Stormwater Pollution Prevention Plan:
for
Edgewater

Prepared for:
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1.0 INTRODUCTION

1.1 Overview

This Stormwater Pollution Prevention Plan (SWPPP) has been developed in accordance with NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity Permit No. GP-0-15-002, dated May 1, 2015 which authorizes stormwater discharges to surface waters of the State from the following construction activities identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. Construction activities located in the New York City, East of Hudson watershed, that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Construction activities involving soil disturbances of less than one (1) acre where the Department has determined that a SPDES permit is required for stormwater discharges based on the potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to surface waters of the State.
3. Construction activities involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a larger common plan of development or sale that will ultimately disturb one or more acres of land; excluding routine maintenance activity that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

This project qualifies for SPDES coverage under provision 3 as stated above.

The objectives of this SWPPP are as follows:

- To develop a sediment and erosion control plan in accordance with the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, latest edition, which implements best management practices to stabilize disturbed areas, protect off site areas and sensitive areas and minimize the transport of sediment.
- To demonstrate that the resulting stormwater runoff from the development exiting the site will not adversely impact offsite properties, stormwater conveyance systems or receiving water bodies, and that temporary and permanent stormwater systems and facilities are designed in accordance with the latest revision to the New York State Stormwater Management Design Manual, January 2015.
- To demonstrate that a minimum of 90% of the average annual stormwater runoff from the development is captured and treated through approved water quality measures.

A copy of the Permit, SWPPP, Notice of Intent (NOI), NOI acknowledgment letter, inspection reports and accompanying plans shall be maintained on-site from the date of initiation of construction activities to the date of final stabilization. This SWPPP shall replace the existing SWPPP and shall be kept on-site in accordance with the above requirement upon re-mobilization and re-start of construction activities.

1.2 Land Disturbance

Per the General Permit, no more than five (5) acres of land disturbance may occur at any one time without written approval from the NYSDEC. At a minimum, the owner or operator must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The owner or operator shall have a qualified inspector conduct at least two (2) site inspections every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has been temporarily or permanently ceased, and is located in one of the watersheds [NYCDEP], the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity has ceased. The soil stabilization measures selected shall be in conformance with the current version most of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control.

c. The owner or operator shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The owner or operator shall install any additional site specific practices needed to protect water quality.

The project calls for clearing of trees for the construction of a multifamily residential complex. The overall project area is approximately 12.00 acres. A phasing plan will be developed which will consist of disturbance of areas in increments of less than 5-acres.

2.0 PROJECT DESCRIPTION

2.1 Project Location

The project site is located at 22 Edgewater Place in the City of Beacon, Dutchess County, New York, and is located on the North side of the road. The total parcel area is approximately 12.00 acres (4 parcels make up the project area). The project study area, regarding storm water pollution prevention, consists of approximately 12.00 acres (total area contributing to the various design points identified in the SWPPP), and consists of mostly open meadow area, wooded area and two residential dwellings.

2.2 Project Scope and Description

The construction project entails the construction a multifamily residential apartment complex, along with access and egress roads, parking lots, green spaces and stormwater management areas. The residential complex contains 96 studio apartments, 115 one-bedroom, 86 two-bedroom and 10 three-bedroom apartments for a total 307 units (413 total bedrooms).

The proposed project will disturb approximately 9.14 acres of on-site area. Future land banked parking will add an additional 0.38 acres of disturbed area (9.52 ac. total); however, the land banked parking will only be constructed if the City of Beacon determines them necessary. For

the purpose of this SWPPP, the future land banked parking is included in the study, and the proposed stormwater management system has been sized to accommodate the additional parking. Development of a phasing plan will comply with the 5.0-acre disturbance limit, and therefore the actual disturbance is significantly less than 9.52 acres during any phase. For the purpose of this study, 9.52 acres will be used for analysis. Approximately 2.48 acres of the parcel will remain undisturbed.

2.3 Surface Water Bodies

2.3.1 Wetlands

The NYSDEC and USACE wetland maps do not indicate that wetlands are present within the project area.

2.3.2 Streams

NYSDEC mapping indicates that there are no regulated streams located on the property.

2.3.3 Floodplains

Based upon a review of the National Flood Insurance Program Flood Insurance Rate Map panel 36027C 0463E for the City of Beacon, New York, the entire site lies within Zone X – areas determined to be outside the 100-year flood plain.

3.0 NOTICE OF INTENT

Prior to commencement of construction activities, the Owner/Operator shall submit a Notice of Intent (NOI) to the NYSDEC for authorization. The NYSDEC authorization schedule is as follows:

For construction activities that are not subject to the requirements of a regulated, traditional land use control MS4:

- Five (5) business days from the date the NYSDEC receives a complete NOI for construction activities with a SWPPP that has been prepared in conformance with the technical standards, or
- Sixty (60) business days from the date the NYSDEC receives a complete NOI for construction activities with a SWPPP that has not been prepared in conformance with the technical standards.

For construction activities that are subject to the requirements of a regulated, traditional land use control MS4:

- Five (5) business days from the date the NYSDEC receives a complete NOI and signed “MS4 SWPPP Acceptance” form.

The project area is under the control of a regulated MS4, therefore the NOI shall be submitted directly to the NYSDEC along with the MS4 SWPPP Acceptance form. A blank NOI has been included within Appendix A.

4.0 SOILS

The hydrologic soil characteristics of the watershed areas were obtained from Soil Survey Mapping of Dutchess County, New York, and available Geographical Information Systems (GIS) and are as follows:

Symbol	Description	Hydrologic Soil Group
DwB	Dutchess-Cardigan complex, undulating, rocky	B
DxB	Dutchess-Cardigan Urban land complex, undulating, rocky	B*
NwD	Nassau-Cardigan complex, hilly, very rocky	D

SOIL PROPERTIES

Symbol	Water Table	Restrictive Layer	Bedrock	Erosion Hazard (k)
DwB	>78”	>78”	>78”	0.32
DxB	>78”	29.9”	>78”	0.32*
NwD	>78”	16.1”	29.9”	0.17

Supporting information has been provided in Appendix B.

* According to Dutchess County Soil Survey

5.0 RAINFALL

5.1 Overview

The rainfall data utilized in the analysis of the watershed was obtained from http://precip.eas.cornell.edu as provided in the NYS Stormwater Design Manual dated January 2015. Supporting information has been provided in Appendix C. The storm events are as follows:

Storm Event	24-Hour Rainfall (in)
1 - year	2.61
10 - year	4.69
100 - year	8.32

5.2 Rainfall Event Sizing Criteria

The stream channel protection volume (Cpv) criteria, intended to protect stream banks from erosion, will be demonstrated by providing 12-24 hour extended detention of the Type III 1-year, 24-hour storm event. The channel protection volume criterion is not required where the resulting diameter of the extended detention basin orifice is less than three (3) inches with a trash rack.

The overbank flood control (Qp) criteria, intended to prevent an increase in frequency and magnitude of out of bank flooding generated by new development, will be demonstrated by attenuating the Type III 10-year, 24-hour peak discharge rate to pre-development conditions. The overbank flood criteria can be waived if the project site discharges to a tidal water or fifth order stream.

The extreme flood control (Qf) criteria, intended to prevent the increased risk of flood damage from large storm events, maintain the boundaries of pre-development conditions, and protect the physical integrity of stormwater management practices, will be demonstrated by attenuating the Type III 100-year, 24-hour peak discharge rate to pre-development conditions. The extreme flood control criteria can be waived if the project site discharges to a tidal water or fifth order stream.

The pre and post-development runoff rates were compared utilizing the Type III 1-year (channel protection), 10-year (overbank flood control), and 100-year (extreme flood control) year, 24-hour storm events.

The proposed drainage conveyance system will be designed utilizing the Type III, 10-year storm event.

6.0 STORMWATER ANALYSIS AND MANAGEMENT

6.1 Methodology

6.1.1 Hydrologic Analysis

The HydroCAD stormwater modeling system computer program by Applied Microcomputer Systems was used to analyze, design and document the complete drainage system. The program uses standard hydrograph generation and routing techniques based on the USDA-NRCS Technical Releases TR-20 and TR-55 to develop stormwater runoff rates and volumes.

The program determines the rate and volume of runoff based on inputs of the watershed area, and characteristics of the land including vegetative coverage, slope, soil type, and impervious area.

6.1.2 Stormwater Design Points

Design Points represent the location where the majority of runoff from an area exits the site. The same design points are identified in post-development conditions so that a comparison can be made between the pre-development and post-development conditions. Three design points for the main project area were selected, as follows:

Stormwater Design Points

SDP	Description
1	Discharge from on-site area to the westerly and northerly property line.
2	Discharge from on-site area to easterly property line (Bank and Branch Street ROW).

6.2 Pre-Development Watershed Conditions

All existing watershed areas are modeled in HydroCAD as 'subcatchment' areas. The pre-development areas are as follows:

Subcatchment 1 is comprised of approximately 4.36 acres of on-site area. The on-site area is undeveloped grass and wooded areas. A small amount of impervious area is contributed by the existing residential building and driveway. The subcatchment area contains soils in hydrologic soil groups B and D. Runoff from the subcatchment travels overland via sheet flow and shallow concentrated flow to SDP 1.

Subcatchment 2 is comprised of approximately 3.88 acres of on-site area. The on-site area is undeveloped grassy meadow and woods. Land cover consists mainly of meadow areas with a small amount of wooded area. The subcatchment area contains soils in hydrologic soil groups B and D. Runoff from the subcatchment travels overland via sheet flow and shallow concentrated flow to SDP 1.

Subcatchment 3 is comprised of approximately 3.76 acres of on-site area. The on-site area is mostly undeveloped open grassy meadow and wooded area. The developed portion of the subcatchment consists of impervious residential areas with driveways. The entire subcatchment area contains soils in hydrologic soil group B. Runoff from the subcatchment travels overland via sheet flow and shallow concentrated flow to SDP 2.

Detailed stormwater calculations and routing have been included in Appendix D.

The following table summarizes the pre-development watershed conditions:

Pre-Development Watershed Conditions					
Subcatchment	**Area (ac)**	**Cover**	**Average Curve #**	**Hydrologic Soil Group(s)**	**Time of Concentration**
1	4.36	Mostly grass with some woods and a small amount of impervious area	64	B/D	9.6 minutes
2	3.88	Mostly grass and woods, small amount of impervious area	63	B/D	8.6 minutes
3	3.76	Mostly woods with some grass and impervious area	65	B	13.9 minutes

6.3 Post-Development Watershed Conditions

The proposed development will result in a disturbance of approximately 9.14 acres The land cover will consist of mainly impervious areas, buildings and parking lots, with some grassy green spaces and stormwater management areas.

The post-developed subcatchment numbers listed below correspond to the pre-developed watershed areas with the same number. Sub watershed areas have been broken out of the main areas that drain directly to a stormwater management area. Two infiltration basins are proposed to provide treatment of the site runoff from the site access, and attenuation of the design storms.

Subcatchment 1 is comprised of approximately 2.48 acres of on-site area. The on-site area is developed with the eastern apartment complex and Infiltration Basin 1. The entire subcatchment area contains soils in hydrologic soil group B. Runoff from the subcatchment is directed towards Infiltration Basin 1, while overflow from the infiltration basin travels through and outlet control structure via pipe flow to SDP1. A minimum Tc of 6 minutes is used for this subcatchment.

Subcatchment 2 is comprised of approximately 3.90 acres of on-site area. The on-site area is developed with the western apartment building and the central and northern parking lots. Some grassed areas are contained in Subcatchment 2, mainly graded lawn areas and Infiltration Basin 2. The subcatchment area contains soils in hydrologic soil group B. Runoff from the subcatchment travels via the stormwater conveyance system in the parking lot areas and into Infiltration Basin 2. Overflow from Infiltration Basin 2 travels through an outlet control structure toward SDP 1. A minimum Tc of 6 minutes is used for this subcatchment.

Subcatchment 3 is comprised of approximately 2.04 acres of on-site area. The on-site area is developed with a section of the asphalt access drive, a portion of the easterly parking area, graded grass areas and Infiltration Basin 3. The subcatchment area contains soils in hydrologic soil group B. Runoff from the subcatchment travels overland via sheet flow to the proposed stormwater conveyance system and into Infiltration Basin 3. Overflow from Infiltration Basin 3 travels through an outlet control structure toward SDP 1.. A minimum Tc of 6 minutes is used for this subcatchment.

Subcatchment 4 is comprised of approximately 2.05 acres of on-site area. The on-site area is undeveloped wooded and grassy areas with a small amount of developed graded grass area. The subcatchment area contains soils in hydrologic soil group B and D. Runoff from the subcatchment travels overland via sheet flow and shallow concentrated flow to the westerly property line and then off-site to SDP1. A minimum Tc of 6 minutes is used for this subcatchment.

Subcatchment 5 is comprised of approximately 1.49 acres of on-site area. The on-site area is mostly undeveloped wooded and grassed area. The developed portion of subcatchment 5 consists of a section of the access road and final grading stabilized with grass. The subcatchment area contains soils in hydrologic soil group B. Runoff from the subcatchment travels overland via sheet flow and shallow concentrated flow to SDP 2. A minimum Tc of 6 minutes is used for this subcatchment.

Detailed stormwater calculations and routing have been included in Appendix E.

The following table summarizes the post-development watershed conditions:

Post-Development Watershed Conditions					
Subcatchment	**Area (ac)**	**Cover**	**Average Curve #**	**Hydrologic Soil Group(s)**	**Time of Concentration**
1	2.48	Mostly impervious with some	91	B	6.0 minutes

		grassed areas and small amount of gravel path			
2	3.90	Mostly impervious with some grassed areas and small amount of gravel path	81	B	6.0 minutes
3	2.04	Mostly grass with impervious area	83	B	6.0 minutes
4	2.05	Grass and wooded area	69	B/D	6.0 minutes
5	1.49	Mostly woods and grassed areas with some impervious area	62	B	6.0 minutes

6.4 Hydrologic Review

The stormwater runoff volumes at each discharge point under pre-development and post-development conditions are summarized below.

SDP	1 - Year		10 - Year		100 - Year	
	Pre	**Post**	**Pre**	**Post**	**Pre**	**Post**
1	1.28	0.86	10.61	9.05	33.75	32.18
2	0.69	0.18	4.61	4.45	14.11	14.08

As shown above, post-development peak flow rates are less than pre-development rates for the storm events modeled for SDP 1 and SDP 2; therefore, the post-developed storm water management controls provide the required storage to attenuate the 1, 10 and 100-year storm events. It should be noted that Infiltration Basins 1 and 3 have been sized to handle the future land banked parking area.

Supporting hydrologic analyses for pre-development and post-development conditions are included in Appendices D and E.

6.5 Stormwater Management System

The final stormwater management system will consist of minimal conveyance systems which will include culverts, and grass-lined swales/dikes where required. It is anticipated that most, if not all perimeter diversion swales/dikes will be unnecessary and removed after installation; however, there may be a need for some as site conditions warrant.

The remainder of the drainage area will remain undisturbed with natural vegetation remaining. Minimum 20 feet wide undisturbed vegetated buffers will remain intact between developed areas and water bodies, streams, and wetlands.

6.6 Hydraulic Calculations

Hydraulic sizing of the culverts and swales are based on the 10-year, Type III, 24-hour rainfall event. Sizing calculations will be provided within Appendix F in the final SWPPP.

6.7 Green Infrastructure for Stormwater Management

The SDM encourages the use of green infrastructure (GI) practices for stormwater management. Green infrastructure approach for stormwater management reduces a site's impact on an aquatic ecosystem through the use of site planning techniques, runoff reduction techniques, and certain standard stormwater management practices. The objective is to replicate the pre-development hydrology by maintaining pre-construction infiltration, peak runoff flow, discharge volume, and minimizing concentrated runoff by use of runoff control techniques. When implemented, green infrastructure can reduce volume, peak flow, and flow duration, promote infiltration and evapotranspiration, improve groundwater recharge, reduce downstream flooding, and protect downstream water and wetlands.

6.7.1 Green Infrastructure Practices

Green infrastructure consists of implementing several techniques during the site planning process which are:

- Preservation of Natural Resources – Preservation of undisturbed areas; preservation of buffers; reduction of clearing and grading; locating development in less sensitive areas; open space design; soil restoration.
- Reduction of Impervious Cover – Roadway reduction; sidewalk reduction; driveway reduction; cul-de-sac reduction; building footprint reduction; parking reduction.
- Runoff Reduction Techniques – Conservation of natural areas; sheet flow to riparian buffers or filter strips; vegetated open swale; tree planting/tree box; disconnection of roof runoff; stream daylighting for redevelopment projects; bioretention areas; rain gardens; green roofs; stormwater planters; rain tank/cistern; pervious pavement.

During the planning process, the above techniques are implemented to the greatest extent possible to reduce runoff developed by the site.

6.7.2 Five Step Process for Stormwater Site Planning and Selection Design

Stormwater management using GI is summarized in the five-step process described below.

Step 1: Site Planning

The site design will incorporate the preservation of natural resources including protection of wetland areas, natural areas, avoidance of sensitive areas, minimizing grading and soil disturbance, minimizing impervious areas on internal access ways, driveways and parking areas. The site layout will avoid wetlands, waterways, buffers, areas of highly erodible soils and critical areas. The site design will also maintain natural drainage design points. The use of meadow as a permanent final groundcover will provide better water quality and reduce runoff offsite.

Step 2: Determine Water Quality Volume (WQv)

Calculate the water quality volume per Chapter 4 of the NYSDEC manual. This is described in detail under Section 6.8.

Step 3: Runoff Reduction by Applying Green Infrastructure Techniques

Green infrastructure practices will be implemented wherever possible to reduce runoff from the site. GI for this site will consist of reduction of access drive width, preservation of undisturbed buffers, providing infiltration practices and use of open channel conveyance systems.

Step 4: Apply Standard SMP's to Address Remaining WQv

Standard SMP's such as ponds, filtering practices or stormwater wetlands to meet additional water quality volume requirements. It is not anticipated that additional standard SMP's will be required for this project based upon the use of meadow groundcover.

Step 5: Apply Volume and Peak Rate Control Practices (if needed)

Cpv, Qp and Qf must also be met, either by standard practices, or other accepted techniques such as meeting criteria set forth in the NYS SWDM, where Cpv, Qp and Qf are required. Cpv, Qp and Qf are met by the use of meadow groundcover which reduces the peak flows associated with each criteria.

6.8 Qualitative Practices

Small sized, frequently occurring storms account for the majority of runoff events that generate stormwater runoff. As a result, the runoff from these storms is recognized as a major contributor of pollutants. Therefore, treating these frequently occurring smaller rainfall events and a portion of the larger events offers an opportunity to minimize the water quality impacts associated with developed areas.

The water quality volume, denoted as WQ_v, specifies a treatment volume required to be captured and treated by intercepting 90% of the average annual stormwater runoff volume. This criterion strives to achieve an 80% Total Suspended Solids (TSS) removal and 40% Total Phosphorous (TP) removal on an annual basis.

In numerical terms, it is calculated using the formula below which was obtained from Section 4.2 of the New York State Stormwater Management Design Manual, January 2015:

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

Where:

WQ_v = Water Quality Volume (acre-feet)

P = 90% Rainfall Event Number

$R_v = 0.05+0.009 \times I$, where I is percent impervious (minimum $R_v = 0.2$)

A = Site area in acres (contributing area)

The following table has been developed summarizing the pre-treatment volume, water quality volume and treatment practices for the main project area.

Watershed	Total WQv (cf)	Required Pre-Treatment Volume (cf)	Pre-Treatment Practice	Treatment Practice	WQv Provided (cf)
1	8,616	8,616	Hydrodynamic	Infiltration	8,616
2	9,278	9,278	Hydrodynamic	Infiltration	9,278
3	5,112	5,112	Hydrodynamic	Infiltration	5,112
4	1,786	1,786	Overland	Overland	1,786
5	1,298	1,298	Overland	Overland	1,298

*Areas 4 and 5 are mostly undisturbed and do not have any new impervious; therefore are not subject to water quality requirements. The watersheds will achieve water quality volume goals by sheet flow through non-disturbed wooded areas.

All water quality volumes are calculated using the total contributing area. Offsite contributing areas that do not require treatment are diverted as much as possible. Infiltration rates are assumed to be 5 inches per hour, thus requiring 100% pre-treatment. The above volumes are total for the entire watershed.

A major concern with runoff into waterbodies is phosphorus loading. Phosphorus, like nitrogen, is an essential nutrient for aquatic life in waterbodies. However, increased amounts of phosphorus entering surface waters promotes excessive algae growth, which decreases water clarity, causes variations in dissolved oxygen, disagreeable odors, habitat loss and fish kills. The protection of waterbodies from the harmful effects of phosphorus can be accomplished from reducing the runoff volume entering surface waters. Reduction of runoff volume reduces the concentrations of pollutants entering the surface water and thus decreases harmful effects. The removal of enhanced phosphorus can be accomplished using stormwater management practices. Whether in particulate or dissolved speciation, phosphorus can be removed using unit operations. Particulate phosphorus in particular can be removed using infiltration basins and through sedimentation of runoff before entering surface water. Primarily, reducing the WQv entering a surface water body will lower phosphorus pollutant loading. All of the onsite infiltration basins have been sized to infiltrate the entire WQv and 1-year storm.

6.8.2 Pre-Treatment Practices

The following pre-treatment practices have been incorporated into the design of this project. Preventative and corrective maintenance measures to provide long-term effectiveness of stormwater attenuation practices if properly implemented will be included in Appendix F.

6.8.2.1 Overland Flow

A significant portion of the runoff will flow overland to receiving water bodies. Much of the site's existing natural vegetation is proposed to remain, and the post developed land cover will be restored to meadow. The meadow will capture more sediment and floatables than the pre-conditions woods in fair condition.

6.8.2.2 Vegetated Swales

The design incorporates several temporary vegetated swales/dikes to convey stormwater to sediment trapping devices. There may be a need to keep some of them post construction; however, it is not anticipated at this time.

6.8.2.3 Stone Check Dams

Stone check dams will be provided in all diversion dikes that lead to an infiltration practice. Stone check dams provide a pooling area where sediment can be captured and allowed to settle out of suspension. Stone check dams provide a good means of capturing floatables as well.

6.8.3 Treatment Practices

The following treatment practices have not been incorporated into the design of this project, but are discussed should they are found to be required. Preventative and corrective maintenance measures to provide long-term effectiveness of stormwater attenuation practices if properly implemented will be included in Appendix F.

6.8.3.1 Infiltration Basins

Stormwater infiltration practices capture and temporarily store the water quality volume before allowing it to infiltrate through the floor of each practice into the soil over a two-day period. In areas where the subsurface soils exhibit high infiltration rates, the channel protection volume may also be infiltrated. Infiltration facilities are not typically capable of infiltrating the overbank flood or extreme flood volumes. Adequate outflows are required for these larger storm events. Soil testing to obtain infiltration rates are required as part of the design of infiltration facilities. Varying degrees of pre-treatment of the water quality are required based on the field determined infiltration rate of the subsurface soils. 100% of the water quality volume is required where the infiltration rate exceeds 5 inches per hour, 50% for infiltration rates between 2 and 5 inches per hour, and 25% for infiltration rates less than 2 inches per hour. Pre-treatment is typically accomplished through installation of plunge pools and other filtering methods. Infiltration practices must be isolated and protected from stormwater run-off during construction. The contributory drainage area shall be completely constructed and stabilized before connection of the stormwater conveyance system to the infiltration practice. Infiltration basins are typically landscaped by providing a hardy, drought tolerant grass species that is capable of tolerating periodic inundation. The established grass requires mowing twice annually (or as needed). Proper maintenance of the contributing conveyance system and pre-treatment practice are important in maintaining infiltration rates.

Infiltration Basins 1 and 3 have been sized to accommodate the future land banked parking.

6.8.3.2 Grass Filter Strips

Grass Filter Strips provide capture of sediment, remove pollutants and increase infiltration. The entire solar array area will be restored to a meadow; thus, acting as a grass filter strip over the entire area. Perimeter buffers, and minimum 20’ buffers surrounding wetland areas will be provided and maintained.

6.9 Runoff Reduction Volume (RRv)

RRv (measured in acre-feet) is reduction of the total WQv by application of GI techniques and SMP’s to replicate the pre-development hydrology. The minimum required RRv is defined as the specified Reduction Factor (S), provided objective technical justification is documented.

RRv must be achieved by infiltration, groundwater recharge, reuse, recycle, evaporation/evapotranspiration of 100% of the post-developed WQv’s to replicate pre-development hydrology by maintaining pre-construction infiltration, peak runoff flow, discharge

volume, as well as minimizing concentrated flow by using runoff control techniques to provide treatment in a distributed manner before runoff reaches the collection system.

RRv is calculated based upon three methods:

1. Reduction of the practice contributing area in WQv computation.
2. Reduction of runoff volume by storage capacity of the practice.
3. Reduction using standard SMP's with runoff reduction capacity.

Projects that cannot meet 100% of the runoff reduction requirement must provide a justification that evaluates each of the GI planning and reduction techniques, and identify the specific limitations of the site according to which application of this criterion is technically infeasible. Projects that do not achieve runoff reduction to pre-construction must, at a minimum, reduce a percentage of the runoff from impervious areas to be constructed on the site. The percent reduction is based on the Hydrologic Soil Group(s) (HSG) of the site and is defined as Specific Reduction Factor (S).

The following lists the specific reduction factors for the HSG's.

HSG A = 0.55

HSG B = 0.40

HSG C = 0.30

HSG D = 0.20

The specific reduction factor (S) is based on the HSG's present at the site. The values are defined based on a hydrology analysis of low, medium, and high imperviousness. The reduction is achieved when runoff from a percentage of the impervious area on a site is captured, routed through GI or an SMP, infiltrated to the ground, reused, reduced by evapotranspiration, and eventually removed from the stormwater discharge from the site.

The following equation is used to determine the minimum RRv:

RRv (in acre-feet of storage) = [(P)(Rv*)(Ai)]/12

Ai = (S)(Aic)

Ai = impervious cover targeted for runoff reduction

(Aic) = total area of new impervious cover

Rv * = 0.05+0.009(I) where I is 100% impervious

S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S)

The goal of the SWPPP is to utilize as many runoff reduction methods as possible on a site. All GI practices will be quantified and compared to the overall WQv for the site. If the RRv is

greater than or equal to the WQv, then standard SMP's can be implemented to control peak rate leaving the site if applicable.

The following table summarizes required 100% RRv, minimum RRv, RRv reduced by use of runoff reduction techniques, RRv provided by standard SMP's with RRv and provided RRv for the main project area.

Watershed	Required Total RRv (cf)	Required Minimum RRv (cf)	RRv reduced by use of runoff reduction techniques (cf)	RRv provided by standard SMP with RRv (cf)*	RRv (cf) Provided
1	8,616	3,410	0	9,088	8,616
2	9,278	3,559	0	9,290	9,278
3	5,112	1,970	0	5,112	5,112
4	446	0	446	0	446
5	1,128	339	1,128	0	1,128

* Treatment practices can be oversized to provide additional runoff reduction (RRv); however, they can only be oversized to provide up to 100% of the RRv. No additional credit can be taken for RRv for practices that provide greater than 100% RRv. The infiltration basin has been sized to infiltrate the 1-year storm.

6.10 Soil Restoration

Soils within disturbed areas tend to over compact as a result of heavy construction traffic; thus limiting their infiltrative capacity. Under the GP 0-15-002 permit, soil restoration is now required in disturbed areas that will be vegetated in order to recover the original properties and porosity of the soil, especially in areas that receive high construction traffic, or areas that have soils that are poorly drained.

Many runoff reduction practices need Soil Restoration measures applied over and adjacent to the practice to achieve runoff reduction performance. Some key benefits of soil restoration are less runoff, better water quality; healthier, aesthetically pleasing landscapes; increased porosity on redevelopment sites where impervious cover is converted to converted to pervious; decreases runoff volume generated and lowers the demand on runoff control structures; enhances direct groundwater recharge; promotes successful long-term re-vegetation by restoring soil organic matter, permeability, drainage and water holding capacity for healthy root system development of trees, shrubs and deep-rooted ground covers, minimizing lawn chemical requirements, plant drowning during wet periods, and burnout during dry periods.

Soil restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.

6.10.1 Soil Restoration Methods

- Topsoil Application – Applying 6" of topsoil in soils with an HSG of A & B and have only been stripped, cut or filled. Soils with HSG of C or D that have only been stripped require aeration in addition to topsoil.

- Aeration - Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.
- Tilling – Tilling includes the use of a cat-mounted ripper, tractor mounted disc, or tiller in order to expose the compacted soil devoid of oxygen and air to recreate temporary air space which allows for infiltration.
- Full Soil Restoration - Consists of Deep Ripping and De-Compaction, Compost Enhancement, and/or Deep Subsoiling. Deep Ripping includes the use of a cat mounted ripper, and is typically done at 12" to 24" depths. Compost Enhancement is done by using a deep subsoiler after topsoil has been applied. The goal is to alleviate the compaction that may have occurred during the placement of topsoil. This method mixes the topsoil and compost with subsoils.

Restoration techniques shall not be done until construction is complete and traffic will not travel through green areas.

7.0 EROSION AND SEDIMENT CONTROL

7.1 Overview

The most sensitive stage of the development cycle is the period when vegetation is cleared and a site is graded. The potential impacts to on-site and off-site receiving waters and adjoining properties are particularly high at this stage. Trees and topsoil are removed, soils are exposed to erosion, natural topography and drainage patterns are altered. Control of erosion and sediment during these periods is an essential function of this SWPPP and accompanying plans.

Effective and practical measures employed to minimize the erosion potential and prevent sediment from leaving the construction site and reaching streams or other water bodies have been recommended in accordance with:

- New York State Standards and Specifications for Erosion and Sediment Control, July 2016

In order to ensure the effectiveness of the measures recommended herein, routine inspections and documentation, along with procedures for monitoring the findings, maintenance, and corrective actions resulting from each inspection are outlined within this section of the SWPPP.

7.2 Temporary Erosion and Sediment Control Measures

The following temporary measures have been incorporated into the erosion and sediment control plans for the site construction activities. These measures are also detailed on the site plans.

7.2.1 Silt Fence

A silt fence is a temporary sediment barrier consisting of a filter fabric stretched across and attached to supporting posts, entrenched, and supported with woven wire fence. Silt fences are installed on the contours across a slope and used to trap sediment by intercepting and detaining sediment laden runoff from disturbed areas in order to promote sedimentation on the uphill side of the fence.

Silt fences are suitable for perimeter and interior control, placed below areas where runoff may occur in the form of sheet flow. It should not be placed in channels or areas where flow is concentrated. In addition to interior and perimeter control a silt fence can be applied in the following applications:

- Below the toe or down slope of exposed and erodible slopes.
- Along streams and channels banks.
- Around temporary spoil area and stockpiles.

7.2.2 Stabilized Construction Entrance

A stabilized construction entrance consists of a pad of aggregate overlaying a geotextile fabric located at a point where construction vehicles enter or exit a site to reduce or eliminate the tracking of sediment onto public right of ways, street, alleys or parking areas, thereby preventing the transportation of sediment into local stormwater collection systems. Efficiency is greatly increased when a washing area is included as part of a stabilized construction entrance.

Stabilized construction entrances shall be a minimum of fifty (50) feet long and twelve (12) feet wide, but not less the full width of points where vehicles enter and exit the site. Where there is only one access point to the site, the stabilized construction entrance shall be a minimum of twenty-four (24) feet wide. Stabilized construction entrances shall be a minimum of six (6) inches in depth consisting of one (1) to four (4) inch stone, or reclaimed or recycled equivalent.

7.2.3 Check Dams

Check dams shall be placed in channels to reduce scour and erosion by reducing flow velocity and promoting sediment settlement. Check dams shall be spaced in the channel so that the crest of the downstream dam is at the elevation of the toe of the upstream dam. Check dams, consisting of a well-graded stone two (2) – nine (9) inches in size (NYSDOT – Light Stone) shall maintain a height of two (2) feet with side slopes of 2:1 extending beyond the bank of the channel by a minimum of one and a half (1.5) feet. Check dams shall be anchored in the channel by a cutoff trench of one and a half (1.5) feet in width by a half (0.5) foot in depth.

7.2.4 Inlet Protection

Inlet protection consists of a filtering measure placed around or upstream of a storm drain used to trap sediment by temporary ponding runoff before it enters the storm drain. Inlet protection is not considered to be a primary means of sediment control and should be used with an overall integrated sediment control program. There are four types of storm drain inlet protection consisting of: excavated drop inlet protection, fabric drop inlet protection, stone and block drop inlet protection and curb drop inlet protection.

Inlet protection shall be implemented for all inlets that could potentially be impacted by sediment laden runoff.

7.2.5 Temporary Channels

Temporary channels in the form of diversion swales or berms may be used to intercept and direct runoff under the following applications:

- Above disturbed areas in order to direct and prevent clean runoff from flowing over disturbed areas until the area is permanently stabilized.
- Below disturbed areas to convey sediment laden runoff to sediment traps.
- Across disturbed slopes to reduce slope lengths.

Where used to convey sediment laden runoff, temporary channels shall be equipped with check dams.

7.2.6 Sediment Traps & Sediment Basins

A sediment trap or basin is a containment area, where sediment laden runoff collected from disturbed areas is temporarily detained allowing sediment to settle out before the runoff is discharged. Sediment traps and basins are formed by excavating an area or constructing an earthen embankment where sediment control is needed.

