Subcatchment 2S: b

Hydrograph



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Summary for Subcatchment 3S: C

[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 4.89 cfs @ 12.11 hrs, Volume= 0.335 af, Depth> 5.44"

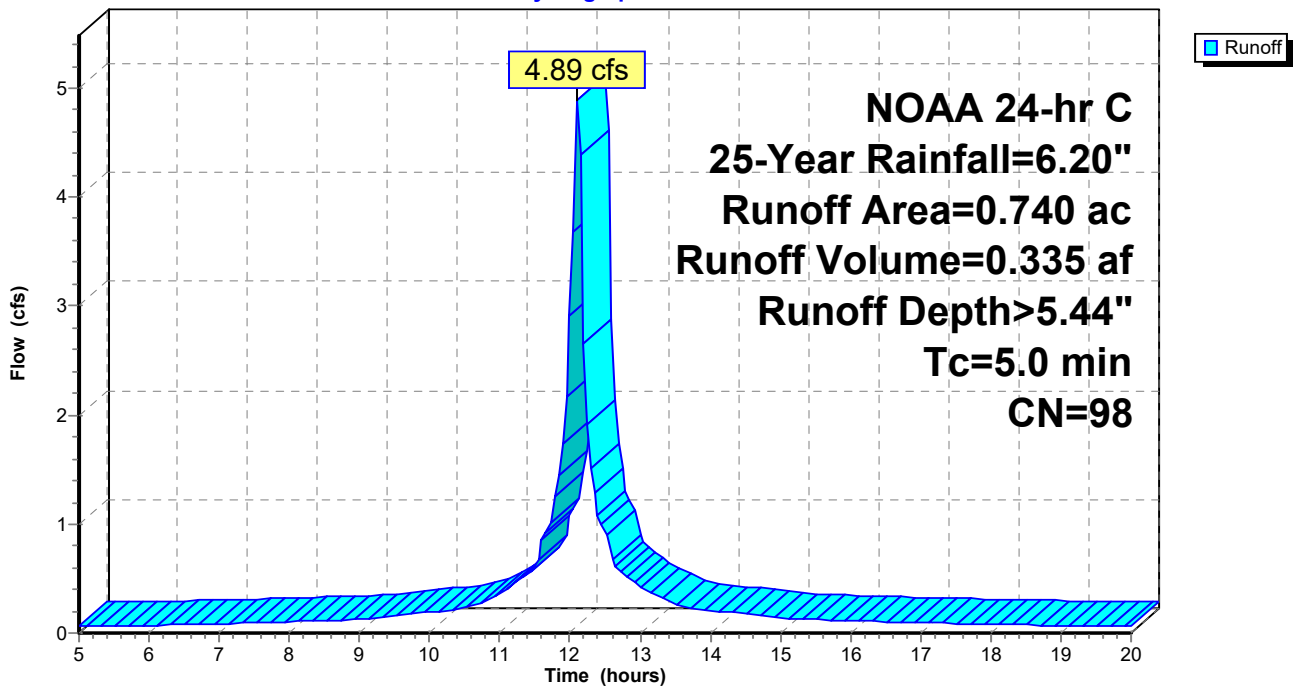
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 25-Year Rainfall=6.20"

Area (ac)	CN	Description
* 0.740	98	
0.740		100.00% Impervious Area

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

Subcatchment 3S: C

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NOAA 24-hr C 25-Year Rainfall=6.20"

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Summary for Reach 5R: C1

[52] Hint: Inlet/Outlet conditions not evaluated

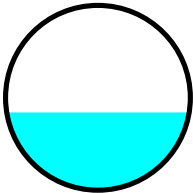
[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.400 ac, 100.00% Impervious, Inflow Depth > 5.44" for 25-Year event
Inflow = 2.65 cfs @ 12.11 hrs, Volume= 0.181 af
Outflow = 2.55 cfs @ 12.12 hrs, Volume= 0.181 af, Atten= 4%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.28 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 3.13 fps, Avg. Travel Time= 0.9 min

Peak Storage= 55 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.08 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 177.5' Slope= 0.0394 '/'
Inlet Invert= 1,578.00', Outlet Invert= 1,571.00'



Pipe Design

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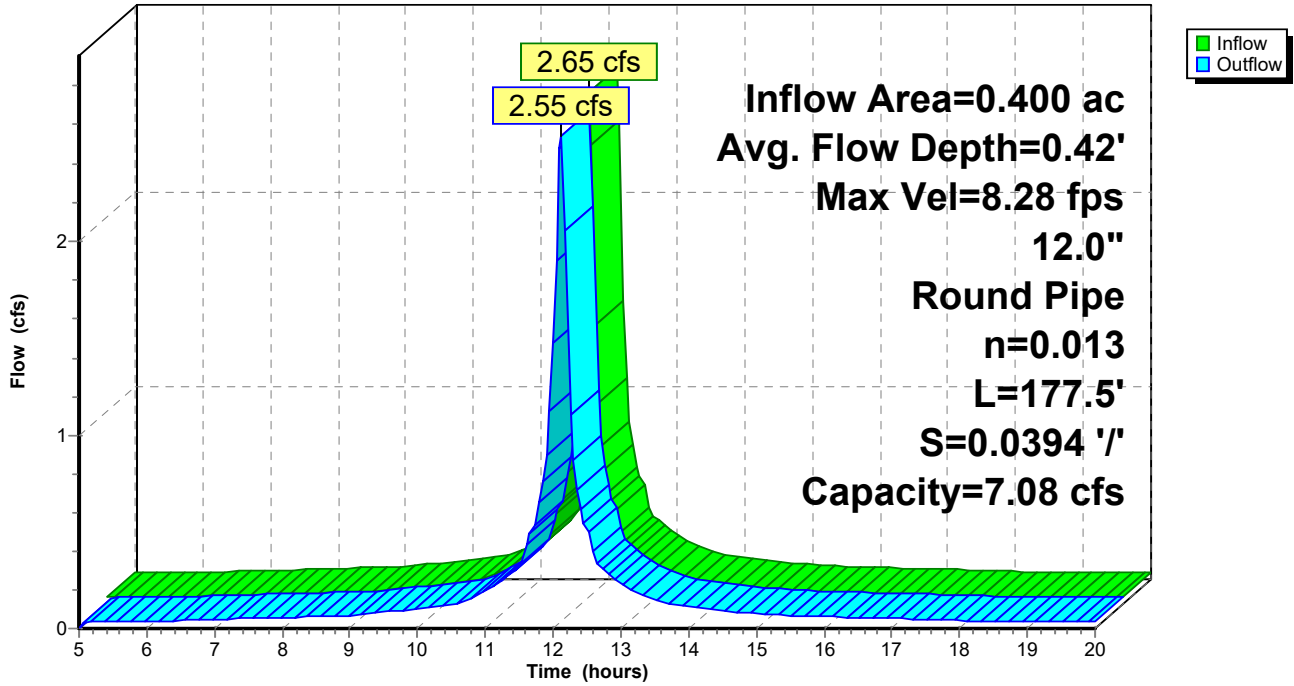
NOAA 24-hr C 25-Year Rainfall=6.20"

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Reach 5R: C1

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Summary for Reach 6R: C2

[52] Hint: Inlet/Outlet conditions not evaluated

[82] Warning: Early inflow requires earlier time span

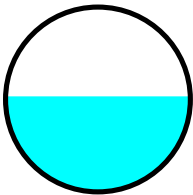
[62] Hint: Exceeded Reach 5R OUTLET depth by 0.35' @ 12.10 hrs

Inflow Area = 1.130 ac, 100.00% Impervious, Inflow Depth > 5.44" for 25-Year event
Inflow = 7.36 cfs @ 12.11 hrs, Volume= 0.512 af
Outflow = 7.19 cfs @ 12.12 hrs, Volume= 0.512 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.88 fps, Min. Travel Time= 0.2 min
Avg. Velocity= 3.04 fps, Avg. Travel Time= 0.6 min

Peak Storage= 106 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.77'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 13.82 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 115.5' Slope= 0.0173 '/'
Inlet Invert= 1,571.00', Outlet Invert= 1,569.00'



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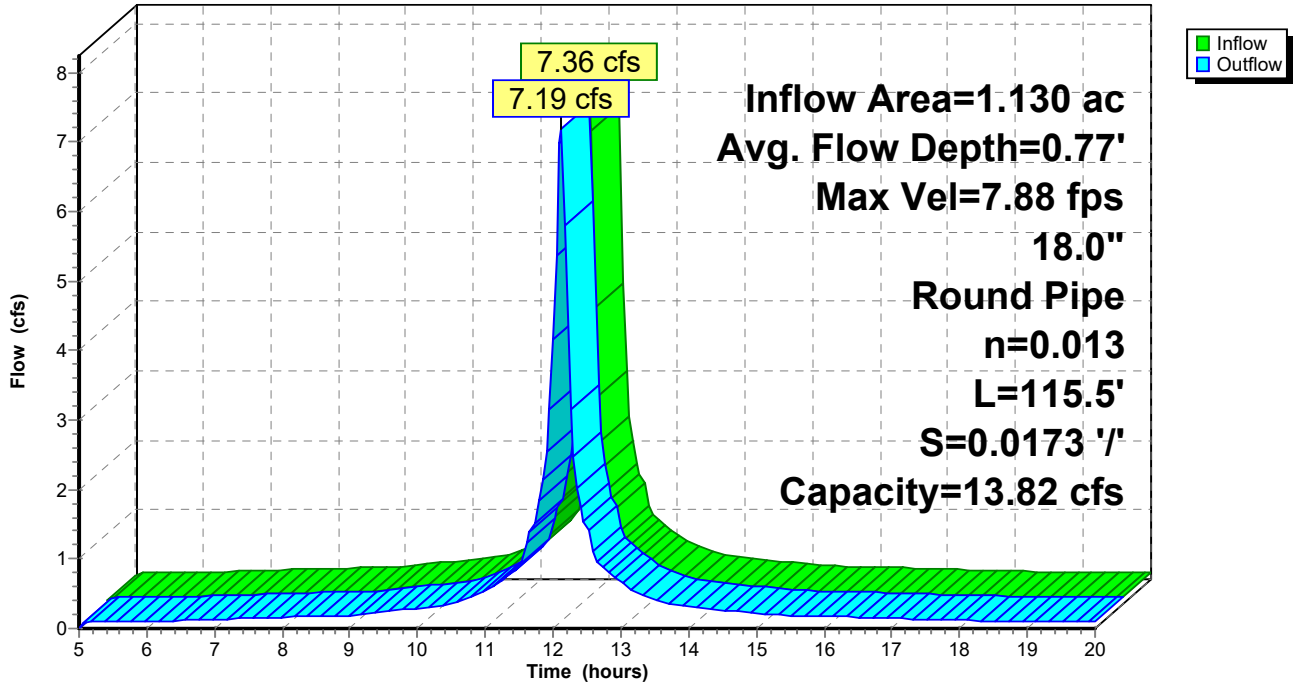
NOAA 24-hr C 25-Year Rainfall=6.20"

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Reach 6R: C2

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Summary for Reach 7R: C3

[52] Hint: Inlet/Outlet conditions not evaluated

[82] Warning: Early inflow requires earlier time span

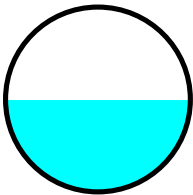
[61] Hint: Exceeded Reach 6R outlet invert by 0.73' @ 12.10 hrs

Inflow Area = 1.870 ac, 100.00% Impervious, Inflow Depth > 5.44" for 25-Year event
Inflow = 12.06 cfs @ 12.12 hrs, Volume= 0.847 af
Outflow = 11.97 cfs @ 12.12 hrs, Volume= 0.847 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.67 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 5.25 fps, Avg. Travel Time= 0.2 min

Peak Storage= 57 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.74'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 24.38 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 65.0' Slope= 0.0538 '/
Inlet Invert= 1,569.00', Outlet Invert= 1,565.50'



Pipe Design

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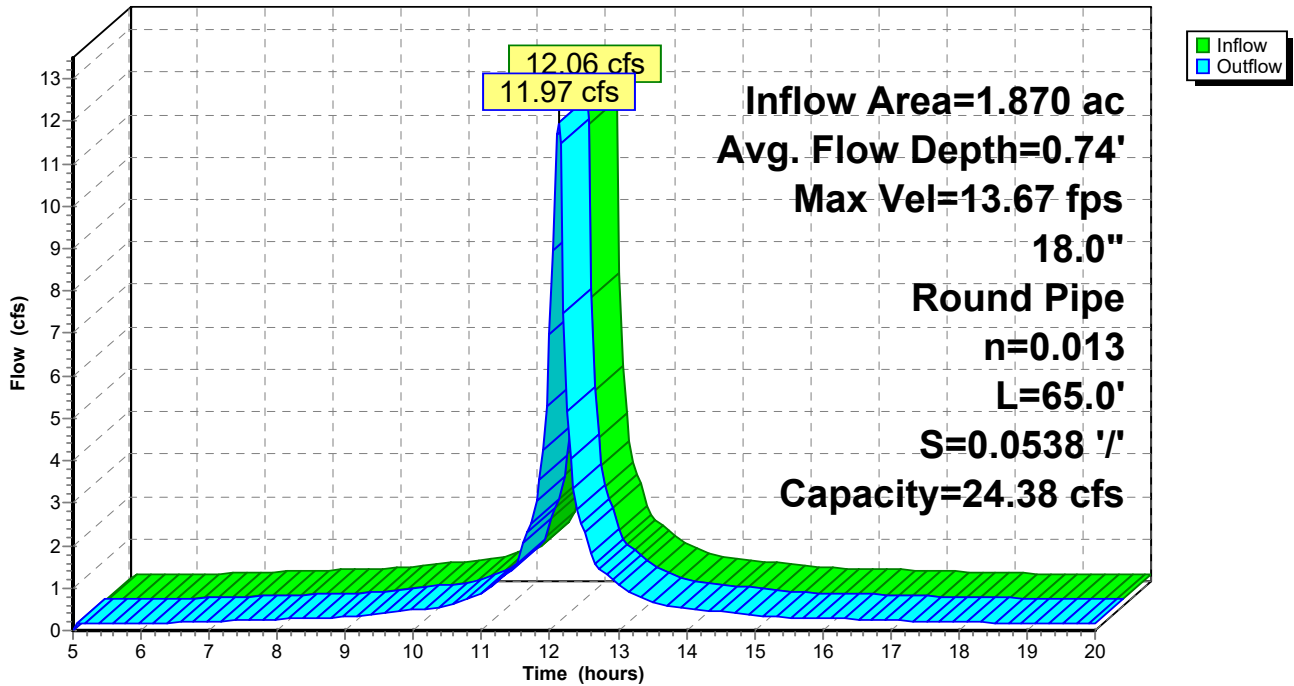
NOAA 24-hr C 25-Year Rainfall=6.20"

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Reach 7R: C3

Hydrograph



ATTACHMENT I-4
PCSM CALCULATIONS

NORTH EAST WASTE SYSTEMS, LLC
NORTH EAST WASTE SYSTEMS TRANSFER FACILITY

Pre- and Post-Construction Stormwater Volume for 2-yr Rainfall event

Pre-construction (cf)	Post-construction before BMPs (cf)	Post-construction after BMPs (cf)	Net (cf)
0.0	46,827	0.0	0.0

Pre-Construction Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
0.00	0.00	0.00	0.04	0.16	0.66

Post-Construction Peak Discharge Rates (cfs)

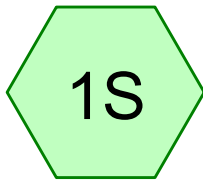
1-year	2-year	10-year	25-year	50-year	100-year
13.50	15.89	23.51	29.21	33.52	39.63

Post-Construction w/ BMPs Peak Discharge Rates (cfs)

1-year	2-year	10-year	25-year	50-year	100-year
0.00	0.00	0.00	0.00	0.00	0.00

Difference between Pre-Construction and Post-Construction w/ BMPs

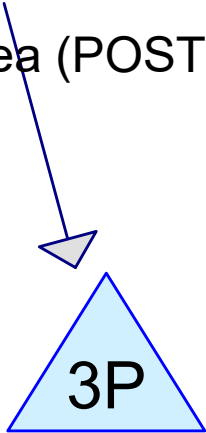
	1-year	2-year	10-year	25-year	50-year	100-year
NET Difference	0.00	0.00	0.00	-0.04	-0.16	-0.66



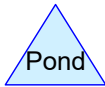
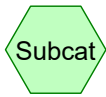
Drainage Area (PRE)



Drainage Area (POST)



Infiltration bed



PCSM Design

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Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 7639 PA Luzerne-C

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.416	30	Meadow, non-grazed, HSG A (1S)
4.416	98	Paved parking, HSG A (2S)
8.832	64	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
8.832	HSG A	1S, 2S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
8.832		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
4.416	0.000	0.000	0.000	0.000	4.416	Meadow, non-grazed	1S
4.416	0.000	0.000	0.000	0.000	4.416	Paved parking	2S
8.832	0.000	0.000	0.000	0.000	8.832	TOTAL AREA	

PCSM Design

NOAA 24-hr C 1-Year Rainfall=2.90"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area (PRE) Runoff Area=192,362 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=950' Tc=13.5 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment 2S: Drainage Area (POST) Runoff Area=192,362 sf 100.00% Impervious Runoff Depth>2.47"
Tc=5.0 min CN=98 Runoff=13.50 cfs 0.909 af

Pond 3P: Infiltration bed Peak Elev=1,566.33' Storage=15,709 cf Inflow=13.50 cfs 0.909 af
Outflow=1.32 cfs 0.906 af

Total Runoff Area = 8.832 ac Runoff Volume = 0.909 af Average Runoff Depth = 1.23"
50.00% Pervious = 4.416 ac 50.00% Impervious = 4.416 ac

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NOAA 24-hr C 1-Year Rainfall=2.90"

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Summary for Subcatchment 1S: Drainage Area (PRE)