There are several types of sediment traps. The outlet of a rip rap outlet sediment traps shall be through a partially excavated channel through the embankment lined with rip rap. Pipe outlet sediment traps are equipped with an outlet structure including a perforated riser. The pipe outlet typically is installed through the embankment.

Sediment traps and basins are designed to treat 3,600 cubic feet per acre of drainage area collected. Pipe outlet sediment traps are limited to drainage areas of less than five (5) acres, rip rap outlet sediment traps are limited to fifteen (15) acres of drainage area, and sediment basins can accommodate upwards of one-hundred (100) acres.

Sediment shall be removed and the trap or basin shall be restored to the original dimensions when the sediment has accumulated to ½ of the design depth. The required and provided storage/cleanout elevations have been provided on the plan set. Calculations for sizing the facilities will be provided in the final SWPPP.

7.2.7 Water Bars

Water bars are temporary earth barriers constructed across construction roads used to intercept and divert roadway runoff toward temporary sediment traps or channels, prevent runoff from concentrating, and minimize the potential of gullies from forming. Spacing of water bars is dependent upon the road slope, and shall be installed in accordance with the schedule depicted on the Erosion and Sediment Control detail sheet.

7.2.8 Straw Bale Barriers

Straw bale barriers are used to intercept and contain sediment from disturbed areas of limited size in order to prevent sediment from exiting the site. Bales should be placed in a single row lengthwise along the contour, with ends abutting one another. Straw bales shall be bound and installed so that the bindings are oriented around the sides. Straw bales shall be entrenched a minimum of four (4) inches, backfilled, and anchored using either two stakes or rebar driven through the straw bales to a depth of one and a half (1.5) to two (2) feet below grade.

Straw bales shall be used where no other measure is feasible. They shall not be used where there is a concentration of flow within a channel or other area.

The useful life of a straw bale barrier is three (3) months.

7.2.9 Temporary Soil Stockpiles

Stockpiling of soil is a method of preserving soil and topsoil for regrading and vegetating disturbed areas. Stockpiles shall be located away from environmentally sensitive areas (i.e. wetlands and associated buffers, streams, water bodies) and shall be protected with a peripheral silt fence. Slopes of stockpiles shall not exceed 2V:1H. Temporary stabilization measures shall be completed within seven (7) days of stockpile formation.

7.2.10 Dust Control

Dust controls reduce the surface and air transport of dust, thereby preventing pollutants from mixing into stormwater. Dust control measures for the construction activities associated within this project consist of windbreaks, minimization of soil disturbance (preserving buffer areas of vegetation where practical), mulching, temporary and permanent vegetation cover, barriers (i.e. geotextile on driving surfaces) and water spraying.

Construction activities shall be scheduled to minimize the amount of area disturbed at any one time.

7.2.11 Temporary Soil Stabilization Practices

Stabilization practices reduce the potential for soil detachment by shielding the soil surface from the impact of rainfall and reducing overland flow velocity.

The Contractor shall initiate stabilization measures as soon as possible in portions of the site where construction activities have temporarily or permanently ceased. In areas where soil disturbance activity has temporarily or permanently ceased, and is located in one of the watersheds [NYCDEP] the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased.

This requirement does not apply where the initiation of stabilization measures by the 7th day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions.

Temporary stabilization practices may include:

7.2.11.1 Mulching

Mulching is a temporary soil stabilization practice. Mulching prevents erosion by protecting soil from raindrop impact and by reducing the velocity of overland flow. Mulching also retains moisture within the soil surface and prevents germination.
Where mulching consists of wood chips or shavings, it shall be applied at a rate of 500-900 lbs per 1000 s.f. Where mulching consists of straw, it shall be applied at a rate of 90-100 lbs. per 1000 s.f.

All temporary grass areas shall receive a standard application of mulch consisting of straw, unless the area is hydro-seeded.

7.2.11.2 Temporary Seeding

Temporary seeding provides additional benefits over other stabilization practices by creating a vegetation system holding soil particles in place with root systems, and maintaining the soils

capacity to absorb runoff. Temporary vegetation shall be placed in accordance with project plans.

Irrigation shall be used when the soil is dry or when summer plantings are done.

7.2.11.3 Temporary Erosion Control Blanket

A temporary erosion control blanket is a degradable erosion control blanket used to hold seed and soil in place until vegetation is established in disturbed areas. Temporary erosion control blankets insulate and conserve seed moisture thus reducing evaporation and increasing germination rates, and protects seeds from birds. Temporary erosion control blankets may consist of straw blankets, excelsior blankets (curled wood excelsior), coconut fiber blankets, or wood fiber blankets (reprocessed wood fibers which do not possess or contain any growth or germination inhibiting factors).

7.3 Permanent Erosion and Sediment Control Measures

The following permanent measures have been incorporated into the erosion and sediment control plans for the site construction activities.

7.3.1 Outlet Protection

Outlet protection is used to reduce stormwater velocity and dissipate the energy of flow exiting a culvert before discharging into receiving channels. Rip-rap treatment extends between the point where flows exit the culvert and where the velocity and/or energy from runoff is dissipated to a degree where there is minimal erosion downstream of the discharge point.

A geotextile fabric shall be placed beneath the rip-rap to prevent soil movement into and through the rip-rap.

7.3.2 Permanent Soil Stabilization Practices

Stabilization practices reduce the potential for soil detachment by shielding the soil surface from the impact of rainfall and reducing overland flow velocity.

In areas where soil disturbance activity has temporarily or permanently ceased, and is located in one of the watersheds [NYCDEP] the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased.

Permanent stabilization practices may include:

7.3.2.1 Sod

Where exposed soils have the potential to generate off-site sediment loading, sod can provide a immediate form of stabilization and extra protection to a disturbed area. Where applied, sod shall be blue grass or a bluegrass/red fescue mixture or a perennial ryegrass and machine cut with a uniform soil thickness of ¾ inch, plus or minus ¼ inch. Sod shall be used at the discretion of the Owner, unless specifically required by the plans.

7.3.2.2 Permanent Vegetation

Permanent vegetation shall be used to provide a protective cover for exposed areas that have received final grading. Permanent stabilization shall be applied where topsoil has been placed or

returned and incorporated into the soil surface. When used, this process shall be followed with the application of straw mulch to protect soil from erosion and seed from drying out.
Irrigation shall be used when the soil is dry or when summer plantings are done.
Permanent vegetation shall be placed in accordance with project plans.

7.3.2.3 Hydroseeding

Hydroseeding is the hydraulic application of seed and fertilizer onto prepared seed beds. When used, this process shall be followed with the application of straw mulch to protect soil from erosion and seed from drying out.
Irrigation shall be used when the soil is dry or when summer plantings are done.
Hydroseeding shall be used at the discretion of the Contractor, unless specifically required by the plans.

7.3.2.4 Permanent Erosion Control Blankets

Permanent erosion control blankets are comprised of synthetic materials that form a high strength mat that helps prevent soil erosion in channels and on steep slopes. Stems and roots become intertwined within the matrix, thus reinforcing the vegetation and anchoring the mat. Permanent erosion control blankets insulate and conserve seed moisture thus reducing evaporation and increasing germination rates, and protect seeds from birds. When used within channels, permanent erosion control blankets can aid in the establishment of vegetation and increase the maximum permissible velocity of the given channel by reinforcing the soil and vegetation to resist the forces of erosion during runoff events.
Permanent erosion control blankets shall be used on slopes steeper than 3:1.

7.4 Erosion and Sediment Control Sequencing Schedule

Implementation schedules for the installation of erosion and sediment control measures prior to and during the course of construction will depend greatly on the actual construction schedule and the varying field conditions that may warrant temporary construction stops and/or work commencing in other locations. The plans will include an anticipated construction sequence schedule, of which temporary and permanent erosion and sediment control practices will be required and inspected.

7.4.1 Sequencing Schedule and Phasing

The construction sequence shall be followed such that no more than 5-acres are disturbed at any given time. The phasing can be broken down as follows:

Phase I

Phase I includes the mass grading and installation of the lower site access road and westerly parking lots, clearing and grubbing of a small amount of wooded areas within the phase, site preparation for the lower westerly apartment building and underground utilities within the phase. Utility connections will be made within Branch Street during this phase and stubs will be provided into Phase II and Phase III. Infiltration basins 2 and 3 will be constructed to 2 feet above the proposed bottom of the basin during this phase. The anticipated disturbance is approximately 4.14 acres during this phase.

Phase II

Once Phase I has been stabilized to 80% vegetation establishment within landscaped areas, and road/parking areas stabilized with binder or Item 4 sub base material, Phase II can commence. Phase II includes the mass grading and construction of the southeast portion of the upper parking area and the southerly access drive from the lower parking area with underground utilities. The southerly portion of the upper apartment building will be brought to subgrade during this phase. Once Phase II is complete, landscaped areas that are at rough grade shall be stabilized by seed and mulch. The anticipated disturbance for Phase II is 2.20 acres.

Phase III

Phase III shall not commence until there is no more than 2.5 acres disturbed within other phases. This phase consists of the mass grading and construction of the northeast portion of the upper parking area and the northerly access drive from the lower parking area. The northerly portion of the upper apartment building will be brought to subgrade during this phase. Once Phase III is complete, landscaped areas that are at rough grade shall be stabilized by seed and mulch. The anticipated disturbance for Phase II is 2.80 acres.

Phase IV

Phase IV shall not commence until all other phases have been stabilized to 80% vegetation establishment within landscaped areas, and road/parking areas stabilized with binder or Item 4 sub base material. Phase IV consists of construction of the apartment buildings, soil restoration, Infiltration Basins 1, 2 and 3 final paving and landscaping. The anticipated disturbance for Phase IV is 4.60 acres.

7.5 Maintenance Schedules

Maintenance of the erosion and sediment controls incorporated into this project shall be performed on a regular basis to assure continued effectiveness. This includes repairs and replacement to all erosion and sediment control practices, including cleanout of all sediment retaining measures. Those measures found to be ineffective during routine inspections shall be repaired or replaced and cleaned out (where applicable) before the next anticipated storm event or within 24-hours of being notified, whichever comes first. A more detailed description of the maintenance procedures for the site-specific erosion and sediment control practices has been provided on the plan set.

7.6 Construction Staging Areas

Construction staging areas are areas designated within construction sites where most equipment and materials are stored. The locations of the construction staging areas for this project will be shown on the final plan set.

7.7 Site Assessments, Inspections and Reporting

Regular inspections of the construction site shall be performed by a qualified professional who is familiar with all aspects of the SWPPP and the implemented control practices. Inspections are intended to identify areas where the pollutant control measures at the site are ineffective and have the potential to allow pollutants to enter water bodies or adjoining properties.

7.7.1 Prior to Construction

Prior to the commencement of construction, a qualified professional shall conduct an inspection of the site and certify in an inspection report that the appropriate erosion and sediment control measures have been installed as indicated by the project plan set and SWPPP. This certification shall be forwarded to the Owner's Representative and Contractor for filing in the construction log book.

A copy of the "Pre-Construction Site Assessment Checklist" has been provided in Appendix G.

7.7.2 During Construction

Following the commencement of construction, a qualified professional shall perform inspections of site construction activities in accordance with the SPDES General Permit. Inspections shall occur every seven (7) calendar days. Refer to Section 1.2 of this SWPPP for additional inspection requirements associated with disturbance of greater than five (5) acres at any time.

For project areas where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the qualified inspector shall conduct a site inspection at least once every thirty (30) calendar days. The owner or operator shall notify the Regional Office stormwater contact person in writing prior to reducing the frequency of inspections.

For project areas where soil disturbance activities have been shut down with partial project completion, the qualified inspector can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The owner or operator shall notify the Regional Office stormwater contact person in writing prior to the shutdown.

The inspections shall include observation of installed and maintained erosion and sediment control measures for consistency with project specifications and documentation of items to be corrected and recommendations for mitigating concerns. The following information, at minimum, shall be recorded during each inspection:

- Date and time of inspection;
- Name and title of person(s) performing inspection;
- A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
- A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
- A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site which receive

runoff from disturbed areas. This shall include identification of any discharges of sediment to the surface waterbody;

- Identification of all erosion and sediment control practices that need repair or maintenance;

- Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

- Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;

- Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

- Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water (where applicable);

- Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of the sediment storage volume;

- Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

- Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The qualified inspector shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection

- A brief description of any erosion and sediment control practice repairs, maintenance or installations made as a result of previous inspection; and

- All deficiencies that are identified with the implementation of the SWPPP.

Summary reports shall be forwarded to the Owner's Representative and Contractor. Reports shall be incorporated into the construction log book. Within one business day of the completion of an inspection, the qualified inspector shall notify the owner or operator and appropriate contractor or subcontractor of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

A copy of the "Construction" inspection report has been provided in Appendix M.

7.7.3 Quarterly Report

The Owner shall prepare a written summary of its status with respect to compliance with the SPDES General Permit at a minimum frequency of every three months during which coverage under the permit exists. The summary should address the status of achieving each component of the SWPPP.

7.7.4 End of Term

Termination of coverage under SPDES General Permit is accomplished by filing a Notice of Termination with the NYSDEC. Prior to the filing of the Notice of Termination (NOT), the Owner shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods and that all temporary erosion and sediment control structures have been removed and that all permanent erosion control and stormwater facilities have been installed and are operational in conformance with the SWPPP by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The owner or operator shall then submit the completed NOT form to the NYSDEC. Final stabilization" means that all soil disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextile) have been employed on all unpaved areas and area not covered by permanent structures.

A NOT is provided in Appendix N.

7.8 Construction Log Book

The construction log book shall be maintained on-site from the date of initiation of construction activities to the date of final stabilization and shall be made available to the permitting authority upon request. The construction log book shall contain a record of all inspections; preparer's, qualified professional's; owner's/operator's; contractor's, and sub-contractor's (if applicable) certifications; and weekly and quarterly reports.

8.0 GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES

The following good housekeeping and material management practices shall be followed to reduce the risk of spills or exposure of materials to stormwater runoff.

8.1 Waste Materials

All waste material, including but not limited to trash and construction debris, generated during construction shall be collected and stored in a proper receptacle in accordance with Federal, State, County and Local regulations. No waste material shall be buried on-site. All collected waste material shall be hauled to an approved waste disposal facility.

8.2 Chemical

Chemicals used on-site shall be kept in small quantities and stored in closed water tight containers undercover in a neat orderly manner and kept out of direct contact with stormwater. Chemical products shall not be mixed with one another unless recommended by manufacturer.

All on-site personnel shall have access to material safety data sheets (MSDS) and National Institute for Occupational Safety and Health (NIOSH) Guide to Chemical Hazards (latest edition) for all chemicals stored and used on-site.

Manufacturer's and/or Federal, State, County and Local guidelines for proper use and disposal shall be followed. Any spills or contamination of runoff with chemicals shall be contained, collected, cleaned up immediately and disposed of in accordance with Federal, State, County and Local regulations.

8.3 Fuels and Oil

All on-site vehicles, tools, and construction equipment shall be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. On-site vehicle and equipment refueling shall be conducted at a location away from access to surface waters and runoff. Any on-site storage tanks shall have a means of secondary containment. Oil products shall be kept in their original containers with original manufacturer's label. In the event of a spill, it shall be contained, cleaned up immediately and the material, including any contaminated soil, shall be disposed of in accordance with Federal, State, County and Local regulations.

Fuel and oil spills in excess of reportable quantities shall be reported to the NYSDEC as soon as the discharge is discovered.

8.4 Fertilizers

Fertilizers used on-site shall be stored in closed water tight containers undercover in a neat orderly manner and kept out of direct contact with stormwater. Manufacturer's and/or Federal, State, County and Local guidelines for proper use and disposal shall be followed. Any spills or contamination of runoff with fertilizers shall be contained, collected, cleaned up immediately, and disposed of in accordance with Federal, State, County and Local regulations.

8.5 Paint

Paints used on-site shall be stored in closed water tight containers undercover in a neat orderly manner and kept out of direct contact with stormwater. Manufacturer's and/or Federal, State, County and Local guidelines for proper use and disposal shall be followed. Any spills or contamination of runoff with paint shall be contained, collected, cleaned up immediately, and disposed of in accordance with Federal, State, County and Local regulations.

8.6 Sanitary Waste Facilities

Should portable units be located on-site, they shall be placed on upland areas away from direct contact with surface waters. They shall be serviced and cleaned on a weekly basis by a licensed portable toilet and septic disposal service. Any spills occurring during service shall be cleaned up immediately and disposed of in accordance with Federal, State, County, and Local regulations.

8.7 Container Disposal

All of a product shall be used up before disposal of the container. Empty containers that may contain chemical residue shall be disposed of in accordance with Federal, State, County and Local regulations.

8.8 Concrete and Asphalt Trucks

Concrete and asphalt trucks shall not be allowed to wash out or discharge surplus material on-site.

8.9 Site Supervisor

It shall be the responsibility of the Contractor's Site Supervisor to inspect daily and ensure the proper use, storage and disposal of all on-site materials.

9.0 SWPPP AMENDMENT

The SWPPP shall be updated by a licensed professional engineer whenever any of the following apply:

1) There is a significant change in design, construction, operation or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP.
2) The SWPPP proves to be ineffective in:
   - Eliminating or significantly minimizing pollutants from sources identified in the SWPPP required by the SPDES Permit; or
   - Achieving the general objective of controlling pollutants in stormwater discharges from permitted construction activity.
3) Identify any new contractor or subcontractor that will implement any measure of the SWPPP.
4) NYSDEC notifies the Permittee that the SWPPP does not meet one or more of the minimum requirements of the SPDES Permit. Within seven (7) days of such notification or as provided for by the NYSDEC, the Permittee shall make amendments to the SWPPP and submit to the NYSDEC a written certification that the requested changes have been made.

10.0 CONTRACTOR CERTIFICATIONS

All contractors and subcontractors that have any responsibility to install, inspect or maintain erosion or sediment control measures shall sign a copy of the certification statement included in Appendix Q before undertaking any construction activity at the site identified in the SWPPP.

11.0 OWNER/OPERATOR CERTIFICATION

The Owner/Operator must review and sign the owner/operator certification statement included in Appendix S.

12.0 CONCLUSIONS

This SWPPP demonstrates that the proposed project generally meets the requirements of SPDES GP-0-15-002, as follows:

- An erosion and sediment control plan in accordance with the latest revision to the New York State Standards and Specifications for Erosion and Sediment Control, July 2016, has been developed for the project and is included in the site plan set.
- Hydraulic calculations for all storm events modeled will demonstrate that the resulting stormwater runoff from the development, exiting the site will not adversely impact offsite properties, stormwater conveyance systems or receiving water bodies. Temporary and permanent stormwater systems and facilities are designed in accordance with the latest revision to the New York State Stormwater Management Design Manual, January 2015.
- The project has been designed to capture and treat 90% of the average annual stormwater runoff from the development through approved water quality measures in all available areas.
- The infiltration practices will capture 100% of the required runoff reduction volume (RRv) and infiltrated the entire 1-year storm.

APPENDIX A

NOTICE OF INTENT AND MS4 ACCEPTANCE

0644089821

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____
(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-15-002

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-
RETURN THIS FORM TO THE ADDRESS ABOVE
OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
Beacon Scenic Developments, LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Weber

Owner/Operator Contact Person First Name
Rodney

Owner/Operator Mailing Address

City
Beacon

State
NY

Zip
12508 -

Phone (Owner/Operator)
___ - ___ - ____

Fax (Owner/Operator)
___ - ___ - ____

Email (Owner/Operator)

FED TAX ID
__ - _____ (not required for individuals)

Project Site Information

Project/Site Name

Edgewater

Street Address (NOT P.O. BOX)

22 Edgewater Place

Side of Street

● **North** ○ **South** ○ **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)

Beacon

State: NY

Zip: 12508 -

County: Dutchess

DEC Region: 3

Name of Nearest Cross Street

Tompkins Terrace

Distance to Nearest Cross Street (Feet)

0

Project In Relation to Cross Street

○ **North** ● **South** ○ **East** ○ **West**

Tax Map Numbers
Section-Block-Parcel

Tax Map Numbers

590022

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you **must** go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/imsmaps/stormwater/viewer.htm

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located your project site, go to the tool boxes on the top and choose "i"(identify). Then click on the center of your site and a new window containing the X, Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)

584916

Y Coordinates (Northing)

4559558008

2. What is the nature of this construction project?

● **New Construction**

○ **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ● PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ○ OTHER

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION — Number of Lots
- ○ TOWN HOME RESIDENTIAL
- ● MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ○ OTHER

***Note**: for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
12.102.0	9.19.1	1.21.2	5.25.2

5. Do you plan to disturb more than 5 acres of soil at any one time? ○ **Yes** ● **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	91 %	%	9 %

7. Is this a phased project? ● **Yes** ○ **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date 08/01/2017 - **End Date** 08/01/2018

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

Hudson River

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ○ Stream / Creek Off Site
- ○ River On Site
- ● River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ● Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-15-002? ○ **Yes** ● **No**

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-15-002? ○ **Yes** ● **No**

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ **Yes** ● **No**
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ **Yes** ● **No**
If Yes, what is the acreage to be disturbed?

.

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ **Yes** ● **No**

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ● Yes ○ No ○ Unknown

16. What is the name of the municipality/entity that owns the separate storm sewer system?

City of Beacon

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ Yes ● No ○ Unknown

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ Yes ● No

19. Is this property owned by a state authority, state agency, federal government or local government? ○ Yes ● No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ Yes ● No

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● Yes ○ No

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ● Yes ○ No
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ● Yes ○ No

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer: Hudson Land Design

Contact Name (Last, Space, First): Bodendorf Michael

Mailing Address: 174 Main Street

City: Beacon

State: NY Zip: 12508 -

Phone: 845 440 9026 Fax: 845 440 6737

Email: mbodendorf@hudsonlanddesign.com

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-15-002. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name: Michael **MI**: A

Last Name: Bodendorf

Signature

Date / /

25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ● Construction Road Stabilization
- ● Dust Control
- ○ Earth Dike
- ● Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ● Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ● Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ● Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ● Grassed Waterway
- ● Mulching
- ● Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ● Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ● **Preservation of Undisturbed Areas**
- ○ **Preservation of Buffers**
- ○ **Reduction of Clearing and Grading**
- ○ **Locating Development in Less Sensitive Areas**
- ● **Roadway Reduction**
- ○ **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ● **Building Footprint Reduction**
- ● **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

0.5098 **acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area(acres)
RR Techniques (Area Reduction)			
○ Conservation of Natural Areas (RR-1) ...		and/or	
● Sheetflow to Riparian Buffers/Filters Strips (RR-2)	3.54	and/or	0.205
○ Tree Planting/Tree Pit (RR-3)		and/or	
○ Disconnection of Rooftop Runoff (RR-4)..		and/or	
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
● Infiltration Basin (I-2)	5.40		
○ Dry Well (I-3)			
○ Underground Infiltration System (I-4)			
○ Bioretention (F-5)			
○ Dry Swale (O-1)			
Standard SMPs			
○ Micropool Extended Detention (P-1)			
○ Wet Pond (P-2)			
○ Wet Extended Detention (P-3)			
○ Multiple Pond System (P-4)			
○ Pocket Pond (P-5)			
○ Surface Sand Filter (F-1)			
○ Underground Sand Filter (F-2)			
○ Perimeter Sand Filter (F-3)			
○ Organic Filter (F-4)			
○ Shallow Wetland (W-1)			
○ Extended Detention Wetland (W-2)			
○ Pond/Wetland System (W-3)			
○ Pocket Wetland (W-4)			
○ Wet Swale (O-2)			

Table 2 - Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area(acres)
○ **Hydrodynamic**	
○ **Wet Vault**	
○ **Media Filter**	
○ **Other**	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

0.5098 **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

● **Yes** ○ **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

. **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

● **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

[ ][ ][ ].[ ][ ][ ] **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). [ ][ ][ ].[ ][ ][ ]

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ● **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

0.708181 **acre-feet**

CPv Provided

0.708181 **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

● Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

15.222 **CFS**

Post-development

13.550 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

47.866 **CFS**

Post-development

46.266 **CFS**

37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ● **Yes** ○ **No**

If Yes, Identify the entity responsible for the long term Operation and Maintenance

Weber Projects III, LLC

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP N Y R
- ○ Other
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ **Yes** ● **No**
If Yes, Indicate Size of Impact. .

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● **Yes** ○ **No**
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ○ **Yes** ● **No**

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. N Y R

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name: Rodney

MI:

Print Last Name: Weber

Owner/Operator Signature:

Date: / /

APPENDIX B

SOILS DATA

Hydrologic Soil Group—Dutchess County, New York
(Edgewater)

Map Scale: 1:2,040 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 50 100 200 300

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Dutchess County, New York
Survey Area Data: Version 13, Sep 23, 2016

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

Date(s) aerial images were photographed: Mar 26, 2011—Apr 16, 2012

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

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Dutchess County, New York (NY027)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
DwB	Dutchess-Cardigan complex, undulating, rocky	B	9.5	79.8%
DxB	Dutchess-Cardigan-Urban land complex, undulating, rocky		1.1	8.9%
NwD	Nassau-Cardigan complex, hilly, very rocky	D	1.4	11.4%
Totals for Area of Interest			**11.9**	**100.0%**

K Factor, Whole Soil—Dutchess County, New York
(EW)

Map Scale: 1:2,030 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 50 100 200 300

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Lines

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Points

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Dutchess County, New York
Survey Area Data: Version 13, Sep 23, 2016

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

Date(s) aerial images were photographed: Mar 26, 2011—Apr 16, 2012

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

K Factor, Whole Soil

K Factor, Whole Soil— Summary by Map Unit — Dutchess County, New York (NY027)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
DwB	Dutchess-Cardigan complex, undulating, rocky	.32	9.5	79.0%
DxB	Dutchess-Cardigan-Urban land complex, undulating, rocky		1.1	9.2%
NwD	Nassau-Cardigan complex, hilly, very rocky	.17	1.4	11.8%
Totals for Area of Interest			**12.0**	**100.0%**

Description

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX C

RAINFALL DATA, NYSDEC ERM, FLOOD MAP AND WETLAND MAP

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New York
Location	
Longitude	73.983 degrees West
Latitude	41.510 degrees North
Elevation	0 feet
Date/Time	Mon, 27 Mar 2017 19:47:21 -0400

Extreme Precipitation Estimates

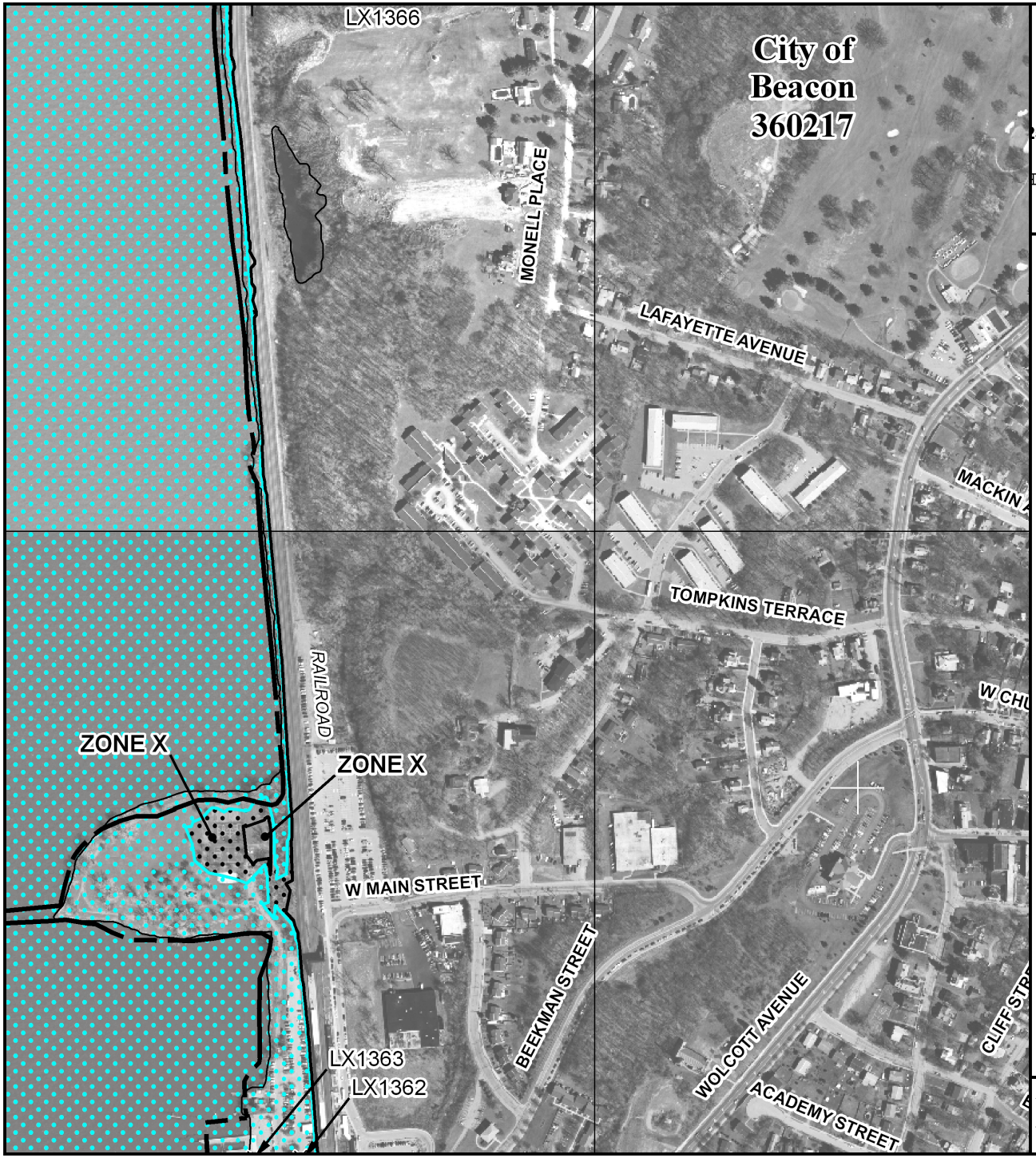
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.33	0.50	0.62	0.82	1.02	1.26	**1yr**	0.88	1.19	1.44	1.77	2.15	2.61	2.96	**1yr**	2.31	2.85	3.29	3.95	4.59	**1yr**
2yr	0.39	0.59	0.74	0.98	1.23	1.53	**2yr**	1.06	1.43	1.75	2.14	2.61	3.16	3.56	**2yr**	2.79	3.43	3.93	4.63	5.28	**2yr**
5yr	0.46	0.71	0.89	1.19	1.52	1.91	**5yr**	1.31	1.76	2.20	2.69	3.27	3.95	4.51	**5yr**	3.50	4.34	4.99	5.76	6.52	**5yr**
10yr	0.51	0.80	1.02	1.38	1.79	2.27	**10yr**	1.55	2.07	2.62	3.21	3.90	4.69	5.40	**10yr**	4.15	5.19	5.98	6.80	7.66	**10yr**
25yr	0.60	0.95	1.21	1.67	2.23	2.85	**25yr**	1.92	2.55	3.30	4.06	4.92	5.89	6.84	**25yr**	5.21	6.58	7.60	8.47	9.47	**25yr**
50yr	0.68	1.09	1.39	1.95	2.63	3.39	**50yr**	2.27	3.00	3.93	4.83	5.85	7.00	8.19	**50yr**	6.19	7.88	9.13	10.01	11.14	**50yr**
100yr	0.77	1.25	1.61	2.28	3.10	4.03	**100yr**	2.68	3.53	4.68	5.77	6.97	8.32	9.81	**100yr**	7.36	9.43	10.96	11.83	13.11	**100yr**
200yr	0.87	1.43	1.85	2.66	3.67	4.79	**200yr**	3.17	4.15	5.58	6.88	8.31	9.89	11.76	**200yr**	8.76	11.30	13.17	13.98	15.43	**200yr**
500yr	1.05	1.73	2.26	3.28	4.60	6.03	**500yr**	3.97	5.14	7.04	8.69	10.49	12.45	14.94	**500yr**	11.02	14.37	16.80	17.46	19.16	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.76	1.06	1.23	1.59	2.01	2.08	2.36	**1yr**	1.84	2.27	2.49	3.29	4.07	**1yr**
2yr	0.37	0.58	0.71	0.96	1.19	1.41	**2yr**	1.02	1.38	1.61	2.05	2.58	3.06	3.44	**2yr**	2.71	3.31	3.76	4.47	5.12	**2yr**
5yr	0.42	0.65	0.81	1.11	1.41	1.65	**5yr**	1.22	1.61	1.88	2.42	3.00	3.64	4.15	**5yr**	3.22	3.99	4.55	5.26	6.04	**5yr**
10yr	0.47	0.72	0.89	1.25	1.61	1.85	**10yr**	1.39	1.81	2.11	2.71	3.37	4.12	4.78	**10yr**	3.64	4.60	5.22	5.94	6.85	**10yr**
25yr	0.54	0.82	1.02	1.46	1.92	2.13	**25yr**	1.66	2.08	2.44	3.05	3.93	4.82	5.78	**25yr**	4.27	5.55	6.26	6.98	8.10	**25yr**
50yr	0.60	0.92	1.14	1.64	2.21	2.37	**50yr**	1.91	2.32	2.75	3.41	4.42	5.46	6.68	**50yr**	4.83	6.42	7.19	7.87	9.22	**50yr**
100yr	0.68	1.03	1.29	1.86	2.55	2.66	**100yr**	2.20	2.60	3.11	3.80	4.99	6.13	7.73	**100yr**	5.43	7.43	8.26	8.88	10.49	**100yr**
200yr	0.77	1.16	1.47	2.12	2.96	2.97	**200yr**	2.56	2.91	3.50	4.26	5.64	6.84	8.97	**200yr**	6.05	8.62	9.49	10.01	11.97	**200yr**
500yr	0.92	1.36	1.75	2.55	3.63	3.46	**500yr**	3.13	3.38	4.13	4.97	6.65	7.91	10.93	**500yr**	7.00	10.51	11.42	11.71	14.27	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.36	0.55	0.68	0.91	1.12	1.35	**1yr**	0.97	1.32	1.52	1.96	2.42	2.82	3.22	**1yr**	2.50	3.09	3.57	4.24	4.96	**1yr**
2yr	0.40	0.62	0.76	1.04	1.28	1.54	**2yr**	1.10	1.50	1.74	2.24	2.80	3.32	3.70	**2yr**	2.94	3.56	4.11	4.82	5.47	**2yr**
5yr	0.49	0.76	0.94	1.29	1.64	1.95	**5yr**	1.42	1.91	2.25	2.88	3.65	4.26	4.89	**5yr**	3.77	4.70	5.42	6.29	7.02	**5yr**
10yr	0.58	0.89	1.11	1.55	2.00	2.37	**10yr**	1.73	2.32	2.74	3.53	4.48	5.21	6.02	**10yr**	4.61	5.79	6.72	7.70	8.49	**10yr**
25yr	0.72	1.10	1.37	1.96	2.58	3.05	**25yr**	2.22	2.99	3.57	4.73	5.86	6.80	7.94	**25yr**	6.02	7.64	8.95	10.08	10.95	**25yr**
50yr	0.85	1.30	1.62	2.33	3.13	3.72	**50yr**	2.70	3.63	4.36	5.83	7.18	8.34	9.80	**50yr**	7.38	9.42	11.14	12.36	13.26	**50yr**
100yr	1.01	1.53	1.92	2.77	3.80	4.52	**100yr**	3.28	4.42	5.32	7.20	8.80	10.23	12.07	**100yr**	9.05	11.61	13.86	15.19	16.07	**100yr**
200yr	1.19	1.80	2.28	3.30	4.60	5.49	**200yr**	3.97	5.37	6.50	8.87	10.79	12.56	14.90	**200yr**	11.12	14.33	17.27	18.66	19.49	**200yr**
500yr	1.50	2.23	2.87	4.17	5.93	7.12	**500yr**	5.12	6.96	8.47	11.72	14.12	16.52	19.65	**500yr**	14.62	18.89	23.11	24.54	25.12	**500yr**