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

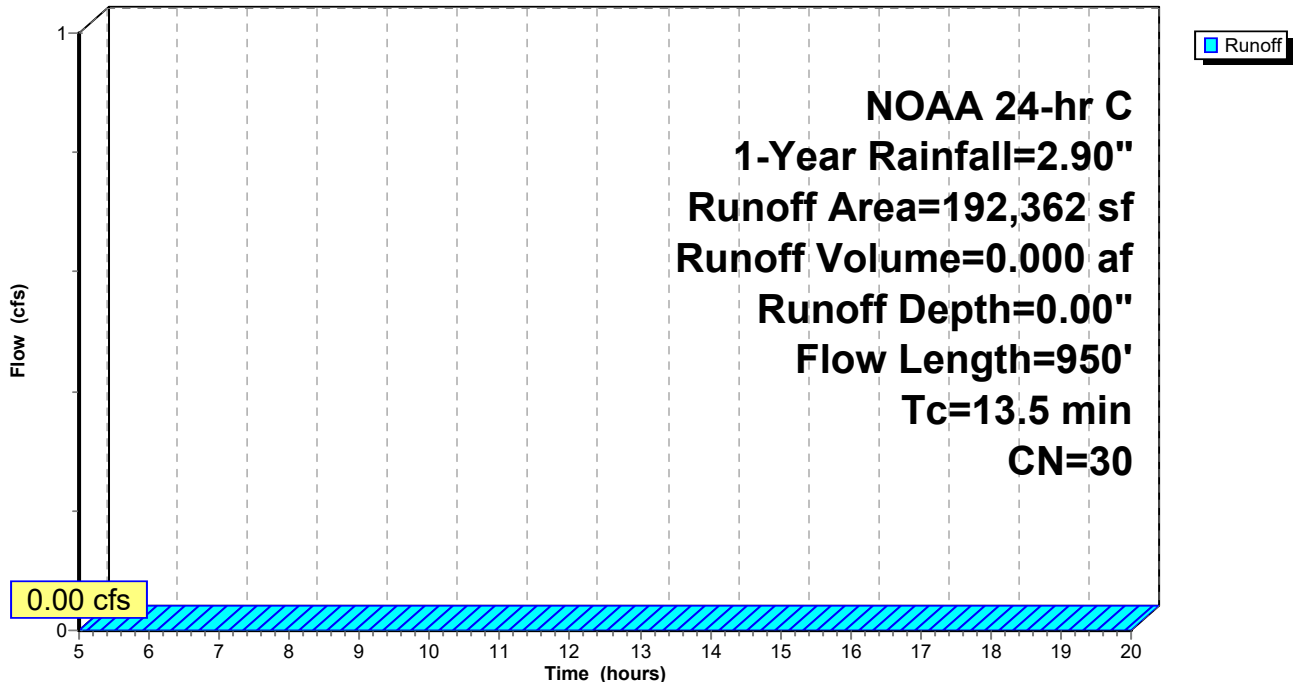
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 1-Year Rainfall=2.90"

Area (sf)	CN	Description
192,362	30	Meadow, non-grazed, HSG A
192,362		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	100	0.1000	0.23		Sheet Flow, Sheet Grass: Dense n= 0.240 P2= 3.40"
6.2	850	0.0200	2.28		Shallow Concentrated Flow, SCF Unpaved Kv= 16.1 fps
13.5	950	Total			

Subcatchment 1S: Drainage Area (PRE)

Hydrograph



Summary for Subcatchment 2S: Drainage Area (POST)

[49] Hint: $T_c < 2dt$ may require smaller dt

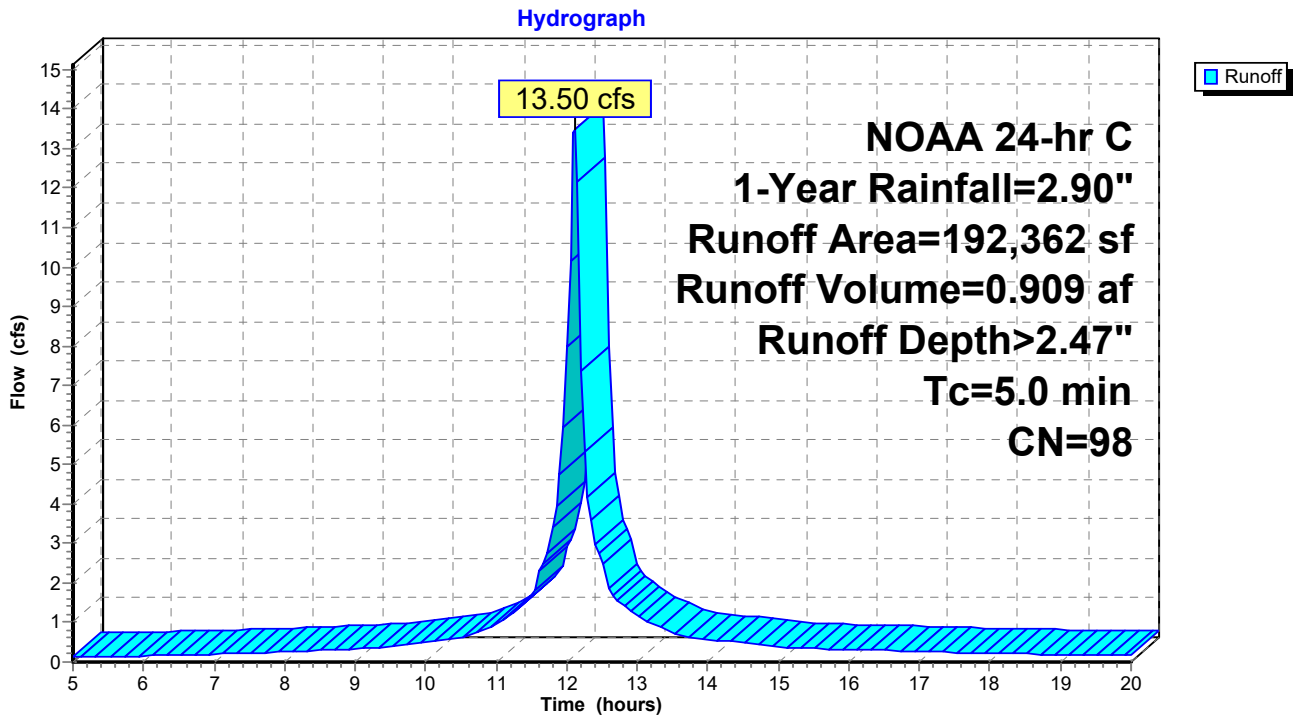
Runoff = 13.50 cfs @ 12.11 hrs, Volume= 0.909 af, Depth> 2.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 1-Year Rainfall=2.90"

Area (sf)	CN	Description
192,362	98	Paved parking, HSG A
192,362		100.00% Impervious Area

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

Subcatchment 2S: Drainage Area (POST)



Summary for Pond 3P: Infiltration bed

[82] Warning: Early inflow requires earlier time span

Inflow Area = 4.416 ac, 100.00% Impervious, Inflow Depth > 2.47" for 1-Year event
 Inflow = 13.50 cfs @ 12.11 hrs, Volume= 0.909 af
 Outflow = 1.32 cfs @ 12.91 hrs, Volume= 0.906 af, Atten= 90%, Lag= 47.8 min
 Discarded = 1.32 cfs @ 12.91 hrs, Volume= 0.906 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,566.33' @ 12.91 hrs Surf.Area= 46,000 sf Storage= 15,709 cf

Plug-Flow detention time= 96.1 min calculated for 0.906 af (100% of inflow)
 Center-of-Mass det. time= 94.6 min (833.2 - 738.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,565.50'	1,113 cf	18.0" Round Pipe Storage Inside #2 L= 630.0'
#2	1,565.50'	63,955 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 161,000 cf Overall - 1,113 cf Embedded = 159,887 cf x 40.0% Voids
		65,068 cf	Total Available Storage

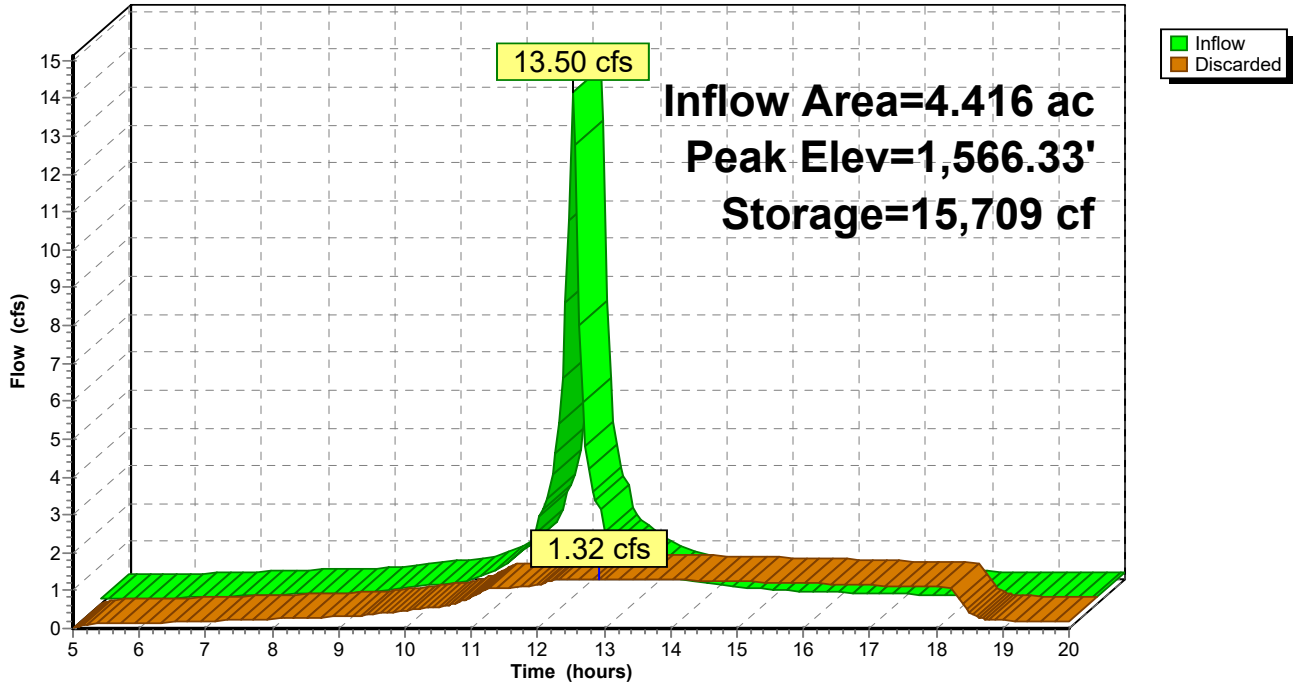
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,565.50	46,000	0	0
1,569.00	46,000	161,000	161,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,565.50'	1.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1,562.00'

Discarded OutFlow Max=1.32 cfs @ 12.91 hrs HW=1,566.33' (Free Discharge)
 ↑1=Exfiltration (Controls 1.32 cfs)

Pond 3P: Infiltration bed

Hydrograph



PCSM Design

NOAA 24-hr C 2-Year Rainfall=3.40"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area (PRE) Runoff Area=192,362 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=950' Tc=13.5 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment 2S: Drainage Area (POST) Runoff Area=192,362 sf 100.00% Impervious Runoff Depth>2.92"
Tc=5.0 min CN=98 Runoff=15.89 cfs 1.075 af

Pond 3P: Infiltration bed Peak Elev=1,566.54' Storage=19,671 cf Inflow=15.89 cfs 1.075 af
Outflow=1.38 cfs 1.071 af

Total Runoff Area = 8.832 ac Runoff Volume = 1.075 af Average Runoff Depth = 1.46"
50.00% Pervious = 4.416 ac 50.00% Impervious = 4.416 ac

Summary for Subcatchment 1S: Drainage Area (PRE)

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

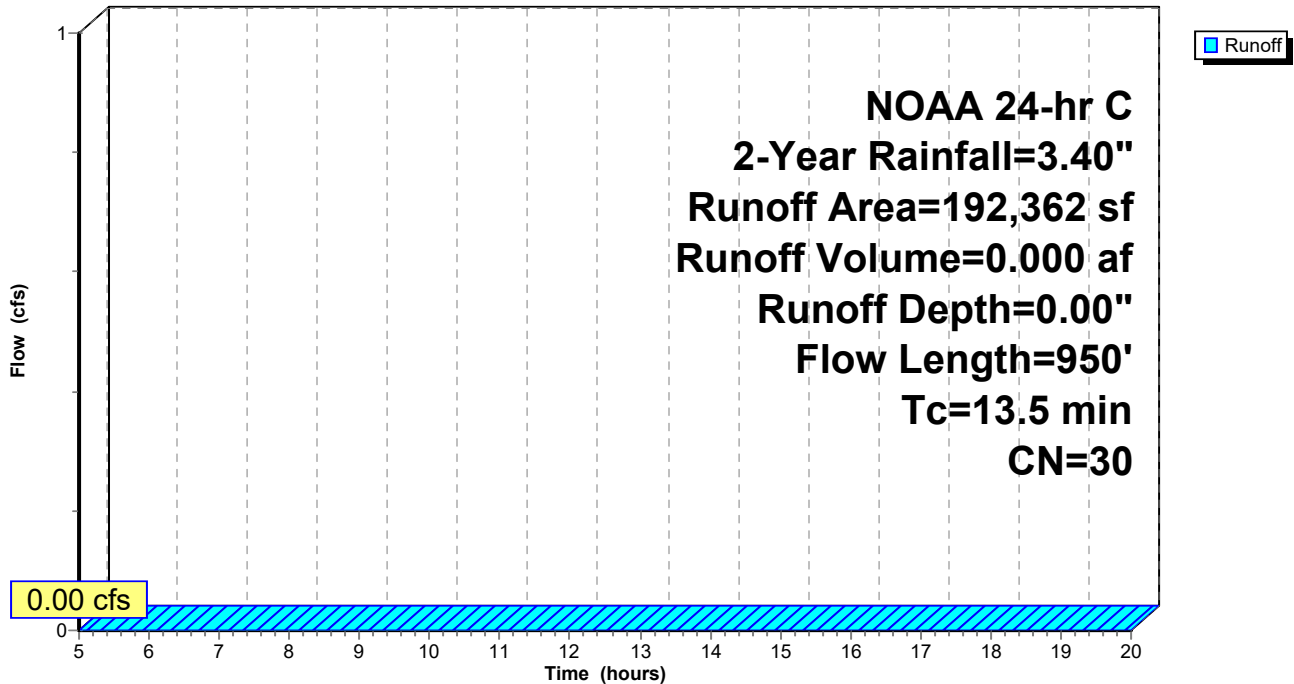
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 2-Year Rainfall=3.40"

Area (sf)	CN	Description
192,362	30	Meadow, non-grazed, HSG A
192,362		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	100	0.1000	0.23		Sheet Flow, Sheet Grass: Dense n= 0.240 P2= 3.40"
6.2	850	0.0200	2.28		Shallow Concentrated Flow, SCF Unpaved Kv= 16.1 fps
13.5	950	Total			

Subcatchment 1S: Drainage Area (PRE)

Hydrograph



Summary for Subcatchment 2S: Drainage Area (POST)

[49] Hint: Tc<2dt may require smaller dt

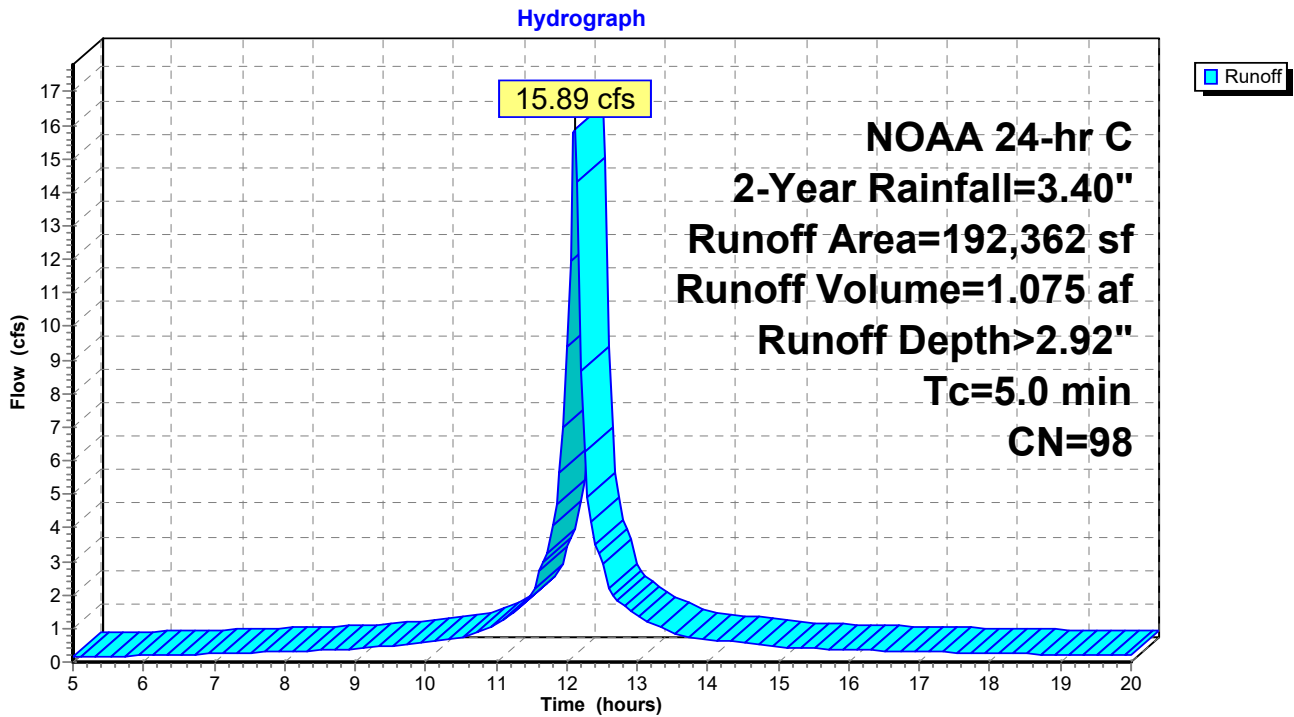
Runoff = 15.89 cfs @ 12.11 hrs, Volume= 1.075 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 2-Year Rainfall=3.40"

Area (sf)	CN	Description
192,362	98	Paved parking, HSG A
192,362		100.00% Impervious Area

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

Subcatchment 2S: Drainage Area (POST)



Summary for Pond 3P: Infiltration bed

[82] Warning: Early inflow requires earlier time span

Inflow Area = 4.416 ac, 100.00% Impervious, Inflow Depth > 2.92" for 2-Year event
 Inflow = 15.89 cfs @ 12.11 hrs, Volume= 1.075 af
 Outflow = 1.38 cfs @ 13.01 hrs, Volume= 1.071 af, Atten= 91%, Lag= 54.0 min
 Discarded = 1.38 cfs @ 13.01 hrs, Volume= 1.071 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,566.54' @ 13.01 hrs Surf.Area= 46,000 sf Storage= 19,671 cf

Plug-Flow detention time= 119.4 min calculated for 1.071 af (100% of inflow)
 Center-of-Mass det. time= 117.5 min (854.7 - 737.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,565.50'	1,113 cf	18.0" Round Pipe Storage Inside #2 L= 630.0'
#2	1,565.50'	63,955 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 161,000 cf Overall - 1,113 cf Embedded = 159,887 cf x 40.0% Voids
		65,068 cf	Total Available Storage

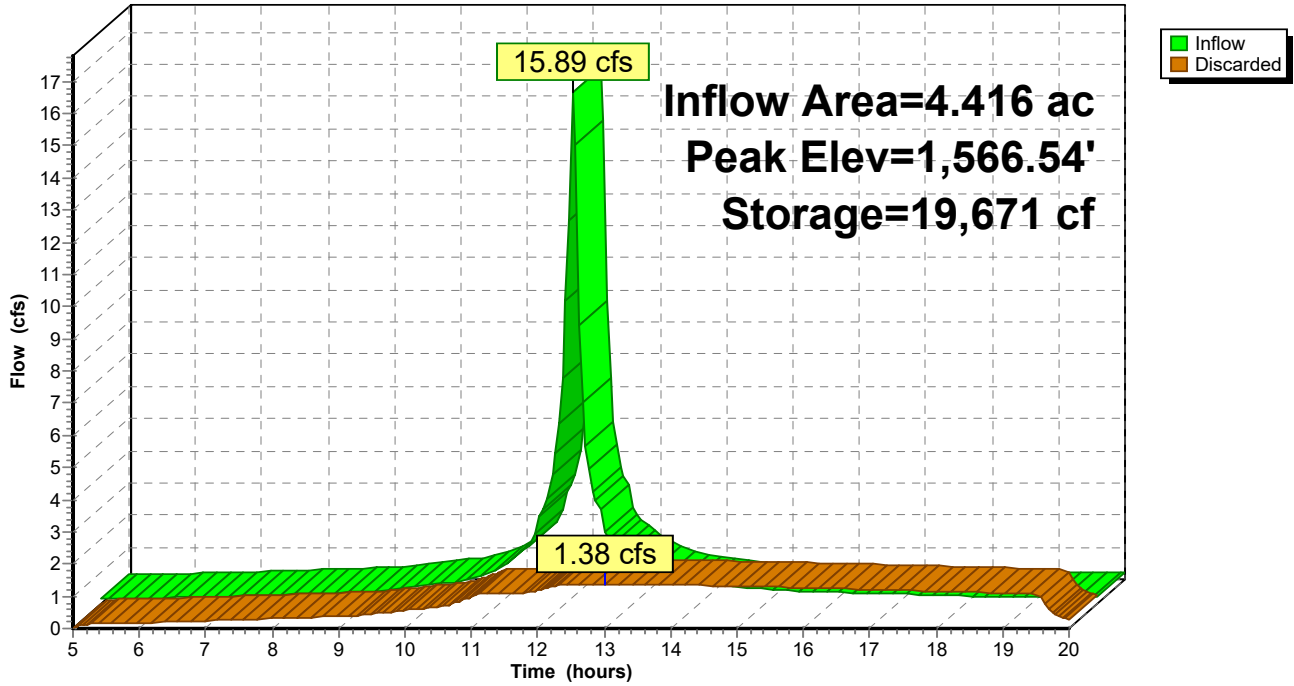
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,565.50	46,000	0	0
1,569.00	46,000	161,000	161,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,565.50'	1.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1,562.00'

Discarded OutFlow Max=1.38 cfs @ 13.01 hrs HW=1,566.54' (Free Discharge)
 ↑1=Exfiltration (Controls 1.38 cfs)

Pond 3P: Infiltration bed

Hydrograph



PCSM Design

NOAA 24-hr C 5-Year Rainfall=4.30"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area (PRE) Runoff Area=192,362 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=950' Tc=13.5 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment 2S: Drainage Area (POST) Runoff Area=192,362 sf 100.00% Impervious Runoff Depth>3.73"
Tc=5.0 min CN=98 Runoff=20.18 cfs 1.374 af

Pond 3P: Infiltration bed Peak Elev=1,566.94' Storage=27,094 cf Inflow=20.18 cfs 1.374 af
Outflow=1.50 cfs 1.227 af

Total Runoff Area = 8.832 ac Runoff Volume = 1.374 af Average Runoff Depth = 1.87"
50.00% Pervious = 4.416 ac 50.00% Impervious = 4.416 ac

Summary for Subcatchment 1S: Drainage Area (PRE)

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

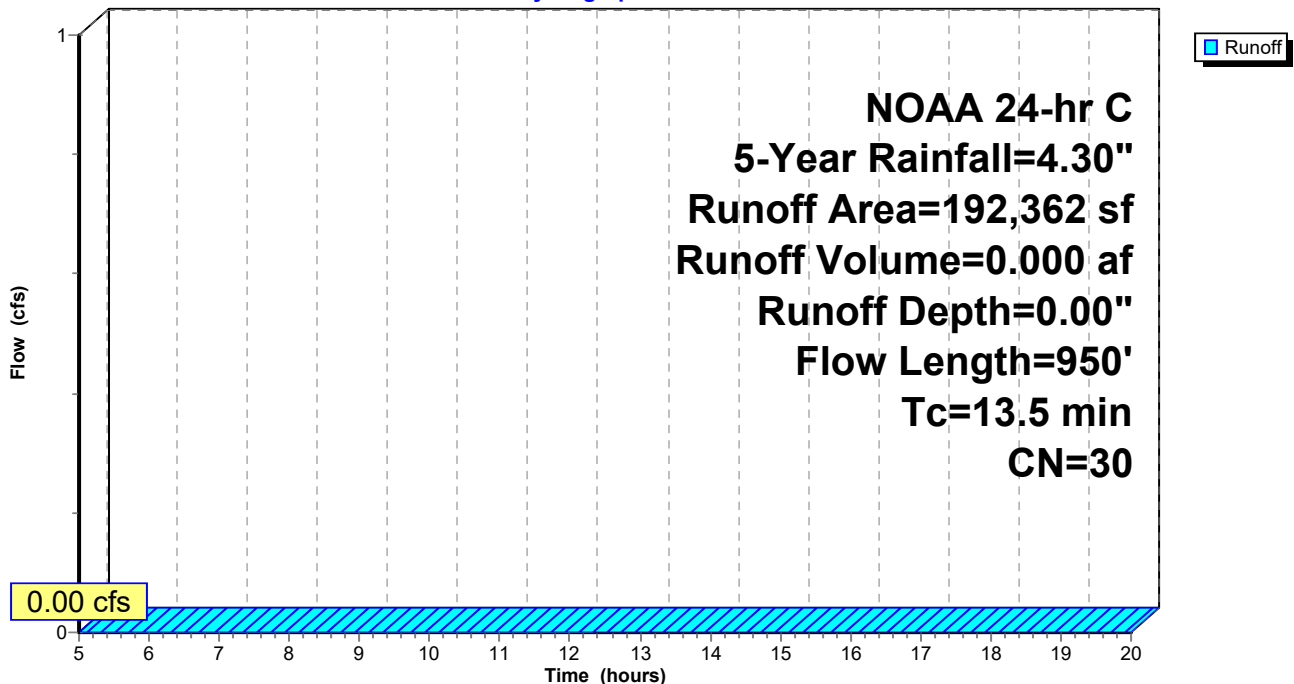
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 5-Year Rainfall=4.30"

Area (sf)	CN	Description
192,362	30	Meadow, non-grazed, HSG A
192,362		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	100	0.1000	0.23		Sheet Flow, Sheet Grass: Dense n= 0.240 P2= 3.40"
6.2	850	0.0200	2.28		Shallow Concentrated Flow, SCF Unpaved Kv= 16.1 fps
13.5	950	Total			

Subcatchment 1S: Drainage Area (PRE)

Hydrograph



Summary for Subcatchment 2S: Drainage Area (POST)

[49] Hint: $T_c < 2dt$ may require smaller dt

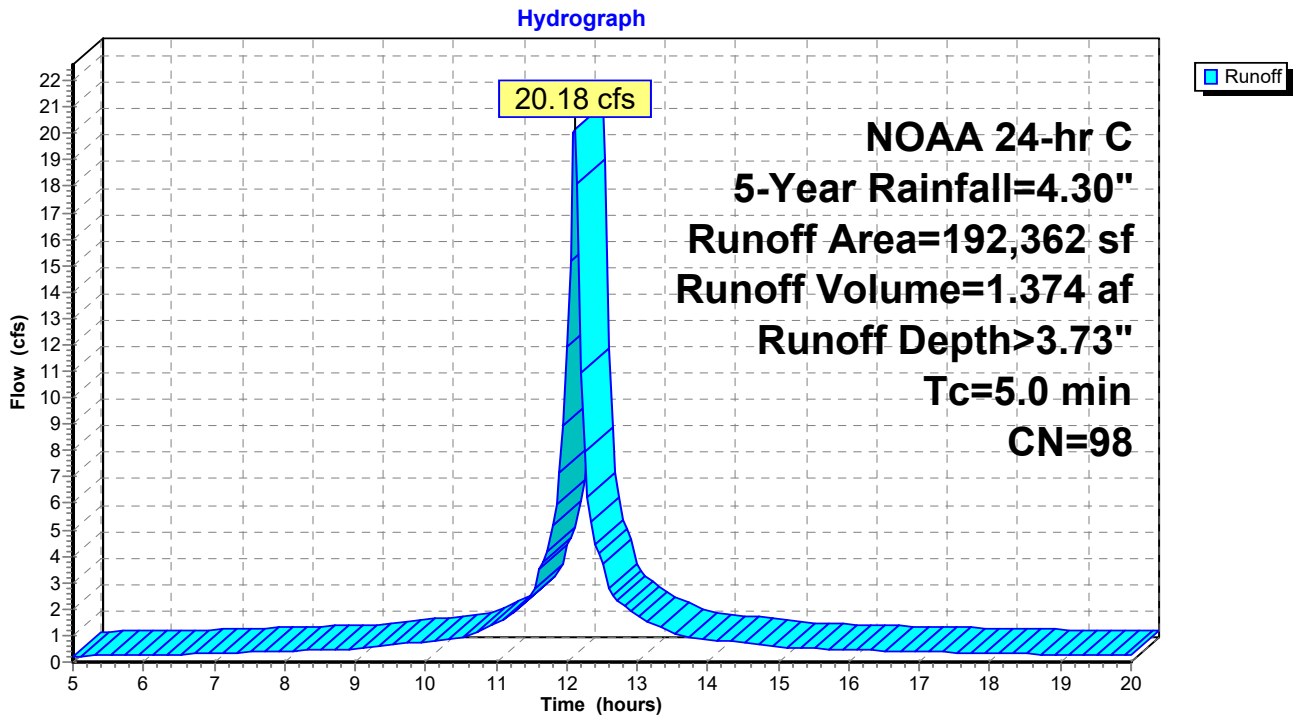
Runoff = 20.18 cfs @ 12.11 hrs, Volume= 1.374 af, Depth> 3.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 5-Year Rainfall=4.30"

Area (sf)	CN	Description
192,362	98	Paved parking, HSG A
192,362		100.00% Impervious Area

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

Subcatchment 2S: Drainage Area (POST)



Summary for Pond 3P: Infiltration bed

[82] Warning: Early inflow requires earlier time span

Inflow Area = 4.416 ac, 100.00% Impervious, Inflow Depth > 3.73" for 5-Year event
 Inflow = 20.18 cfs @ 12.11 hrs, Volume= 1.374 af
 Outflow = 1.50 cfs @ 13.15 hrs, Volume= 1.227 af, Atten= 93%, Lag= 62.1 min
 Discarded = 1.50 cfs @ 13.15 hrs, Volume= 1.227 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,566.94' @ 13.15 hrs Surf.Area= 46,000 sf Storage= 27,094 cf

Plug-Flow detention time= 153.5 min calculated for 1.227 af (89% of inflow)
 Center-of-Mass det. time= 117.1 min (852.5 - 735.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,565.50'	1,113 cf	18.0" Round Pipe Storage Inside #2 L= 630.0'
#2	1,565.50'	63,955 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 161,000 cf Overall - 1,113 cf Embedded = 159,887 cf x 40.0% Voids
		65,068 cf	Total Available Storage

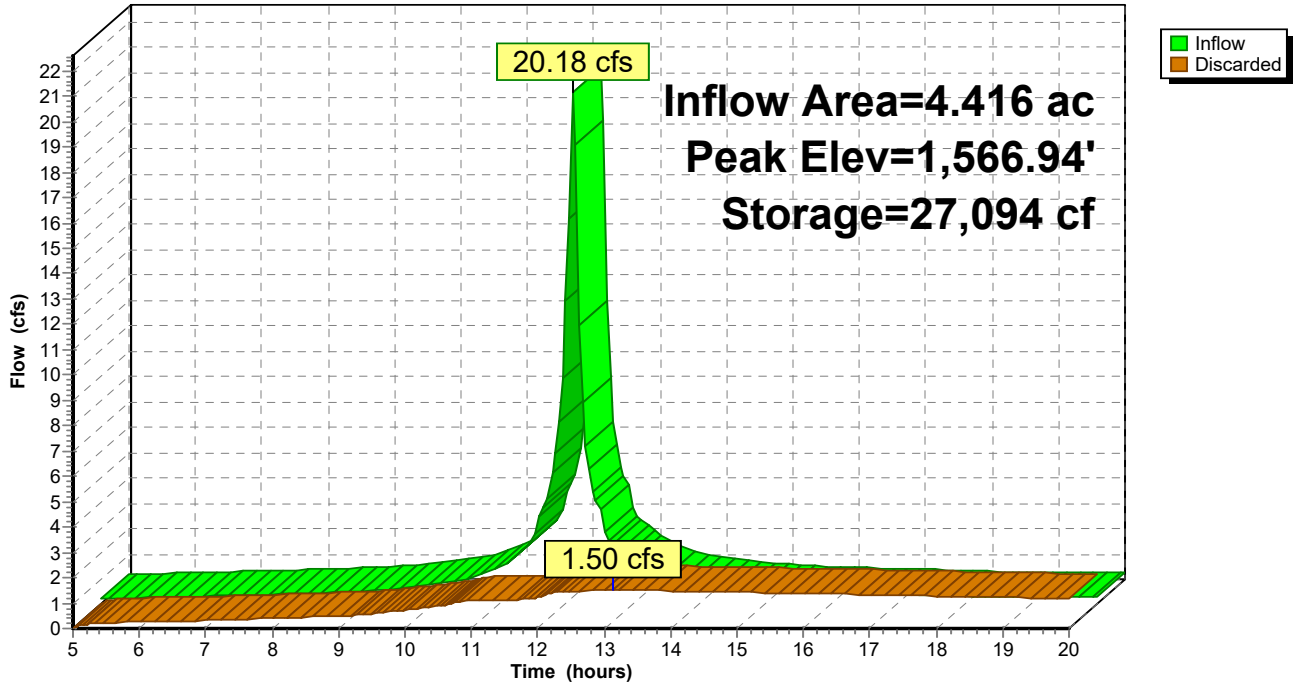
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,565.50	46,000	0	0
1,569.00	46,000	161,000	161,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,565.50'	1.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1,562.00'

Discarded OutFlow Max=1.50 cfs @ 13.15 hrs HW=1,566.94' (Free Discharge)
 ↑1=Exfiltration (Controls 1.50 cfs)

Pond 3P: Infiltration bed

Hydrograph



PCSM Design

NOAA 24-hr C 10-Year Rainfall=5.00"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area (PRE) Runoff Area=192,362 sf 0.00% Impervious Runoff Depth>0.00"
Flow Length=950' Tc=13.5 min CN=30 Runoff=0.00 cfs 0.000 af

Subcatchment 2S: Drainage Area (POST) Runoff Area=192,362 sf 100.00% Impervious Runoff Depth>4.36"
Tc=5.0 min CN=98 Runoff=23.51 cfs 1.605 af

Pond 3P: Infiltration bed Peak Elev=1,567.26' Storage=33,057 cf Inflow=23.51 cfs 1.605 af
Outflow=1.60 cfs 1.330 af

Total Runoff Area = 8.832 ac Runoff Volume = 1.605 af Average Runoff Depth = 2.18"
50.00% Pervious = 4.416 ac 50.00% Impervious = 4.416 ac

Summary for Subcatchment 2S: Drainage Area (POST)

[49] Hint: $T_c < 2dt$ may require smaller dt

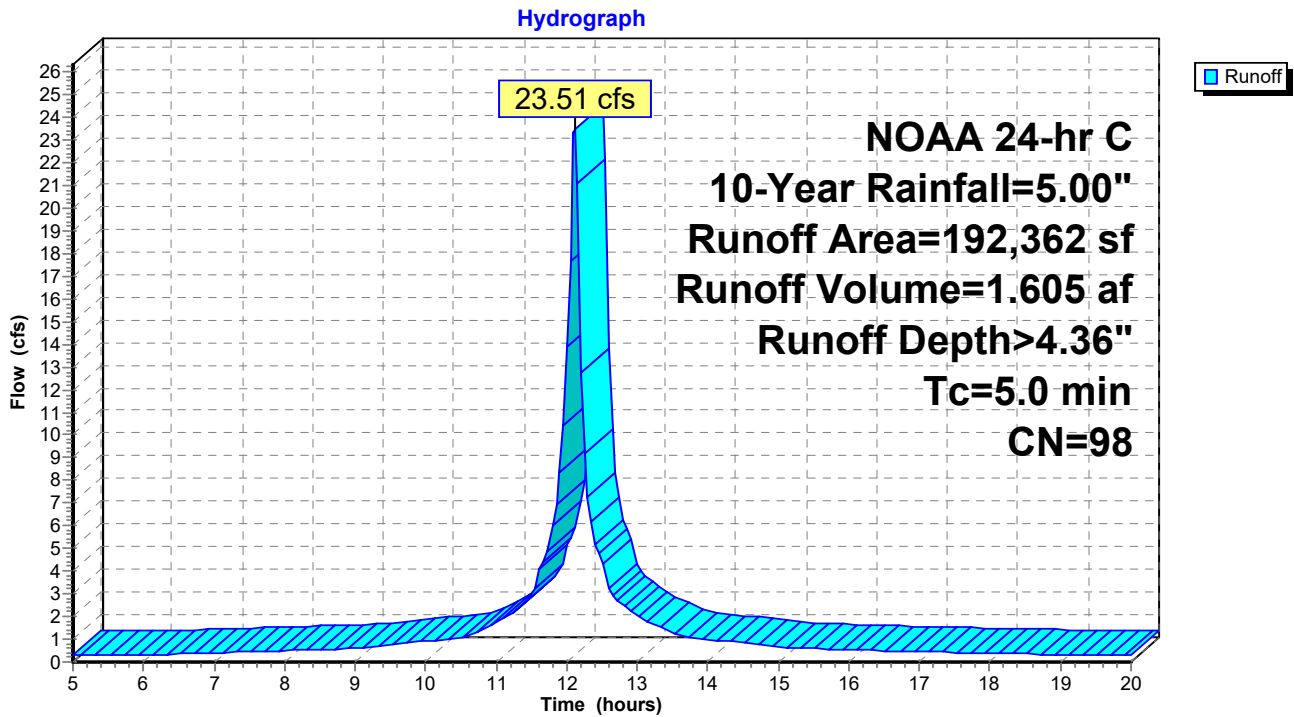
Runoff = 23.51 cfs @ 12.11 hrs, Volume= 1.605 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.00"

Area (sf)	CN	Description
192,362	98	Paved parking, HSG A
192,362		100.00% Impervious Area

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

Subcatchment 2S: Drainage Area (POST)