MAP SCALE 1" = 500'

250 0 500 1000 FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0463E

FIRM

FLOOD INSURANCE RATE MAP

for DUTCHESS COUNTY, NEW YORK
(ALL JURISDICTIONS)

CONTAINS:

COMMUNITY	NUMBER
BEACON, CITY OF	360217
FISHKILL, TOWN OF	361337

PANEL 463 OF 602
MAP SUFFIX: E
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
36027C0463E

EFFECTIVE DATE
MAY 2, 2012

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

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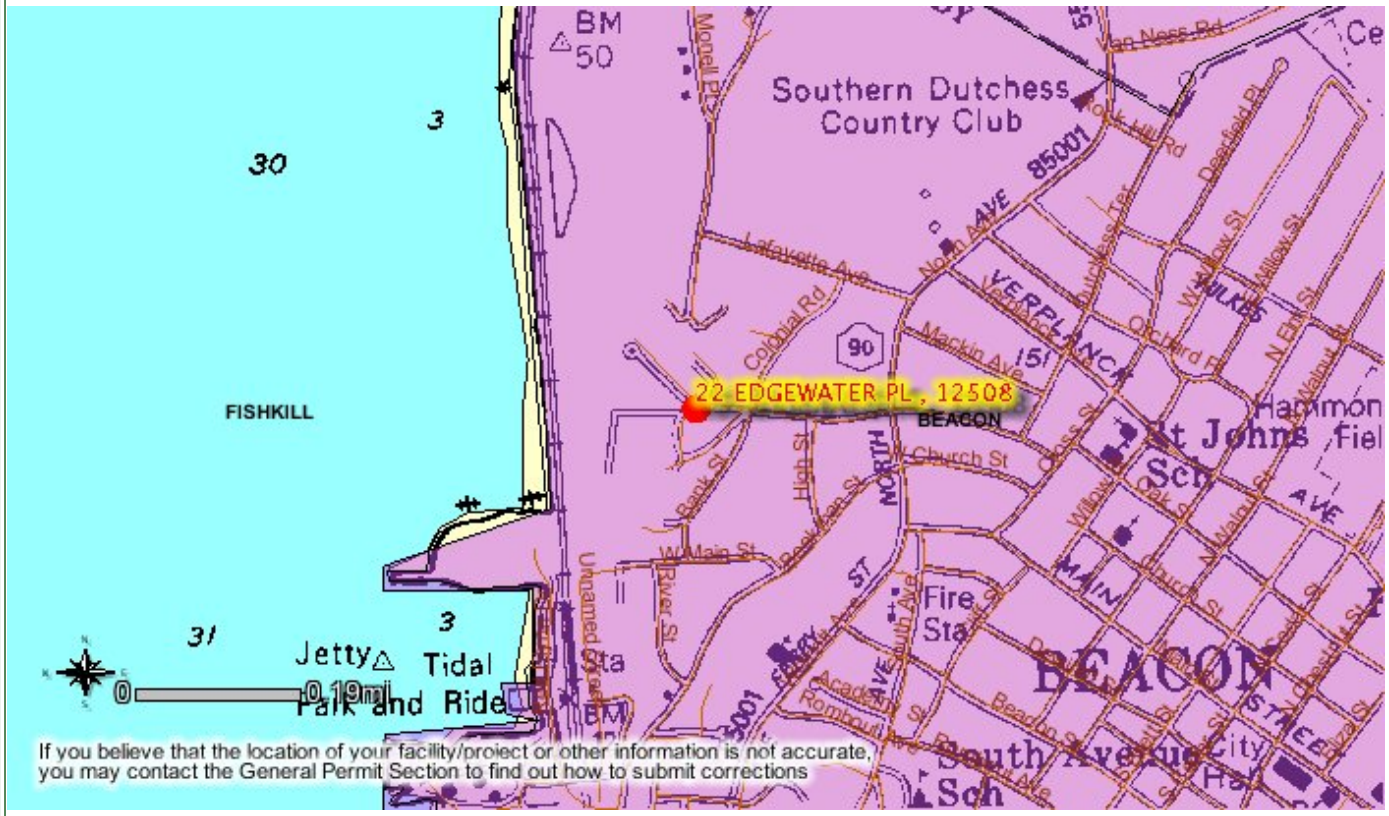
Please set your printer orientation to "Landscape".

Edgewater Storm Water Map



MinX: 583719, MaxX: 586175, MinY: 4596431, MaxY: 4595401

Visible Layers

- Major Roads
- Regulated MS4s
  - Automatic
  - Designation 2003
  - Designation 2008
  - Designation 2010
  - 303D Estuary Construction
- Planimetric Maps
  - Towns

U.S. Fish and Wildlife Service

National Wetlands Inventory

Edgewater Wetland Mapper

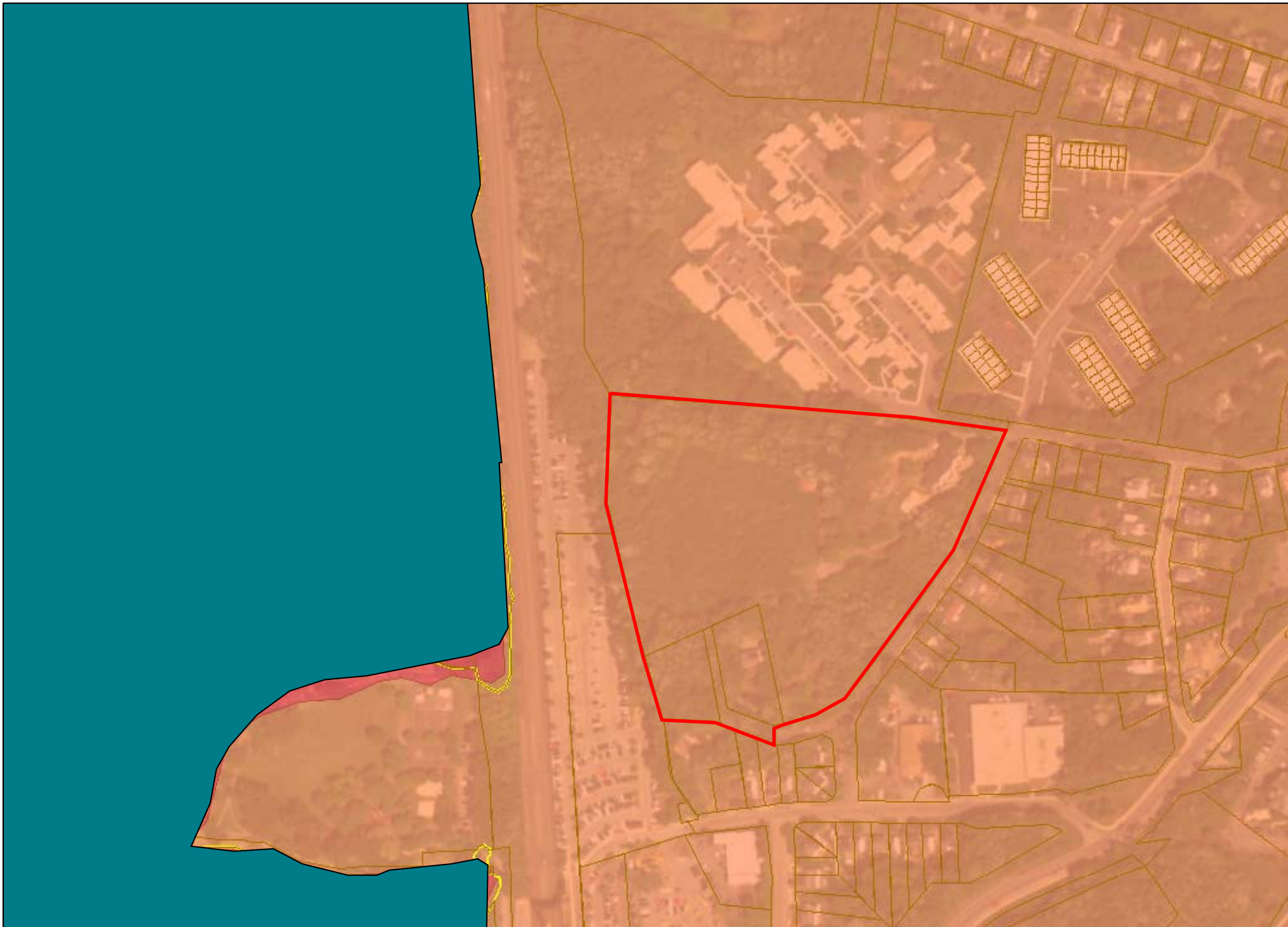
December 27, 2016

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

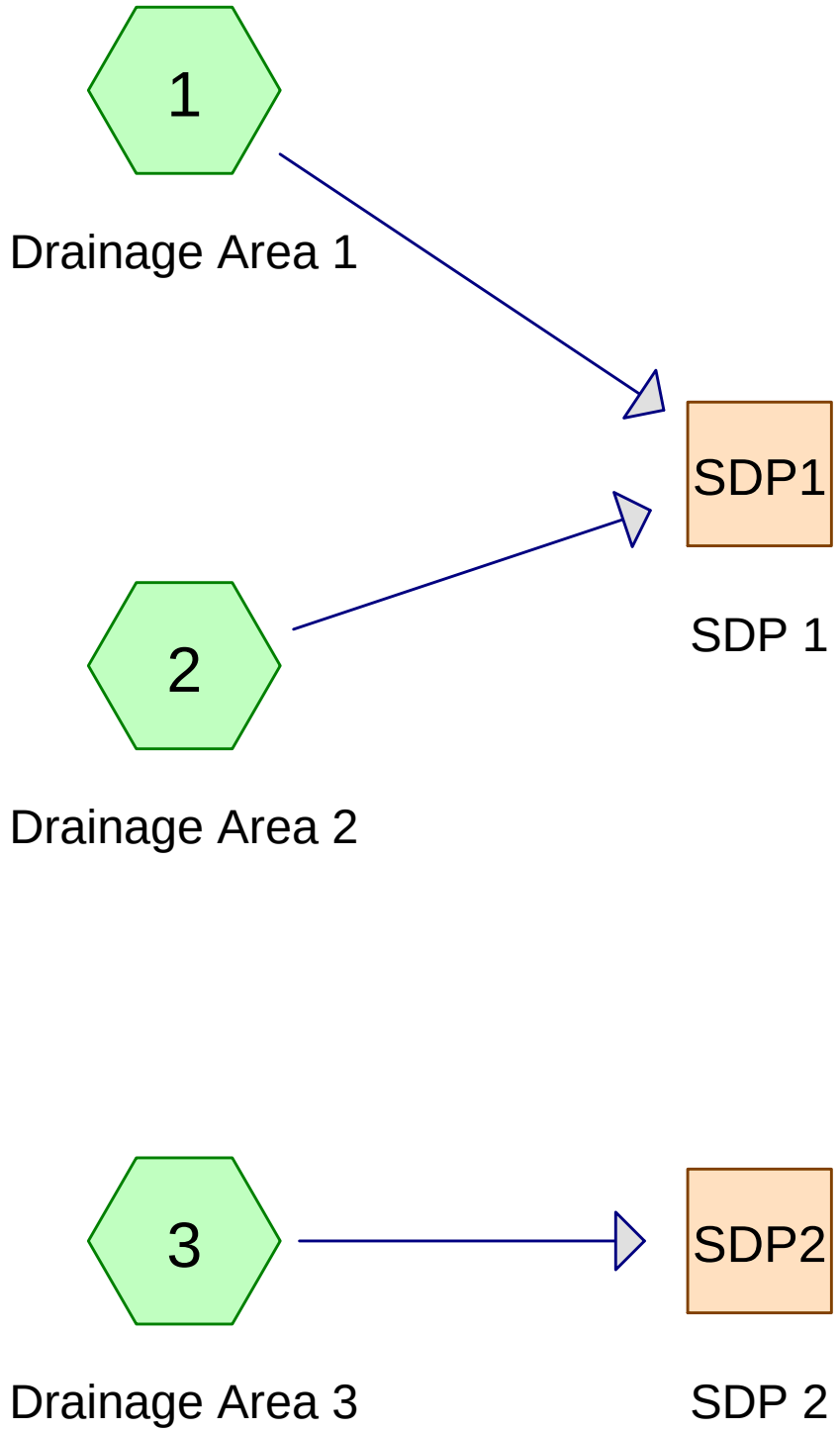
National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

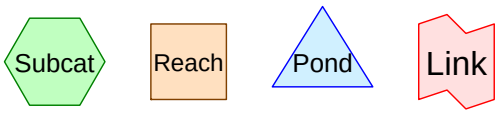
Edgewater



APPENDIX D

PRE-DEVELOPMENT HYDROCAD MODEL





Drainage Diagram for Pre Drainage 2017-0327
Prepared by Hudson Land Design

Subcatchment 1: Drainage Area 1

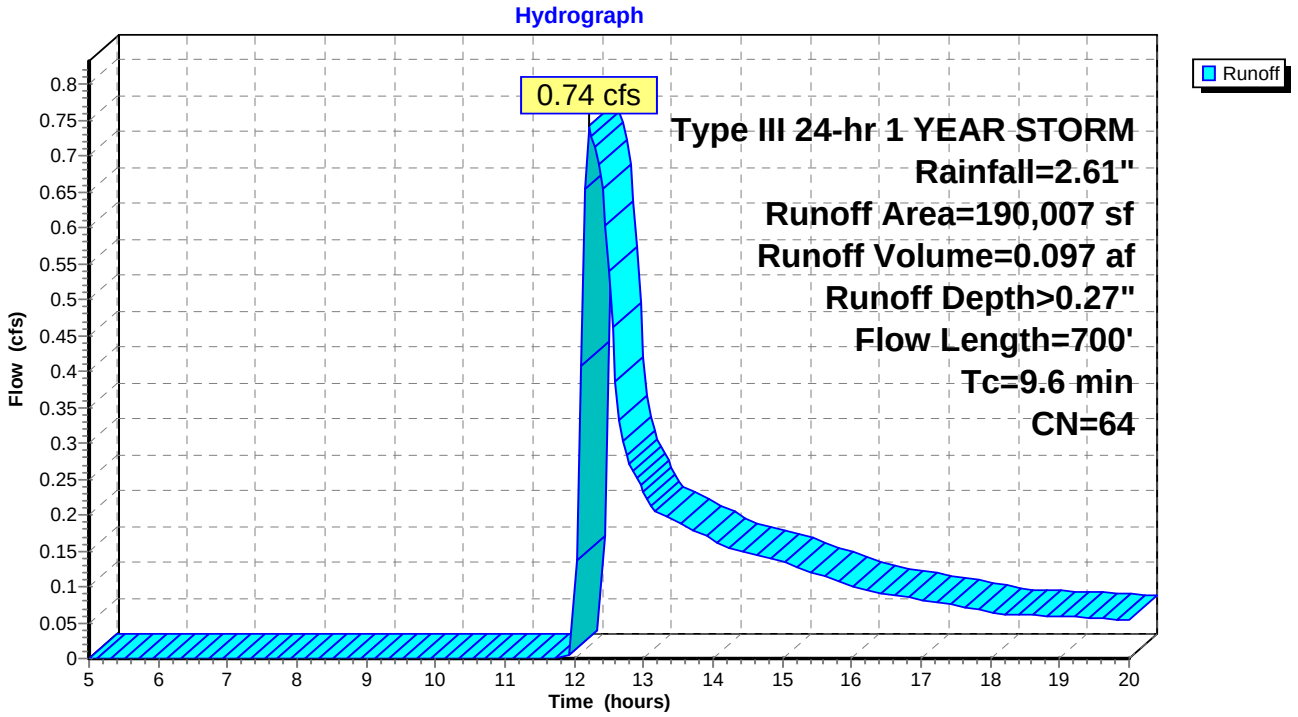
Runoff = 0.74 cfs @ 12.22 hrs, Volume= 0.097 af, Depth> 0.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 YEAR STORM Rainfall=2.61"

Area (sf)	CN	Description
108,262	61	>75% Grass cover, Good, HSG B
346	80	>75% Grass cover, Good, HSG D
50,198	55	Woods, Good, HSG B
12,027	77	Woods, Good, HSG D
19,174	98	Paved parking & roofs
190,007	64	Weighted Average
170,833		Pervious Area
19,174		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	59	0.0800	0.28		**Sheet Flow, Seg 1** Grass: Short n= 0.150 P2= 3.50"
2.0	41	0.1700	0.35		**Sheet Flow, Seg 2** Grass: Short n= 0.150 P2= 3.50"
3.2	400	0.0875	2.07		**Shallow Concentrated Flow, Seg 3** Short Grass Pasture Kv= 7.0 fps
0.9	200	0.5000	3.54		**Shallow Concentrated Flow, Seg 4** Woodland Kv= 5.0 fps
9.6	700	Total			

Subcatchment 1: Drainage Area 1



Subcatchment 2: Drainage Area 2

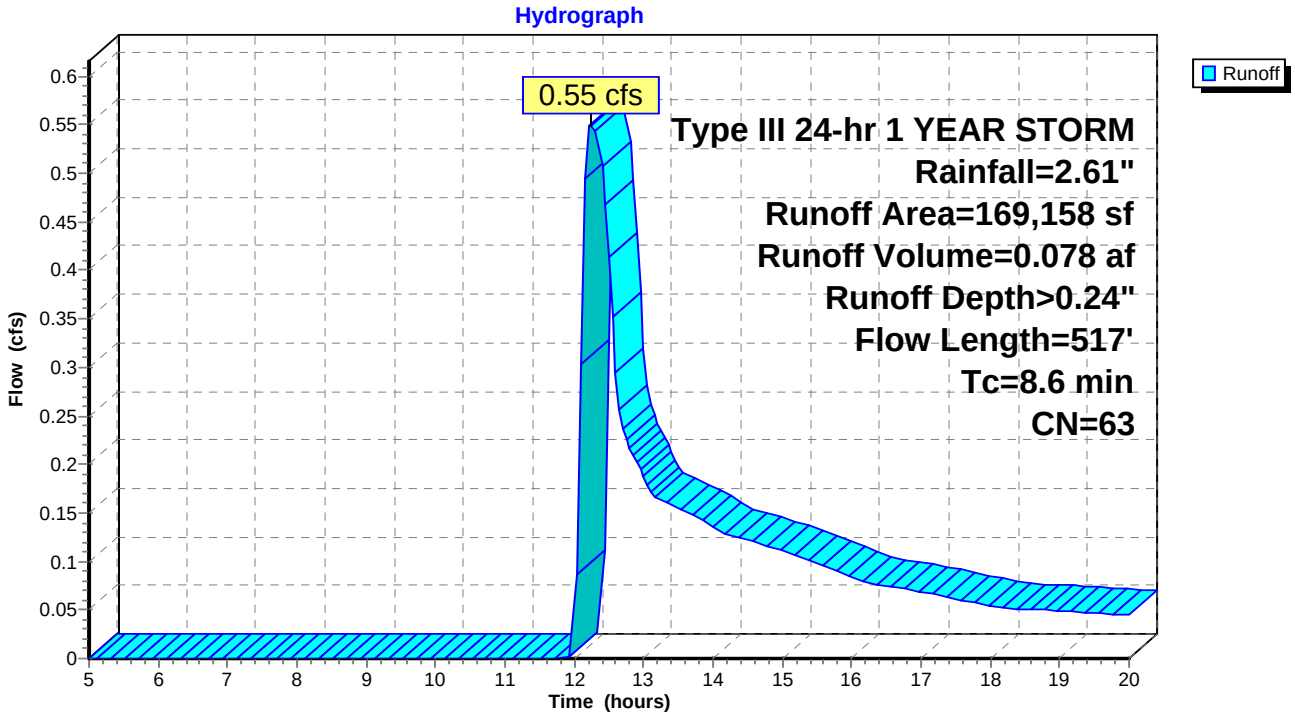
Runoff = 0.55 cfs @ 12.23 hrs, Volume= 0.078 af, Depth> 0.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 YEAR STORM Rainfall=2.61"

Area (sf)	CN	Description
72,361	61	>75% Grass cover, Good, HSG B
56,182	55	Woods, Good, HSG B
39,068	77	Woods, Good, HSG D
1,547	98	Paved parking & roofs
169,158	63	Weighted Average
167,611		Pervious Area
1,547		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	85	0.0700	0.28		**Sheet Flow, Seg 1** Grass: Short n= 0.150 P2= 3.50"
1.0	15	0.1300	0.26		**Sheet Flow, Seg 2** Grass: Short n= 0.150 P2= 3.50"
2.2	330	0.1300	2.52		**Shallow Concentrated Flow, Seg 3** Short Grass Pasture Kv= 7.0 fps
0.4	87	0.5000	3.54		**Shallow Concentrated Flow, Seg 4** Woodland Kv= 5.0 fps
8.6	517	Total			

Subcatchment 2: Drainage Area 2



Subcatchment 3: Drainage Area 3

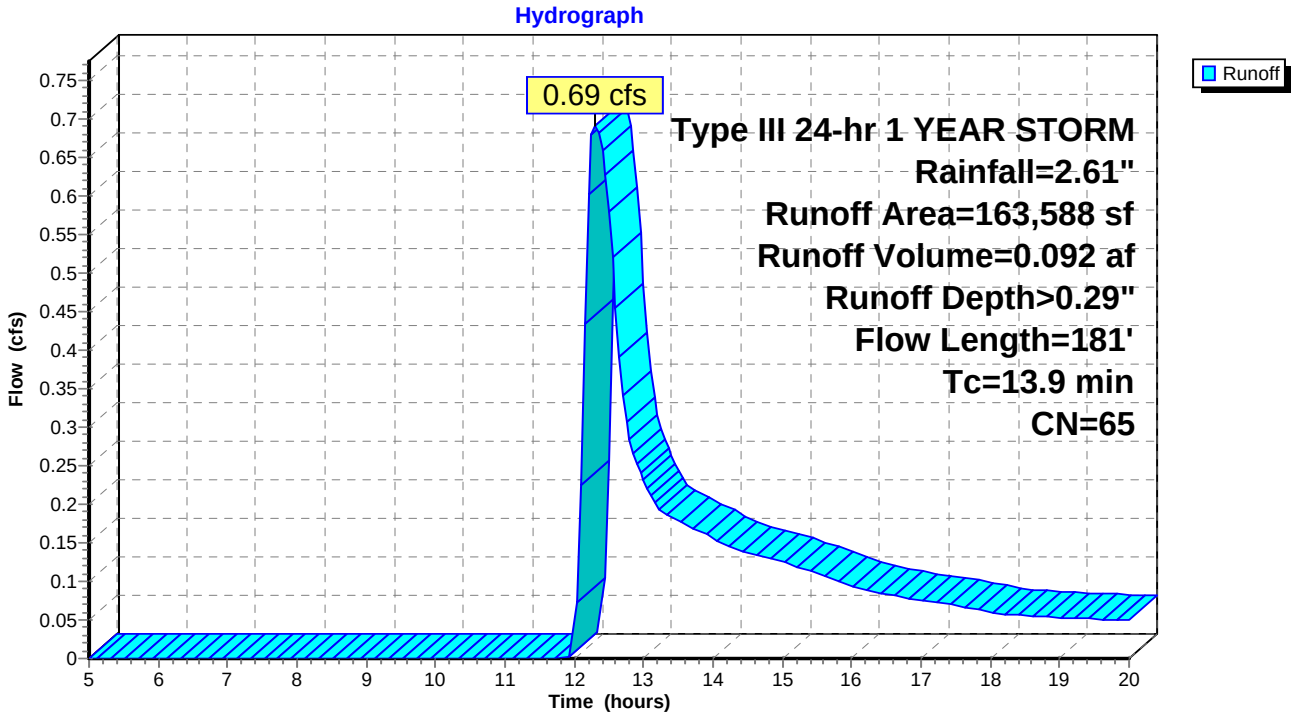
Runoff = 0.69 cfs @ 12.30 hrs, Volume= 0.092 af, Depth> 0.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 YEAR STORM Rainfall=2.61"

Area (sf)	CN	Description
27,729	61	>75% Grass cover, Good, HSG B
103,258	55	Woods, Good, HSG B
32,601	98	Paved parking & roofs
163,588	65	Weighted Average
130,987		Pervious Area
32,601		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	20	0.0100	0.10		**Sheet Flow, Seg 1** Grass: Short n= 0.150 P2= 3.50"
0.9	50	0.0100	0.95		**Sheet Flow, Seg 2** Smooth surfaces n= 0.011 P2= 3.50"
7.5	10	0.0100	0.02		**Sheet Flow, Seg 3** Woods: Dense underbrush n= 0.800 P2= 3.50"
1.6	20	0.5000	0.21		**Sheet Flow, Seg 4** Woods: Light underbrush n= 0.400 P2= 3.50"
0.5	81	0.3500	2.96		**Shallow Concentrated Flow, Seg 5** Woodland Kv= 5.0 fps
13.9	181	Total			

Subcatchment 3: Drainage Area 3

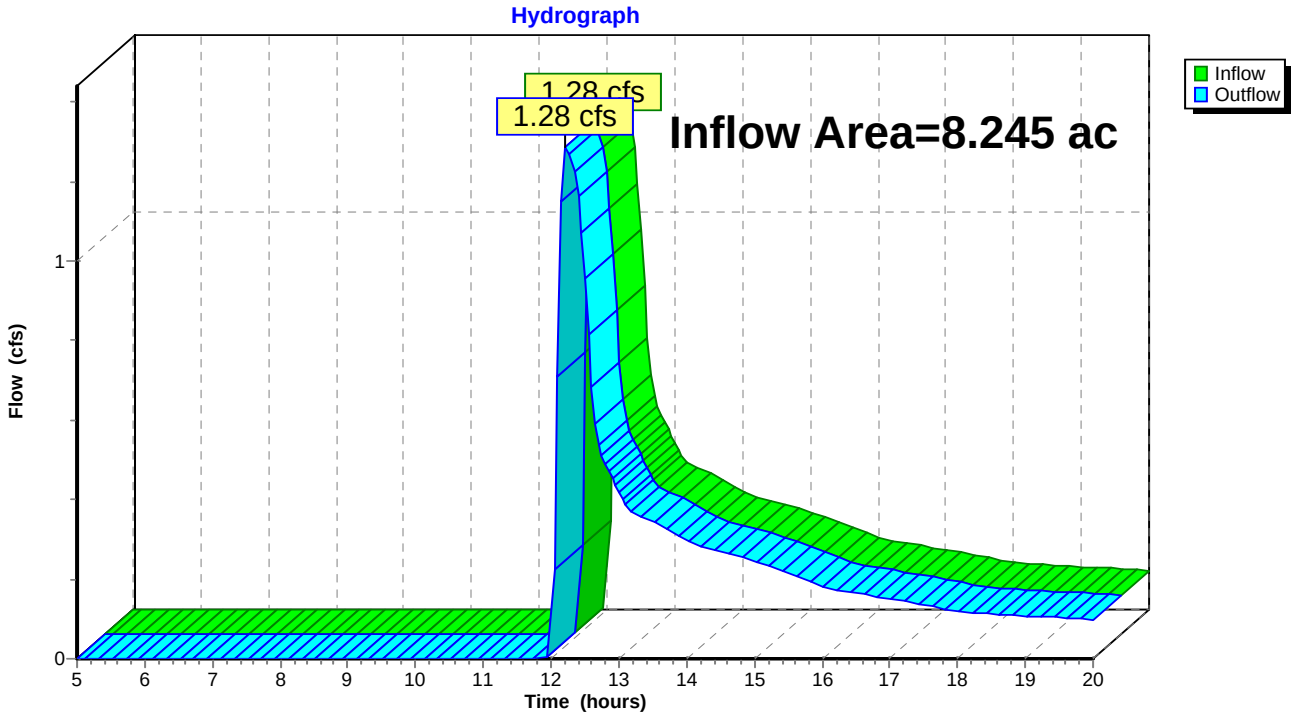


Reach SDP1: SDP 1

Inflow Area = 8.245 ac, Inflow Depth > 0.26" for 1 YEAR STORM event
Inflow = 1.28 cfs @ 12.20 hrs, Volume= 0.176 af
Outflow = 1.28 cfs @ 12.20 hrs, Volume= 0.176 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SDP1: SDP 1

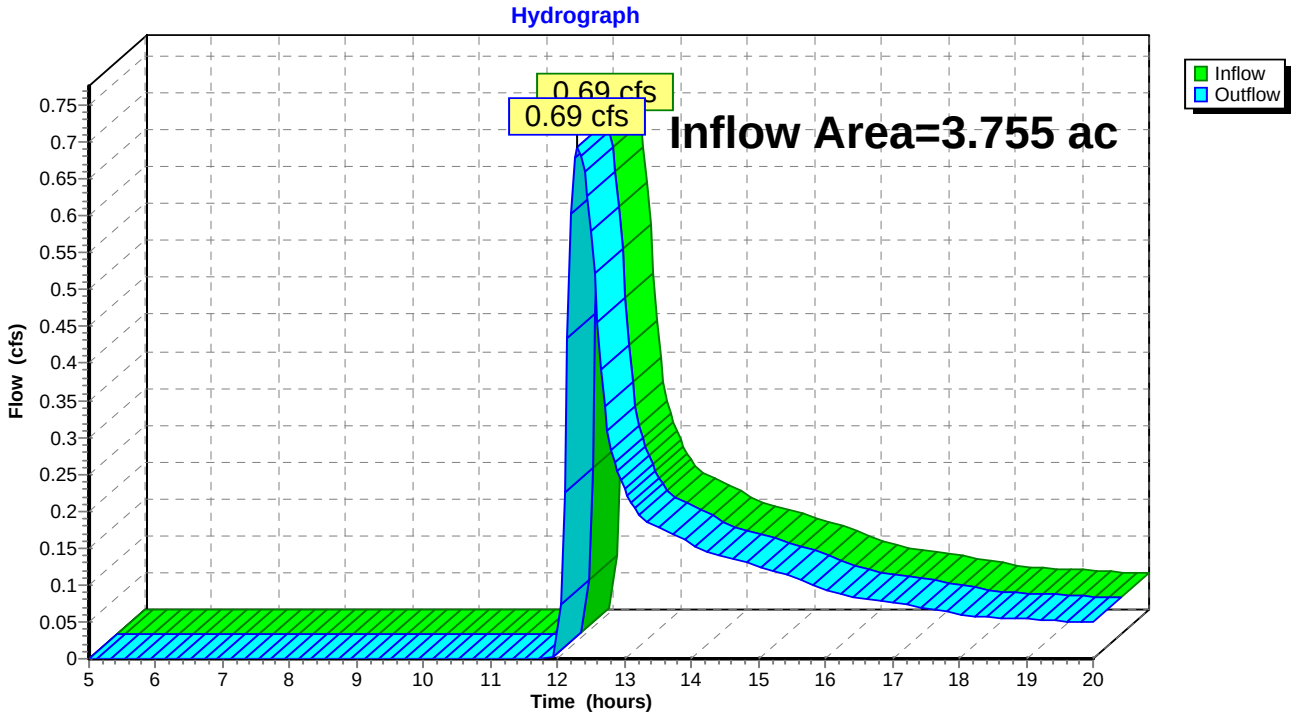


Reach SDP2: SDP 2

Inflow Area = 3.755 ac, Inflow Depth > 0.29" for 1 YEAR STORM event
Inflow = 0.69 cfs @ 12.30 hrs, Volume= 0.092 af
Outflow = 0.69 cfs @ 12.30 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SDP2: SDP 2