Summary for Pond 3P: Infiltration bed

[82] Warning: Early inflow requires earlier time span

Inflow Area = 4.416 ac, 100.00% Impervious, Inflow Depth > 4.36" for 10-Year event
 Inflow = 23.51 cfs @ 12.11 hrs, Volume= 1.605 af
 Outflow = 1.60 cfs @ 13.25 hrs, Volume= 1.330 af, Atten= 93%, Lag= 68.5 min
 Discarded = 1.60 cfs @ 13.25 hrs, Volume= 1.330 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,567.26' @ 13.25 hrs Surf.Area= 46,000 sf Storage= 33,057 cf

Plug-Flow detention time= 161.7 min calculated for 1.326 af (83% of inflow)
 Center-of-Mass det. time= 113.1 min (847.7 - 734.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,565.50'	1,113 cf	18.0" Round Pipe Storage Inside #2 L= 630.0'
#2	1,565.50'	63,955 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 161,000 cf Overall - 1,113 cf Embedded = 159,887 cf x 40.0% Voids
		65,068 cf	Total Available Storage

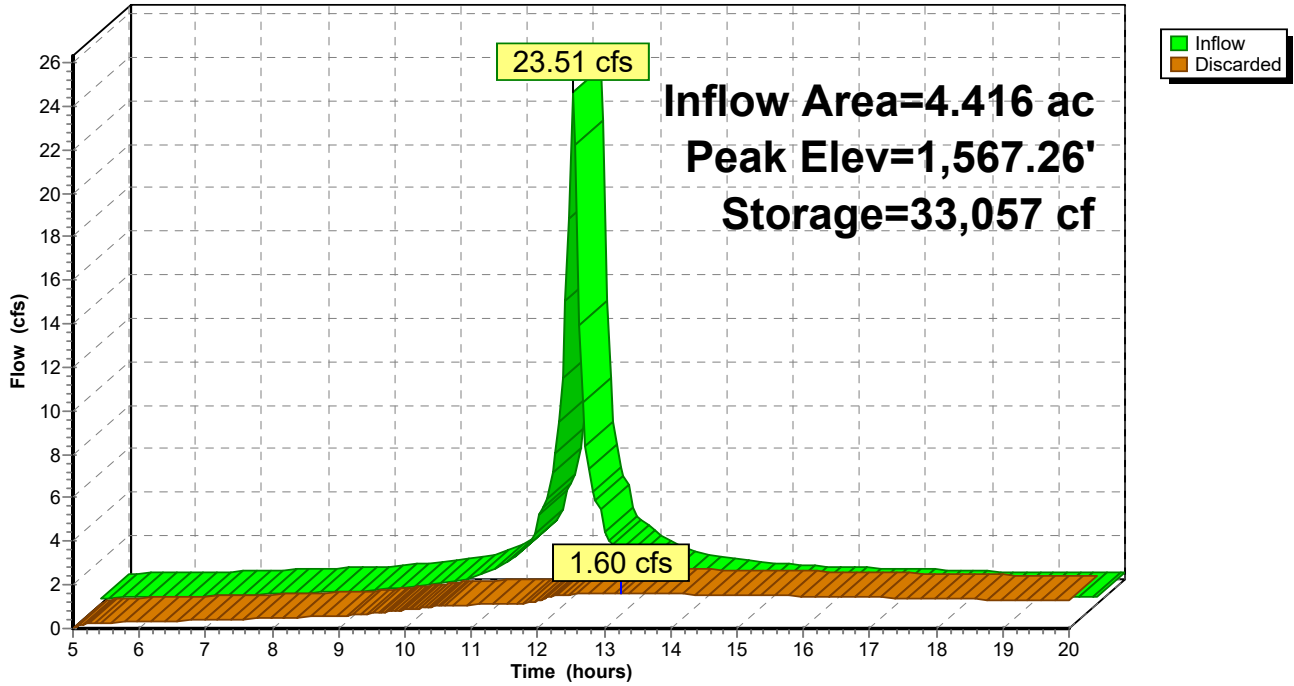
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,565.50	46,000	0	0
1,569.00	46,000	161,000	161,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,565.50'	1.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1,562.00'

Discarded OutFlow Max=1.60 cfs @ 13.25 hrs HW=1,567.26' (Free Discharge)
 ↑1=Exfiltration (Controls 1.60 cfs)

Pond 3P: Infiltration bed

Hydrograph



PCSM Design

NOAA 24-hr C 25-Year Rainfall=6.20"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area (PRE) Runoff Area=192,362 sf 0.00% Impervious Runoff Depth>0.06"
Flow Length=950' Tc=13.5 min CN=30 Runoff=0.04 cfs 0.022 af

Subcatchment 2S: Drainage Area (POST) Runoff Area=192,362 sf 100.00% Impervious Runoff Depth>5.44"
Tc=5.0 min CN=98 Runoff=29.21 cfs 2.001 af

Pond 3P: Infiltration bed Peak Elev=1,567.84' Storage=43,673 cf Inflow=29.21 cfs 2.001 af
Outflow=1.78 cfs 1.502 af

Total Runoff Area = 8.832 ac Runoff Volume = 2.023 af Average Runoff Depth = 2.75"
50.00% Pervious = 4.416 ac 50.00% Impervious = 4.416 ac

Summary for Subcatchment 1S: Drainage Area (PRE)

Runoff = 0.04 cfs @ 14.70 hrs, Volume= 0.022 af, Depth> 0.06"

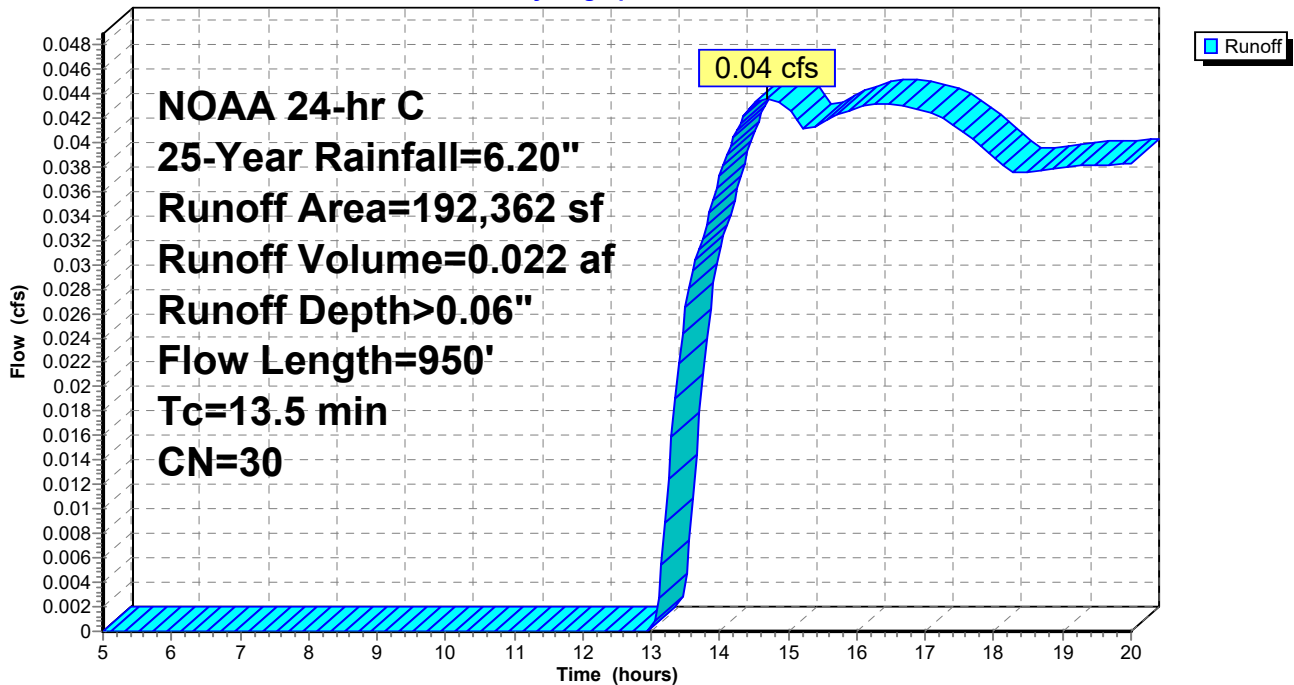
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 25-Year Rainfall=6.20"

Area (sf)	CN	Description
192,362	30	Meadow, non-grazed, HSG A
192,362		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	100	0.1000	0.23		Sheet Flow, Sheet Grass: Dense n= 0.240 P2= 3.40"
6.2	850	0.0200	2.28		Shallow Concentrated Flow, SCF Unpaved Kv= 16.1 fps
13.5	950	Total			

Subcatchment 1S: Drainage Area (PRE)

Hydrograph



Summary for Subcatchment 2S: Drainage Area (POST)

[49] Hint: $T_c < 2dt$ may require smaller dt

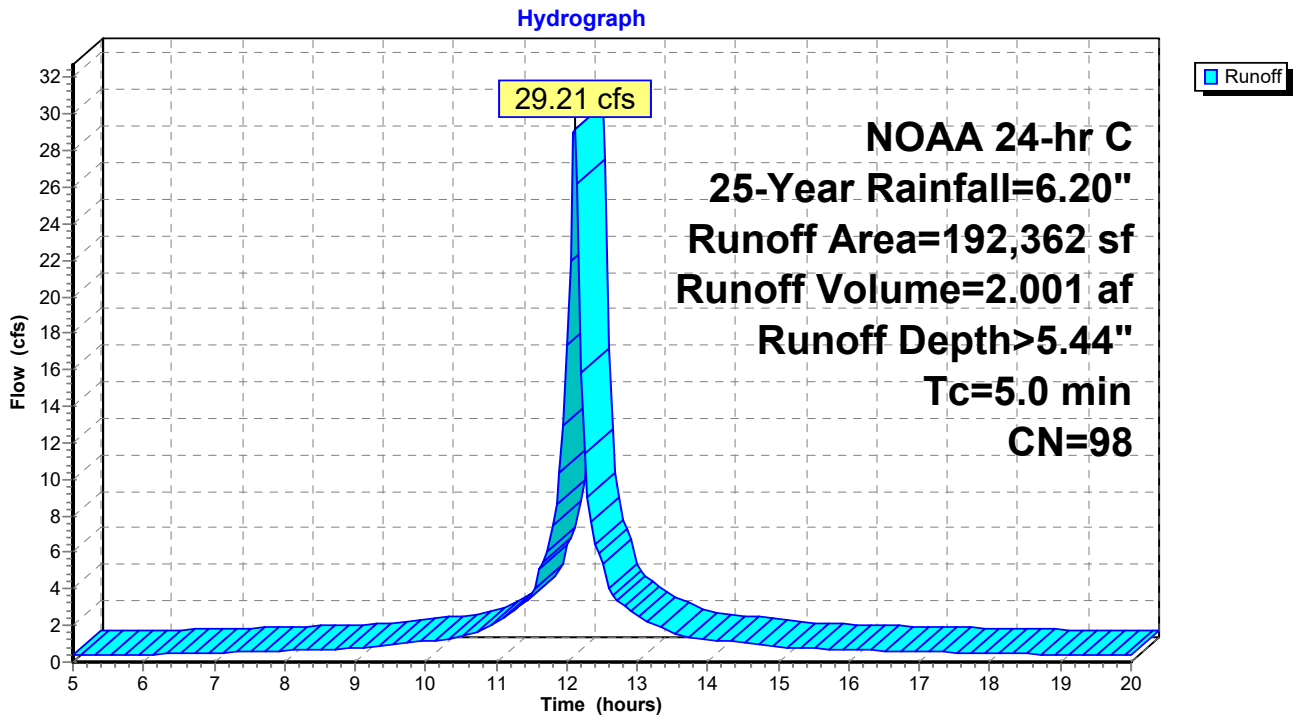
Runoff = 29.21 cfs @ 12.11 hrs, Volume= 2.001 af, Depth> 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 25-Year Rainfall=6.20"

Area (sf)	CN	Description
192,362	98	Paved parking, HSG A
192,362		100.00% Impervious Area

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

Subcatchment 2S: Drainage Area (POST)



Summary for Pond 3P: Infiltration bed

[82] Warning: Early inflow requires earlier time span

Inflow Area = 4.416 ac, 100.00% Impervious, Inflow Depth > 5.44" for 25-Year event
 Inflow = 29.21 cfs @ 12.11 hrs, Volume= 2.001 af
 Outflow = 1.78 cfs @ 13.39 hrs, Volume= 1.502 af, Atten= 94%, Lag= 76.5 min
 Discarded = 1.78 cfs @ 13.39 hrs, Volume= 1.502 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,567.84' @ 13.39 hrs Surf.Area= 46,000 sf Storage= 43,673 cf

Plug-Flow detention time= 169.3 min calculated for 1.502 af (75% of inflow)
 Center-of-Mass det. time= 108.8 min (842.4 - 733.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,565.50'	1,113 cf	18.0" Round Pipe Storage Inside #2 L= 630.0'
#2	1,565.50'	63,955 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 161,000 cf Overall - 1,113 cf Embedded = 159,887 cf x 40.0% Voids
		65,068 cf	Total Available Storage

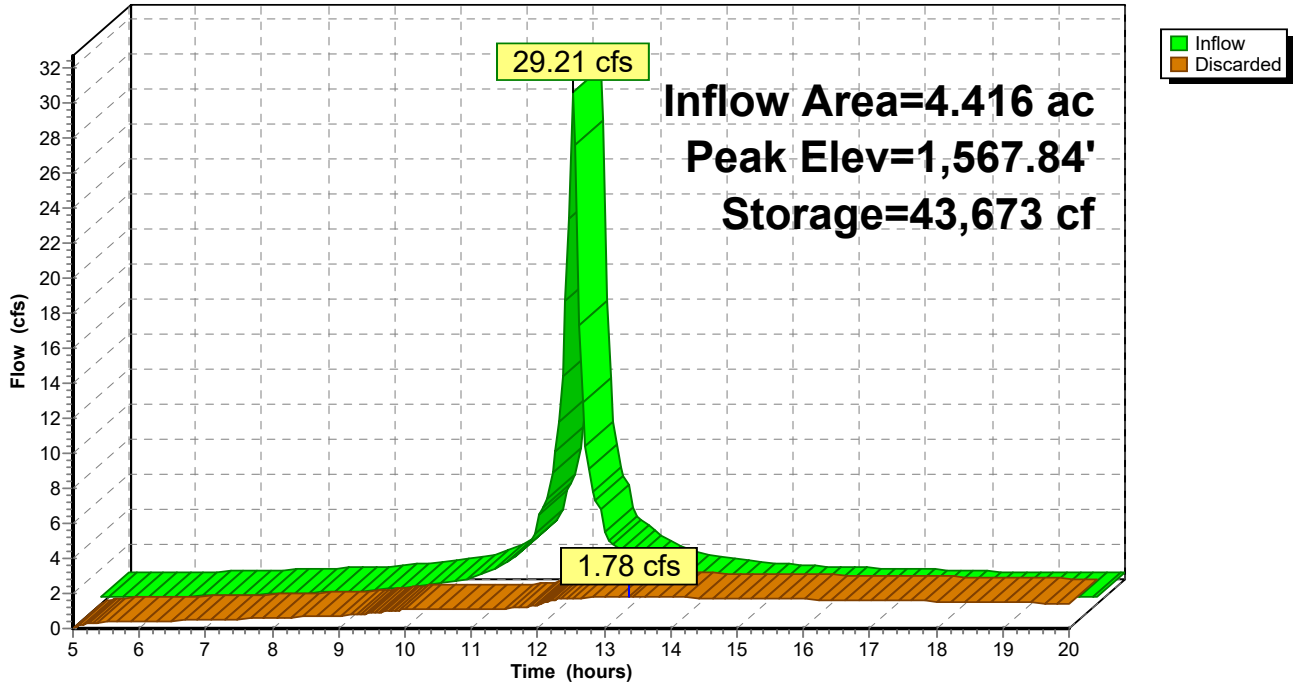
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,565.50	46,000	0	0
1,569.00	46,000	161,000	161,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,565.50'	1.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1,562.00'

Discarded OutFlow Max=1.78 cfs @ 13.39 hrs HW=1,567.84' (Free Discharge)
 ↑1=Exfiltration (Controls 1.78 cfs)

Pond 3P: Infiltration bed

Hydrograph



PCSM Design

NOAA 24-hr C 50-Year Rainfall=7.11"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area (PRE) Runoff Area=192,362 sf 0.00% Impervious Runoff Depth>0.17"
Flow Length=950' Tc=13.5 min CN=30 Runoff=0.16 cfs 0.062 af

Subcatchment 2S: Drainage Area (POST) Runoff Area=192,362 sf 100.00% Impervious Runoff Depth>6.25"
Tc=5.0 min CN=98 Runoff=33.52 cfs 2.301 af

Pond 3P: Infiltration bed Peak Elev=1,568.29' Storage=51,997 cf Inflow=33.52 cfs 2.301 af
Outflow=1.91 cfs 1.629 af

Total Runoff Area = 8.832 ac Runoff Volume = 2.363 af Average Runoff Depth = 3.21"
50.00% Pervious = 4.416 ac 50.00% Impervious = 4.416 ac

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NOAA 24-hr C 50-Year Rainfall=7.11"

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Summary for Subcatchment 1S: Drainage Area (PRE)

Runoff = 0.16 cfs @ 13.06 hrs, Volume= 0.062 af, Depth> 0.17"

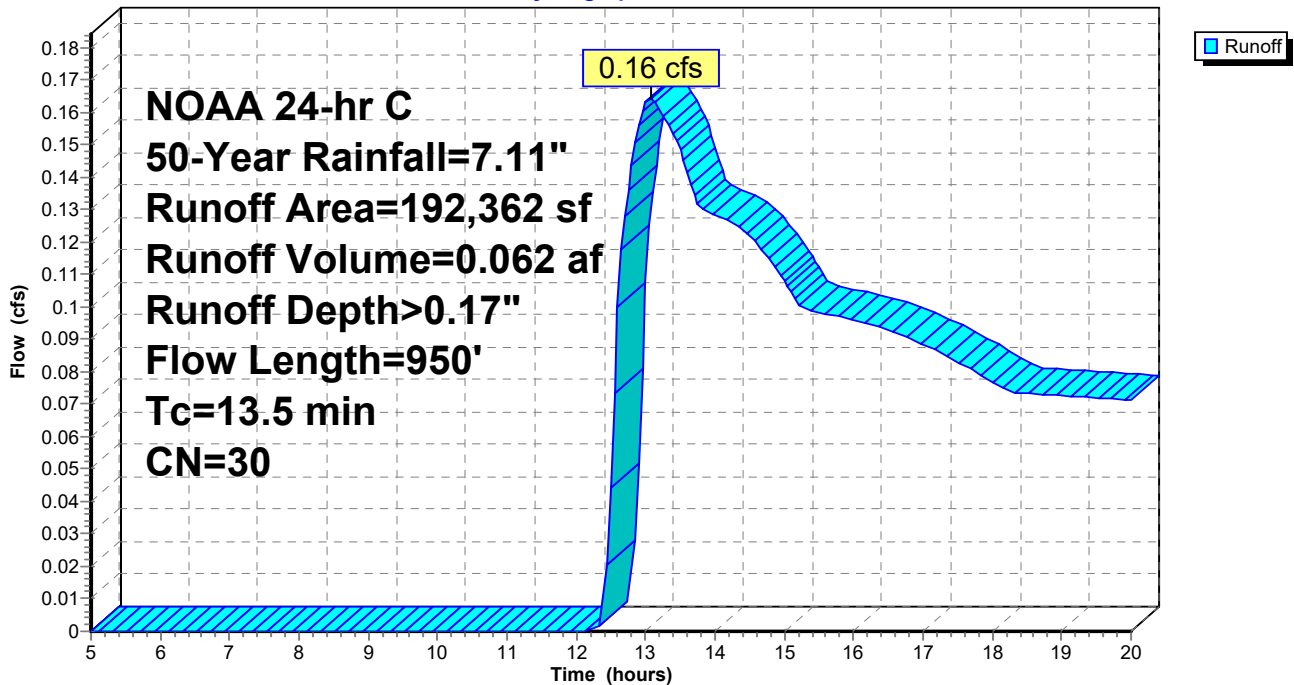
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 50-Year Rainfall=7.11"

Area (sf)	CN	Description
192,362	30	Meadow, non-grazed, HSG A
192,362		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	100	0.1000	0.23		Sheet Flow, Sheet Grass: Dense n= 0.240 P2= 3.40"
6.2	850	0.0200	2.28		Shallow Concentrated Flow, SCF Unpaved Kv= 16.1 fps
13.5	950	Total			

Subcatchment 1S: Drainage Area (PRE)

Hydrograph



Summary for Subcatchment 2S: Drainage Area (POST)

[49] Hint: $T_c < 2dt$ may require smaller dt

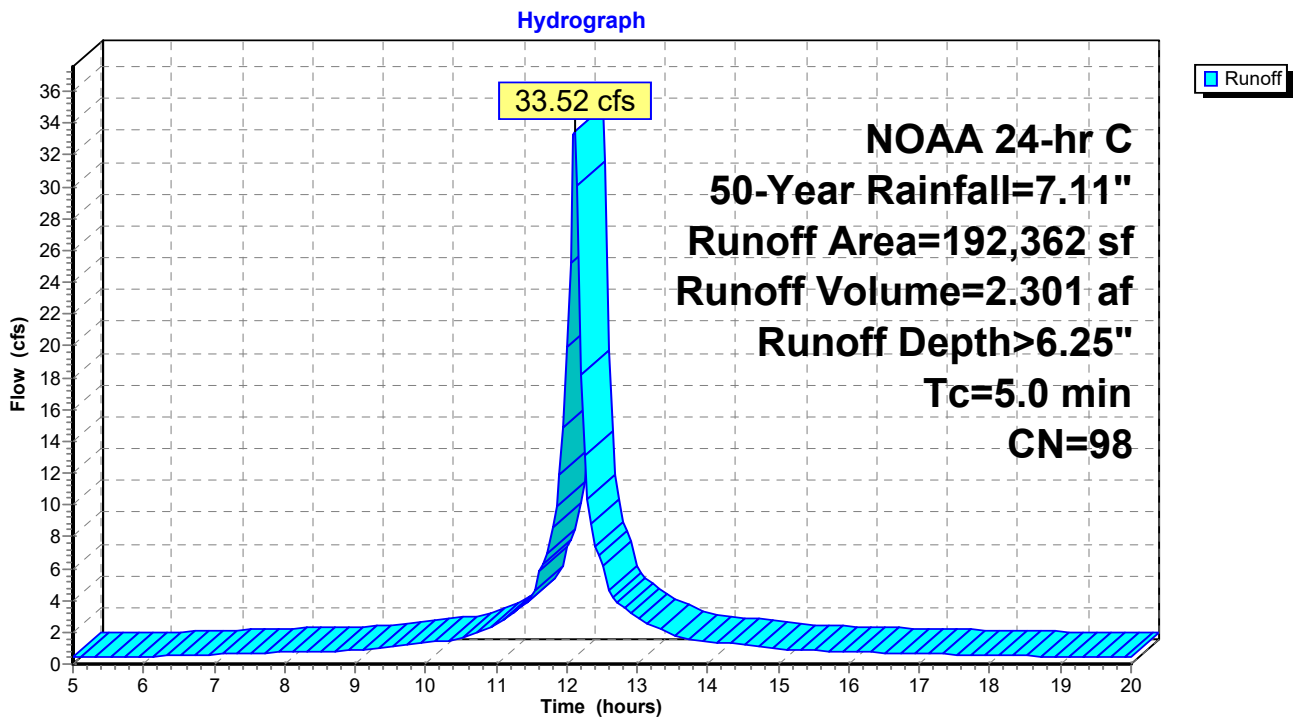
Runoff = 33.52 cfs @ 12.11 hrs, Volume= 2.301 af, Depth> 6.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 50-Year Rainfall=7.11"

Area (sf)	CN	Description
192,362	98	Paved parking, HSG A
192,362		100.00% Impervious Area

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

Subcatchment 2S: Drainage Area (POST)



Summary for Pond 3P: Infiltration bed

[82] Warning: Early inflow requires earlier time span

Inflow Area = 4.416 ac, 100.00% Impervious, Inflow Depth > 6.25" for 50-Year event
 Inflow = 33.52 cfs @ 12.11 hrs, Volume= 2.301 af
 Outflow = 1.91 cfs @ 13.45 hrs, Volume= 1.629 af, Atten= 94%, Lag= 80.6 min
 Discarded = 1.91 cfs @ 13.45 hrs, Volume= 1.629 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,568.29' @ 13.45 hrs Surf.Area= 46,000 sf Storage= 51,997 cf

Plug-Flow detention time= 173.0 min calculated for 1.628 af (71% of inflow)
 Center-of-Mass det. time= 107.2 min (840.3 - 733.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,565.50'	1,113 cf	18.0" Round Pipe Storage Inside #2 L= 630.0'
#2	1,565.50'	63,955 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 161,000 cf Overall - 1,113 cf Embedded = 159,887 cf x 40.0% Voids
		65,068 cf	Total Available Storage

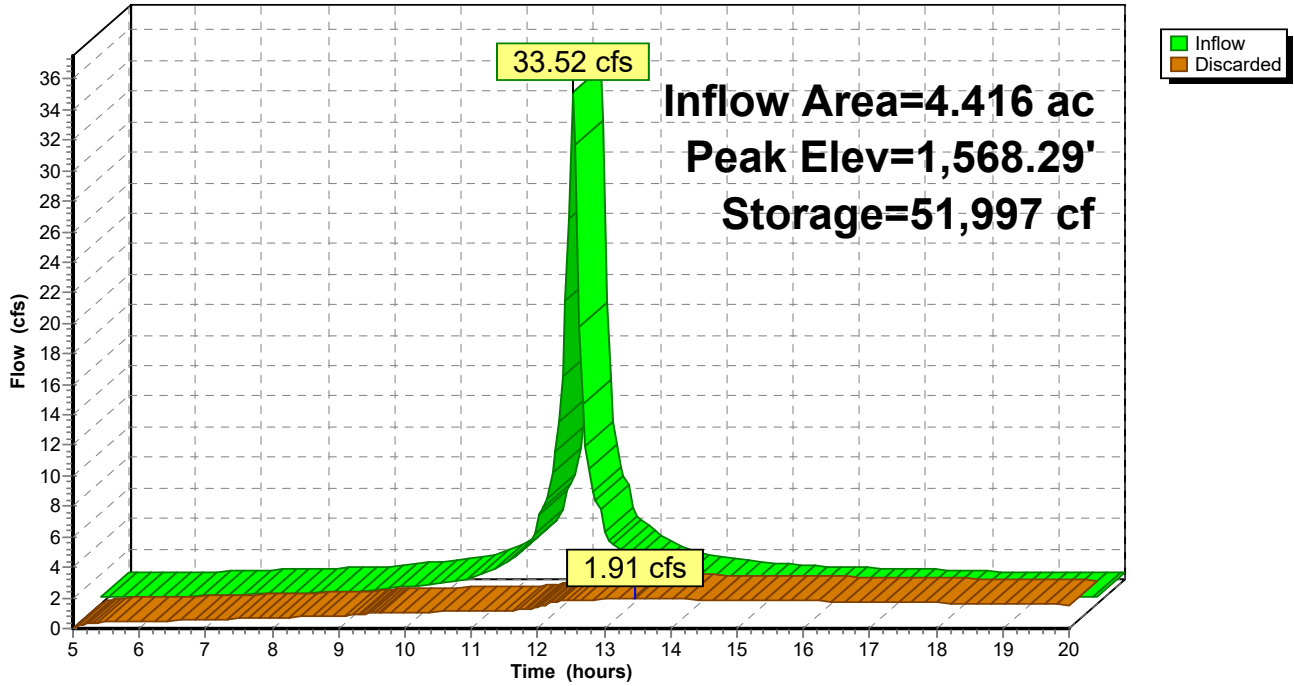
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,565.50	46,000	0	0
1,569.00	46,000	161,000	161,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,565.50'	1.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1,562.00'

Discarded OutFlow Max=1.91 cfs @ 13.45 hrs HW=1,568.29' (Free Discharge)
 ↑1=Exfiltration (Controls 1.91 cfs)

Pond 3P: Infiltration bed

Hydrograph



PCSM Design

NOAA 24-hr C 100-Year Rainfall=8.40"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area (PRE) Runoff Area=192,362 sf 0.00% Impervious Runoff Depth>0.41"
Flow Length=950' Tc=13.5 min CN=30 Runoff=0.66 cfs 0.150 af

Subcatchment 2S: Drainage Area (POST) Runoff Area=192,362 sf 100.00% Impervious Runoff Depth>7.41"
Tc=5.0 min CN=98 Runoff=39.63 cfs 2.725 af

Pond 3P: Infiltration bed Peak Elev=1,568.94' Storage=64,034 cf Inflow=39.63 cfs 2.725 af
Outflow=2.11 cfs 1.805 af

Total Runoff Area = 8.832 ac Runoff Volume = 2.876 af Average Runoff Depth = 3.91"
50.00% Pervious = 4.416 ac 50.00% Impervious = 4.416 ac

PCSM Design

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NOAA 24-hr C 100-Year Rainfall=8.40"

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Summary for Subcatchment 1S: Drainage Area (PRE)

Runoff = 0.66 cfs @ 12.58 hrs, Volume= 0.150 af, Depth> 0.41"

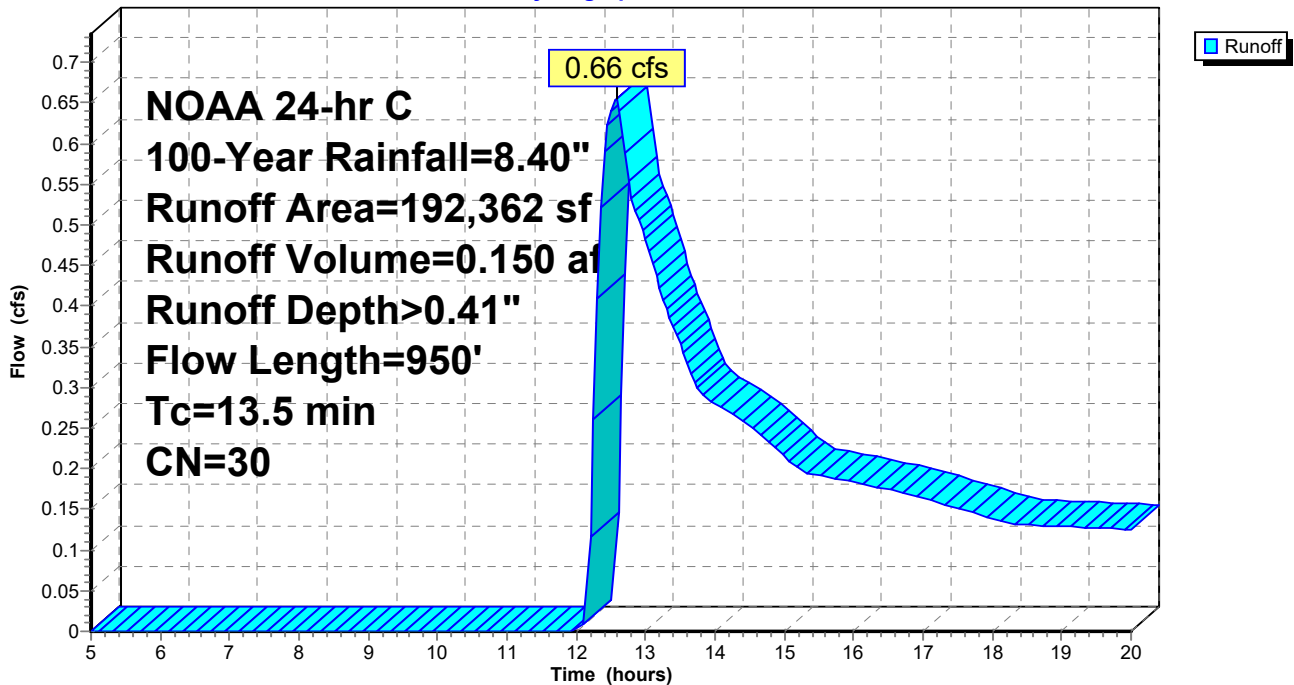
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.40"

Area (sf)	CN	Description
192,362	30	Meadow, non-grazed, HSG A
192,362		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	100	0.1000	0.23		Sheet Flow, Sheet Grass: Dense n= 0.240 P2= 3.40"
6.2	850	0.0200	2.28		Shallow Concentrated Flow, SCF Unpaved Kv= 16.1 fps
13.5	950	Total			

Subcatchment 1S: Drainage Area (PRE)

Hydrograph



Summary for Subcatchment 2S: Drainage Area (POST)

[49] Hint: Tc<2dt may require smaller dt

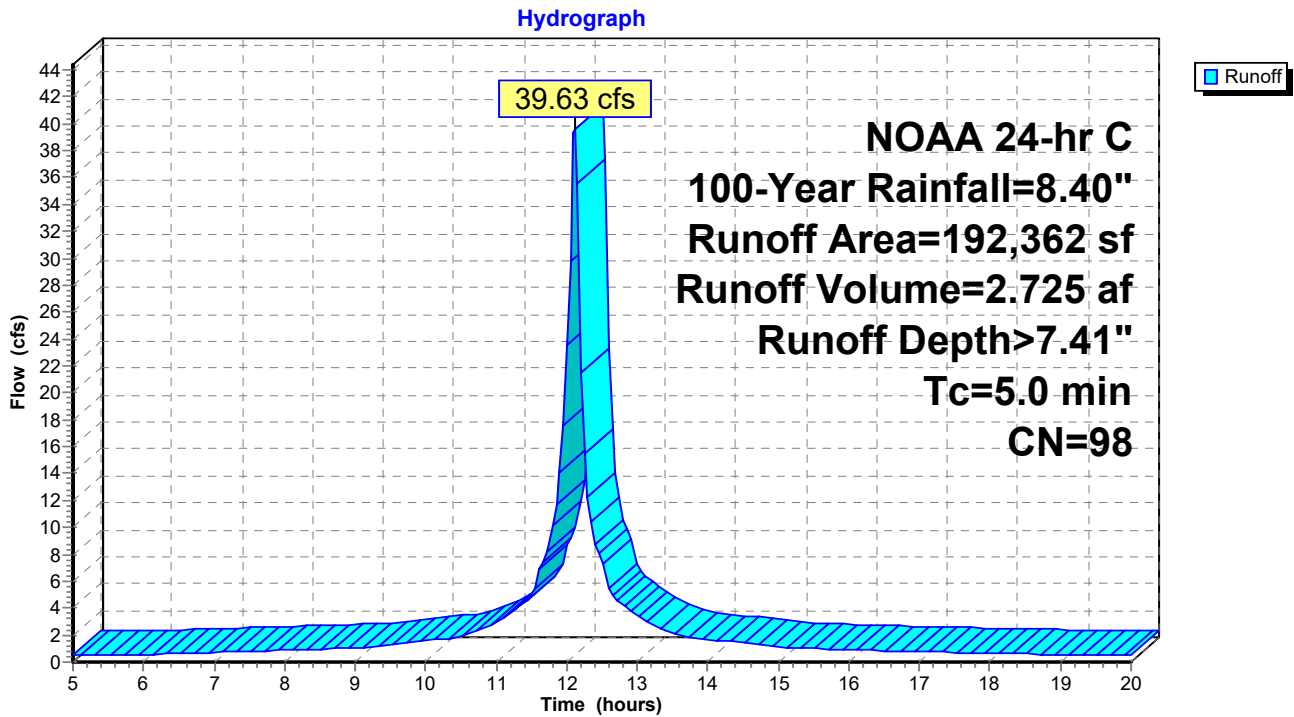
Runoff = 39.63 cfs @ 12.11 hrs, Volume= 2.725 af, Depth> 7.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.40"

Area (sf)	CN	Description
192,362	98	Paved parking, HSG A
192,362		100.00% Impervious Area

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

Subcatchment 2S: Drainage Area (POST)



Summary for Pond 3P: Infiltration bed

[82] Warning: Early inflow requires earlier time span

Inflow Area = 4.416 ac, 100.00% Impervious, Inflow Depth > 7.41" for 100-Year event
 Inflow = 39.63 cfs @ 12.11 hrs, Volume= 2.725 af
 Outflow = 2.11 cfs @ 13.52 hrs, Volume= 1.805 af, Atten= 95%, Lag= 84.7 min
 Discarded = 2.11 cfs @ 13.52 hrs, Volume= 1.805 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 1,568.94' @ 13.52 hrs Surf.Area= 46,000 sf Storage= 64,034 cf

Plug-Flow detention time= 176.5 min calculated for 1.798 af (66% of inflow)
 Center-of-Mass det. time= 106.2 min (838.9 - 732.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,565.50'	1,113 cf	18.0" Round Pipe Storage Inside #2 L= 630.0'
#2	1,565.50'	63,955 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 161,000 cf Overall - 1,113 cf Embedded = 159,887 cf x 40.0% Voids
		65,068 cf	Total Available Storage

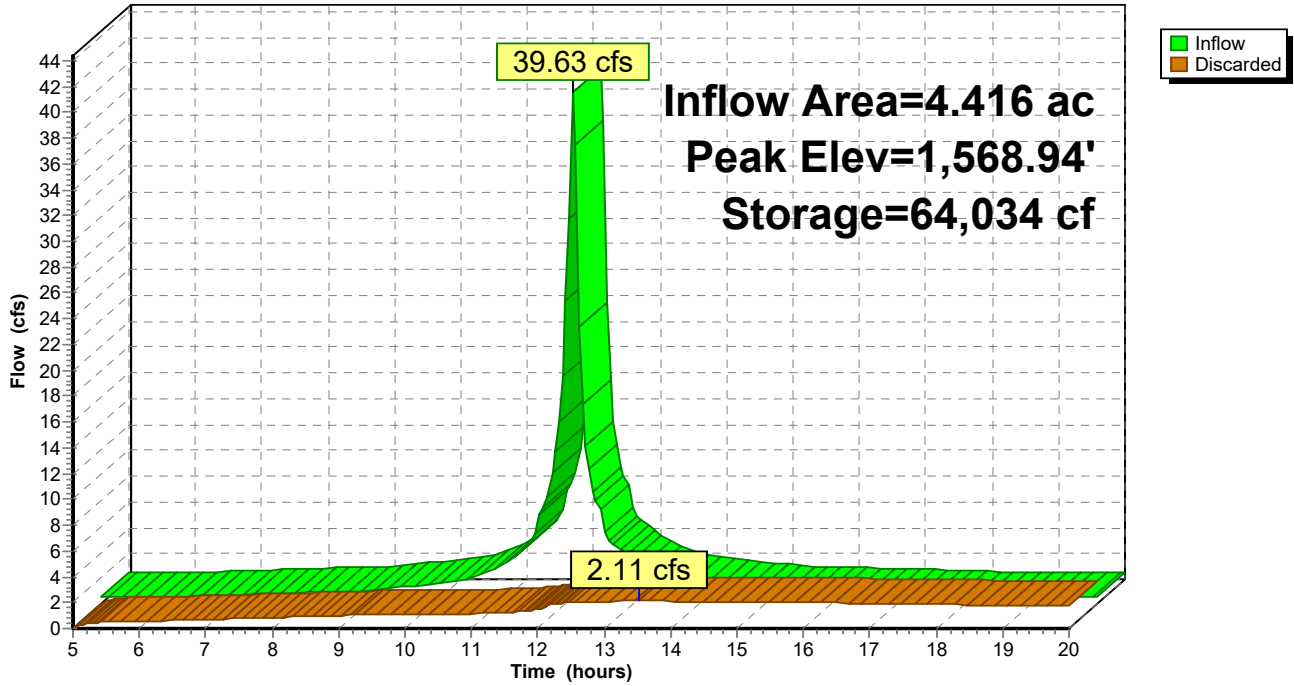
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,565.50	46,000	0	0
1,569.00	46,000	161,000	161,000

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,565.50'	1.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1,562.00'

Discarded OutFlow Max=2.11 cfs @ 13.52 hrs HW=1,568.94' (Free Discharge)
 ↑1=Exfiltration (Controls 2.11 cfs)

Pond 3P: Infiltration bed

Hydrograph



ATTACHMENT I-5
LUZERNE COUNTY STORMWATER ORDINANCE

Chapter 424

STORMWATER MANAGEMENT

[HISTORY: Adopted by the City Council of the City of Hazleton 4-27-2011 by Ord. No. 2011-5. Amendments noted where applicable.]