Subcatchment 1: Drainage Area 1

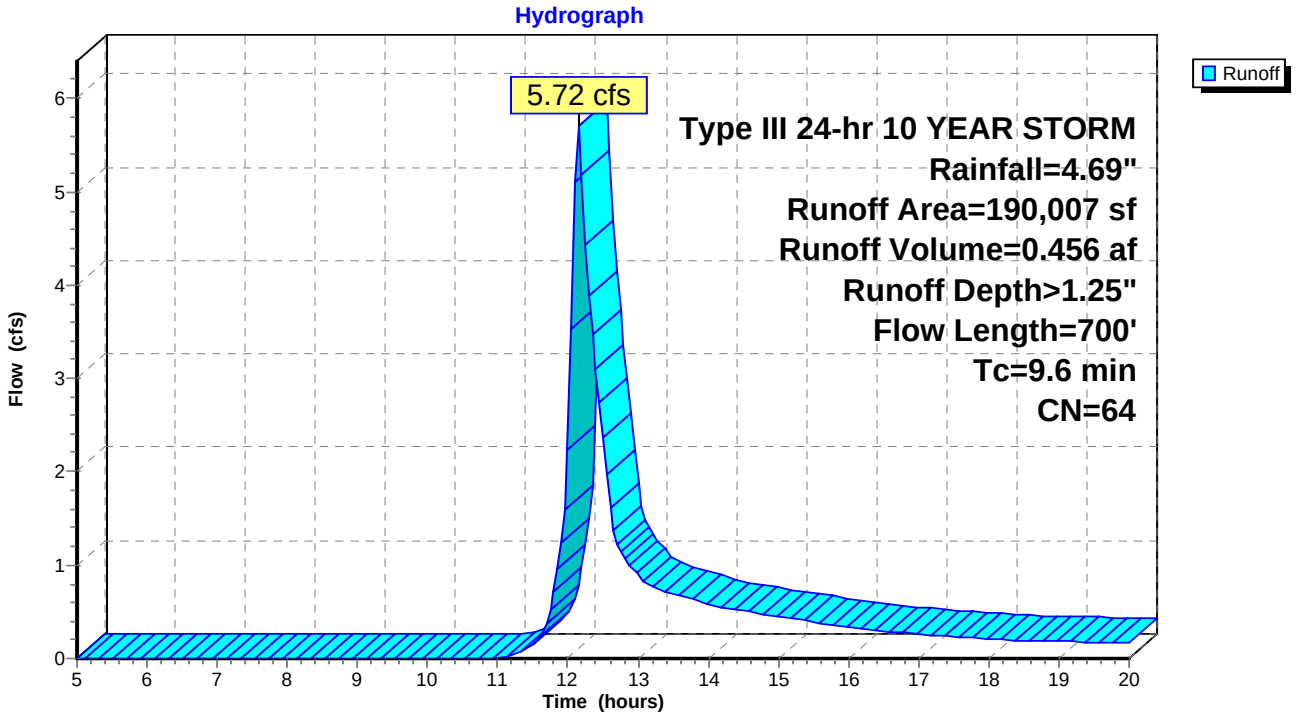
Runoff = 5.72 cfs @ 12.15 hrs, Volume= 0.456 af, Depth> 1.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.69"

Area (sf)	CN	Description
108,262	61	>75% Grass cover, Good, HSG B
346	80	>75% Grass cover, Good, HSG D
50,198	55	Woods, Good, HSG B
12,027	77	Woods, Good, HSG D
19,174	98	Paved parking & roofs
190,007	64	Weighted Average
170,833		Pervious Area
19,174		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	59	0.0800	0.28		**Sheet Flow, Seg 1** Grass: Short n= 0.150 P2= 3.50"
2.0	41	0.1700	0.35		**Sheet Flow, Seg 2** Grass: Short n= 0.150 P2= 3.50"
3.2	400	0.0875	2.07		**Shallow Concentrated Flow, Seg 3** Short Grass Pasture Kv= 7.0 fps
0.9	200	0.5000	3.54		**Shallow Concentrated Flow, Seg 4** Woodland Kv= 5.0 fps
9.6	700	Total			

Subcatchment 1: Drainage Area 1



Subcatchment 2: Drainage Area 2

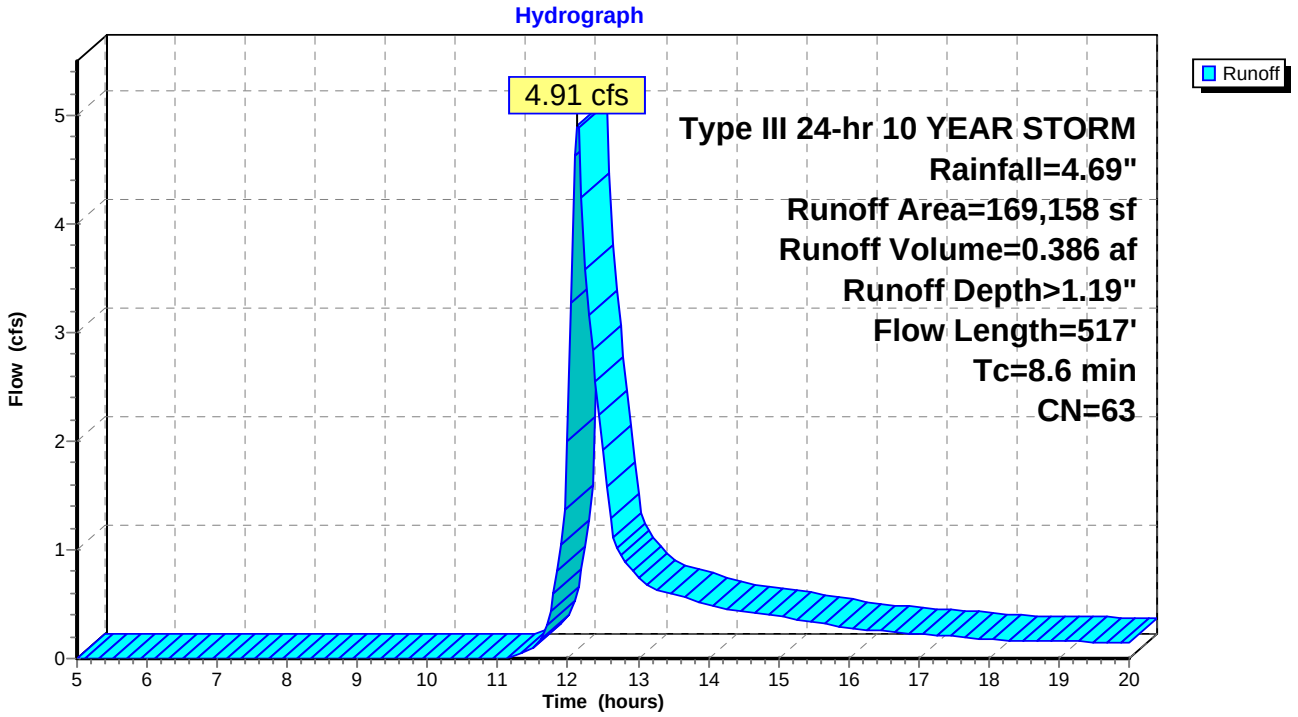
Runoff = 4.91 cfs @ 12.14 hrs, Volume= 0.386 af, Depth> 1.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.69"

Area (sf)	CN	Description
72,361	61	>75% Grass cover, Good, HSG B
56,182	55	Woods, Good, HSG B
39,068	77	Woods, Good, HSG D
1,547	98	Paved parking & roofs
169,158	63	Weighted Average
167,611		Pervious Area
1,547		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	85	0.0700	0.28		**Sheet Flow, Seg 1** Grass: Short n= 0.150 P2= 3.50"
1.0	15	0.1300	0.26		**Sheet Flow, Seg 2** Grass: Short n= 0.150 P2= 3.50"
2.2	330	0.1300	2.52		**Shallow Concentrated Flow, Seg 3** Short Grass Pasture Kv= 7.0 fps
0.4	87	0.5000	3.54		**Shallow Concentrated Flow, Seg 4** Woodland Kv= 5.0 fps
8.6	517	Total			

Subcatchment 2: Drainage Area 2



Subcatchment 3: Drainage Area 3

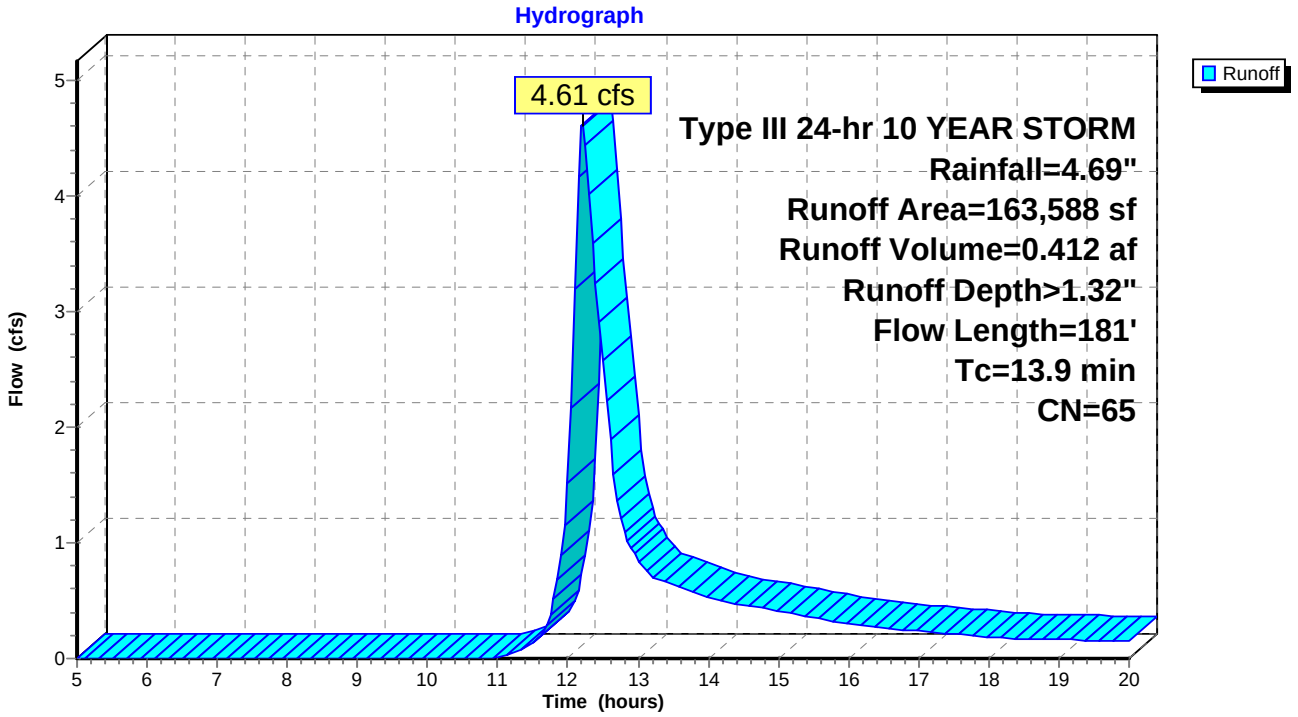
Runoff = 4.61 cfs @ 12.21 hrs, Volume= 0.412 af, Depth> 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.69"

Area (sf)	CN	Description
27,729	61	>75% Grass cover, Good, HSG B
103,258	55	Woods, Good, HSG B
32,601	98	Paved parking & roofs
163,588	65	Weighted Average
130,987		Pervious Area
32,601		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	20	0.0100	0.10		**Sheet Flow, Seg 1** Grass: Short n= 0.150 P2= 3.50"
0.9	50	0.0100	0.95		**Sheet Flow, Seg 2** Smooth surfaces n= 0.011 P2= 3.50"
7.5	10	0.0100	0.02		**Sheet Flow, Seg 3** Woods: Dense underbrush n= 0.800 P2= 3.50"
1.6	20	0.5000	0.21		**Sheet Flow, Seg 4** Woods: Light underbrush n= 0.400 P2= 3.50"
0.5	81	0.3500	2.96		**Shallow Concentrated Flow, Seg 5** Woodland Kv= 5.0 fps
13.9	181	Total			

Subcatchment 3: Drainage Area 3

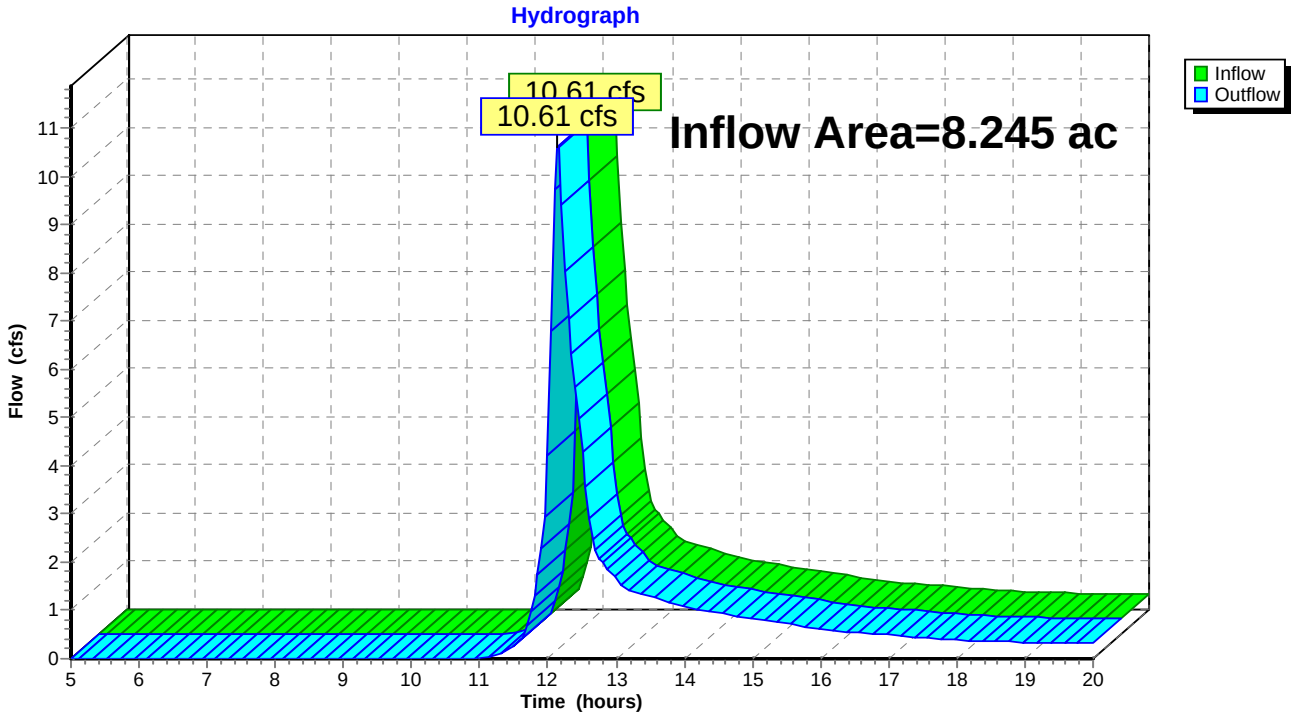


Reach SDP1: SDP 1

Inflow Area = 8.245 ac, Inflow Depth > 1.22" for 10 YEAR STORM event
Inflow = 10.61 cfs @ 12.15 hrs, Volume= 0.841 af
Outflow = 10.61 cfs @ 12.15 hrs, Volume= 0.841 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SDP1: SDP 1

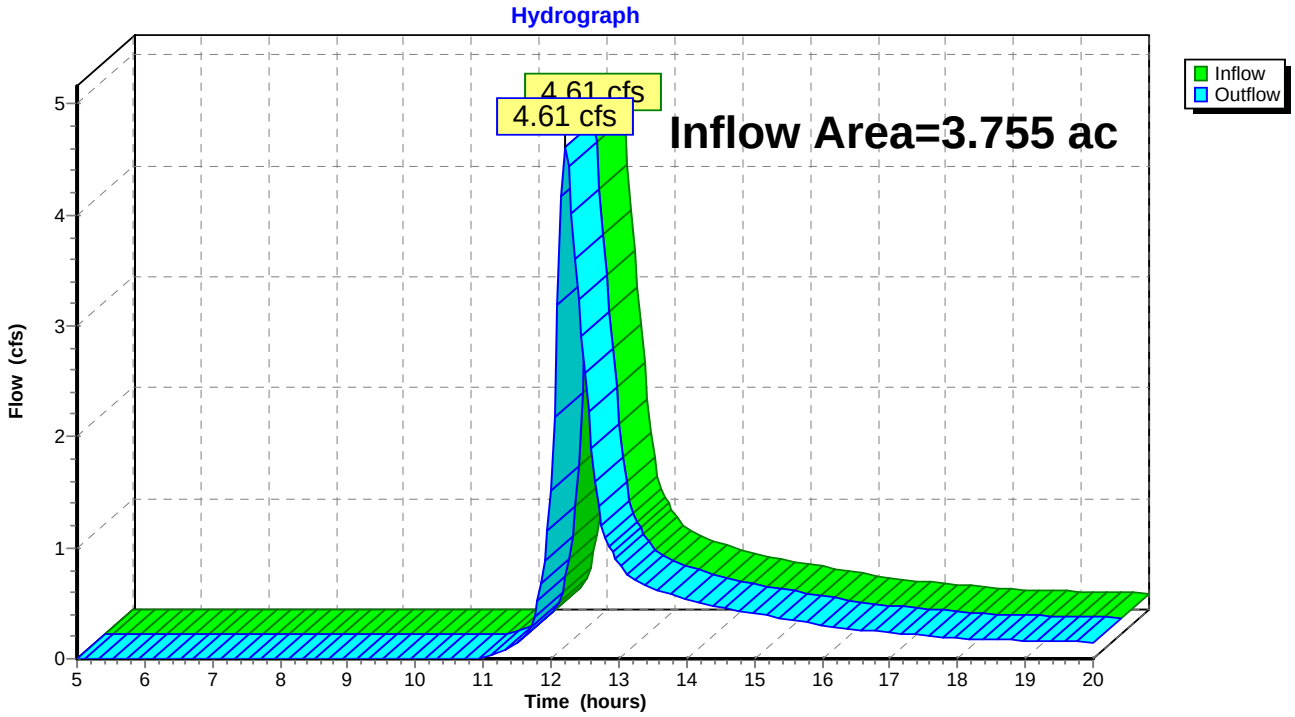


Reach SDP2: SDP 2

Inflow Area = 3.755 ac, Inflow Depth > 1.32" for 10 YEAR STORM event
Inflow = 4.61 cfs @ 12.21 hrs, Volume= 0.412 af
Outflow = 4.61 cfs @ 12.21 hrs, Volume= 0.412 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SDP2: SDP 2



Subcatchment 1: Drainage Area 1

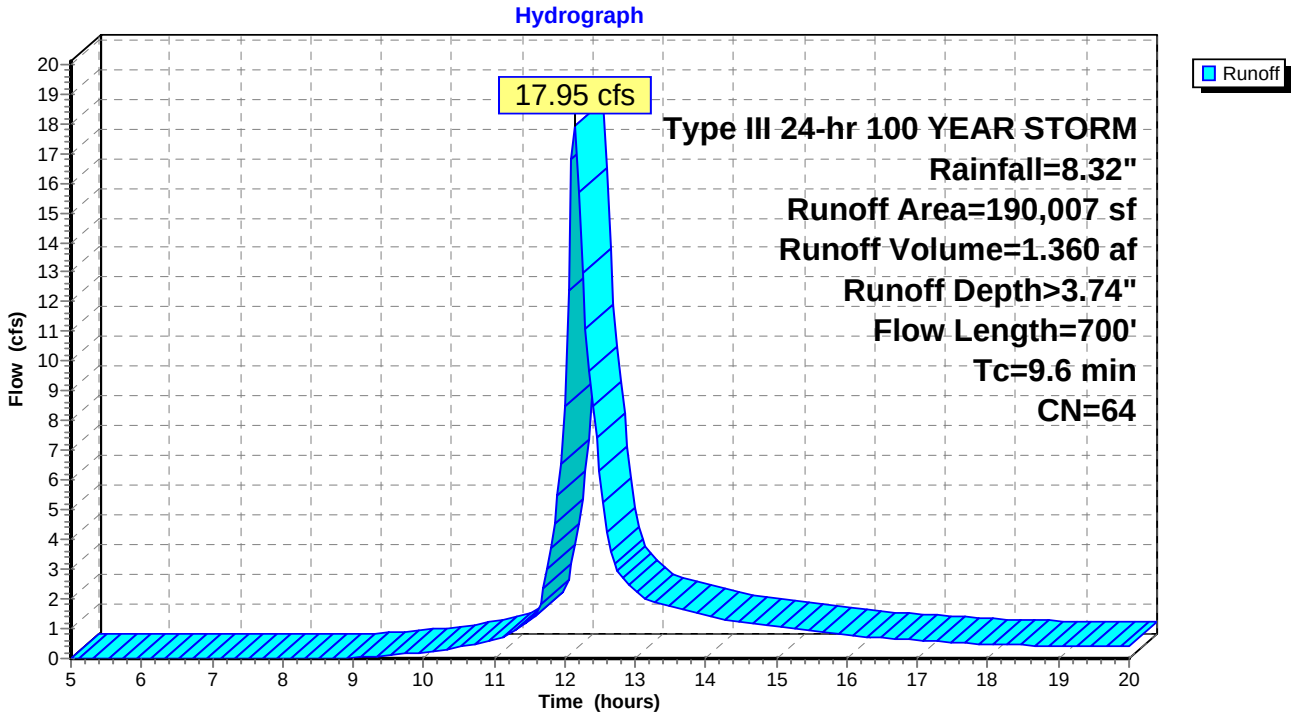
Runoff = 17.95 cfs @ 12.14 hrs, Volume= 1.360 af, Depth> 3.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR STORM Rainfall=8.32"

Area (sf)	CN	Description
108,262	61	>75% Grass cover, Good, HSG B
346	80	>75% Grass cover, Good, HSG D
50,198	55	Woods, Good, HSG B
12,027	77	Woods, Good, HSG D
19,174	98	Paved parking & roofs
190,007	64	Weighted Average
170,833		Pervious Area
19,174		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	59	0.0800	0.28		**Sheet Flow, Seg 1** Grass: Short n= 0.150 P2= 3.50"
2.0	41	0.1700	0.35		**Sheet Flow, Seg 2** Grass: Short n= 0.150 P2= 3.50"
3.2	400	0.0875	2.07		**Shallow Concentrated Flow, Seg 3** Short Grass Pasture Kv= 7.0 fps
0.9	200	0.5000	3.54		**Shallow Concentrated Flow, Seg 4** Woodland Kv= 5.0 fps
9.6	700	Total			

Subcatchment 1: Drainage Area 1



Subcatchment 2: Drainage Area 2

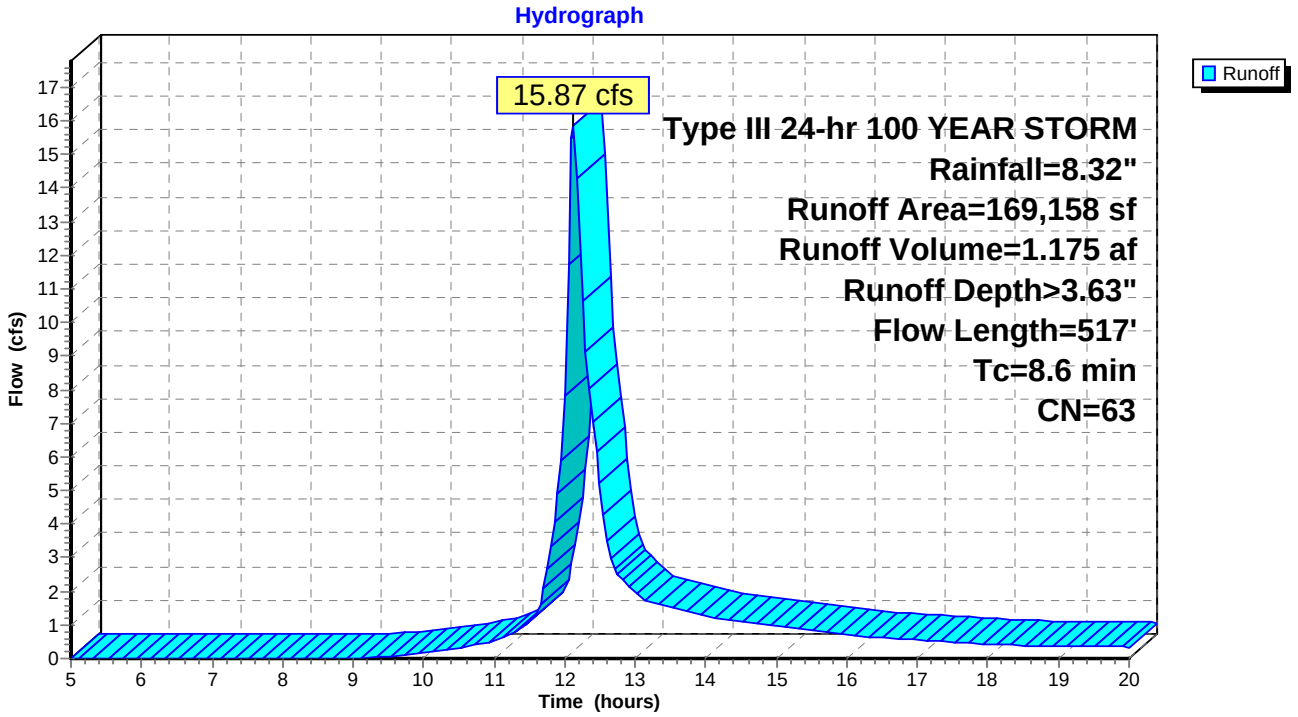
Runoff = 15.87 cfs @ 12.13 hrs, Volume= 1.175 af, Depth> 3.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR STORM Rainfall=8.32"

Area (sf)	CN	Description
72,361	61	>75% Grass cover, Good, HSG B
56,182	55	Woods, Good, HSG B
39,068	77	Woods, Good, HSG D
1,547	98	Paved parking & roofs
169,158	63	Weighted Average
167,611		Pervious Area
1,547		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	85	0.0700	0.28		**Sheet Flow, Seg 1** Grass: Short n= 0.150 P2= 3.50"
1.0	15	0.1300	0.26		**Sheet Flow, Seg 2** Grass: Short n= 0.150 P2= 3.50"
2.2	330	0.1300	2.52		**Shallow Concentrated Flow, Seg 3** Short Grass Pasture Kv= 7.0 fps
0.4	87	0.5000	3.54		**Shallow Concentrated Flow, Seg 4** Woodland Kv= 5.0 fps
8.6	517	Total			

Subcatchment 2: Drainage Area 2



Subcatchment 3: Drainage Area 3

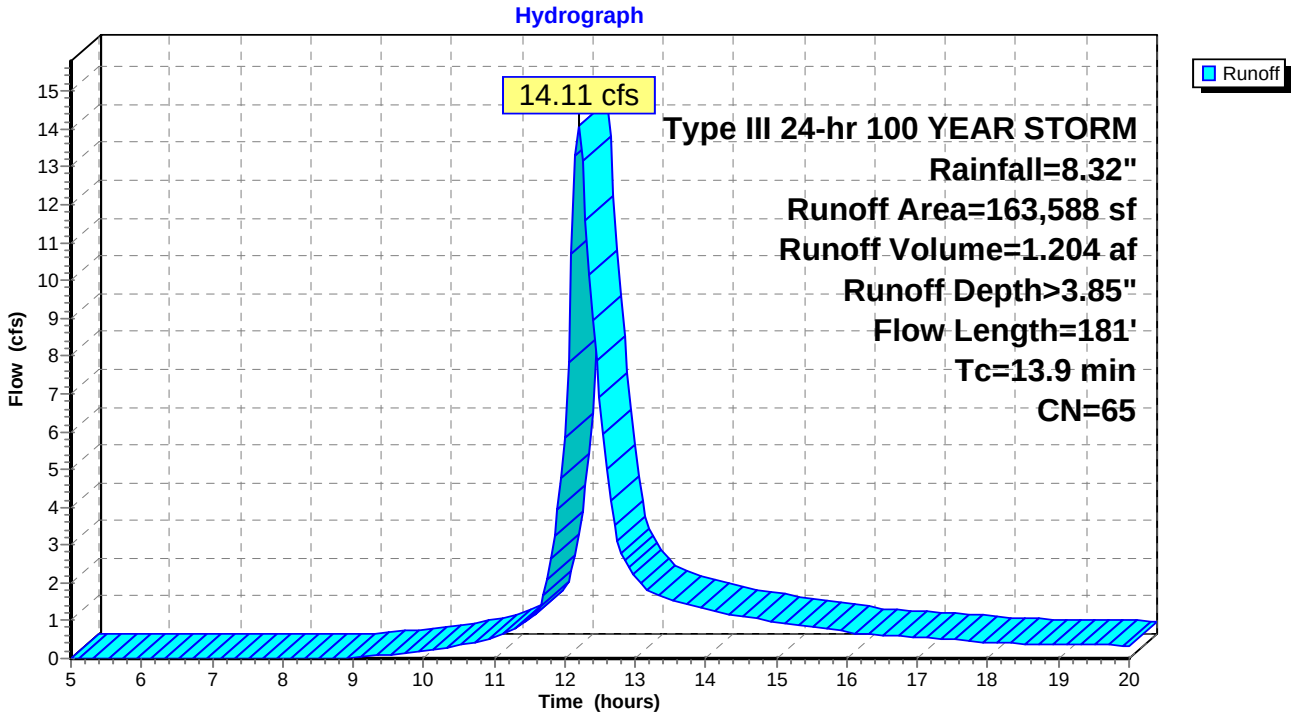
Runoff = 14.11 cfs @ 12.20 hrs, Volume= 1.204 af, Depth> 3.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YEAR STORM Rainfall=8.32"

Area (sf)	CN	Description
27,729	61	>75% Grass cover, Good, HSG B
103,258	55	Woods, Good, HSG B
32,601	98	Paved parking & roofs
163,588	65	Weighted Average
130,987		Pervious Area
32,601		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	20	0.0100	0.10		**Sheet Flow, Seg 1** Grass: Short n= 0.150 P2= 3.50"
0.9	50	0.0100	0.95		**Sheet Flow, Seg 2** Smooth surfaces n= 0.011 P2= 3.50"
7.5	10	0.0100	0.02		**Sheet Flow, Seg 3** Woods: Dense underbrush n= 0.800 P2= 3.50"
1.6	20	0.5000	0.21		**Sheet Flow, Seg 4** Woods: Light underbrush n= 0.400 P2= 3.50"
0.5	81	0.3500	2.96		**Shallow Concentrated Flow, Seg 5** Woodland Kv= 5.0 fps
13.9	181	Total			

Subcatchment 3: Drainage Area 3

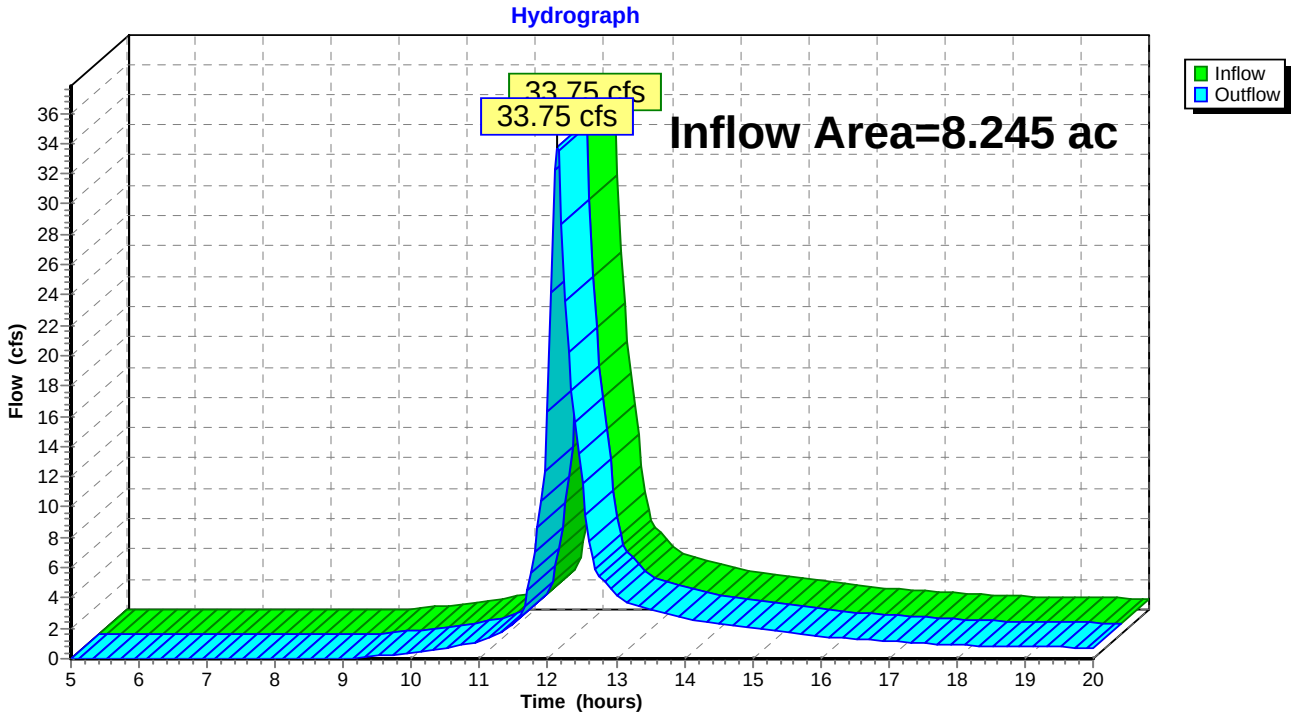


Reach SDP1: SDP 1

Inflow Area = 8.245 ac, Inflow Depth > 3.69" for 100 YEAR STORM event
Inflow = 33.75 cfs @ 12.14 hrs, Volume= 2.534 af
Outflow = 33.75 cfs @ 12.14 hrs, Volume= 2.534 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SDP1: SDP 1

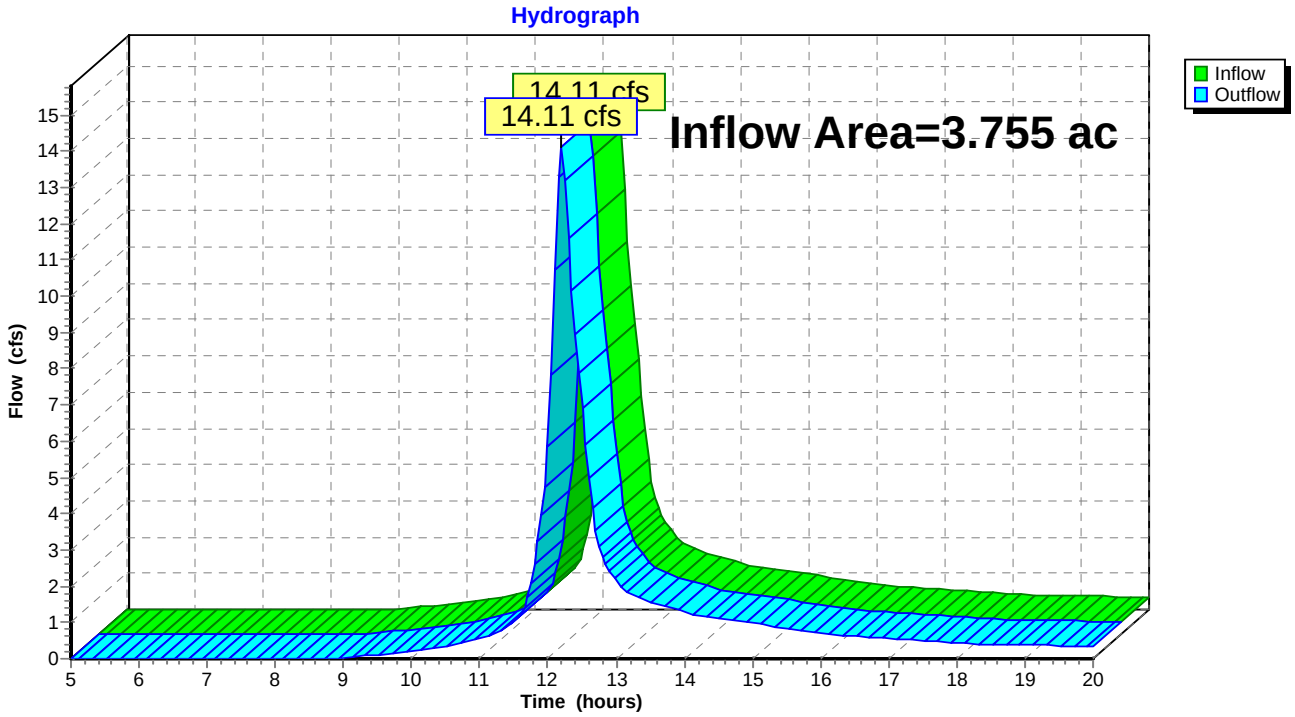


Reach SDP2: SDP 2

Inflow Area = 3.755 ac, Inflow Depth > 3.85" for 100 YEAR STORM event
Inflow = 14.11 cfs @ 12.20 hrs, Volume= 1.204 af
Outflow = 14.11 cfs @ 12.20 hrs, Volume= 1.204 af, Atten= 0%, Lag= 0.0 min

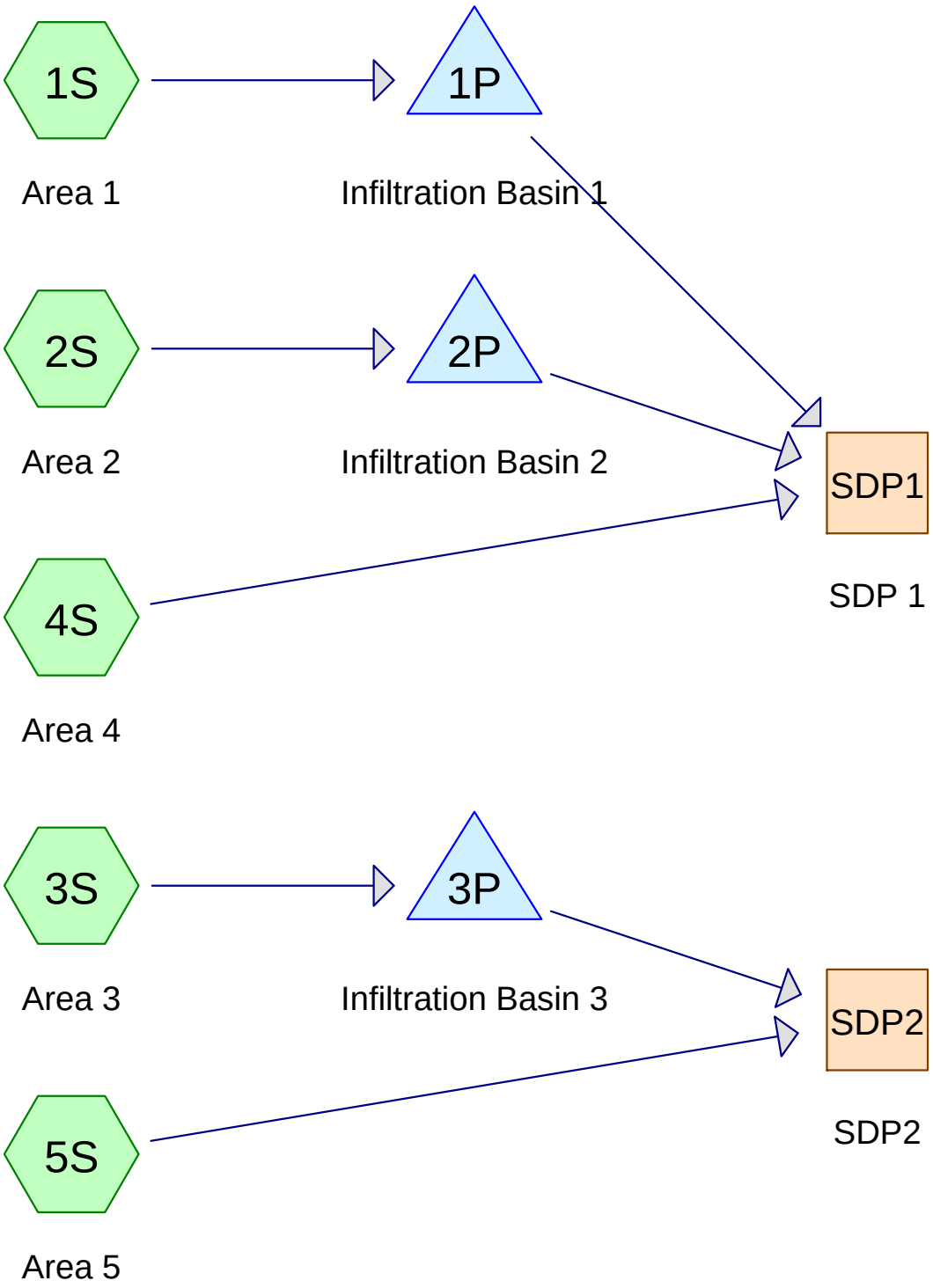
Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SDP2: SDP 2



APPENDIX E

POST-DEVELOPMENT HYDROCAD MODEL



Subcat Reach Pond Link

Drainage Diagram for Post Drainage_2017-0327
Prepared by Hudson Land Design
HydroCAD® 8.00 s/n 004797 © 2006 HydroCAD Software Solutions LLC

Subcatchment 1S: Area 1

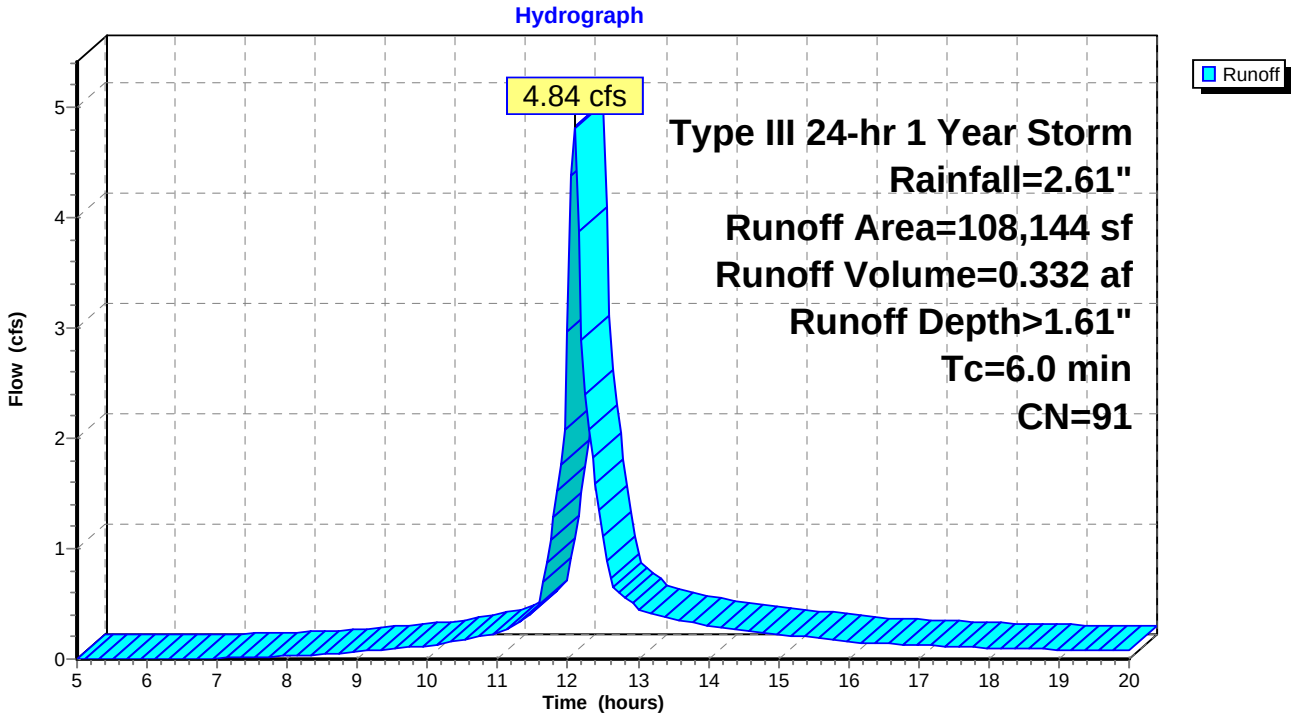
Runoff = 4.84 cfs @ 12.09 hrs, Volume= 0.332 af, Depth> 1.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 Year Storm Rainfall=2.61"

Area (sf)	CN	Description
87,707	98	Paved parking & roofs
18,516	61	>75% Grass cover, Good, HSG B
1,921	85	Gravel roads, HSG B
108,144	91	Weighted Average
20,437		Pervious Area
87,707		Impervious Area

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

Subcatchment 1S: Area 1



Subcatchment 2S: Area 2

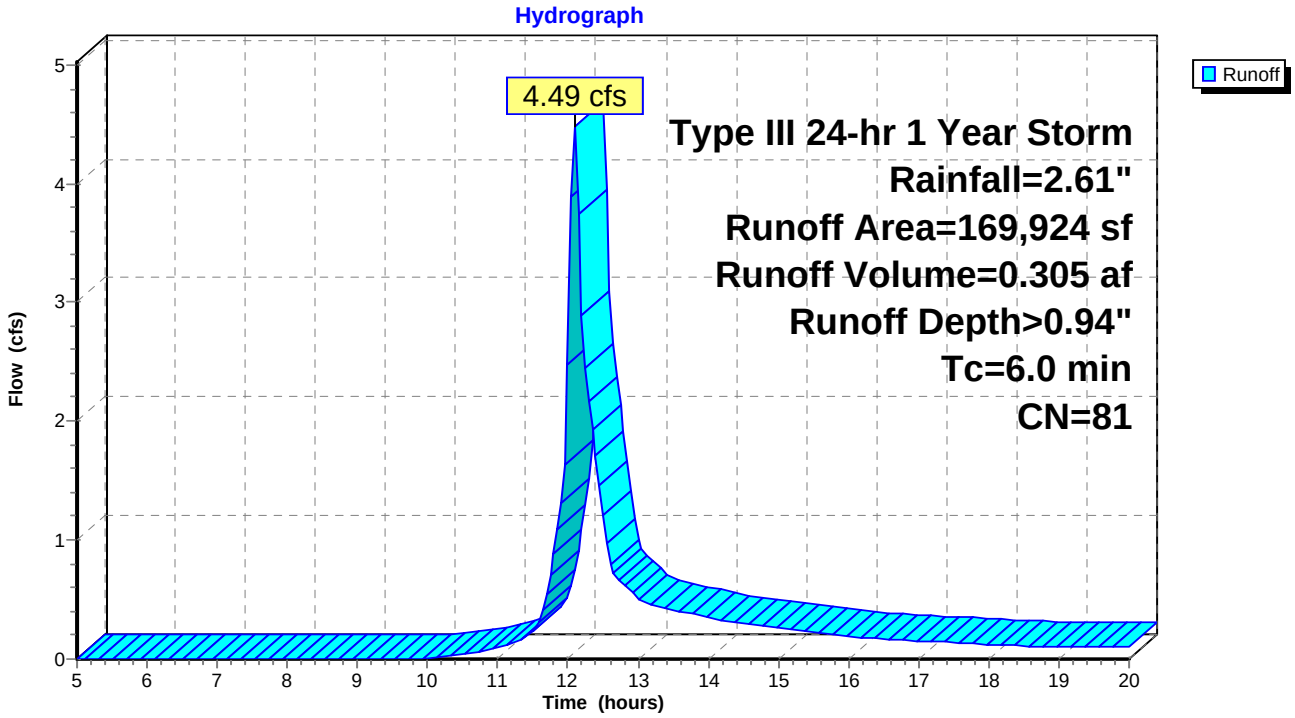
Runoff = 4.49 cfs @ 12.10 hrs, Volume= 0.305 af, Depth> 0.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 Year Storm Rainfall=2.61"

Area (sf)	CN	Description
76,336	61	>75% Grass cover, Good, HSG B
90,335	98	Paved parking & roofs
3,253	85	Gravel roads, HSG B
169,924	81	Weighted Average
79,589		Pervious Area
90,335		Impervious Area

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

Subcatchment 2S: Area 2



Subcatchment 3S: Area 3

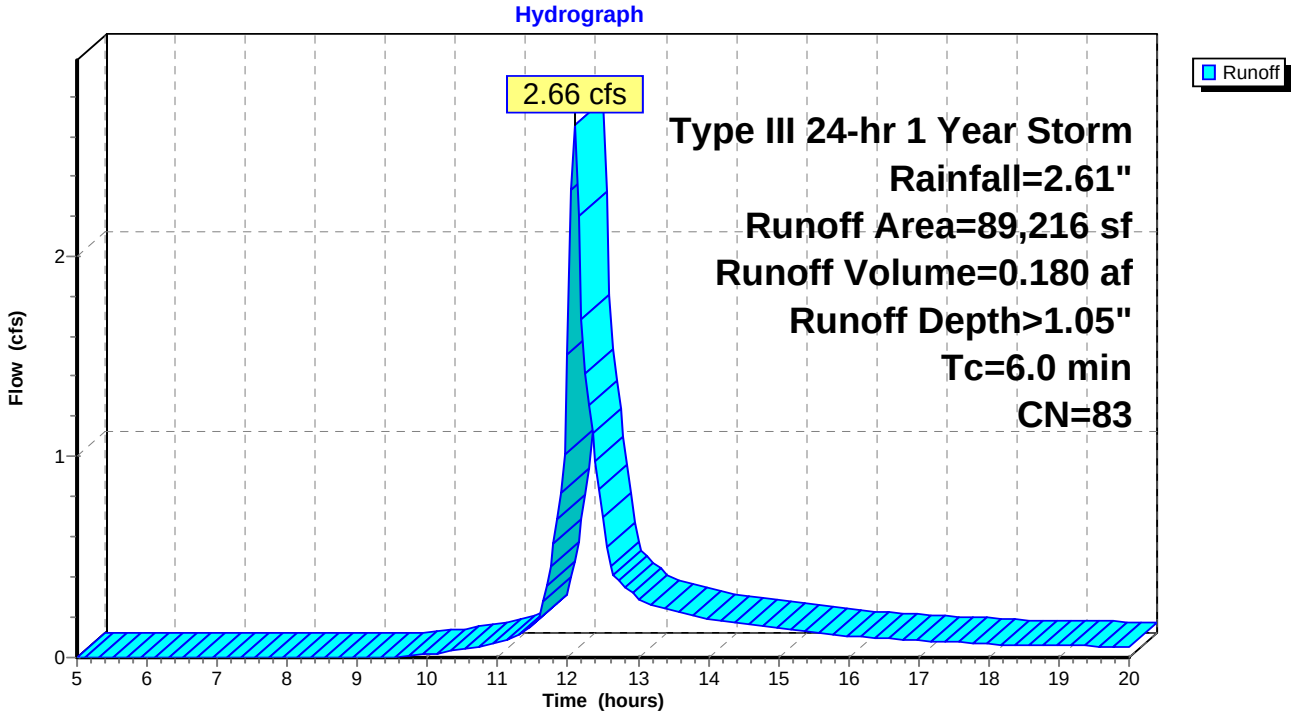
Runoff = 2.66 cfs @ 12.10 hrs, Volume= 0.180 af, Depth> 1.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 Year Storm Rainfall=2.61"

Area (sf)	CN	Description
37,236	61	>75% Grass cover, Good, HSG B
51,980	98	Paved parking & roofs
89,216	83	Weighted Average
37,236		Pervious Area
51,980		Impervious Area

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

Subcatchment 3S: Area 3



Subcatchment 4S: Area 4

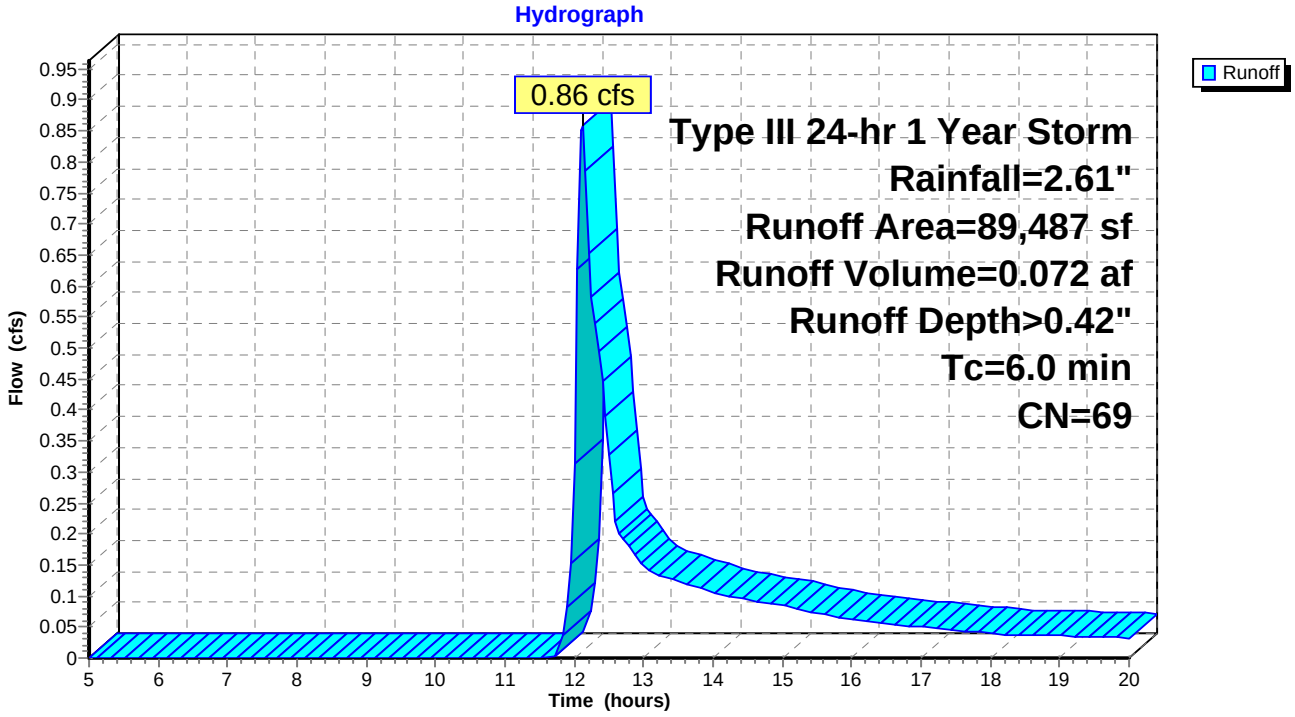
Runoff = 0.86 cfs @ 12.11 hrs, Volume= 0.072 af, Depth> 0.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 Year Storm Rainfall=2.61"

Area (sf)	CN	Description
44,963	77	Woods, Good, HSG D
44,524	61	>75% Grass cover, Good, HSG B
89,487	69	Weighted Average
89,487		Pervious Area

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

Subcatchment 4S: Area 4



Subcatchment 5S: Area 5

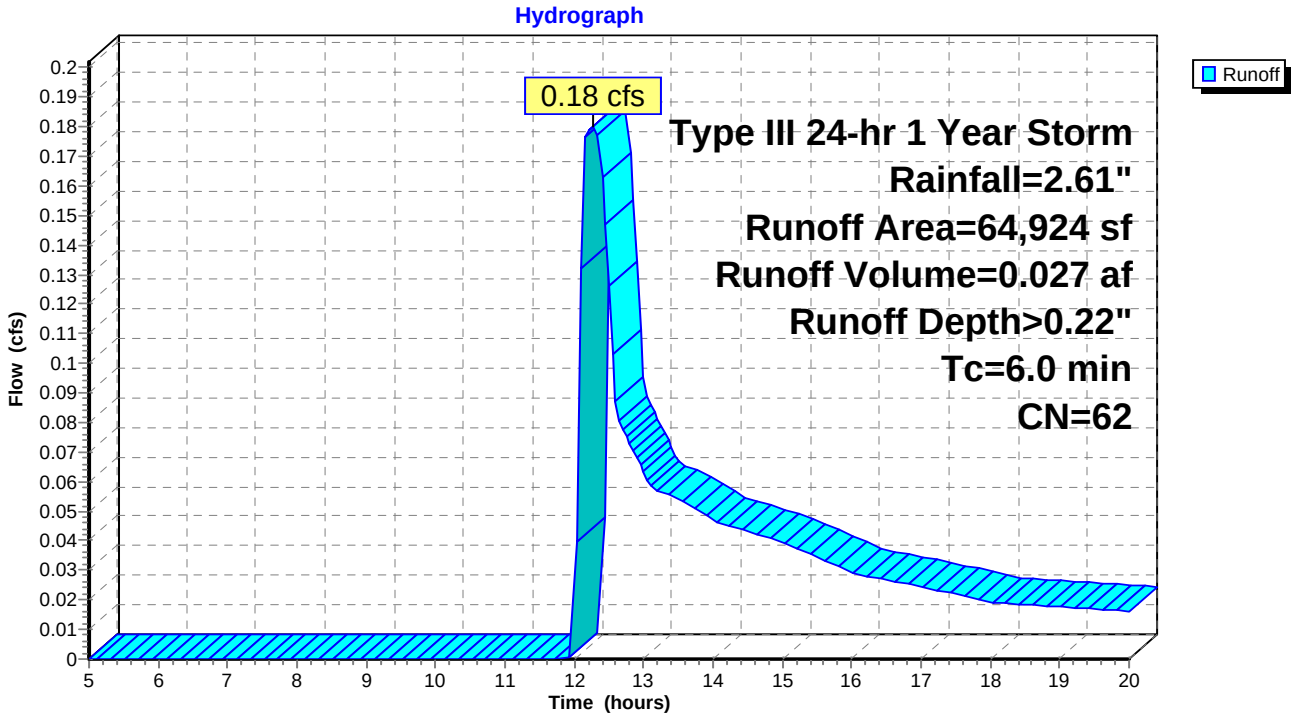
Runoff = 0.18 cfs @ 12.27 hrs, Volume= 0.027 af, Depth> 0.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 Year Storm Rainfall=2.61"

Area (sf)	CN	Description
8,921	98	Paved parking & roofs
7,542	61	>75% Grass cover, Good, HSG B
48,461	55	Woods, Good, HSG B
64,924	62	Weighted Average
56,003		Pervious Area
8,921		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, S1**

Subcatchment 5S: Area 5

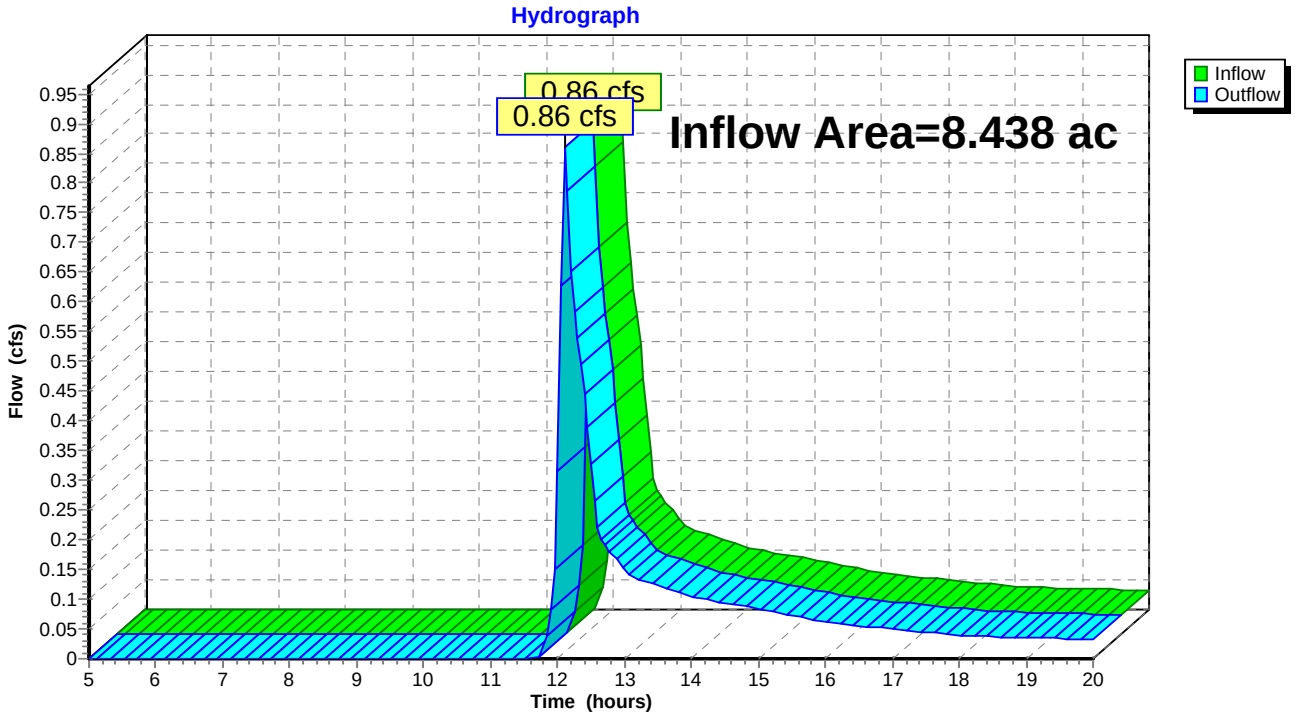


Reach SDP1: SDP 1

Inflow Area = 8.438 ac, Inflow Depth > 0.10" for 1 Year Storm event
Inflow = 0.86 cfs @ 12.11 hrs, Volume= 0.072 af
Outflow = 0.86 cfs @ 12.11 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SDP1: SDP 1

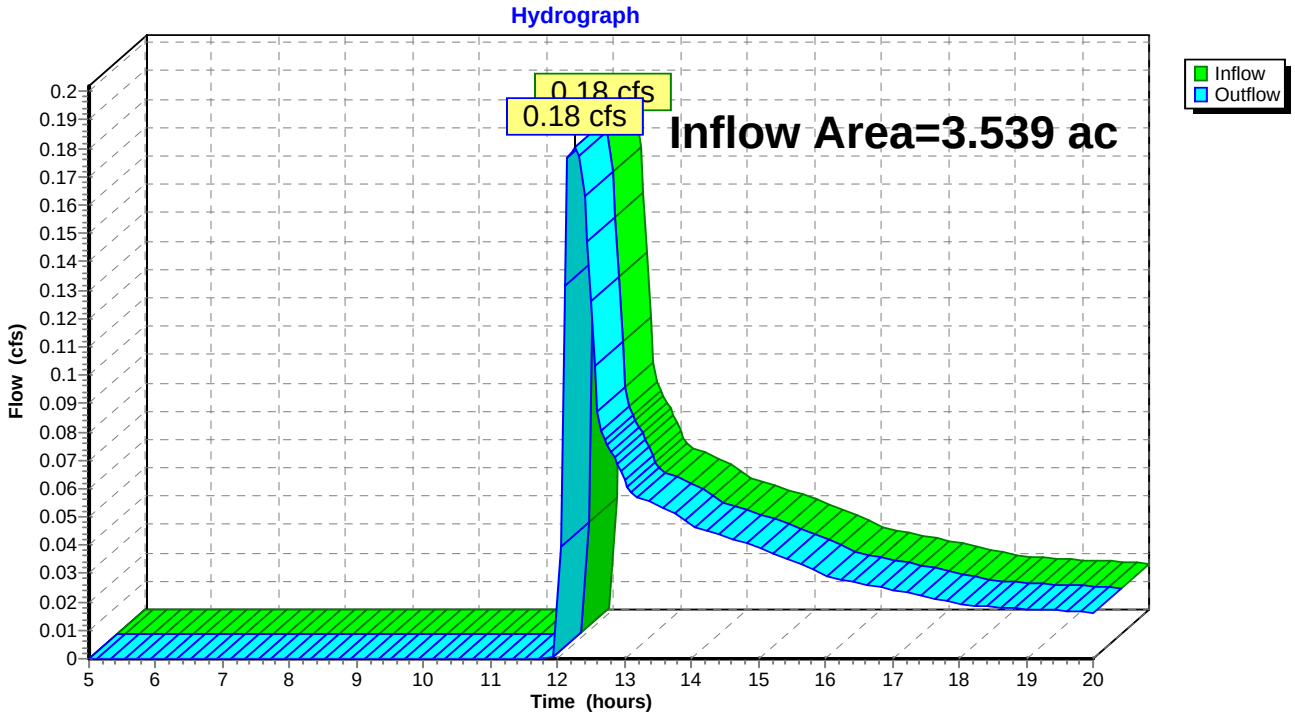


Reach SDP2: SDP2

Inflow Area = 3.539 ac, Inflow Depth > 0.09" for 1 Year Storm event
Inflow = 0.18 cfs @ 12.27 hrs, Volume= 0.027 af
Outflow = 0.18 cfs @ 12.27 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SDP2: SDP2



Pond 1P: Infiltration Basin 1

Inflow Area =	2.483 ac,	Inflow Depth >	1.61"	for	1 Year Storm event
Inflow =	4.84 cfs @	12.09 hrs,	Volume=	0.332 af	
Outflow =	0.28 cfs @	14.19 hrs,	Volume=	0.179 af,	Atten= 94%, Lag= 126.2 min
Discarded =	0.28 cfs @	14.19 hrs,	Volume=	0.179 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 95.29' @ 14.19 hrs Surf.Area= 3,996 sf Storage= 9,039 cf

Plug-Flow detention time= 239.9 min calculated for 0.178 af (54% of inflow)
Center-of-Mass det. time= 161.0 min (938.5 - 777.5)

Volume	Invert	Avail.Storage	Storage Description
#1	92.00'	23,071 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