ARTICLE I
General Provisions

§ 424-1. Title.

This chapter shall be known and may be cited as the "City of Hazleton Stormwater Management Ordinance" and supersede in entirety Ordinance 2007-11 "City of Hazleton Stormwater Management Ordinance."

§ 424-2. Findings.

The governing body of the City of Hazleton finds that:

- A. Inadequate management of accelerated runoff of stormwater resulting from development throughout a watershed increases flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities to carry and control stormwater, undermines floodplain management and flood control efforts in downstream communities, reduces groundwater recharge, threatens public health and safety, and increases nonpoint source pollution of water resources.
- B. A comprehensive program of stormwater management, including reasonable regulation of development and activities causing accelerated runoff, is fundamental to the public health, safety, and welfare and the protection of people of the commonwealth, their resources, and the environment.
- C. Stormwater is an important water resource, which provides groundwater recharge for water supplies and base flow of streams, which also protects and maintains surface water quality.
- D. Federal and state regulations require certain municipalities to implement a program of stormwater controls. These municipalities are required to obtain a permit for stormwater discharges from their separate storm sewer systems under the National Pollutant Discharge Elimination System (NPDES).

§ 424-3. Purpose.

The purpose of this chapter is to promote health, safety, and welfare within the City and its watershed by minimizing the harms and maximizing the benefits described in § 424-2 of this chapter, through provisions designed to:

- A. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code Ch. 93, to protect, maintain, reclaim, and restore the existing and designated uses of the waters of this commonwealth.
- B. Preserve the natural drainage systems as much as possible.
- C. Manage stormwater runoff close to the source.
- D. Provide procedures and performance standards for stormwater planning and management.
- E. Maintain groundwater recharge to prevent degradation of surface and groundwater

quality and to otherwise protect water resources.

- F. Prevent scour and erosion of stream banks and streambeds.
- G. Provide proper operation and maintenance of all permanent SWM BMPs that are implemented within the City.
- H. Provide standards to meet NPDES permit requirements.

§ 424-4. Statutory authority.

- A. Primary authority. The City is empowered to regulate these activities by the authority of the Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. § 680.1, et seq., as amended, the Storm Water Management Act,¹ Third Class City Code and City of Hazleton Code, Chapter 11, Article II, § 11-3, Legislative power.
- B. Secondary authority. The City also is empowered to regulate land use activities that affect runoff by the authority of the Act of July 31, 1968, P.L. 805, No. 247, the Pennsylvania Municipalities Planning Code, as amended.²

§ 424-5. Applicability.

- A. All regulated activities and all activities that may affect stormwater runoff, including land development and earth disturbance activity, are subject to regulation by this chapter.
- B. Pennsylvania Department of Transportation (PennDOT) roadway projects will perform stormwater management consistent with Publication 13M (Design Manual-2) Chapter 13.6 Antidegradation and Post Construction Stormwater Management Policy.

§ 424-6. Repealer.

Any other ordinance provision(s) or regulation of the City inconsistent with any of the provisions of this chapter is hereby repealed to the extent of the inconsistency only.

§ 424-7. Severability.

In the event that a court of competent jurisdiction declares any section or provision of this chapter invalid, such decision shall not affect the validity of any of the remaining provisions of this chapter.

§ 424-8. Compatibility with other requirements.

- A. Approvals issued and actions taken under this chapter do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other code, law, regulation, or ordinance.
- B. The Planning Commission of the City of Hazleton administers Chapter 475, Subdivision and Land Development, referenced in this chapter.

1. Editor's Note: See 32 P.S. § 680.1 et seq.

2. Editor's Note: See 53 P.S. § 10101 et seq.

- C. The standards and criteria in this chapter supersede the standards and criteria in the previously enacted Luzerne County Stormwater Management Ordinance.

ARTICLE II Terminology

§ 424-9. Word usage.

For the purposes of this chapter, certain terms and words used herein shall be interpreted as follows:

- A. Words used in the present tense include the future tense; the singular number includes the plural, and the plural number includes the singular; words of masculine gender include feminine gender; and words of feminine gender include masculine gender.
- B. The word "includes" or "including" shall not limit the term to the specific example but is intended to extend its meaning to all other instances of like kind and character.
- C. The words "shall" and "must" are mandatory; the words "may" and "should" are permissive.

§ 424-10. Definitions.

As used in this chapter, the following terms shall have the meanings indicated:

AGRICULTURAL ACTIVITY — Activities associated with agriculture such as agricultural cultivation, agricultural operation, and animal heavy use areas. This includes the work of producing crops including tillage, land clearing, plowing, disking, harrowing, planting, harvesting crops or pasturing and raising of livestock and installation of conservation measures. Construction of new buildings or impervious area is not considered an agricultural activity.

APPLICANT — A landowner, developer, or other person who has filed an application to the City for approval to engage in any regulated activity at a project site in the City.

BEST MANAGEMENT PRACTICE (BMP) — Activities, facilities, designs, measures, or procedures used to manage stormwater impacts from regulated activities, to meet state water quality requirements, to promote groundwater recharge, and to otherwise meet the purposes of this chapter. Stormwater BMPs are commonly grouped into one of two broad categories or measures: "structural" or "nonstructural." In this chapter, nonstructural BMPs or measures refer to operational and/or behavior-related practices that attempt to minimize the contact of pollutants with stormwater runoff; whereas structural BMPs or measures are those that consist of a physical device or practice that is installed to capture and treat stormwater runoff. Structural BMPs include, but are not limited to, a wide variety of practices and devices, from large-scale retention ponds and constructed wetlands, to small-scale underground treatment systems, infiltration facilities, filter strips, low-impact design, bioretention, wet ponds, permeable paving, grassed swales, riparian or forested buffers, sand filters, detention basins, and manufactured devices. Structural stormwater BMPs are permanent appurtenances to the project site.

CAPTURE — The process of collecting runoff to be managed by a stormwater BMP.

CONSERVATION DISTRICT — A conservation district, as defined in Section 3(c) of

the Conservation District Law [3 P.S. § 851(c)] that has the authority under a delegation agreement executed with DEP to administer and enforce all or a portion of the regulations promulgated under 25 Pa. Code Ch. 102; refers to the Luzerne Conservation District unless otherwise noted.

DEP — The Pennsylvania Department of Environmental Protection.

DESIGN STORM — The magnitude and temporal distribution of precipitation from a storm event measured in probability of occurrence (e.g., a five-year storm) and duration (e.g., 24 hours) used in the design and evaluation of stormwater management systems. Also see "return period."

DETENTION VOLUME — The volume of runoff that is captured and released into the waters of this commonwealth at a controlled rate.

DEVELOPMENT, LAND — See "land development."

DEVELOPMENT, SITE — Any human-induced change to improved or unimproved real estate, whether public or private, including but not limited to land development, construction, installation, or expansion of a building or other structure, land division, street construction, drilling, and site alteration such as embankments, dredging, grubbing, grading, paving, parking or storage facilities, excavation, filling, stockpiling, or clearing.

DISCONNECTED IMPERVIOUS AREA (DIA) — An impervious or impermeable surface that is disconnected from any stormwater drainage or conveyance system and is redirected or directed to a pervious area, which allows for infiltration, filtration, and increased time of concentration as specified in Appendix C, Disconnected Impervious Area.³

DISTURBED AREA — An unstabilized land area where an earth disturbance activity is occurring or has occurred.

EARTH DISTURBANCE ACTIVITY — A construction or other human activity which disturbs the surface of the land, including but not limited to clearing and grubbing; grading; excavations; embankments; road maintenance; building construction; and the moving, depositing, stockpiling, or storing of soil, rock, or earth materials.

EROSION — The natural process by which the surface of the land is worn away by water, wind, or chemical action.

EXISTING CONDITION — The dominant land cover during the five-year period immediately preceding a proposed regulated activity.

FEMA — Federal Emergency Management Agency.

FLOODPLAIN — Any land area susceptible to inundation by water from any natural source or delineated by applicable FEMA maps and studies as being a special flood hazard area. Also includes areas that comprise Group 13 Soils, as listed in Appendix A of the Pennsylvania DEP Technical Manual for Sewage Enforcement Officers (as amended or replaced from time to time by DEP).

FLOODWAY — The channel of the watercourse and those portions of the adjoining floodplains that are reasonably required to carry and discharge the 100-year flood.

3. Editor's Note: Appendix C is included as an attachment to this chapter.

Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of the 100-year floodway, it is assumed, absent evidence to the contrary, that the floodway extends from the stream to 50 feet from the top of the bank of the stream.

FOREST MANAGEMENT/TIMBER OPERATIONS — Planning and activities necessary for the management of forestland. These include conducting a timber inventory, preparation of forest management plans, silvicultural treatment, cutting budgets, logging road design and construction, timber harvesting, site preparation, and reforestation.

GEOTEXTILE — A porous fabric manufactured from synthetic fiber that is used to provide separation between different types of media (i.e., between soil and stone).

GRAVEL (CRUSHED STONE) — Considered to be impervious when the intended use of the stone is for transportation purposes, parking areas, construction areas, trails, or if the gravel is compacted at any time during or after its placement; landscaping stone is not considered as impervious area.

HOTSPOT — Areas where land use or activities generate highly contaminated runoff, with concentrations of pollutants that are higher than those that are typically found in stormwater (e.g., vehicle salvage yards and recycling facilities, vehicle fueling stations, fleet storage areas, vehicle equipment and cleaning facilities, and vehicle service and maintenance facilities).

HYDROLOGIC SOIL GROUP (HSG) — Infiltration rates of soils vary widely and are affected by subsurface permeability as well as surface intake rates. Soils are classified into four HSGs (A, B, C, and D) according to their minimum infiltration rate, which is obtained for bare soil after prolonged wetting. The NRCS defines the four groups and provides a list of most of the soils in the United States and their group classification. The soils in the area of the development site may be identified from a soil survey report that can be obtained from local NRCS offices or conservation district offices. Soils become less pervious as the HSG varies from A to D (NRCS).⁴

IMPERVIOUS SURFACE (IMPERVIOUS AREA) — A surface that prevents the infiltration of water into the ground. Impervious surfaces include, but are not limited to, streets, sidewalks, pavements, parking lots, driveways, roofs, stone patios. See definition of "gravel (crushed stone)" for when gravel classifies as impervious area.

INFILTRATION — Movement of surface water into the soil, where it is absorbed by plant roots, evaporated into the atmosphere, or percolated downward to recharge groundwater.

KARST — A type of topography or landscape characterized by surface depressions, sinkholes, rock pinnacles/uneven bedrock surface, underground drainage, and caves. Karst is formed on carbonate rocks, such as limestone or dolomite.

LAND DEVELOPMENT (DEVELOPMENT) — Inclusive of any or all of the following meanings:

- A. The improvement of one lot or two or more contiguous lots, tracts, or parcels of land for any purpose involving:

4. Editor's Note: See § 424-34, references 3 and 4.

- (1) A group of two or more buildings; or
 - (2) The division or allocation of land or space between or among two or more existing or prospective occupants by means of, or for the purpose of streets, common areas, leaseholds, condominiums, building groups, or other features;
- B. Any subdivision of land;
- C. Development in accordance with Section 503(1.1) of the PA Municipalities Planning Code.⁵

LOW IMPACT DEVELOPMENT — A land development and construction approach that uses various land planning, design practices, and technologies to simultaneously conserve and protect natural resource systems, while allowing for necessary infrastructure improvements associated with land development.

MUNICIPALITY — City of Hazleton, Luzerne County, Pennsylvania.

NRCS — USDA Natural Resources Conservation Service (previously SCS).

PEAK DISCHARGE — The maximum rate of stormwater runoff from a specific storm event.

PERVIOUS AREA — Any area not defined as impervious.

PROJECT SITE — The specific area of land where any regulated activities in the City are planned, conducted, or maintained.

QUALIFIED PROFESSIONAL — Any person licensed by the Pennsylvania Department of State or otherwise qualified by law to perform the work required by the chapter.

REDEVELOPMENT — Any development that requires demolition or removal of existing structures or impervious surfaces at a site and replacement with new impervious surfaces. Maintenance activities such as top-layer grinding and repaving are not considered to be redevelopment. Interior remodeling projects and tenant improvements are also not considered to be redevelopment.

REGULATED ACTIVITIES — Any earth disturbance activities or any activities that involve the alteration or development of land in a manner that may affect stormwater runoff.

REGULATED EARTH DISTURBANCE ACTIVITY — Activity involving earth disturbance subject to regulation under 25 Pa. Code 92, 25 Pa. Code Ch. 102, or the Clean Streams Law.⁶

RETENTION VOLUME/REMOVED RUNOFF — The volume of runoff that is captured and not released directly into the surface waters of this commonwealth during or after a storm event.

RETURN PERIOD — The average interval, in years, within which a storm event of a given magnitude can be expected to occur one time. For example, the twenty-five-year return period rainfall would be expected to occur on average once every 25 years; or stated in another way, the probability of a twenty-five-year storm occurring in any one

5. Editor's Note: See 53 P.S. § 10503(1.1).

6. Editor's Note: See 35 P.S. § 691.1 et seq.

year is 0.04 (i.e., a 4% chance).

RUNOFF — Any part of precipitation that flows over the land.

SEDIMENT — Soils or other materials transported by surface water as a product of erosion.

STATE WATER QUALITY REQUIREMENTS — The regulatory requirements to protect, maintain, reclaim, and restore water quality under Title 25 of the Pennsylvania Code and the Clean Streams Law.⁷

STORMWATER — Drainage runoff from the surface of the land resulting from precipitation or snow or ice melt.

STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES — Is abbreviated as "BMPs" or "SWM BMPs" throughout this chapter.

STORMWATER MANAGEMENT FACILITY — Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff. Typical stormwater management facilities include, but are not limited to: detention and retention basins; open channels; storm sewers; pipes; French drains; underground on-lot seepage pits; and infiltration facilities.

STORMWATER MANAGEMENT PLAN — The Luzerne County Stormwater Management Plan for managing stormwater runoff adopted by the County of Luzerne as required by the Act of October 4, 1978, P.L. 864, (Act 167), as amended, and known as the "Storm Water Management Act."⁸

STORMWATER MANAGEMENT SITE PLAN — The plan prepared by the developer or his representative indicating how stormwater runoff will be managed at the development site in accordance with this chapter. "Stormwater management site plan" will be designated as "SWM site plan" throughout this chapter.

SUBDIVISION — As defined in The Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, No. 247.⁹

USDA — United States Department of Agriculture.

VOID RATIO — The ratio of the volume of void space to the total volume of the BMP material (void space plus solid material/media providing structural support to create the storage area).

WATERS OF THIS COMMONWEALTH — Any and all rivers, streams, creeks, rivulets, impoundments, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs, and all other bodies or channels of conveyance of surface and underground water, or parts thereof, whether natural or artificial, within or on the boundaries of this commonwealth.

WATERSHED — Region or area drained by a river, watercourse, or other surface water of this commonwealth.

WETLAND — Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do

7. Editor's Note: See 35 P.S. § 691.1 et seq.

8. Editor's Note: See 32 P.S. § 680.1 et seq.

9. Editor's Note: See 53 P.S. § 10101 et seq.

support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, and similar areas.

ARTICLE III
Stormwater Management Standards

§ 424-11. General requirements.

- A. For all regulated activities, submission of the Stormwater Management Permit Application provided in Appendix B is required.¹⁰
- B. For all regulated activities, unless preparation of a SWM site plan is specifically exempted in § 424-12:
 - (1) Preparation and implementation of an approved SWM site plan is required.
 - (2) No regulated activities shall commence until the City issues written approval of a SWM site plan, which demonstrates compliance with the requirements of this chapter.
- C. SWM site plans approved by the City, in accordance with § 424-20, shall be on site throughout the duration of the regulated activity.
- D. The City may, after consultation with DEP, approve measures for meeting the state water quality requirements other than those in this chapter, provided that they meet the minimum requirements of, and do not conflict with, state law including, but not limited to, the Clean Streams Law.¹¹
- E. For all regulated earth disturbance activities, erosion and sediment control BMPs shall be designed, implemented, operated, and maintained during the regulated earth disturbance activities (e.g., during construction) to meet the purposes and requirements of this chapter and to meet all requirements under Title 25 of the Pennsylvania Code and the Clean Streams Law. Various BMPs and their design standards are listed in the Erosion and Sediment Pollution Control Program Manual (E&S Manual),¹² No. 363-2134-008 (April 15, 2000), as amended and updated.
- F. For all regulated activities, implementation of the volume controls in § 424-13 is required, unless otherwise exempted by § 424-12.
- G. Impervious areas.
 - (1) The measurement of impervious areas shall include all of the impervious areas in the total proposed development even if development is to take place in stages.
 - (2) For development taking place in stages, the entire development plan must be used in determining conformance with this chapter.
 - (3) For projects that add impervious area to a parcel, only the proposed impervious area on the parcel must be considered and summed to determine the plan preparation and approval requirements of this chapter.