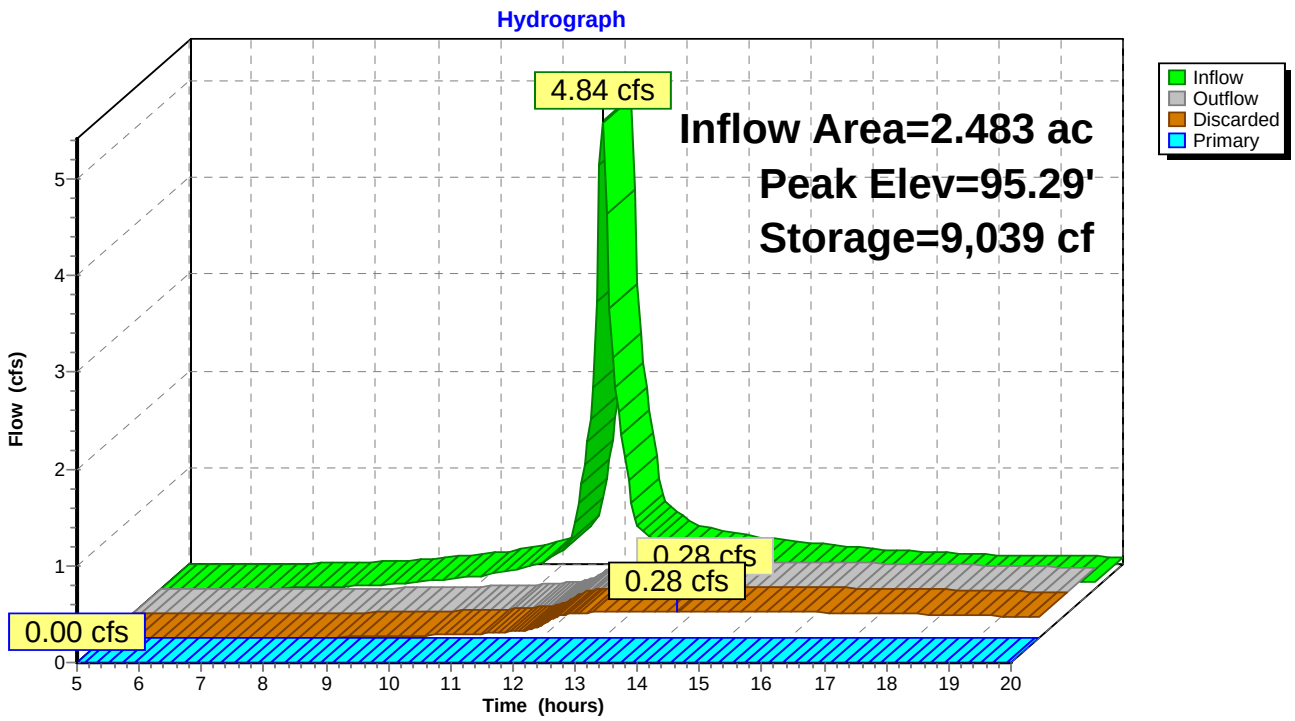
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.00	1,604	0	0
94.00	2,958	4,562	4,562
96.00	4,570	7,528	12,090
98.00	6,411	10,981	23,071

Device	Routing	Invert	Outlet Devices
#1	Primary	91.00'	**15.0" x 200.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 88.70' S= 0.0115 '/' Cc= 0.900 n= 0.013
#2	Device 1	95.30'	**1.00' W x 0.67' H Vert. Orifice/Grate** C= 0.600
#3	Device 1	96.25'	**3.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#4	Primary	97.20'	**15.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	92.00'	**5.000 in/hr Exfiltration over Surface area above invert** Excluded Surface area = 1,604 sf

Discarded OutFlow Max=0.28 cfs @ 14.19 hrs HW=95.29' (Free Discharge)
└─**5=Exfiltration** (Exfiltration Controls 0.28 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=92.00' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Passes 0.00 cfs of 3.58 cfs potential flow)
│ ├─**2=Orifice/Grate** (Controls 0.00 cfs)
│ └─**3=Orifice/Grate** (Controls 0.00 cfs)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Infiltration Basin 1



Pond 2P: Infiltration Basin 2

Inflow Area =	3.901 ac,	Inflow Depth >	0.94"	for	1 Year Storm event
Inflow =	4.49 cfs @	12.10 hrs,	Volume=	0.305 af	
Outflow =	0.28 cfs @	14.77 hrs,	Volume=	0.170 af,	Atten= 94%, Lag= 160.6 min
Discarded =	0.28 cfs @	14.77 hrs,	Volume=	0.170 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 64.21' @ 14.77 hrs Surf.Area= 4,787 sf Storage= 7,758 cf

Plug-Flow detention time= 228.7 min calculated for 0.170 af (56% of inflow)
Center-of-Mass det. time= 145.1 min (954.5 - 809.4)

Volume	Invert	Avail.Storage	Storage Description
#1	62.00'	38,130 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

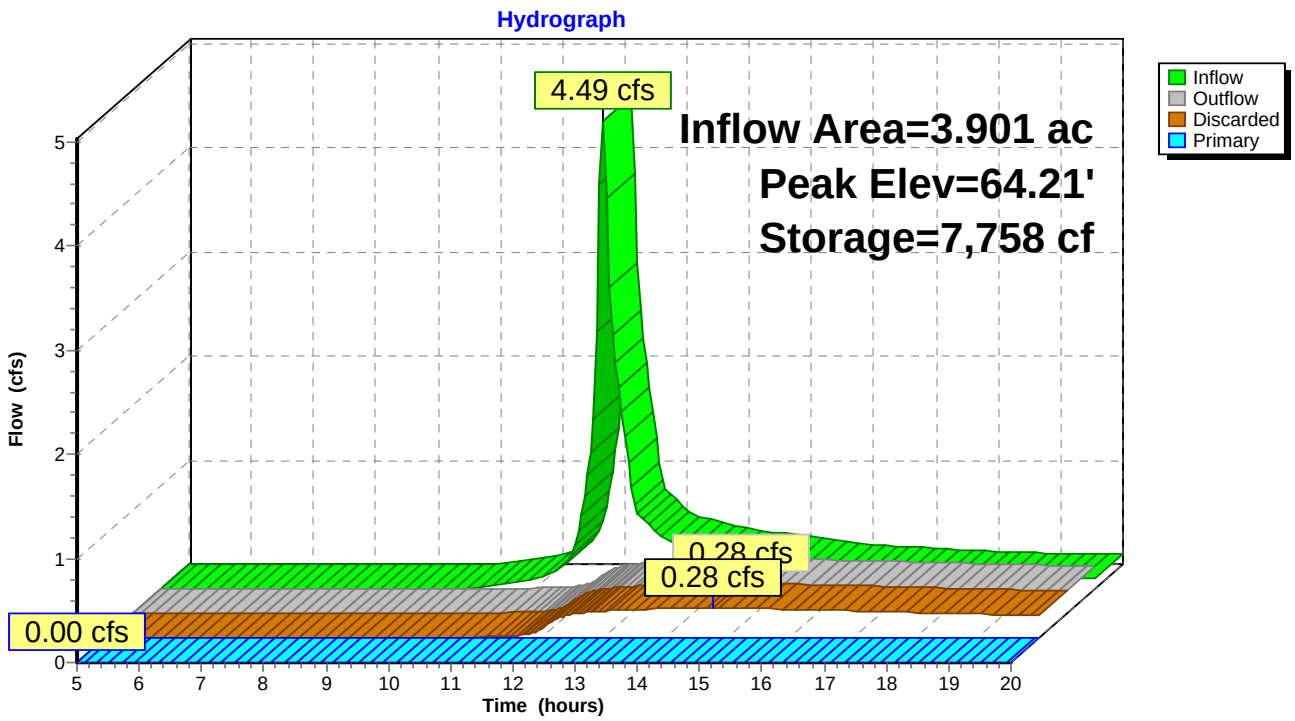
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
62.00	2,346	0	0
64.00	4,432	6,778	6,778
66.00	7,769	12,201	18,979
68.00	11,382	19,151	38,130

Device	Routing	Invert	Outlet Devices
#1	Primary	62.00'	**24.0" x 45.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 61.50' S= 0.0111 '/' Cc= 0.900 n= 0.013
#2	Device 1	64.50'	**1.00' W x 0.67' H Vert. Orifice/Grate** C= 0.600
#3	Device 1	66.75'	**3.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#4	Primary	67.20'	**15.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	62.00'	**5.000 in/hr Exfiltration over Surface area above invert** Excluded Surface area = 2,346 sf

Discarded OutFlow Max=0.28 cfs @ 14.77 hrs HW=64.21' (Free Discharge)
└─**5=Exfiltration** (Exfiltration Controls 0.28 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=62.00' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Controls 0.00 cfs)
│ ├─**2=Orifice/Grate** (Controls 0.00 cfs)
│ └─**3=Orifice/Grate** (Controls 0.00 cfs)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Infiltration Basin 2



Pond 3P: Infiltration Basin 3

Inflow Area =	2.048 ac,	Inflow Depth >	1.05"	for	1 Year Storm event
Inflow =	2.66 cfs @	12.10 hrs,	Volume=	0.180 af	
Outflow =	0.24 cfs @	13.46 hrs,	Volume=	0.138 af,	Atten= 91%, Lag= 81.8 min
Discarded =	0.24 cfs @	13.46 hrs,	Volume=	0.138 af	
Primary =	0.00 cfs @	5.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 59.38' @ 13.46 hrs Surf.Area= 2,115 sf Storage= 3,933 cf

Plug-Flow detention time= 189.3 min calculated for 0.138 af (77% of inflow)
Center-of-Mass det. time= 130.8 min (934.6 - 803.9)

Volume	Invert	Avail.Storage	Storage Description
#1	55.00'	15,703 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

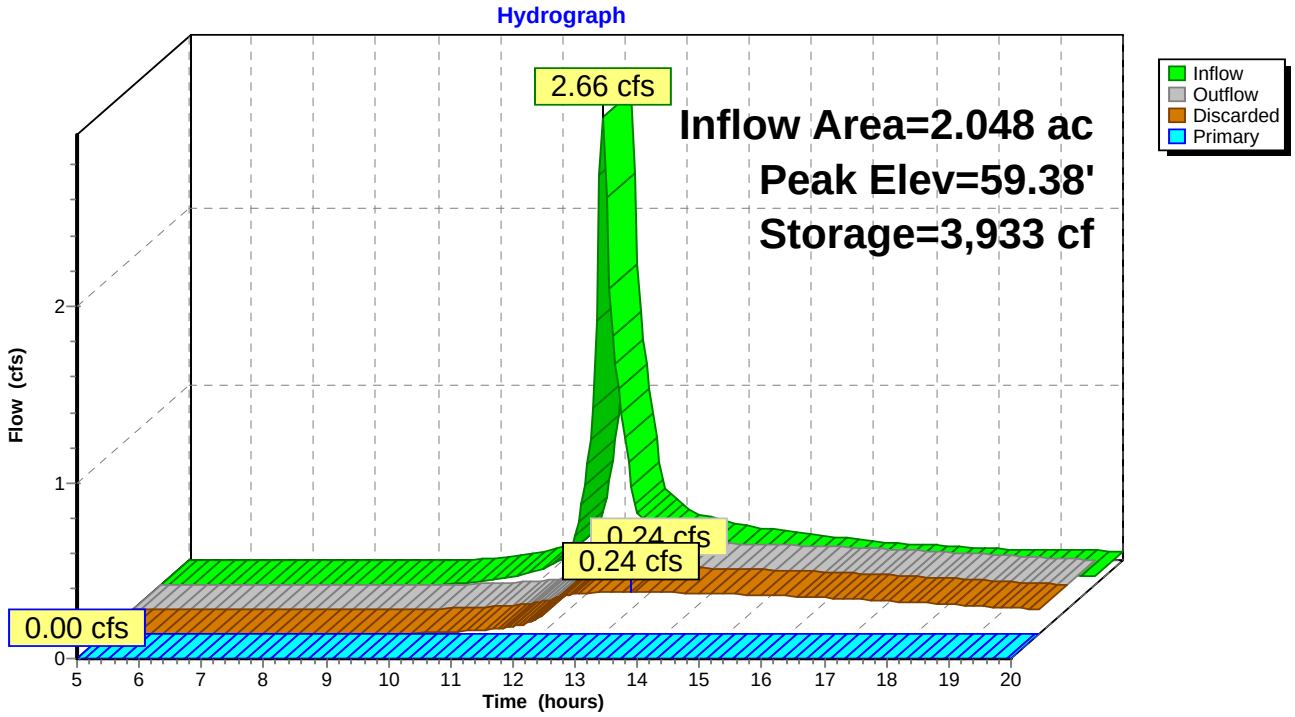
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.00	61	0	0
56.00	296	179	179
58.00	1,185	1,481	1,660
60.00	2,535	3,720	5,380
62.00	4,290	6,825	12,205
62.75	5,040	3,499	15,703

Device	Routing	Invert	Outlet Devices
#1	Primary	55.00'	**15.0" x 62.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 54.00' S= 0.0161 '/' Cc= 0.900 n= 0.013
#2	Device 1	59.40'	**1.00' W x 0.75' H Vert. Orifice/Grate** C= 0.600
#3	Device 1	61.65'	**3.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#4	Primary	62.00'	**15.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	55.00'	**5.000 in/hr Exfiltration over Surface area above invert** Excluded Surface area = 61 sf

Discarded OutFlow Max=0.24 cfs @ 13.46 hrs HW=59.38' (Free Discharge)
└─**5=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=55.00' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Controls 0.00 cfs)
│ ├─**2=Orifice/Grate** (Controls 0.00 cfs)
│ └─**3=Orifice/Grate** (Controls 0.00 cfs)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Infiltration Basin 3



Subcatchment 1S: Area 1

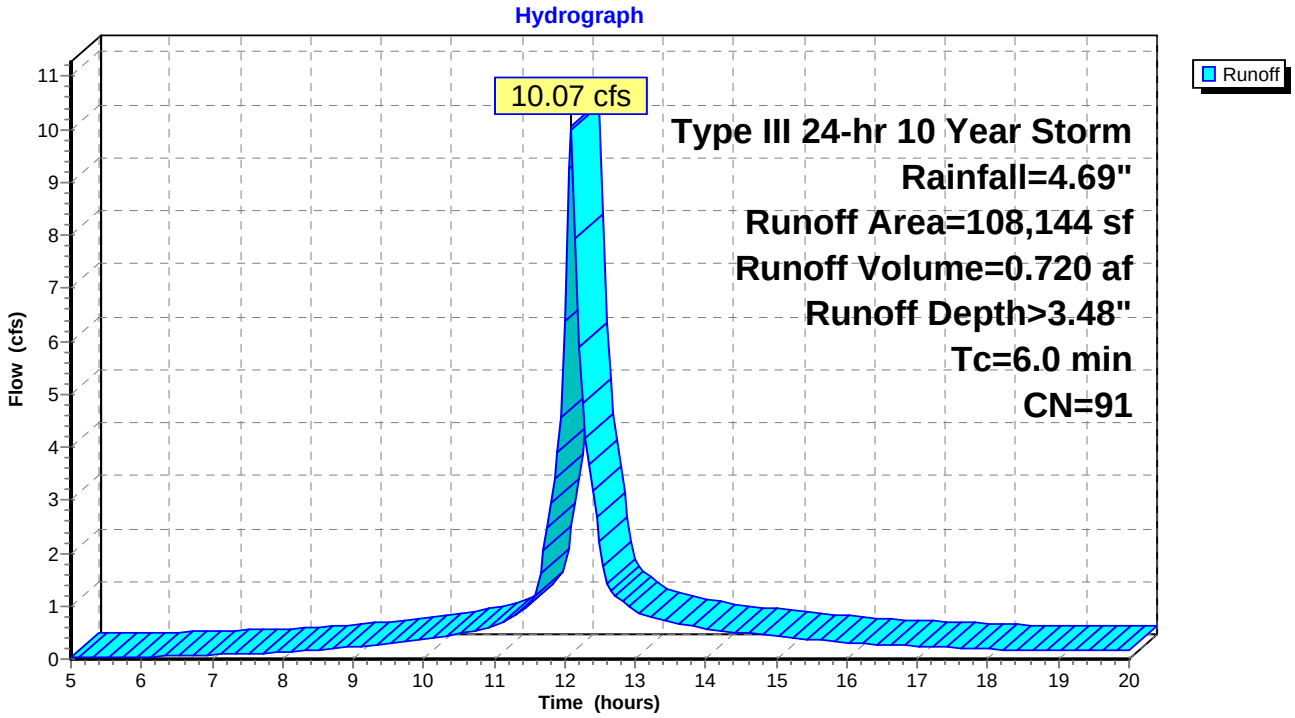
Runoff = 10.07 cfs @ 12.09 hrs, Volume= 0.720 af, Depth> 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=4.69"

Area (sf)	CN	Description
87,707	98	Paved parking & roofs
18,516	61	>75% Grass cover, Good, HSG B
1,921	85	Gravel roads, HSG B
108,144	91	Weighted Average
20,437		Pervious Area
87,707		Impervious Area

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

Subcatchment 1S: Area 1



Subcatchment 2S: Area 2

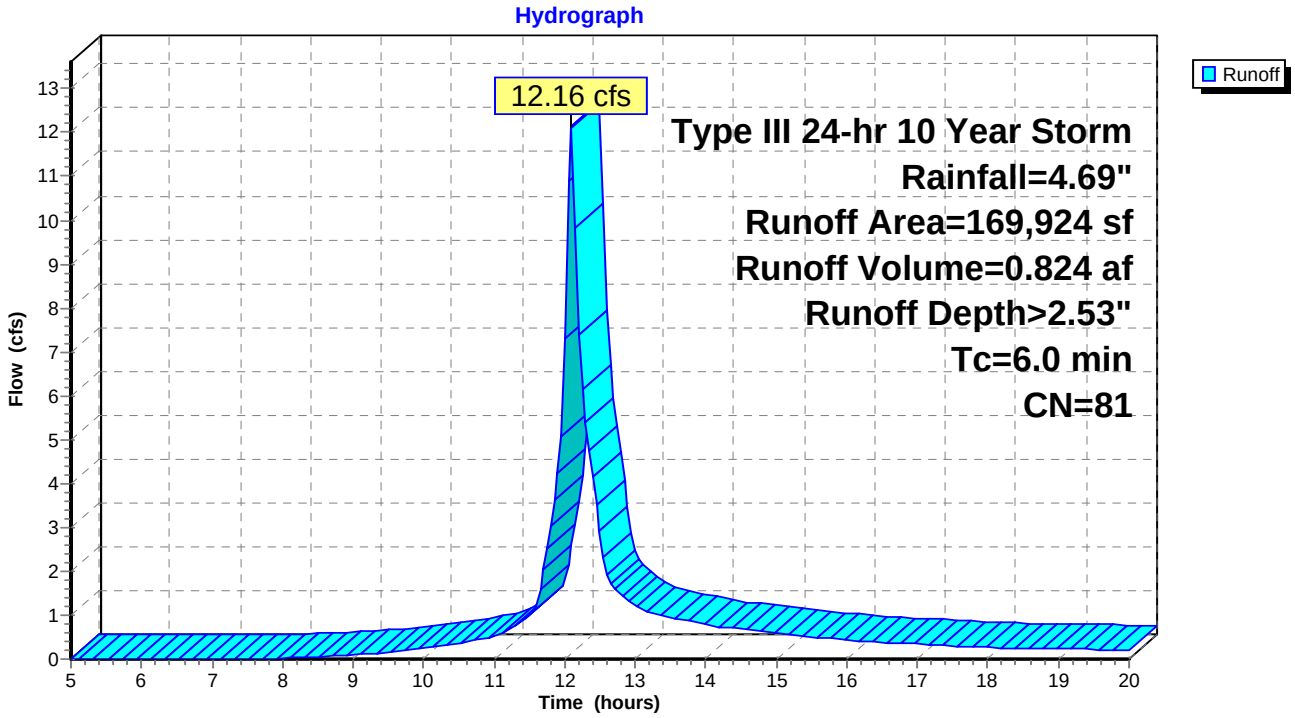
Runoff = 12.16 cfs @ 12.09 hrs, Volume= 0.824 af, Depth> 2.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=4.69"

Area (sf)	CN	Description
76,336	61	>75% Grass cover, Good, HSG B
90,335	98	Paved parking & roofs
3,253	85	Gravel roads, HSG B
169,924	81	Weighted Average
79,589		Pervious Area
90,335		Impervious Area

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

Subcatchment 2S: Area 2



Subcatchment 3S: Area 3

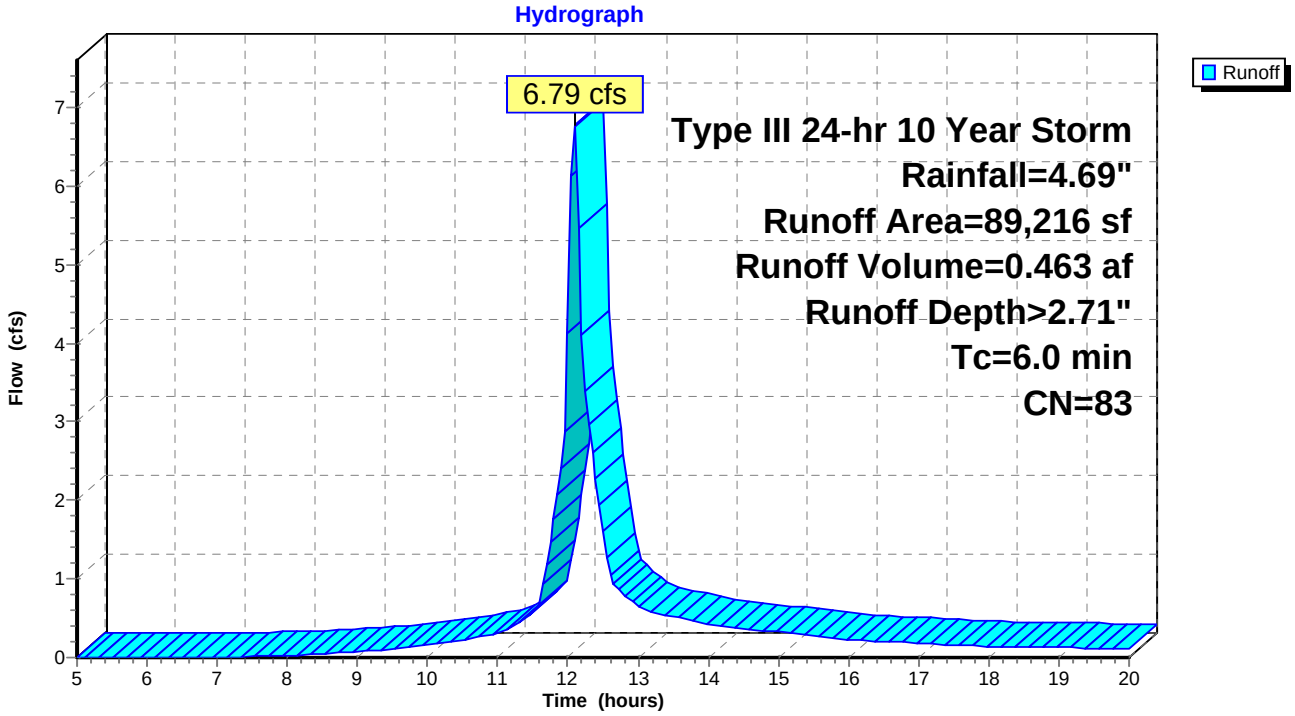
Runoff = 6.79 cfs @ 12.09 hrs, Volume= 0.463 af, Depth> 2.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=4.69"

Area (sf)	CN	Description
37,236	61	>75% Grass cover, Good, HSG B
51,980	98	Paved parking & roofs
89,216	83	Weighted Average
37,236		Pervious Area
51,980		Impervious Area

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

Subcatchment 3S: Area 3



Subcatchment 4S: Area 4

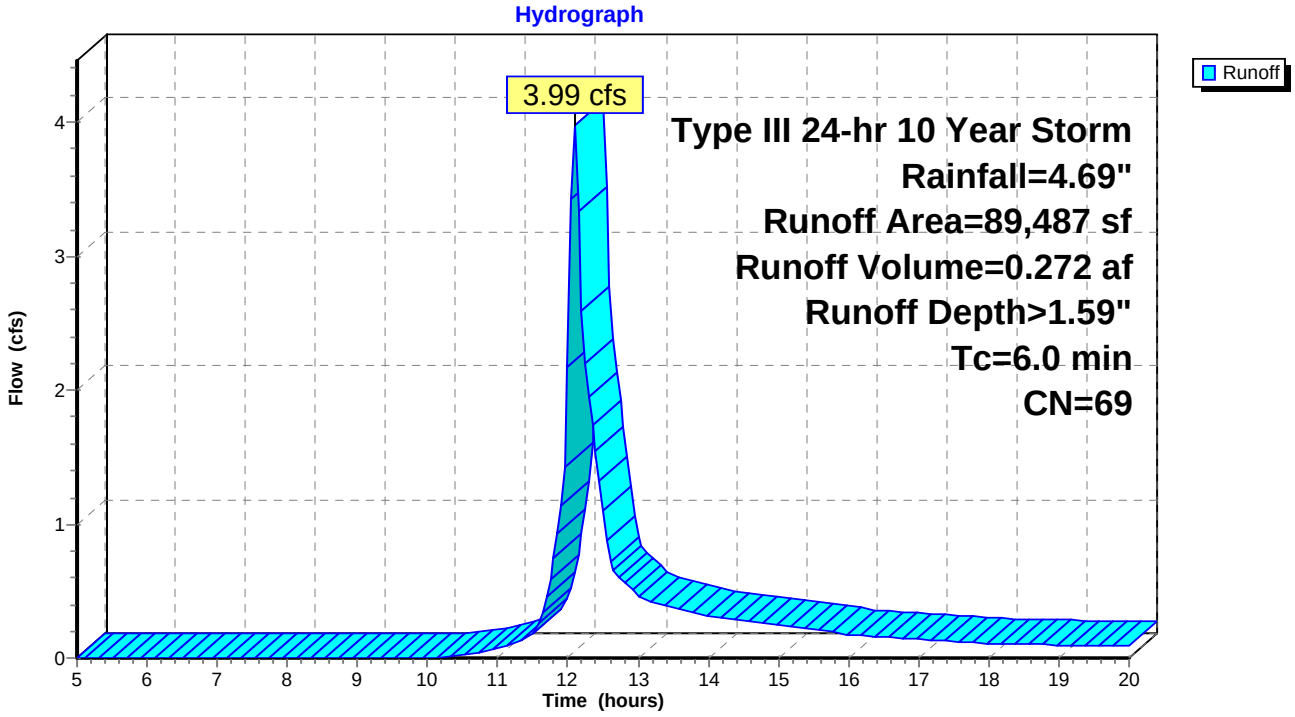
Runoff = 3.99 cfs @ 12.10 hrs, Volume= 0.272 af, Depth> 1.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=4.69"

Area (sf)	CN	Description
44,963	77	Woods, Good, HSG D
44,524	61	>75% Grass cover, Good, HSG B
89,487	69	Weighted Average
89,487		Pervious Area

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

Subcatchment 4S: Area 4



Subcatchment 5S: Area 5

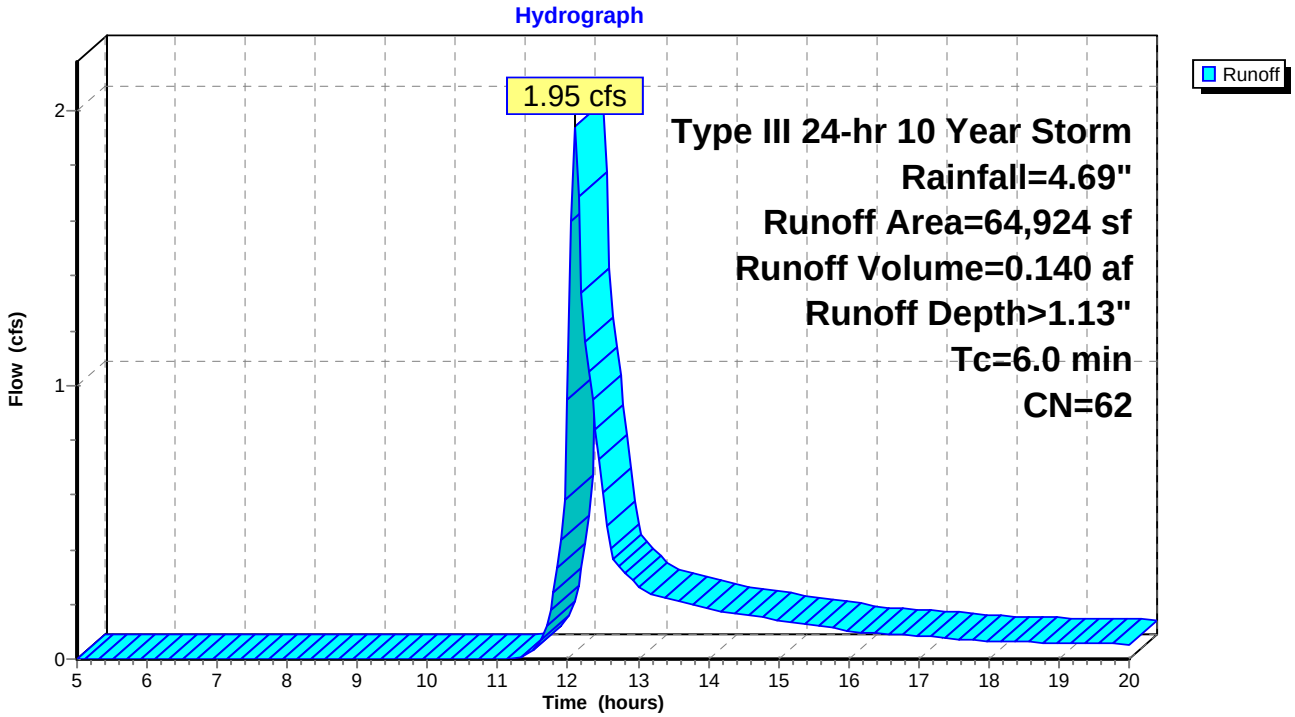
Runoff = 1.95 cfs @ 12.10 hrs, Volume= 0.140 af, Depth> 1.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=4.69"

Area (sf)	CN	Description
8,921	98	Paved parking & roofs
7,542	61	>75% Grass cover, Good, HSG B
48,461	55	Woods, Good, HSG B
64,924	62	Weighted Average
56,003		Pervious Area
8,921		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, S1**

Subcatchment 5S: Area 5

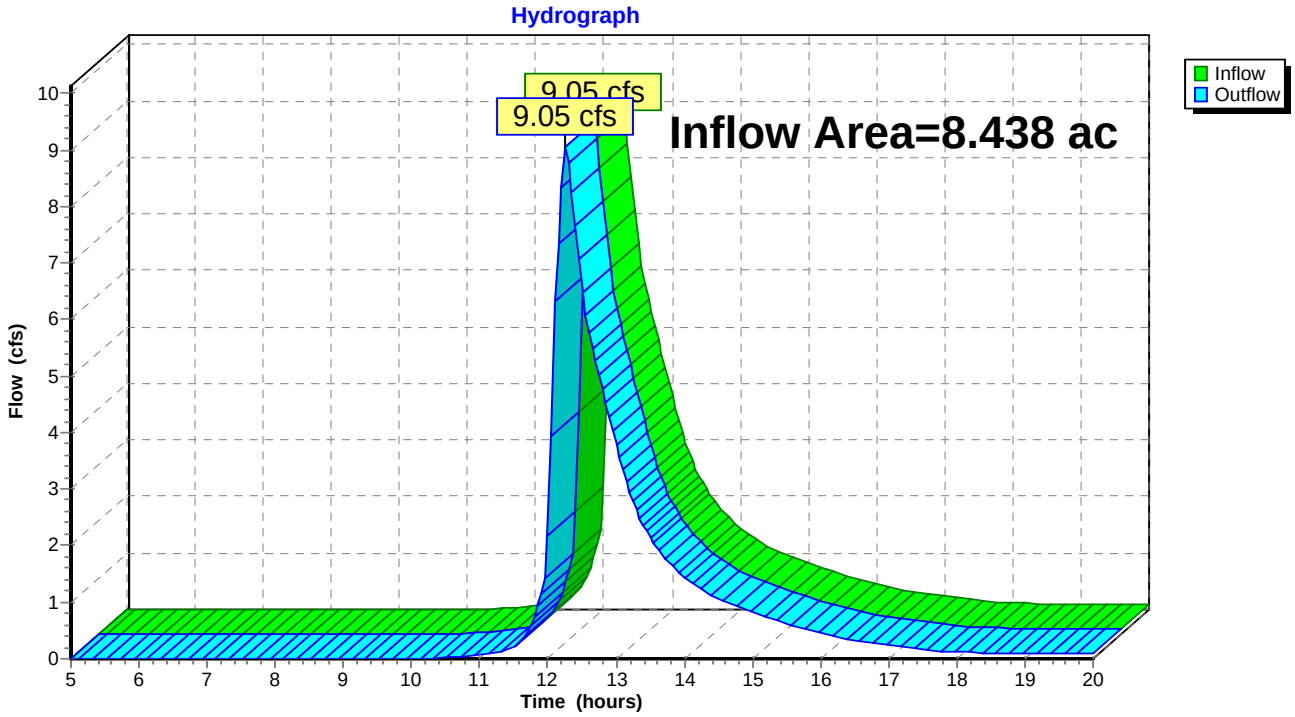


Reach SDP1: SDP 1

Inflow Area = 8.438 ac, Inflow Depth > 1.32" for 10 Year Storm event
Inflow = 9.05 cfs @ 12.26 hrs, Volume= 0.929 af
Outflow = 9.05 cfs @ 12.26 hrs, Volume= 0.929 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SDP1: SDP 1