10. Editor's Note: Appendix B is included as an attachment to this chapter.

11. Editor's Note: See 35 P.S. § 691.1 et seq.

12. Editor's Note: See § 424-34, reference 2.

- (4) For redevelopment projects in which the existing site is disturbed, the entire proposed site is subject to the plan preparation and approval requirements of this chapter. Existing conditions are considered to be the existing site prior to disturbance, and 20% of the existing impervious area must be considered as meadow in good condition for all stormwater calculations. For redevelopment projects in which the existing site is already controlled by a stormwater management facility, the requirement to consider 20% of existing impervious area as meadow is waived provided the existing facility meets the water quality, volume, and peak rate standards and criteria of this chapter.
- H. Stormwater flows onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without written notification of the adjacent property owner(s). Such stormwater flows shall be subject to the requirements of this chapter.
 - I. All regulated activities shall include measures to:
 - (1) Protect health, safety, and property;
 - (2) Meet the water quality goals of this chapter by implementing measures outlined in the Pennsylvania Stormwater Best Management Practices Manual (BMP Manual)¹³ to:
 - (a) Minimize disturbance to floodplains, wetlands, and wooded areas.
 - (b) Maintain or extend riparian buffers.
 - (c) Avoid erosive flow conditions in natural flow pathways.
 - (d) Minimize thermal impacts to waters of this commonwealth.
 - (e) Disconnect impervious surfaces by directing runoff to pervious areas wherever possible.
 - (3) To the maximum extent practicable, incorporate the techniques for low-impact development practices described in the BMP Manual.¹⁴
 - J. The design of all facilities over mined areas shall include an evaluation of measures to minimize adverse effects.
 - K. Infiltration BMPs should be spread out, made as shallow as practicable, and located to maximize use of natural on-site infiltration features while still meeting the other requirements of this chapter.
 - L. Storage facilities, to the greatest extent possible and at the discretion of the City Engineer, shall completely drain both the volume control and rate control capacities over a period of time not less than 24 hours and not more than 72 hours from the end of the design storm.
 - M. Storage facilities shall incorporate features to maximize the length of the flow path and increase the travel time through the facility.

13. Editor's Note: See § 424-34, reference 1.

14. Editor's Note: See § 424-34, reference 1.

- N. The design storm volumes to be used in the analysis of peak rates of discharge should be obtained from the Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, Version 3.0, U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland. NOAA's Atlas 14 can be accessed at: <http://hdsc.nws.noaa.gov/hdsc/pfds/.5>
- O. For all regulated activities, SWM BMPs shall be designed, implemented, operated, and maintained to meet the purposes and requirements of this chapter and to meet all requirements under Title 25 of the Pennsylvania Code, the Clean Streams Law,¹⁵ and the Storm Water Management Act.¹⁶
- P. Various BMPs and their design standards are listed in the BMP Manual.¹⁷

§ 424-12. Exemptions.

- A. Regulated activities that create impervious areas or earth disturbance shall adhere to Table III.1 to meet the requirements of this chapter. The larger of the two areas determines the applicable requirements of this chapter (i.e., if only 500 square feet of impervious area is proposed, but 15,000 square feet of earth disturbance, the requirements follow row 3 of Table III.1).

Table III.1. Stormwater Management Requirements and Exemptions				
Proposed Impervious Area (square feet)	Proposed Total Earth Disturbance (square feet)	Exemptions	Stormwater Management Requirements	What is required to submit to municipality?*
<1,000	<5,000	§§ 424-13, 424-14, and Article IV of this chapter	Ensure § 424-11, General requirements, are met	N/A
1,000 to 5,000	5,000 to 10,000	§§ 424-13, 424-14, and Article IV of this chapter	Disconnected Impervious Area (DIA) as in Appendix C.1 ¹⁸	Appendix C.1 Worksheet and Sketch (or equivalent) ¹⁹
			OR	OR
			Capture and control first 1 inch of runoff over proposed impervious areas as in Appendix E ²⁰	Appendix E Worksheet and Sketch (or equivalent) ²¹

15. Editor's Note: See 35 P.S. § 691.1 et seq.

16. Editor's Note: See 32 P.S. § 680.1 et seq.

17. Editor's Note: See § 424-34, reference 1.

18. Editor's Note: Appendix C is included as an attachment to this chapter.

19. Editor's Note: Appendix C is included as an attachment to this chapter.

20. Editor's Note: Appendix E is included as an attachment to this chapter.

21. Editor's Note: Appendix E is included as an attachment to this chapter.

Table III.1. Stormwater Management Requirements and Exemptions				
Proposed Impervious Area (square feet)	Proposed Total Earth Disturbance (square feet)	Exemptions	Stormwater Management Requirements	What is required to submit to municipality?*
5,000 to 10,000	10,000 to 20,000	§ 424-14 and Article IV of this chapter	Capture and permanently remove the first 2 inches of runoff over proposed impervious areas as in § 424-3B of this chapter	Appendix D Worksheet and Sketch (or equivalent) ²²
>10,000	>20,000	None	All requirements of this chapter	SWM site plan

NOTES:

* In addition to the Stormwater Management Permit Application provided in Appendix B.²³

- B. Agricultural activity is exempt from the rate control and SWM site plan preparation requirements of this chapter provided the activities are performed according to the requirements of 25 Pa. Code Ch. 102.
- C. Forest management and timber operations are exempt from the rate control and SWM site plan preparation requirements of this chapter provided the activities are performed according to the requirements of 25 Pa. Ch. Code 102.
- D. Exemptions from any provisions of this chapter shall not relieve the applicant from the requirements in § 424-11A through P.

§ 424-13. Volume controls.

The low-impact development practices provided in the BMP Manual shall be utilized for all regulated activities to the maximum extent practicable. Water volume controls shall be implemented using the Design Storm Method in Subsection A or the Simplified Method in Subsection B below. For all regulated activities that require submission of a formal SWM site plan, both the Design Storm Method and the Simplified Method shall be calculated; the larger control volume based on the two calculations shall be controlled. Subsection C below provides requirements for mined or other geologically limiting areas where infiltration shall not occur.

- A. The Design Storm Method (CG-1 in the BMP Manual) is applicable to any size of regulated activity. This method requires detailed modeling based on site conditions.
 - (1) Do not increase the post-development total runoff volume for all storms equal to or less than the two-year twenty-four-hour duration precipitation.
 - (2) For modeling purposes:
 - (a) Existing (predevelopment) non-forested pervious areas must be

22. Editor's Note: Appendix D is included as an attachment to this chapter.

23. Editor's Note: Appendix B is included as an attachment to this chapter.

considered meadow or its equivalent.

- (b) Twenty percent of existing impervious area, when present, shall be considered meadow in the model for existing conditions.
- B. When Design Storm Method CG-1 guidelines are not used, the Simplified Method (CG-2 in the BMP Manual has been modified to accommodate two inches of permanently removed runoff volume. This method (provided below) is independent of site conditions and should be used if the Design Storm Method is not followed. For new impervious surfaces:
- (1) The first two inches of runoff from new impervious surfaces shall be permanently removed from the runoff flow (i.e., it shall not be released into the surface waters of this commonwealth). Removal options include reuse, evaporation, transpiration, and infiltration.
 - (2) Wherever possible, infiltration facilities should be designed to accommodate infiltration of the entire permanently removed runoff; however, in all cases, at least the first 0.5 inch of the permanently removed runoff should be infiltrated.
 - (3) Facilities, to the greatest extent possible and subject to the City Engineer's discretion, shall be designed to drain the permanently removed runoff volume in a period no less than 24 hours and no greater than 72 hours.
 - (4) Runoff volume in excess of two inches shall be safely conveyed to existing stormwater collection systems or streams, in the direction of the existing drainage course.
 - (5) This method is exempt from the requirements of § 424-14, Rate controls.
- C. Before infiltration is proposed on a site, site conditions shall be evaluated by a qualified design professional through subsurface investigation and testing to determine if site conditions are suitable to support proposed infiltration facilities to manage runoff. If it is determined that infiltration is not feasible due to physical constraints of the site, or will adversely impact the environment as demonstrated by the presence of acid mine drainage, sinkhole formation, or other serious environmental issues, then the above volume controls must be achieved through surface BMP mitigation. Reference the BMP Manual for alternative mitigation measures that do not require infiltration.

§ 424-14. Rate controls.

- A. Areas not covered by a Stormwater Management District Map contained in Appendix F.1:²⁴

Post-development discharge rates shall not exceed the predevelopment discharge rates for the one- through 100-year, twenty-four-hour storms. If it is shown that the peak rates of discharge indicated by the post-development analysis are less than or equal to the peak rates of discharge indicated by the predevelopment analysis for one- through 100-year, twenty-four-hour storms, then the requirements of this

24. Editor's Note: Appendix F is included as an attachment to this chapter.

section have been met. Otherwise, the applicant shall provide additional controls as necessary to satisfy the peak rate of discharge requirement.

B. Areas designated as District B-2 - Nescopeck Creek Watershed Only:

- (1) If a mine reclamation project is proposed, the post-development discharge rates shall not exceed the predevelopment discharge rates for the one-, two-, five-, ten-, twenty-five-, fifty-, and 100-year storms. Predevelopment land cover conditions shall be considered forest in good condition.
- (2) Proposed land development projects shall apply the 60% release rate criterion for the one-, two-, five-, ten-, twenty-five-, fifty-, and 100-year storms. This applies to all sites including those that have been previously reclaimed. Predevelopment land cover conditions shall be considered forest in good condition.

ARTICLE IV
Stormwater Management (SWM) Site Plan Requirements

§ 424-15. Plan requirements.

The following items shall be included in the SWM site plan:

- A. Appropriate sections from Chapter 475, Subdivision and Land Development, and other applicable local ordinances, shall be followed in preparing the SWM site plans.
- B. The City shall not approve any SWM site plan that is deficient in meeting the requirements of this chapter. At its sole discretion and in accordance with this article, when a SWM site plan is found to be deficient, the City may either disapprove the submission or require a resubmission, or in the case of minor deficiencies, the City may accept submission of modifications.
- C. Provisions for permanent access or maintenance easements for all physical SWM BMPs, such as ponds and infiltration structures, as necessary to implement the operation and maintenance (O&M) plan discussed in Subsection E(9) below.
- D. The following signature block for the City:

"(City Engineer or designee), on this date (date of signature), has reviewed and hereby certifies that the SWM site plan is in compliance with the Municipal Ordinance No. 2011-5."

- E. The SWM site plan shall provide the following information:
 - (1) The overall stormwater management concept for the project.
 - (2) A determination of site conditions in accordance with the BMP Manual. A detailed site evaluation shall be completed for projects proposed in mined areas, and other environmentally sensitive areas, such as brownfields; depending on site conditions, more stringent standards than those in this chapter may be imposed at the discretion of the City Engineer.
 - (3) Stormwater runoff design computations, and documentation as specified in this chapter, or as otherwise necessary to demonstrate that the maximum practicable measures have been taken to meet the requirements of this chapter, including the recommendations and general requirements in § 424-11; computations are required for all proposed stormwater management facilities.
 - (4) Expected project time schedule.
 - (5) A soil erosion and sediment control plan, where applicable, as prepared for and submitted to the approval authority, and in conformance with 25 Pa. Code Ch. 102.
 - (6) The effect of the project (in terms of runoff volumes, water quality, and peak flows) on surrounding properties and aquatic features and on any existing stormwater conveyance system that may be affected by the project.
 - (7) Plan and profile drawings of all SWM BMPs, including drainage structures,

pipes, open channels, and swales.

- (8) SWM site plan shall show the locations of existing and proposed on-lot wastewater facilities and water supply wells.
- (9) The SWM site plan shall include an O&M plan for all existing and proposed physical stormwater management facilities. This plan shall address long-term ownership and responsibilities for O&M as well as schedules and costs for O&M activities.
- (10) The SWM site plan shall include the following additional elements:
 - (a) Construction details of all proposed stormwater management facilities.
 - (b) A stormwater facility design narrative.
 - (c) A signature block containing the name, address, and phone number of the individual responsible for the operation and maintenance plan.
 - (d) A drainage area map with time of concentration paths shown.
 - (e) Existing contour intervals of two feet.
 - (f) All existing features on the property and within 50 feet of property.
 - (g) Floodplain and floodway limits.
 - (h) Proposed structures and proposed grades.
 - (i) Soil boundary lines and descriptions.
 - (j) Date of submission, North arrow, graphic scale, call before you dig note and reference number, location map, name of development, name and address of property owner, and individual preparing the SWM site plan.
 - (k) Existing and proposed easements.
 - (l) Statement signed by landowner stating that they cannot alter any stormwater management facility without prior permission of the City.

§ 424-16. Plan submission.

- A. Five copies of the SWM site plan shall be submitted to the City of Hazleton Planning Commission for distribution as follows:
 - (1) Two copies to the City of Hazleton Planning Commission.
 - (2) One copy to the City Engineer.
 - (3) One copy to the County Conservation District.
 - (4) One copy to the County Planning Commission/Office.
- B. Additional copies shall be submitted as requested by the City or DEP.

§ 424-17. Plan review.

- A. The SWM site plan shall be reviewed by the City Engineer for consistency with the provisions of this chapter. After review, the City Engineer shall provide a written recommendation for the City approval or disapproval of the SWM site plan. If it is recommended to disapprove the SWM site plan, the City Engineer shall state the reasons for the disapproval in writing. The City Engineer also may recommend approval of the SWM site plan with conditions and, if so, shall provide the acceptable conditions for approval in writing. The SWM site plan review and recommendations shall be completed within the time allowed by the Municipalities Planning Code²⁵ for reviewing subdivision plans.
- B. The City shall notify the applicant in writing within 45 days whether the SWM site plan is approved or disapproved. If the SWM site plan involves a subdivision and land development plan, the notification period is 90 days. If a longer notification period is provided by other statute, regulation, or ordinance, the applicant will be so notified by the City. If the City disapproves the SWM site plan, the City shall cite the reasons for disapproval in writing.

§ 424-18. Modification of plans.

A modification to a submitted SWM site plan that involves a change in SWM BMPs or techniques, or that involves the relocation or redesign of SWM BMPs, or that is necessary because soil or other conditions are not as stated on the SWM site plan as determined by the City shall require a resubmission of the modified SWM site plan in accordance with this article.

§ 424-19. Resubmission of disapproved SWM site plans.

A disapproved SWM site plan may be resubmitted, with the revisions addressing the City's concerns, to the City in accordance with this article. The applicable review fee must accompany a resubmission of a disapproved SWM site plan.

§ 424-20. Authorization to construct and term of validity.

The City's approval of an SWM site plan authorizes the regulated activities contained in the SWM site plan for a maximum term of validity of five years following the date of approval. The City may specify a term of validity shorter than five years in the approval for any specific SWM site plan. Terms of validity shall commence on the date the City signs the approval for an SWM site plan. If an approved SWM site plan is not completed according to § 424-21 within the term of validity, then the City may consider the SWM site plan disapproved and may revoke any and all permits. SWM site plans that are considered disapproved by the City shall be resubmitted in accordance with § 424-19 of this chapter.

§ 424-21. As-built plans, completion certificate, and final inspection.

- A. The developer shall be responsible for providing as-built plans of all SWM BMPs included in the approved SWM site plan. The as-built plans and an explanation of any discrepancies with the construction plans shall be submitted to the City of Hazleton Engineer's office.

25. Editor's Note: See 53 P.S. § 10101 et seq.

- B. The as-built submission shall include a certification of completion signed by a qualified professional verifying that all permanent SWM BMPs have been constructed according to the approved plans and specifications. If any licensed qualified professionals contributed to the construction plans, then a licensed qualified professional must sign the completion certificate.
- C. After receipt of the completion certification by the City of Hazleton, the City Engineer or official designee may conduct a final inspection.

ARTICLE V
Operation and Maintenance

§ 424-22. Responsibilities of developers and landowners.

- A. The City shall make the final determination on the continuing maintenance responsibilities prior to final approval of the SWM site plan. The City may require a dedication of such facilities as part of the requirements for approval of the SWM site plan. Such a requirement is not an indication that the City will accept the facilities. The City reserves the right to accept or reject the ownership and operating responsibility for any portion of the stormwater management controls. If the facility is rejected by the City, provisions shall be made to identify the legal owner.
- B. Three options exist for perpetual ownership and responsibility of stormwater management facilities:
- (1) The developer retains ownership;
 - (2) A homeowners' association assumes ownership and responsibility;
 - (3) The facility is dedicated to, and accepted by, the City.
- C. Facilities, areas, or structures used as stormwater management BMPs shall be enumerated as permanent real estate appurtenances and recorded as deed restrictions or conservation easements that run with the land in the office of the Recorder of Deeds for Luzerne County within 15 days of approval of the SWM plan by the City.
- D. The O&M plan shall be recorded as a restrictive deed covenant that runs with the land.
- E. The City may take enforcement actions against an owner for any failure to satisfy the provisions of this article.

§ 424-23. O&M agreements.

The owner is responsible for O&M of the SWM BMPs. If the owner fails to adhere to the O&M Agreement, the City may perform the services required and charge the owner appropriate fees. Nonpayment of fees may result in a lien against the property.

ARTICLE VI
Fees and Expenses

§ 424-24. General.

- A. The City may include all costs incurred in the review fee charged to an applicant.
- B. The review fee may include, but not be limited to, costs for the following:
 - (1) Administrative/clerical processing.
 - (2) Review of the SWM site plan.
 - (3) Attendance at meetings.
- C. The inspection fee includes a single inspection of the installed system. Systems failing the initial inspection will require an additional inspection fee.

§ 424-25. Fee schedule.

- A. Levels 1, 2 and 3.
 - (1) SWM application review: \$50.
 - (2) SWM plan additional review fee: \$25.
- B. Level 4 and DIA.
 - (1) SWM application review: \$150.
 - (2) SWM plan additional review fee: \$75.
- C. Levels 2, 3, 4 and DIA.
 - (1) SWM inspection fee: \$50.
 - (2) SWM site reinspection fee: \$50.

ARTICLE VII
Prohibitions

§ 424-26. Prohibited discharges and connections.