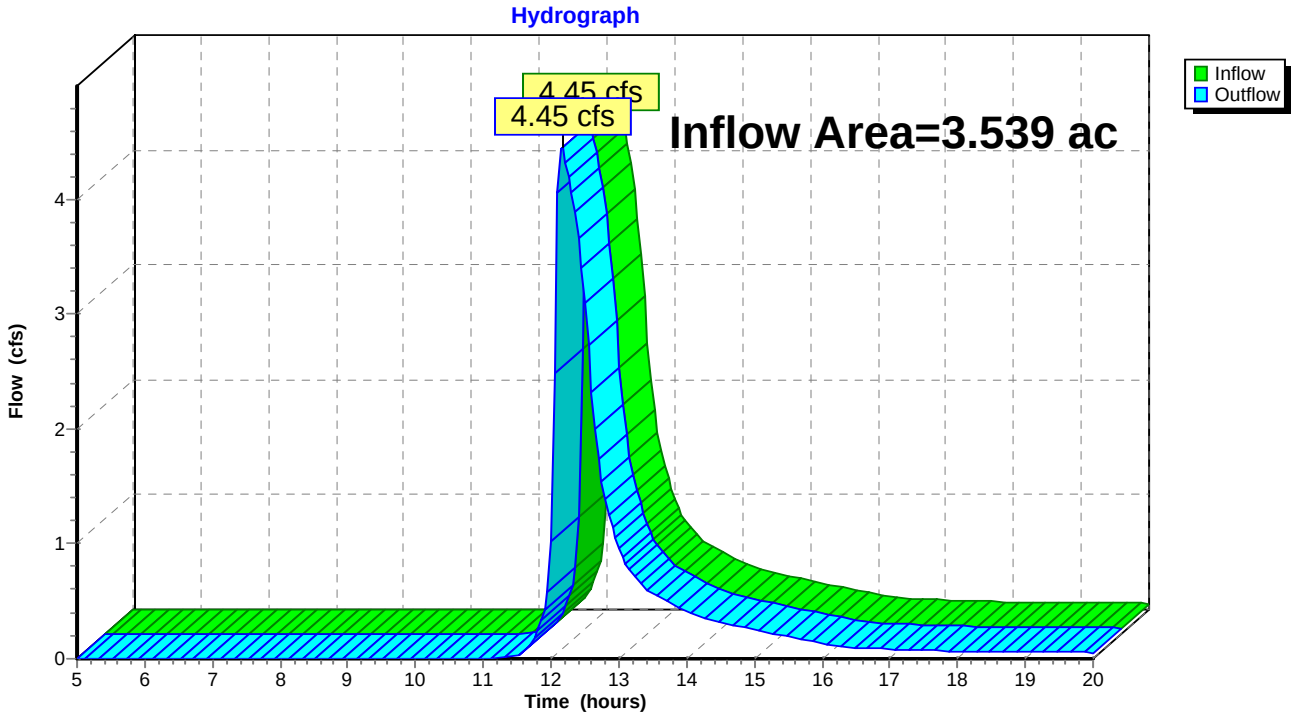


Reach SDP2: SDP2

Inflow Area = 3.539 ac, Inflow Depth > 1.19" for 10 Year Storm event
Inflow = 4.45 cfs @ 12.16 hrs, Volume= 0.350 af
Outflow = 4.45 cfs @ 12.16 hrs, Volume= 0.350 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SDP2: SDP2



Pond 1P: Infiltration Basin 1

Inflow Area =	2.483 ac,	Inflow Depth >	3.48"	for	10 Year Storm event
Inflow =	10.07 cfs @	12.09 hrs,	Volume=	0.720 af	
Outflow =	4.83 cfs @	12.27 hrs,	Volume=	0.531 af,	Atten= 52%, Lag= 10.7 min
Discarded =	0.38 cfs @	12.27 hrs,	Volume=	0.228 af	
Primary =	4.45 cfs @	12.27 hrs,	Volume=	0.303 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 96.36' @ 12.27 hrs Surf.Area= 4,904 sf Storage= 13,808 cf

Plug-Flow detention time= 136.1 min calculated for 0.531 af (74% of inflow)
Center-of-Mass det. time= 73.8 min (833.2 - 759.4)

Volume	Invert	Avail.Storage	Storage Description
#1	92.00'	23,071 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

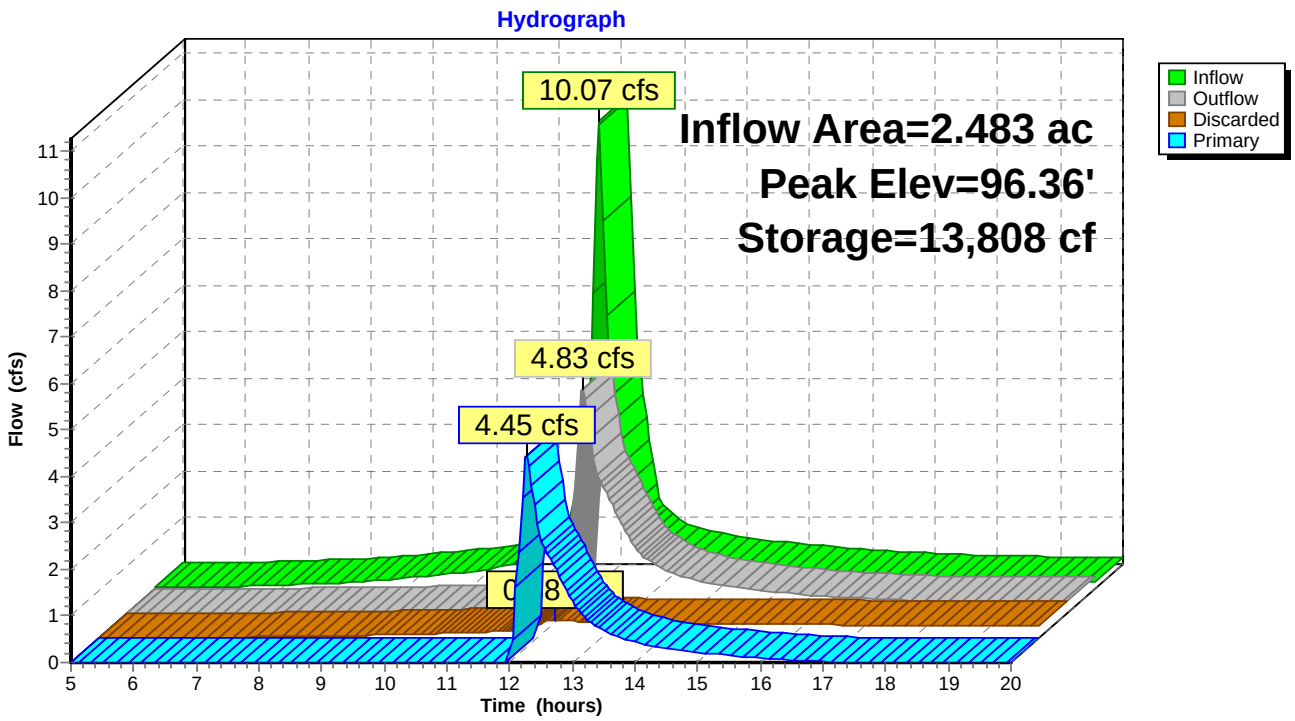
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.00	1,604	0	0
94.00	2,958	4,562	4,562
96.00	4,570	7,528	12,090
98.00	6,411	10,981	23,071

Device	Routing	Invert	Outlet Devices
#1	Primary	91.00'	**15.0" x 200.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 88.70' S= 0.0115 '/' Cc= 0.900 n= 0.013
#2	Device 1	95.30'	**1.00' W x 0.67' H Vert. Orifice/Grate** C= 0.600
#3	Device 1	96.25'	**3.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#4	Primary	97.20'	**15.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	92.00'	**5.000 in/hr Exfiltration over Surface area above invert** Excluded Surface area = 1,604 sf

Discarded OutFlow Max=0.38 cfs @ 12.27 hrs HW=96.36' (Free Discharge)
└─**5=Exfiltration** (Exfiltration Controls 0.38 cfs)

Primary OutFlow Max=4.34 cfs @ 12.27 hrs HW=96.36' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Passes 4.34 cfs of 10.04 cfs potential flow)
│ ├─**2=Orifice/Grate** (Orifice Controls 2.72 cfs @ 4.06 fps)
│ └─**3=Orifice/Grate** (Weir Controls 1.62 cfs @ 1.07 fps)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Infiltration Basin 1



Pond 2P: Infiltration Basin 2

Inflow Area =	3.901 ac,	Inflow Depth >	2.53"	for	10 Year Storm event
Inflow =	12.16 cfs @	12.09 hrs,	Volume=	0.824 af	
Outflow =	3.32 cfs @	12.47 hrs,	Volume=	0.626 af,	Atten= 73%, Lag= 22.5 min
Discarded =	0.55 cfs @	12.47 hrs,	Volume=	0.272 af	
Primary =	2.77 cfs @	12.47 hrs,	Volume=	0.354 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 65.59' @ 12.47 hrs Surf.Area= 7,080 sf Storage= 15,915 cf

Plug-Flow detention time= 126.5 min calculated for 0.626 af (76% of inflow)
Center-of-Mass det. time= 67.1 min (854.1 - 787.0)

Volume	Invert	Avail.Storage	Storage Description
#1	62.00'	38,130 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

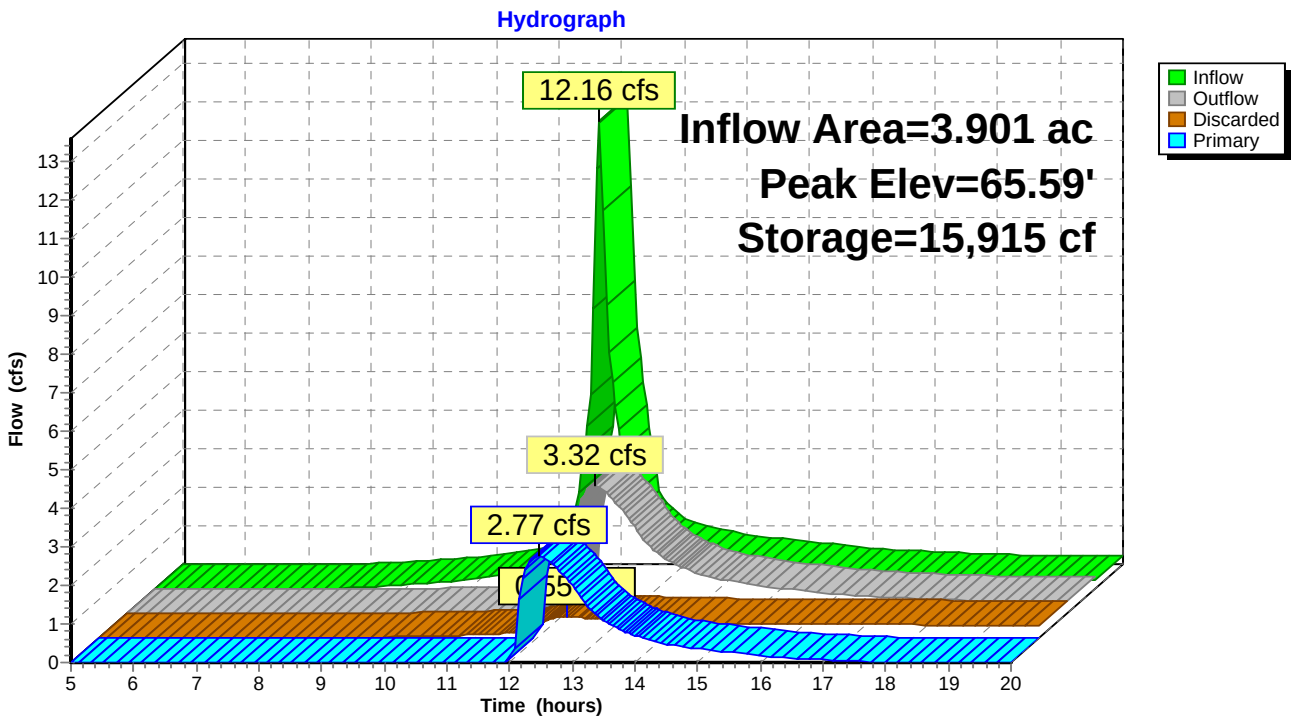
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
62.00	2,346	0	0
64.00	4,432	6,778	6,778
66.00	7,769	12,201	18,979
68.00	11,382	19,151	38,130

Device	Routing	Invert	Outlet Devices
#1	Primary	62.00'	**24.0" x 45.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 61.50' S= 0.0111 '/' Cc= 0.900 n= 0.013
#2	Device 1	64.50'	**1.00' W x 0.67' H Vert. Orifice/Grate** C= 0.600
#3	Device 1	66.75'	**3.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#4	Primary	67.20'	**15.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	62.00'	**5.000 in/hr Exfiltration over Surface area above invert** Excluded Surface area = 2,346 sf

Discarded OutFlow Max=0.55 cfs @ 12.47 hrs HW=65.59' (Free Discharge)
└─**5=Exfiltration** (Exfiltration Controls 0.55 cfs)

Primary OutFlow Max=2.77 cfs @ 12.47 hrs HW=65.59' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Passes 2.77 cfs of 24.32 cfs potential flow)
│ ├─**2=Orifice/Grate** (Orifice Controls 2.77 cfs @ 4.14 fps)
│ └─**3=Orifice/Grate** (Controls 0.00 cfs)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Infiltration Basin 2



Pond 3P: Infiltration Basin 3

Inflow Area =	2.048 ac,	Inflow Depth >	2.71"	for	10 Year Storm event
Inflow =	6.79 cfs @	12.09 hrs,	Volume=	0.463 af	
Outflow =	3.37 cfs @	12.26 hrs,	Volume=	0.394 af,	Atten= 50%, Lag= 10.1 min
Discarded =	0.34 cfs @	12.26 hrs,	Volume=	0.185 af	
Primary =	3.04 cfs @	12.26 hrs,	Volume=	0.209 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 60.50' @ 12.26 hrs Surf.Area= 2,972 sf Storage= 6,752 cf

Plug-Flow detention time= 96.2 min calculated for 0.394 af (85% of inflow)
Center-of-Mass det. time= 52.4 min (834.7 - 782.3)

Volume	Invert	Avail.Storage	Storage Description
#1	55.00'	15,703 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

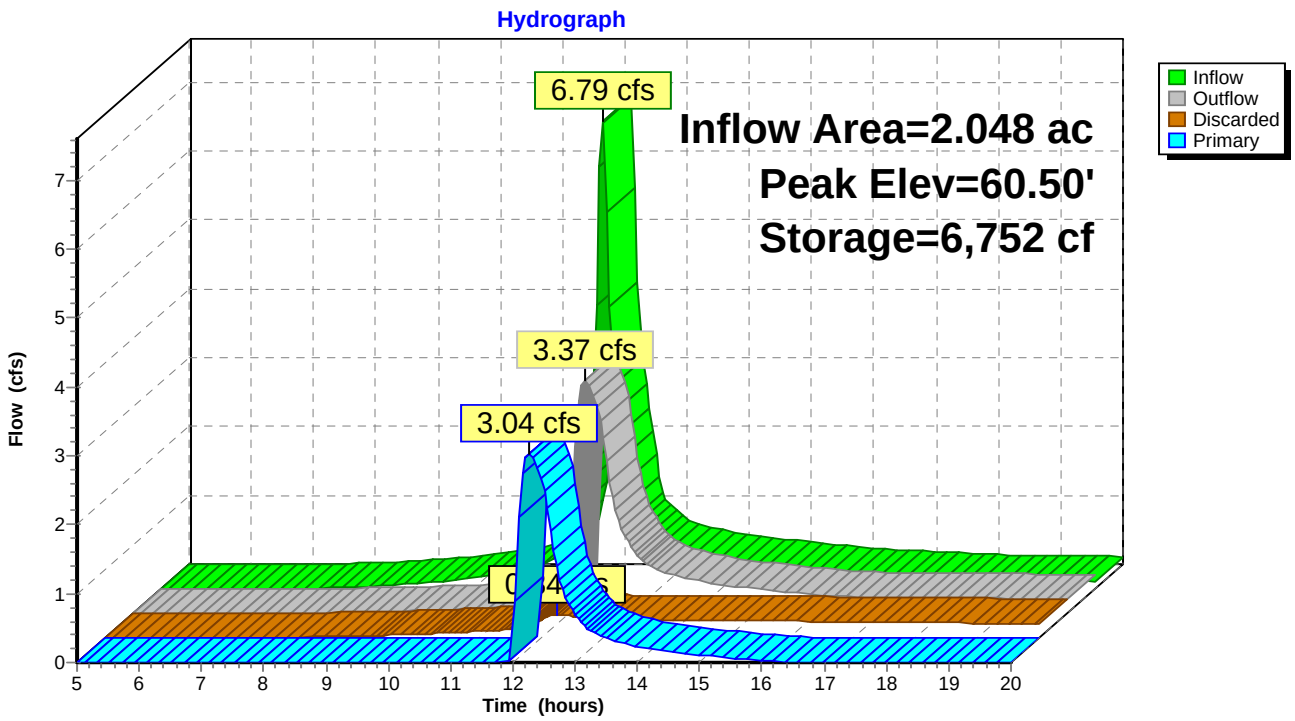
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.00	61	0	0
56.00	296	179	179
58.00	1,185	1,481	1,660
60.00	2,535	3,720	5,380
62.00	4,290	6,825	12,205
62.75	5,040	3,499	15,703

Device	Routing	Invert	Outlet Devices
#1	Primary	55.00'	**15.0" x 62.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 54.00' S= 0.0161 '/' Cc= 0.900 n= 0.013
#2	Device 1	59.40'	**1.00' W x 0.75' H Vert. Orifice/Grate** C= 0.600
#3	Device 1	61.65'	**3.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#4	Primary	62.00'	**15.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	55.00'	**5.000 in/hr Exfiltration over Surface area above invert** Excluded Surface area = 61 sf

Discarded OutFlow Max=0.34 cfs @ 12.26 hrs HW=60.50' (Free Discharge)
└─**5=Exfiltration** (Exfiltration Controls 0.34 cfs)

Primary OutFlow Max=3.03 cfs @ 12.26 hrs HW=60.50' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Passes 3.03 cfs of 13.04 cfs potential flow)
│ ├─**2=Orifice/Grate** (Orifice Controls 3.03 cfs @ 4.04 fps)
│ └─**3=Orifice/Grate** (Controls 0.00 cfs)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Infiltration Basin 3



Subcatchment 1S: Area 1

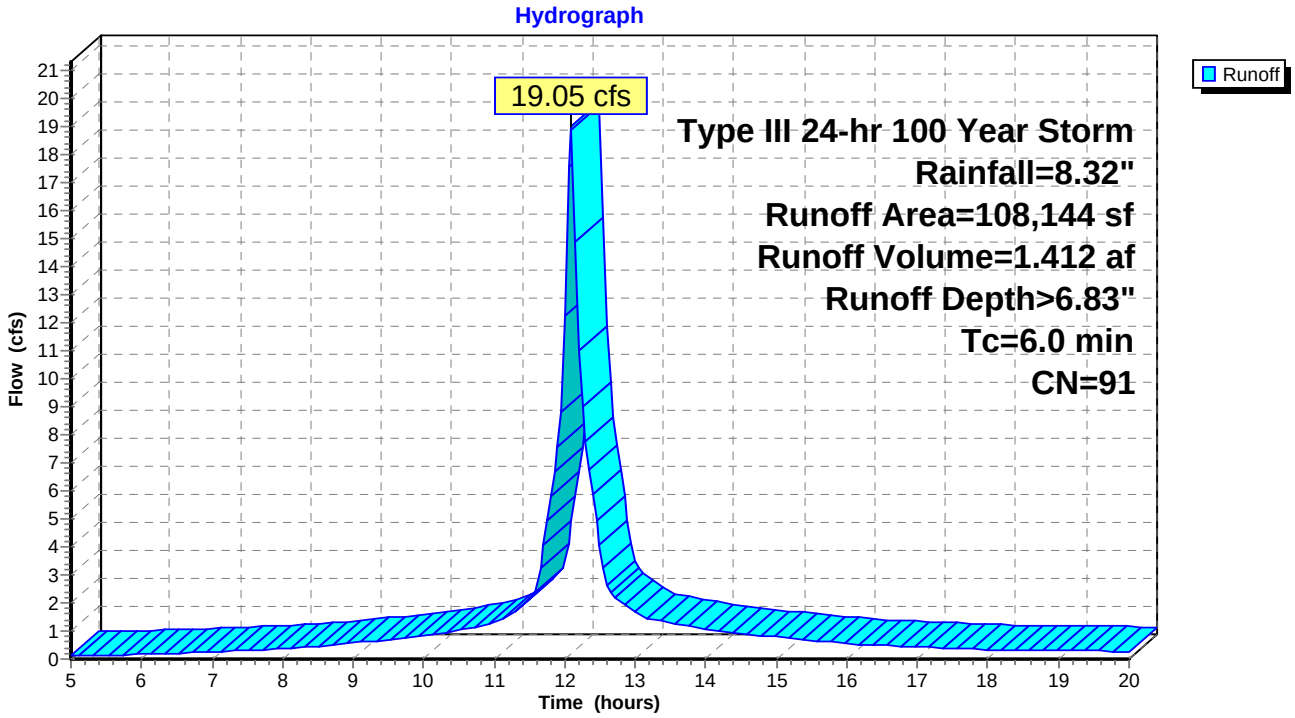
Runoff = 19.05 cfs @ 12.09 hrs, Volume= 1.412 af, Depth> 6.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Storm Rainfall=8.32"

Area (sf)	CN	Description
87,707	98	Paved parking & roofs
18,516	61	>75% Grass cover, Good, HSG B
1,921	85	Gravel roads, HSG B
108,144	91	Weighted Average
20,437		Pervious Area
87,707		Impervious Area

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

Subcatchment 1S: Area 1



Subcatchment 2S: Area 2

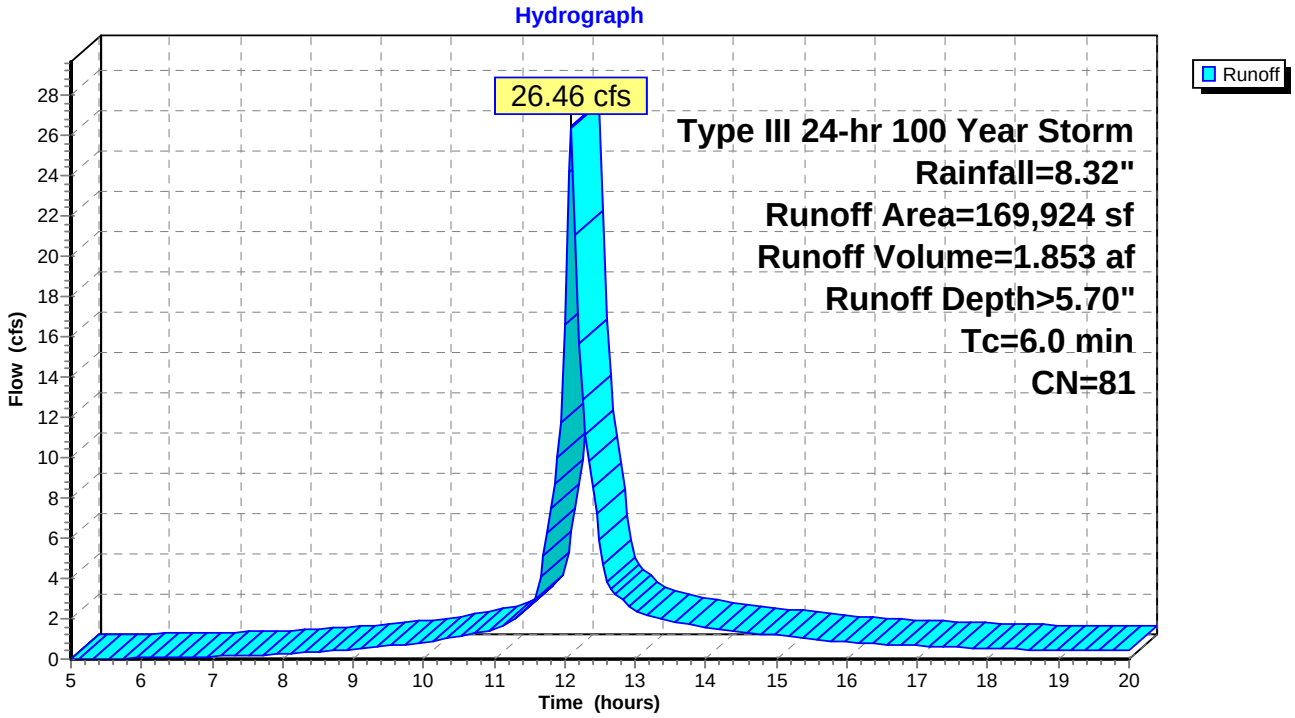
Runoff = 26.46 cfs @ 12.09 hrs, Volume= 1.853 af, Depth> 5.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Storm Rainfall=8.32"

Area (sf)	CN	Description
76,336	61	>75% Grass cover, Good, HSG B
90,335	98	Paved parking & roofs
3,253	85	Gravel roads, HSG B
169,924	81	Weighted Average
79,589		Pervious Area
90,335		Impervious Area

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

Subcatchment 2S: Area 2



Subcatchment 3S: Area 3

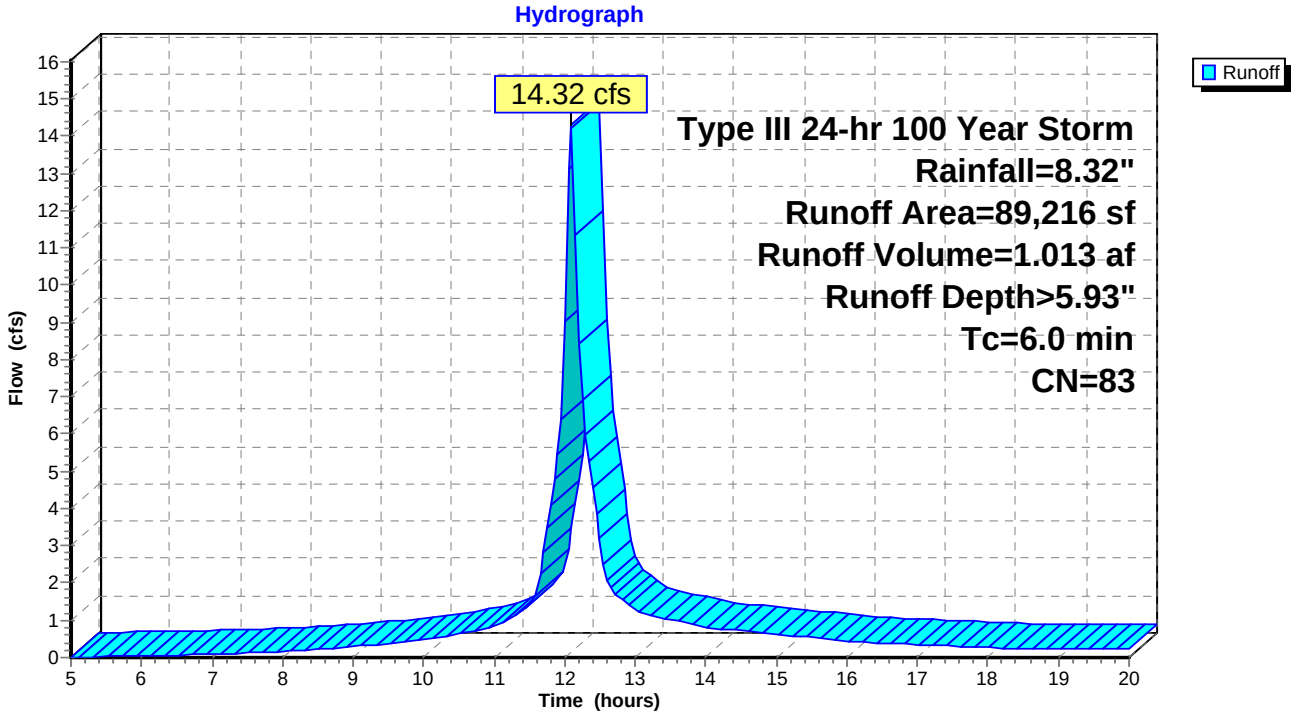
Runoff = 14.32 cfs @ 12.09 hrs, Volume= 1.013 af, Depth> 5.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Storm Rainfall=8.32"

Area (sf)	CN	Description
37,236	61	>75% Grass cover, Good, HSG B
51,980	98	Paved parking & roofs
89,216	83	Weighted Average
37,236		Pervious Area
51,980		Impervious Area

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

Subcatchment 3S: Area 3



Subcatchment 4S: Area 4

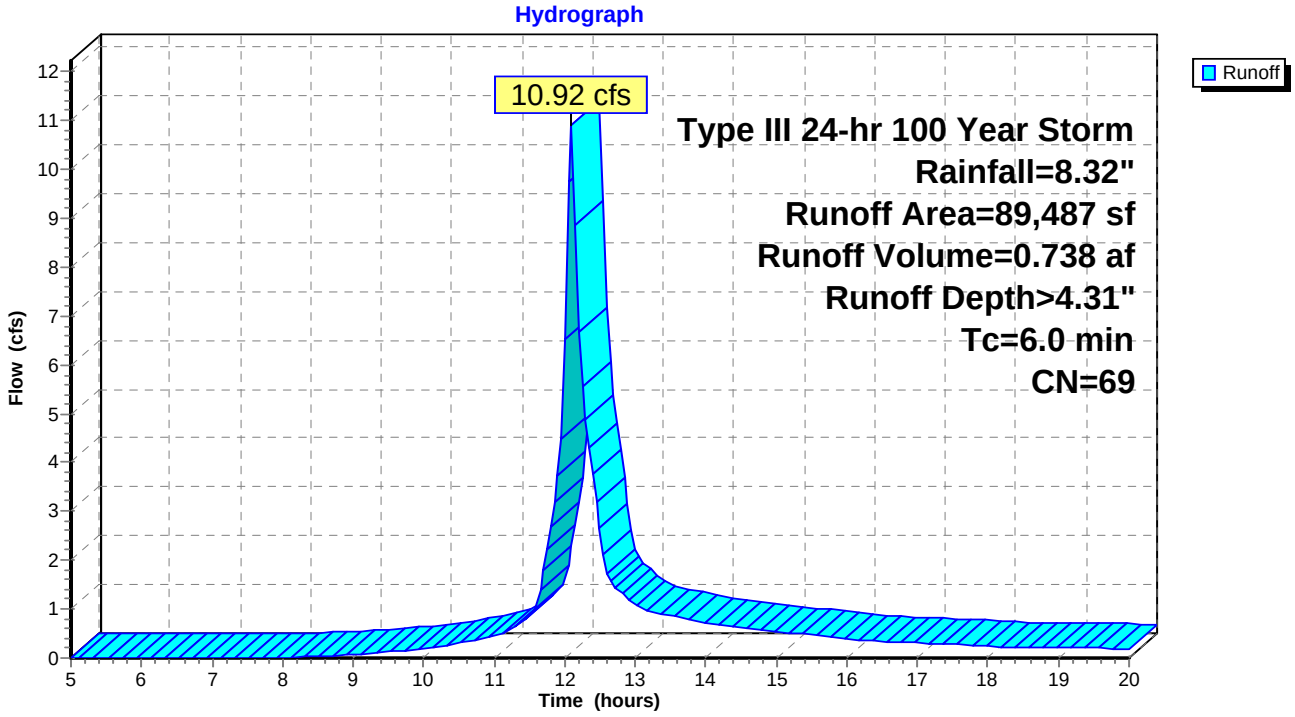
Runoff = 10.92 cfs @ 12.09 hrs, Volume= 0.738 af, Depth> 4.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Storm Rainfall=8.32"

Area (sf)	CN	Description
44,963	77	Woods, Good, HSG D
44,524	61	>75% Grass cover, Good, HSG B
89,487	69	Weighted Average
89,487		Pervious Area

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

Subcatchment 4S: Area 4



Subcatchment 5S: Area 5

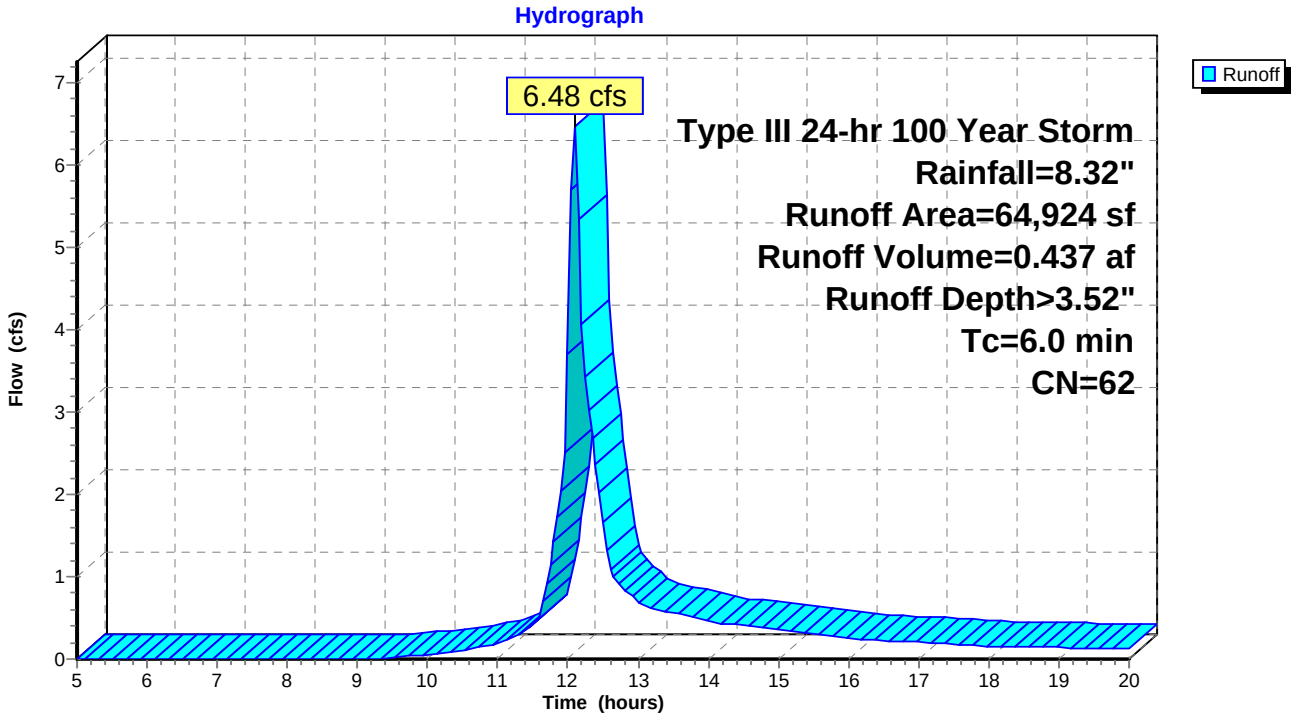
Runoff = 6.48 cfs @ 12.10 hrs, Volume= 0.437 af, Depth> 3.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Storm Rainfall=8.32"