- A. Any drain or conveyance, whether on the surface or subsurface, that allows any nonstormwater discharge including sewage, process wastewater, and wash water to enter the waters of this commonwealth is prohibited.
- B. No person shall allow, or cause to allow, discharges into surface waters of this commonwealth which are not composed entirely of stormwater, except:
- (1) As provided in Subsection C below; and
 - (2) Discharges allowed under a state or federal permit.
- C. The following discharges are authorized unless they are determined to be significant contributors to pollution to the waters of this commonwealth:
- (1) Discharges from firefighting activities.
 - (2) Potable water sources including water line flushing.
 - (3) Irrigation drainage.
 - (4) Air-conditioning condensate.
 - (5) Springs.
 - (6) Water from crawl space pumps.
 - (7) Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents are not used.
 - (8) Flows from riparian habitats and wetlands.
 - (9) Uncontaminated water from foundations or from footing drains.
 - (10) Lawn watering.
 - (11) Dechlorinated swimming pool discharges.
 - (12) Uncontaminated groundwater.
 - (13) Water from individual residential car washing.
 - (14) Routine external building wash down (which does not use detergents or other compounds).
- D. In the event that the City or DEP determines that any of the discharges identified in Subsection C significantly contribute to pollution of the waters of this commonwealth, the City or DEP will notify the responsible person(s) to cease the discharge.

§ 424-27. Roof drains.

Roof drains and sump pumps shall discharge to infiltration or vegetative BMPs and to the maximum extent practicable satisfy the criteria for DIAs consistent with Appendix C.1 of this chapter.²⁶

§ 424-28. Alteration of SWM BMPs.

No person shall modify, remove, fill, landscape, or alter any SWM BMPs, facilities, areas, or structures without the written approval of the City.

26. Editor's Note: Appendix C is included as an attachment to this chapter.

ARTICLE VIII
Enforcement and Penalties

§ 424-29. Right of entry.

Upon presentation of proper credentials, the City of Hazleton personnel may enter at reasonable times upon any property within the City of Hazleton to inspect the condition of the stormwater structures and facilities in regard to any aspect regulated by this chapter.

§ 424-30. Inspection.

Stormwater structures and facilities may be inspected by the landowner or the landowner's designee (including the City for dedicated and owned facilities), or governmental agencies using SWM BMPs:

- A. The frequency of said inspections shall be determined by the landowner, City or governmental agency, as deemed appropriate on a case-by-case basis;
- B. Such inspections are at the discretion of the City or governmental agency where the facility is located. The cost of this inspection shall be set by the City or governmental agency which may include bonding requirements. Such costs or bonding requirements shall be provided to the landowner and/or developer at its request or at any time during the project; however, if bonding is required then all work shall cease until these requirements are met.

§ 424-31. Enforcement.

- A. It shall be unlawful for a person to undertake any regulated activity except as provided in an approved SWM site plan, unless specifically exempted in § 424-12 of this chapter.
- B. It shall be unlawful to violate § 424-28 of this chapter.

§ 424-32. Violations and penalties.

- A. Any person violating any provision of this article shall be subject to the penalties set forth in Chapter 1, Article II, Violations and Penalties, of this Code. Each day that the violation continues shall be a separate offense and penalties shall be cumulative. **[Amended at time of adoption of Code (see Ch. 1, General Provisions, Art. I)]**
- B. In addition, the City may institute injunctive, mandamus, or any other appropriate action or proceeding at law or in equity for the enforcement of this chapter. Any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus, or other appropriate forms of remedy or relief.

§ 424-33. Appeals.

Any person aggrieved by any decision of the City, its representative or designee, relevant to the provisions of this chapter, may appeal to the County Court of Common Pleas in

the county where the activity has taken place within 30 days of the City's decision.

ARTICLE IX
References

§ 424-34. Reference documents.








1. Pennsylvania Department of Environmental Protection. No. 363-0300-002 (December 2006), as amended and updated. Pennsylvania Stormwater Best Management Practices Manual. Harrisburg, PA.
2. Pennsylvania Department of Environmental Protection. No. 363-2134-008 (April 15, 2000), as amended and updated. Erosion and Sediment Pollution Control Program Manual. Harrisburg, PA.
3. U.S. Department of Agriculture, National Resources Conservation Service (NRCS). National Engineering Handbook. Part 630: Hydrology, 1969-2001. Originally published as the National Engineering Handbook, Section 4: Hydrology. Available from the NRCS online at: <http://www.nrcs.usda.gov/>.
4. U.S. Department of Agriculture, Natural Resources Conservation Service. 1986. Technical Release 55: Urban Hydrology for Small Watersheds, 2nd Edition. Washington, D.C.
5. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, Hydrometeorological Design Studies Center. 2004-2006. Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, Version 3.0, Silver Spring, Maryland. Internet address: <http://hdsc.nws.noaa.gov/hdsc/pfds/>.

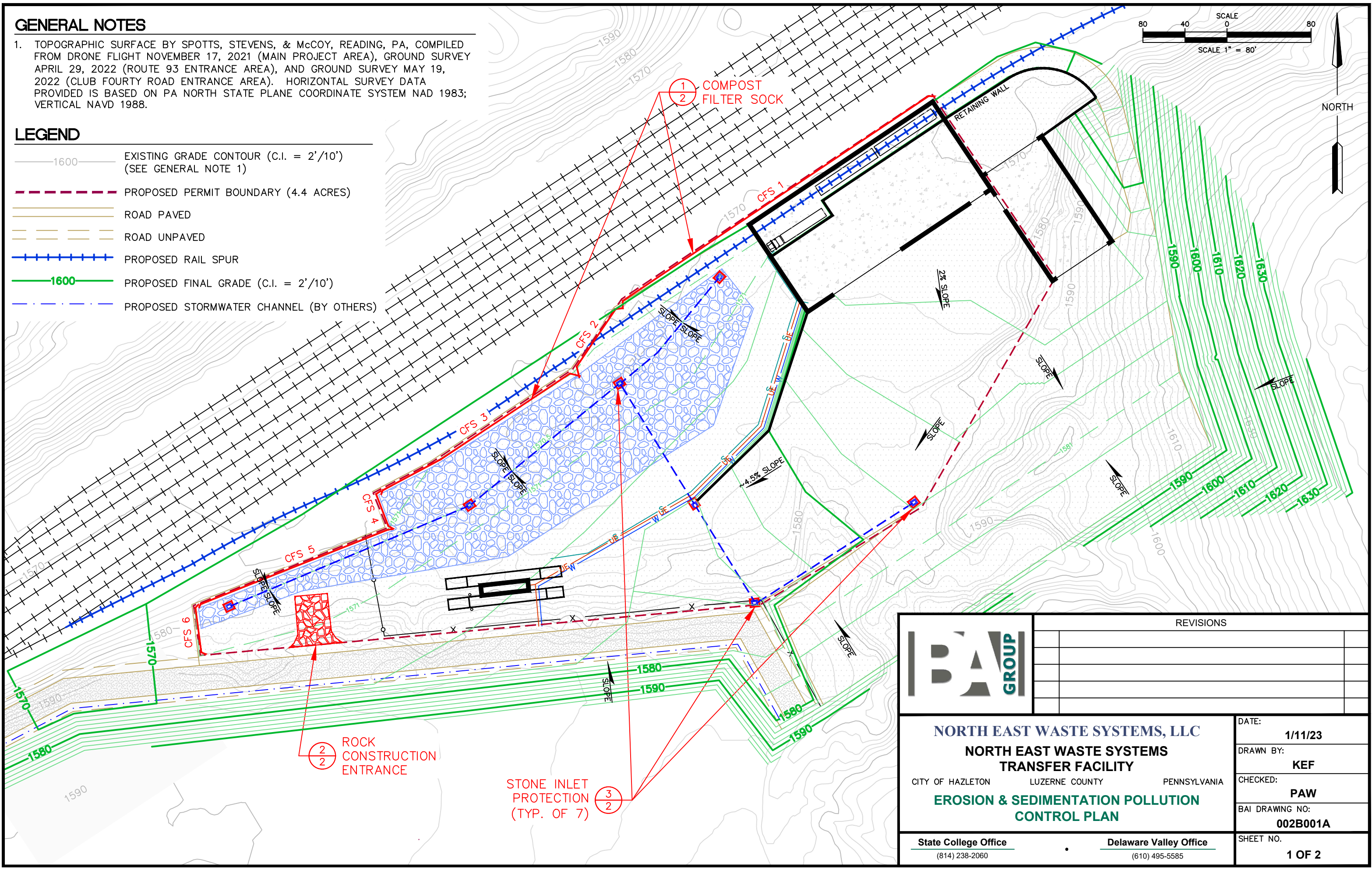
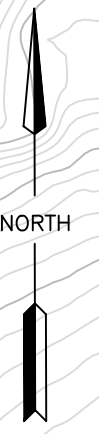
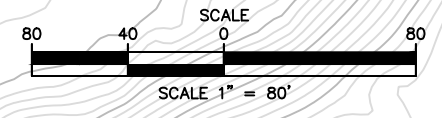
ATTACHMENT I-6
E&S DRAWINGS


GENERAL NOTES

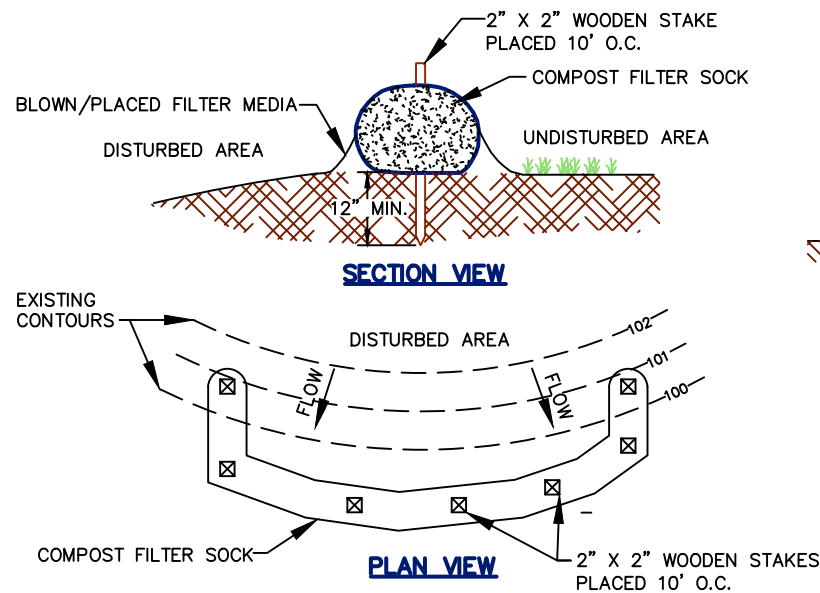
1. TOPOGRAPHIC SURFACE BY SPOTTS, STEVENS, & McCOY, READING, PA, COMPILED FROM DRONE FLIGHT NOVEMBER 17, 2021 (MAIN PROJECT AREA), GROUND SURVEY APRIL 29, 2022 (ROUTE 93 ENTRANCE AREA), AND GROUND SURVEY MAY 19, 2022 (CLUB FOURTY ROAD ENTRANCE AREA). HORIZONTAL SURVEY DATA PROVIDED IS BASED ON PA NORTH STATE PLANE COORDINATE SYSTEM NAD 1983; VERTICAL NAVD 1988.

LEGEND

-  EXISTING GRADE CONTOUR (C.I. = 2'/10') (SEE GENERAL NOTE 1)
-  PROPOSED PERMIT BOUNDARY (4.4 ACRES)
-  ROAD PAVED
-  ROAD UNPAVED
-  PROPOSED RAIL SPUR
-  PROPOSED FINAL GRADE (C.I. = 2'/10')
-  PROPOSED STORMWATER CHANNEL (BY OTHERS)



	REVISIONS	
NORTH EAST WASTE SYSTEMS, LLC NORTH EAST WASTE SYSTEMS TRANSFER FACILITY CITY OF HAZLETON LUZERNE COUNTY PENNSYLVANIA EROSION & SEDIMENTATION POLLUTION CONTROL PLAN		DATE: 1/11/23 DRAWN BY: KEF CHECKED: PAW BAI DRAWING NO: 002B001A
State College Office (814) 238-2060	Delaware Valley Office (610) 495-5585	SHEET NO. 1 OF 2



ADAPTED FROM FILTREXX

SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PADEP EROSION & SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.. COMPOST SHALL MEET THE FOLLOWING STANDARDS.

ORGANIC MATTER CONTENT	80%–100% (DRY WEIGHT BASIS)
ORGANIC PORTION	FIBROUS AND ELONGATED
pH	5.5–8.0
MOISTURE CONTENT	35%–55%
PARTICLE SIZE	98% PASS THROUGH 1" SCREEN
SOLUBLE SALT CONCENTRATION	5.0 dS MAXIMUM

COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE SOCK SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN SOCK ALIGNMENT (SEE FIGURE 4.1). MAXIMUM SLOPE LENGTH ABOVE ANY SOCK SHALL NOT EXCEED THAT SHOWN IN THE TABEL BELOW.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.

ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE SOCK AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.

SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.

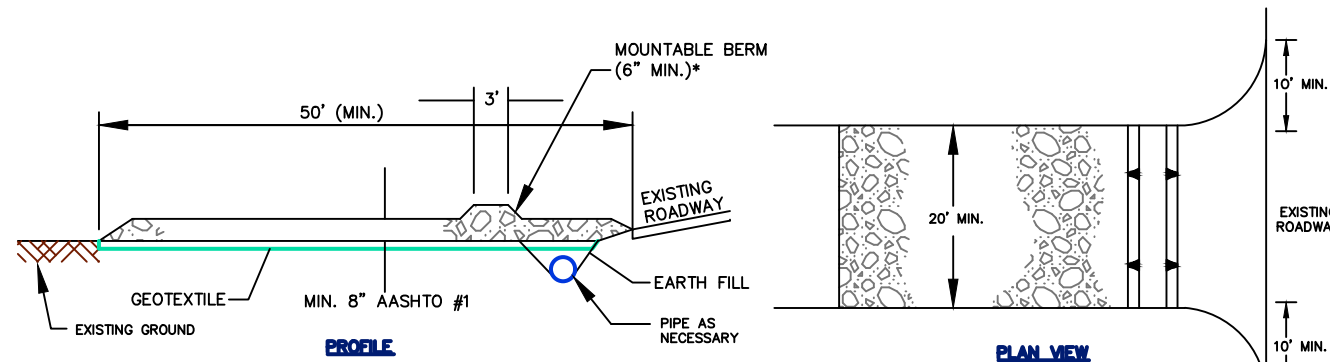
BIODEGRADABLE FILTER SOCK SHALL BE REPLACED AFTER SIX MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

1 COMPOST SILT SOCK

2 NOT TO SCALE

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-4751	80 SIEVE



*MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE
MODIFIED FROM MARYLAND DOE

REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WTH OF ENTRANCE.

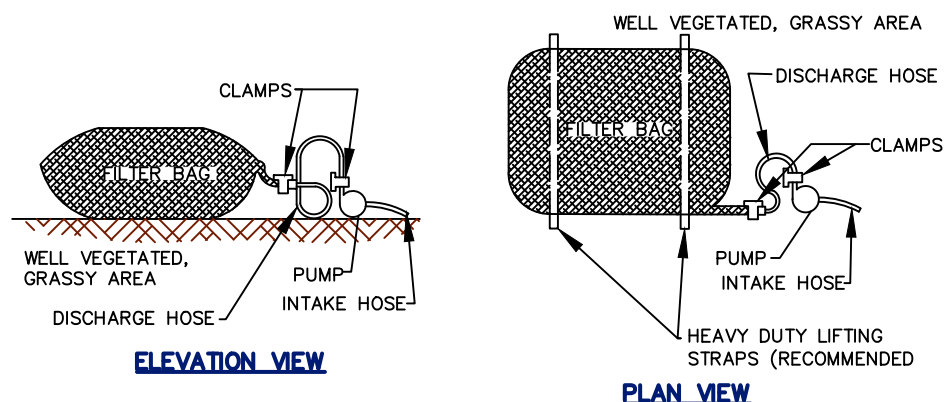
RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.

MOUNTABLE BERM SHOULD BE INSTALLED WHEREVER OPTIONAL CULVERT PIPE IS USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROVIDED. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.

MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FEET INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

2 ROCK CONSTRUCTION ENTRANCE

2 NOT TO SCALE



PA DEP
LOW-VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS MAY BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE STANDARDS IN THE TABLE.

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES MUST BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%. FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.

NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHOULD BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

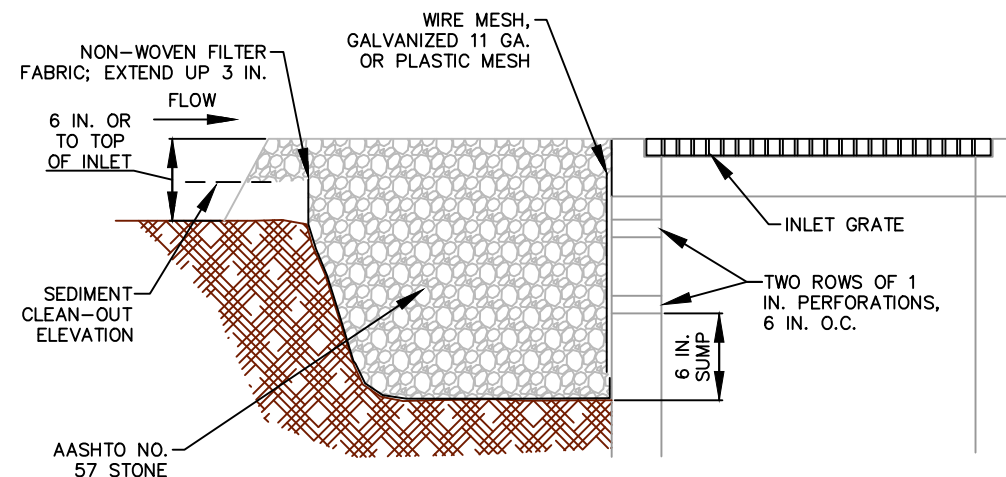
THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.

THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

4 PUMPED WATER FILTER BAG

2 NOT TO SCALE



3 ALTERNATE STONE INLET PROTECTION - TYPE M INLET ABOVE GRADE

2 NOT TO SCALE

INLET PROTECTION NOTES
MAXIMUM DRAINAGE AREA = 1 ACRE.

INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS NOT LOCATED AT A LOW POINT.

SHOULD CONTAIN OPENINGS 1/4 IN. MAXIMUM FOR WIRE OR PLASTIC MESH.

HOLES MAY BE DRILLED IN CONCRETE BOX.

EARTHEN BERM IN ROADWAY IS NOT REQUIRED.

SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE HEIGHT OF THE STONE. DAMAGED OR CLOGGED INSTALLATIONS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.

FOR SYSTEMS DISCHARGING TO HQ OR EV SURFACE WATER, A 6 INCH THICK COMPOST LAYER SHALL BE SECURELY ANCHORED ON OUTSIDE AND OVER TOP OF STONE. COMPOST SHALL MEET THE STANDARDS IN TABLE 4.2 IF THE PA DEP EROSION CONTROL MANUAL.

	REVISIONS	
NORTH EAST WASTE SYSTEMS, LLC NORTH EAST WASTE SYSTEMS TRANSFER FACILITY CITY OF HAZLETON LUZERNE COUNTY PENNSYLVANIA		DATE: 1/11/23 DRAWN BY: KEF CHECKED: PAW BAI DRAWING NO: 002B001B
State College Office (814) 238-2060	Delaware Valley Office (610) 495-5585	SHEET NO. 2 OF 2