Area (sf)	CN	Description
8,921	98	Paved parking & roofs
7,542	61	>75% Grass cover, Good, HSG B
48,461	55	Woods, Good, HSG B
64,924	62	Weighted Average
56,003		Pervious Area
8,921		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, S1**

Subcatchment 5S: Area 5

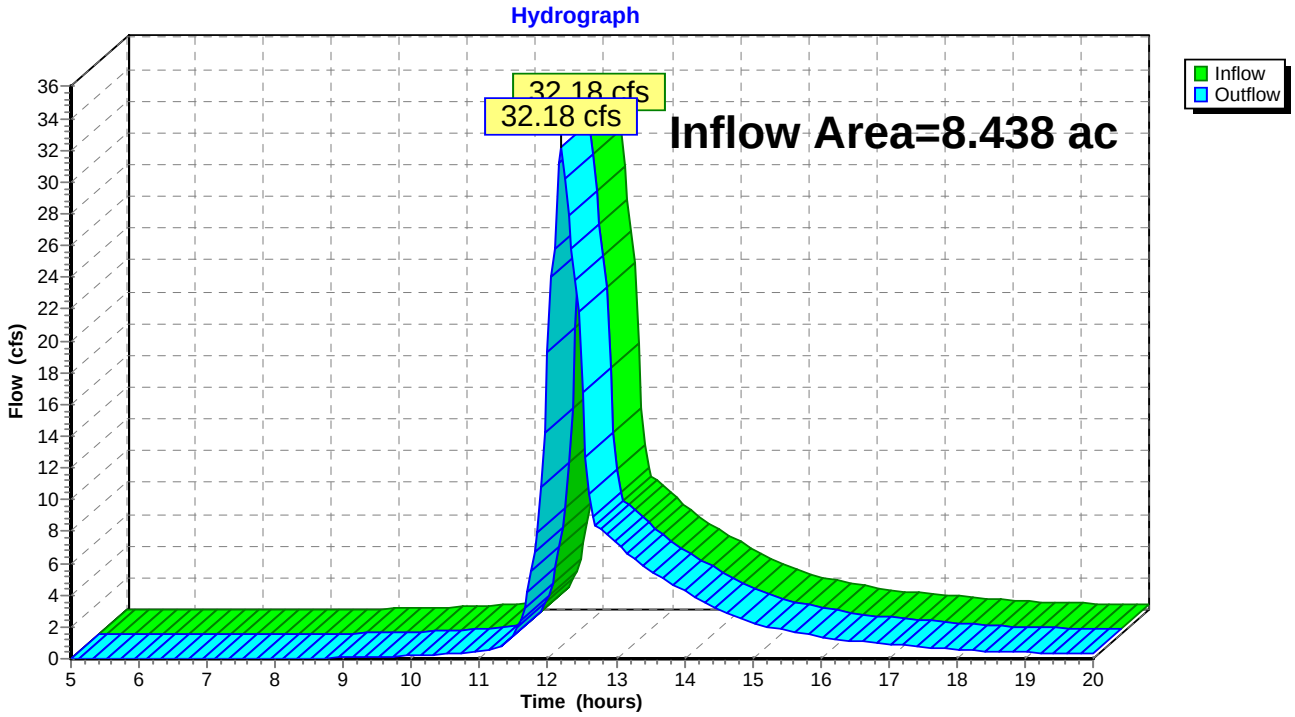


Reach SDP1: SDP 1

Inflow Area = 8.438 ac, Inflow Depth > 4.13" for 100 Year Storm event
Inflow = 32.18 cfs @ 12.19 hrs, Volume= 2.906 af
Outflow = 32.18 cfs @ 12.19 hrs, Volume= 2.906 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SDP1: SDP 1

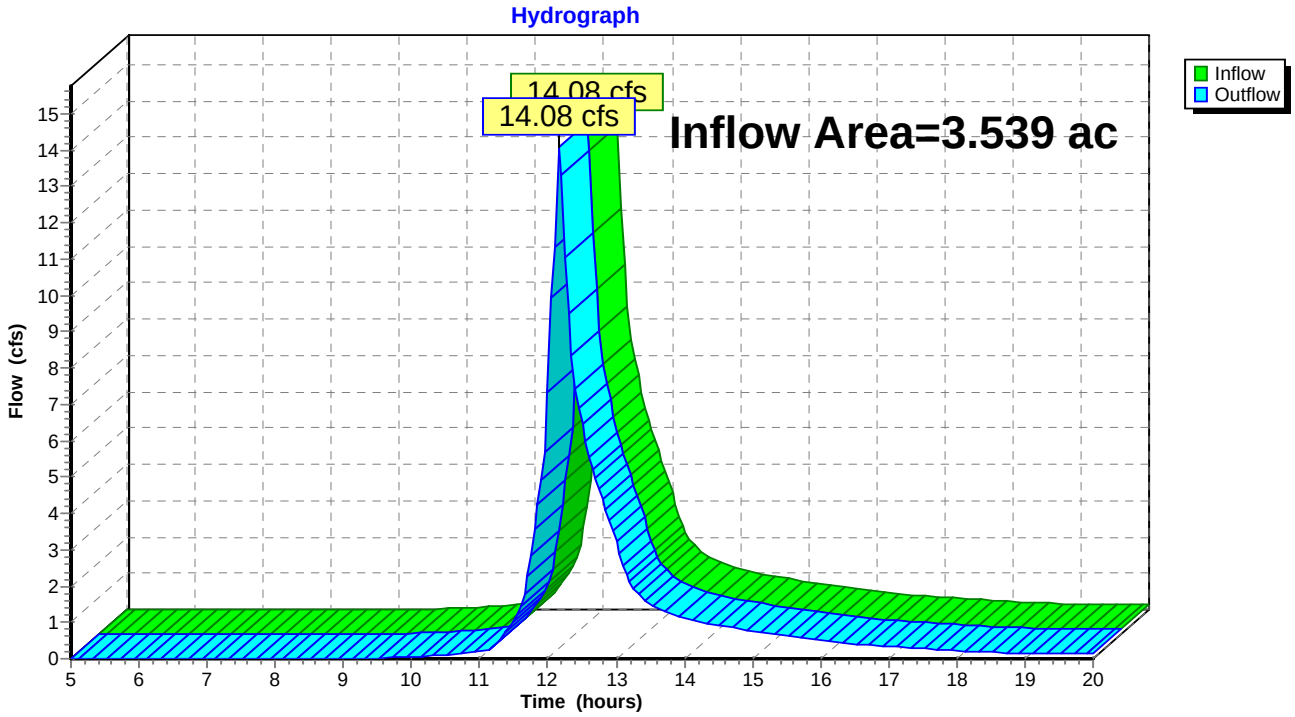


Reach SDP2: SDP2

Inflow Area = 3.539 ac, Inflow Depth > 3.79" for 100 Year Storm event
Inflow = 14.08 cfs @ 12.17 hrs, Volume= 1.116 af
Outflow = 14.08 cfs @ 12.17 hrs, Volume= 1.116 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SDP2: SDP2



Pond 1P: Infiltration Basin 1

Inflow Area =	2.483 ac,	Inflow Depth >	6.83"	for	100 Year Storm event
Inflow =	19.05 cfs @	12.09 hrs,	Volume=	1.412 af	
Outflow =	11.14 cfs @	12.21 hrs,	Volume=	1.200 af,	Atten= 42%, Lag= 7.1 min
Discarded =	0.47 cfs @	12.21 hrs,	Volume=	0.280 af	
Primary =	10.67 cfs @	12.21 hrs,	Volume=	0.920 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 97.19' @ 12.21 hrs Surf.Area= 5,662 sf Storage= 18,156 cf

Plug-Flow detention time= 93.5 min calculated for 1.200 af (85% of inflow)
Center-of-Mass det. time= 48.5 min (795.4 - 746.9)

Volume	Invert	Avail.Storage	Storage Description
#1	92.00'	23,071 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

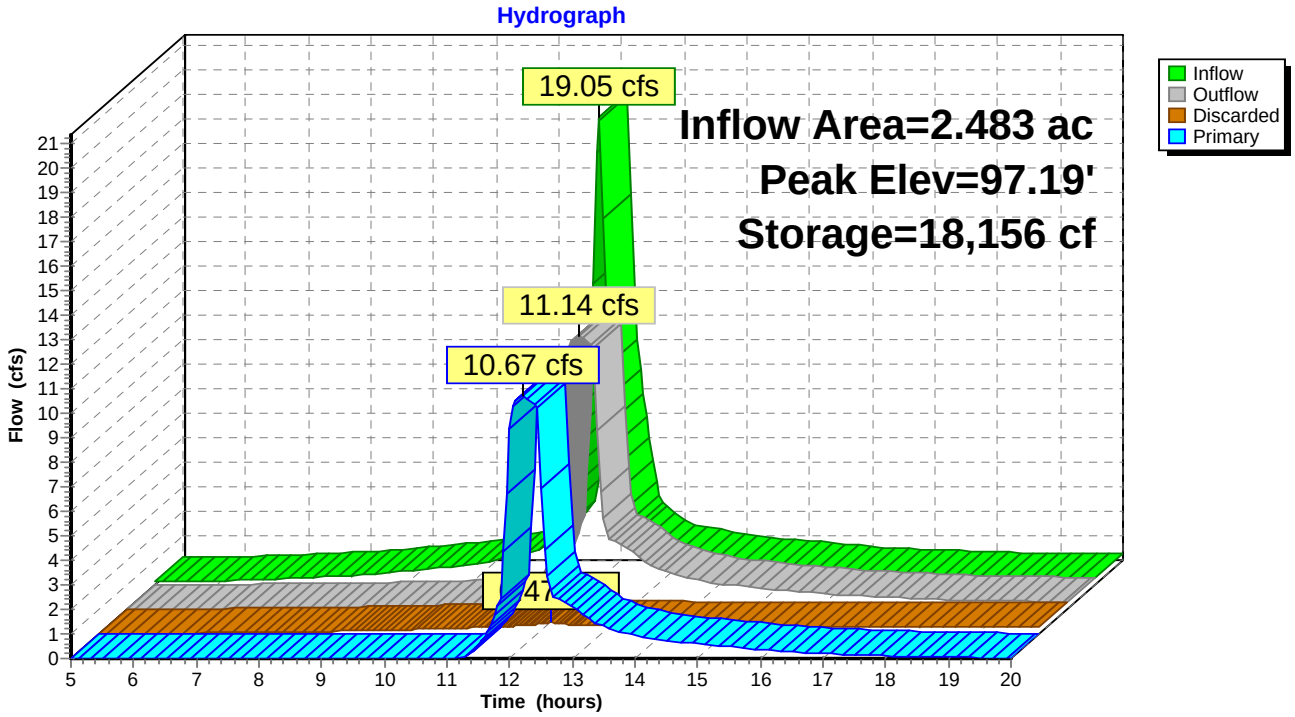
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.00	1,604	0	0
94.00	2,958	4,562	4,562
96.00	4,570	7,528	12,090
98.00	6,411	10,981	23,071

Device	Routing	Invert	Outlet Devices
#1	Primary	91.00'	**15.0" x 200.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 88.70' S= 0.0115 '/' Cc= 0.900 n= 0.013
#2	Device 1	95.30'	**1.00' W x 0.67' H Vert. Orifice/Grate** C= 0.600
#3	Device 1	96.25'	**3.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#4	Primary	97.20'	**15.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	92.00'	**5.000 in/hr Exfiltration over Surface area above invert** Excluded Surface area = 1,604 sf

Discarded OutFlow Max=0.47 cfs @ 12.21 hrs HW=97.18' (Free Discharge)
└─**5=Exfiltration** (Exfiltration Controls 0.47 cfs)

Primary OutFlow Max=10.67 cfs @ 12.21 hrs HW=97.18' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Barrel Controls 10.67 cfs @ 8.69 fps)
│ ├─**2=Orifice/Grate** (Passes < 4.00 cfs potential flow)
│ └─**3=Orifice/Grate** (Passes < 41.12 cfs potential flow)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Infiltration Basin 1



Pond 2P: Infiltration Basin 2

Inflow Area =	3.901 ac,	Inflow Depth >	5.70"	for	100 Year Storm event
Inflow =	26.46 cfs @	12.09 hrs,	Volume=	1.853 af	
Outflow =	15.83 cfs @	12.21 hrs,	Volume=	1.630 af,	Atten= 40%, Lag= 7.5 min
Discarded =	0.86 cfs @	12.22 hrs,	Volume=	0.382 af	
Primary =	14.97 cfs @	12.21 hrs,	Volume=	1.248 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 67.12' @ 12.22 hrs Surf.Area= 9,784 sf Storage= 28,770 cf

Plug-Flow detention time= 89.2 min calculated for 1.625 af (88% of inflow)
Center-of-Mass det. time= 52.1 min (819.9 - 767.9)

Volume	Invert	Avail.Storage	Storage Description
#1	62.00'	38,130 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

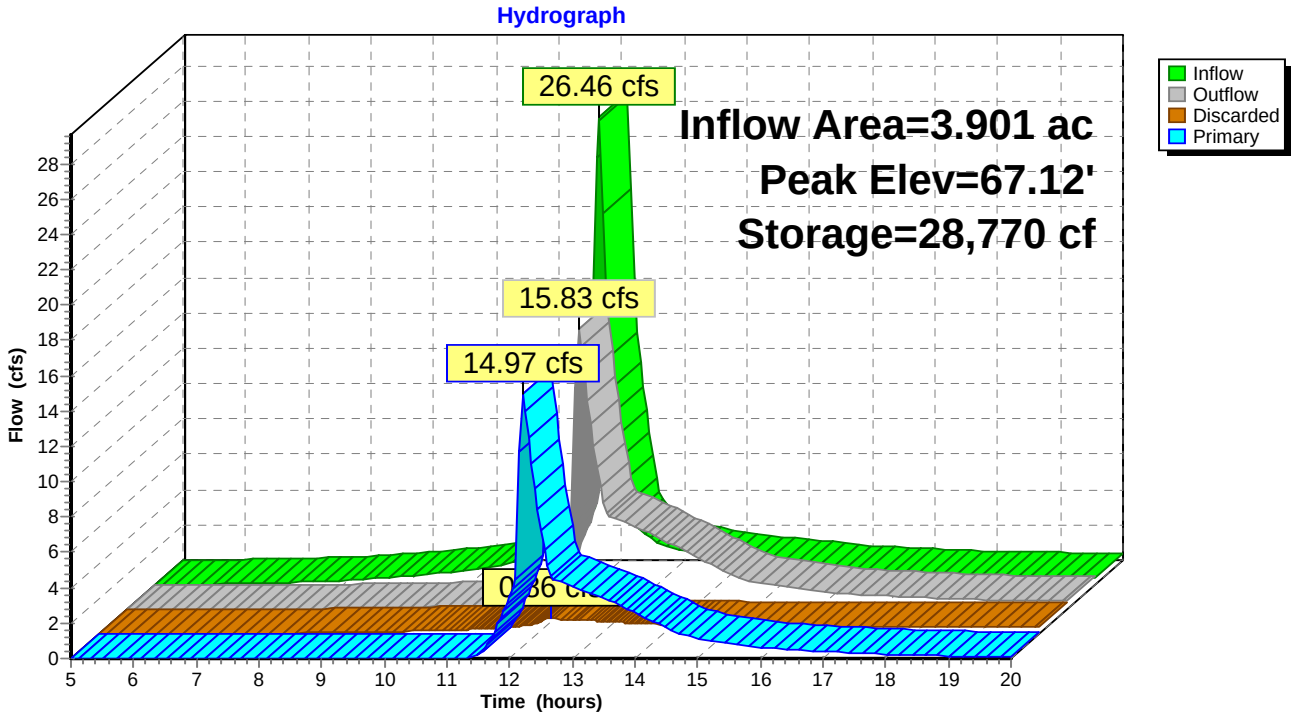
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
62.00	2,346	0	0
64.00	4,432	6,778	6,778
66.00	7,769	12,201	18,979
68.00	11,382	19,151	38,130

Device	Routing	Invert	Outlet Devices
#1	Primary	62.00'	**24.0" x 45.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 61.50' S= 0.0111 '/' Cc= 0.900 n= 0.013
#2	Device 1	64.50'	**1.00' W x 0.67' H Vert. Orifice/Grate** C= 0.600
#3	Device 1	66.75'	**3.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#4	Primary	67.20'	**15.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	62.00'	**5.000 in/hr Exfiltration over Surface area above invert** Excluded Surface area = 2,346 sf

Discarded OutFlow Max=0.86 cfs @ 12.22 hrs HW=67.11' (Free Discharge)
└─**5=Exfiltration** (Exfiltration Controls 0.86 cfs)

Primary OutFlow Max=14.56 cfs @ 12.21 hrs HW=67.11' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Passes 14.56 cfs of 30.65 cfs potential flow)
│ ├─**2=Orifice/Grate** (Orifice Controls 4.86 cfs @ 7.25 fps)
│ └─**3=Orifice/Grate** (Weir Controls 9.70 cfs @ 1.95 fps)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Infiltration Basin 2



Pond 3P: Infiltration Basin 3

Inflow Area =	2.048 ac,	Inflow Depth >	5.93"	for	100 Year Storm event
Inflow =	14.32 cfs @	12.09 hrs,	Volume=	1.013 af	
Outflow =	9.76 cfs @	12.19 hrs,	Volume=	0.921 af,	Atten= 32%, Lag= 6.0 min
Discarded =	0.47 cfs @	12.19 hrs,	Volume=	0.243 af	
Primary =	9.28 cfs @	12.19 hrs,	Volume=	0.679 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 61.85' @ 12.19 hrs Surf.Area= 4,158 sf Storage= 11,571 cf

Plug-Flow detention time= 62.9 min calculated for 0.921 af (91% of inflow)
Center-of-Mass det. time= 32.2 min (795.9 - 763.7)

Volume	Invert	Avail.Storage	Storage Description
#1	55.00'	15,703 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

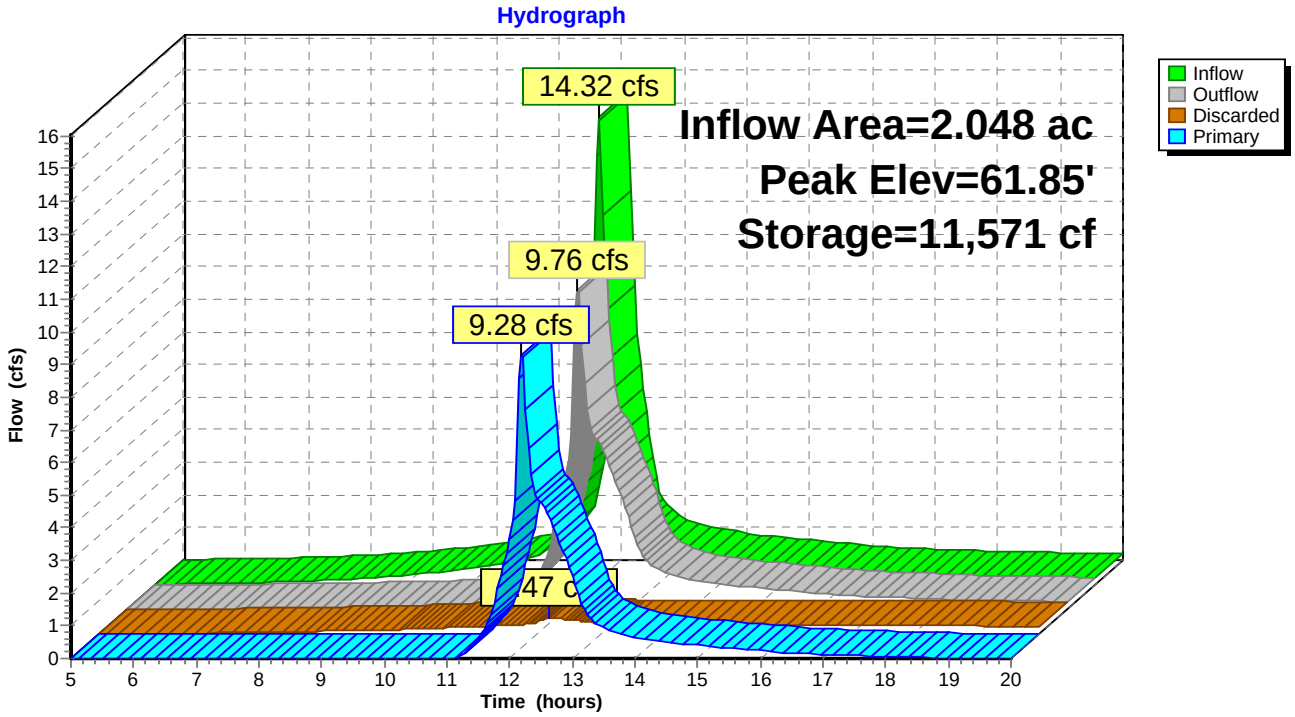
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.00	61	0	0
56.00	296	179	179
58.00	1,185	1,481	1,660
60.00	2,535	3,720	5,380
62.00	4,290	6,825	12,205
62.75	5,040	3,499	15,703

Device	Routing	Invert	Outlet Devices
#1	Primary	55.00'	**15.0" x 62.0' long Culvert** CPP, square edge headwall, Ke= 0.500 Outlet Invert= 54.00' S= 0.0161 '/' Cc= 0.900 n= 0.013
#2	Device 1	59.40'	**1.00' W x 0.75' H Vert. Orifice/Grate** C= 0.600
#3	Device 1	61.65'	**3.00' x 4.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600
#4	Primary	62.00'	**15.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#5	Discarded	55.00'	**5.000 in/hr Exfiltration over Surface area above invert** Excluded Surface area = 61 sf

Discarded OutFlow Max=0.47 cfs @ 12.19 hrs HW=61.84' (Free Discharge)
└─**5=Exfiltration** (Exfiltration Controls 0.47 cfs)

Primary OutFlow Max=9.09 cfs @ 12.19 hrs HW=61.84' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Passes 9.09 cfs of 14.73 cfs potential flow)
│ ├─**2=Orifice/Grate** (Orifice Controls 5.19 cfs @ 6.92 fps)
│ └─**3=Orifice/Grate** (Weir Controls 3.91 cfs @ 1.44 fps)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Infiltration Basin 3



APPENDIX F

STORMWATER MANAGEMENT PRACTICE DESIGN

Project:	Edgewater			
Description:	Stormwater Management Design			
By/Date:	AG 3/27/2017		Reviewed/Date:	MAB 3/27/2017

STORMWATER MANAGEMENT PRACTICE:
Subcatchment 1

1) Determine Required Water Quality Volume & Stormwater Management Practice

Water quality volume to be treated will be calculated using the 90% rule from Section 4.2 of the New York State Storm Water Design Manual (January 2015), hereinafter referred to as NYSSDM.

WQv = 43,560 x [P x Rv x A] / 12

Where:
WQv = Water quality volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area*
A = Watershed (ac)
* A minimum Rv of 0.2 will be applied to regulated sites.

Watershed	P (in)	Impervious Area (ac)	Impervious (Coverage %)	Rv	Total Area (ac)	WQv (cf)	Pre-Treatment Practice	Treatment Practice
Subcatchment 1	1.20	2.060	83.1	0.80	2.480	8,616	Hydrodynamic	Infiltration

Note: Pretreatment will be handeled via a overland flow, and use of stone check dams within diversion dikes.

2) Subsurface soil conditions To be field verified with soil tests

Design Infiltration Rate (f_c): 5.00 inches per hour

3) Determine Required Pre-Treatment Volume

Determine Pre-Treatment Volume

Design Infiltration Rate: 5.00 inches per hour
Required Minimum Pretreatment Volume: 100%

Watershed	Required WQv (cf)	Required Pre-Treatment Volume (cf)	Pre-Treatment Practice	Treatment Practice
Subcatchment 1	8,616	8,616	Hydrodynamic	Infiltration

Notes:
1) Pretreatment volumes per § 6.3.3 of the NYSSDM (January 2015).
2) A hydrodynamic pretreatment unit will be sized to provide 100% pretreatment.

4) Determine Runoff Reduction Volume (RR_V)

Goal: Provide 100% RR_V by implementing Green Infrastructure techniques and Stormwater Management Practices

RR_V = 43,560 x [P x Rv x A] / 12

Where:
RR_V = Runoff Reduction Volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area R_V: 0.80
A = Watershed (ac)
100% RR_V: 8,616 cf
* Minimum Rv of of 0.2 not applicable to RR_V calculations (use actual calculated Rv).

For projects that cannot meet 100% RR_V: Implement Specific Reduction Factor (S), which provides an absoulte minimum acceptable RR_V.

Drainage Area with Hydrologic Soil Group A:	0.000 acres	Corresponding S: 0.55
Drainage Area with Hydrologic Soil Group B:	2.480 acres	Corresponding S: 0.40
Drainage Area with Hydrologic Soil Group C:	0.000 acres	Corresponding S: 0.30
Drainage Area with Hydrologic Soil Group D:	0.000 acres	Corresponding S: 0.20
Total Area:	2.480 acres	
	Total Area Matches	Calculated S: 0.40

Minimum RR_V (acre-feet) = [(P)(Rv*)(Ai)]/12 Calculated Ai: 0.824
Calculated Rv*: 0.95
Where: Calculated Minimum RR_V: 3410 cf
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv* = 0.05 + 0.009 x I , where I is % impervious area (100%)
Ai = (S)(Aic)
Aic = Total area of new impervious cover

5) Stormwater Management Practice Design
Consider infiltating RRv

100% RRv = 8,616 cf
RRv Infiltrated in Basin = 9,088 cf From HydroCAD Model - volume up to low flow orifice
Is RRV 100% infiltrated? yes - acceptable

Consider infiltrating CPv:
Determine Stream Channel Protection Volume (Cpv)

- 1-Year Storm Runoff Volume 0.332 acre-feet From HydroCAD model
Cpv Infiltrated in Basin = 0.332 acre-feet From HydroCAD model
Is Cpv 100% infiltrated? yes - acceptable

3) See HydroCAD model for Overbank Flood Control (Qp) and Extreme Flood Control (Qf) computations

Project:	Edgewater			
Description:	Stormwater Management Design			
By/Date:	AG 3/27/2017	Reviewed/Date:	MAB 3/27/2017	

STORMWATER MANAGEMENT PRACTICE:
Subcatchment 2

1) Determine Required Water Quality Volume & Stormwater Management Practice

Water quality volume to be treated will be calculated using the 90% rule from Section 4.2 of the New York State Storm Water Design Manual (January 2015), hereinafter referred to as NYSSDM.

WQv = 43,560 x [P x Rv x A] / 12

Where:
WQv = Water quality volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area*
A = Watershed (ac)
* A minimum Rv of 0.2 will be applied to regulated sites.

Watershed	P (in)	Impervious Area (ac)	Impervious (Coverage %)	Rv	Total Area (ac)	WQv (cf)	Pre-Treatment Practice	Treatment Practice
Subcatchment 2	1.20	2.150	55.1	0.55	3.900	9,278	Hydrodynamic	Infiltration

Note: Pretreatment will be handeled via a overland flow, and use of stone check dams within diversion dikes.

2) Subsurface soil conditions To be field verified with soil tests

Design Infiltration Rate (f_c): 5.00 inches per hour

3) Determine Required Pre-Treatment Volume

Determine Pre-Treatment Volume

Design Infiltration Rate: 5.00 inches per hour
Required Minimum Pretreatment Volume: 100%

Watershed	Required WQv (cf)	Required Pre-Treatment Volume (cf)	Pre-Treatment Practice	Treatment Practice
Subcatchment 2	9,278	9,278	Hydrodynamic	Infiltration

Notes:
1) Pretreatment volumes per § 6.3.3 of the NYSSDM (January 2015).
2) A hydrodynamic pretreatment unit will be sized to provide 100% pretreatment.

4) Determine Runoff Reduction Volume (RR_V)

Goal: Provide 100% RR_V by implementing Green Infrastructure techniques and Stormwater Management Practices

RR_V = 43,560 x [P x Rv x A] / 12

Where:
RR_V = Runoff Reduction Volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area R_V: 0.55
A = Watershed (ac)
100% RR_V: 9,278 cf
* Minimum Rv of of 0.2 not applicable to RR_V calculations (use actual calculated Rv).

For projects that cannot meet 100% RR_V: Implement Specific Reduction Factor (S), which provides an absoulte minimum acceptable RR_V.

Drainage Area with Hydrologic Soil Group A:	0.000 acres	Corresponding S: 0.55
Drainage Area with Hydrologic Soil Group B:	3.900 acres	Corresponding S: 0.40
Drainage Area with Hydrologic Soil Group C:	0.000 acres	Corresponding S: 0.30
Drainage Area with Hydrologic Soil Group D:	0.000 acres	Corresponding S: 0.20
Total Area:	3.900 acres	
	Total Area Matches	Calculated S: 0.40

Minimum RR_V (acre-feet) = [(P)(Rv*)(Ai)]/12 Calculated Ai: 0.860
Calculated Rv*: 0.95
Calculated Minimum RR_V: 3559 cf

Where:
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv* = 0.05 + 0.009 x I , where I is % impervious area (100%)
Ai = (S)(Aic)
Aic = Total area of new impervious cover

5) Stormwater Management Practice Design

Consider infiltating RRv

100% RRv =	9,278 cf	
RRv Infiltrated in Basin =	9,290 cf	From HydroCAD Model - volume up to low flow orifice
Is RRV 100% infiltrated?	yes - acceptable	

Consider infiltrating CPv:
Determine Stream Channel Protection Volume (Cpv)

◆ 1-Year Storm Runoff Volume	0.305 acre-feet	From HydroCAD model
Cpv Infiltrated in Basin =	0.305 acre-feet	From HydroCAD Model
Is Cpv 100% infiltrated?	yes - acceptable	

3) See HydroCAD model for Overbank Flood Control (Qp) and Extreme Flood Control (Qf) computations

Project:	Edgewater			
Description:	Stormwater Management Design			
By/Date:	AG 3/27/2017	Reviewed/Date:	MAB 3/27/2017	

STORMWATER MANAGEMENT PRACTICE:
Subcatchment 3

1) Determine Required Water Quality Volume & Stormwater Management Practice

Water quality volume to be treated will be calculated using the 90% rule from Section 4.2 of the New York State Storm Water Design Manual (January 2015), hereinafter referred to as NYSSDM.

WQv = 43,560 x [P x Rv x A] / 12

Where:
WQv = Water quality volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area*
A = Watershed (ac)
* A minimum Rv of 0.2 will be applied to regulated sites.

Watershed	P (in)	Impervious Area (ac)	Impervious (Coverage %)	Rv	Total Area (ac)	WQv (cf)	Pre-Treatment Practice	Treatment Practice
Subcatchment 3	1.20	1.190	58.0	0.57	2.050	5,112	Hydrodynamic	Infiltration

Note: Pretreatment will be handeled via a overland flow, and use of stone check dams within diversion dikes.

2) Subsurface soil conditions To be field verified with soil tests

Design Infiltration Rate (f_c): 5.00 inches per hour

3) Determine Required Pre-Treatment Volume

Determine Pre-Treatment Volume

Design Infiltration Rate: 5.00 inches per hour
Required Minimum Pretreatment Volume: 100%

Watershed	Required WQv (cf)	Required Pre-Treatment Volume (cf)	Pre-Treatment Practice	Treatment Practice
Subcatchment 3	5,112	5,112	Hydrodynamic	Infiltration

Notes:
1) Pretreatment volumes per § 6.3.3 of the NYSSDM (January 2015).

4) Determine Runoff Reduction Volume (RR_V)

Goal: Provide 100% RR_V by implementing Green Infrastructure techniques and Stormwater Management Practices

RR_V = 43,560 x [P x Rv x A] / 12

Where:
RR_V = Runoff Reduction Volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area — R_V: 0.57
A = Watershed (ac)
100% RR_V: 5,112 cf
* Minimum Rv of of 0.2 not applicable to RR_V calculations (use actual calculated Rv).

For projects that cannot meet 100% RR_V: Implement Specific Reduction Factor (S), which provides an absoulte minimum acceptable RR_V.

Drainage Area with Hydrologic Soil Group A:	0.000 acres	Corresponding S: 0.55
Drainage Area with Hydrologic Soil Group B:	2.050 acres	Corresponding S: 0.40
Drainage Area with Hydrologic Soil Group C:	0.000 acres	Corresponding S: 0.30
Drainage Area with Hydrologic Soil Group D:	0.000 acres	Corresponding S: 0.20
Total Area:	2.050 acres	
Total Area Matches		Calculated S: 0.40

Minimum RR_V (acre-feet) = [(P)(Rv*)(Ai)]/12 — Calculated Ai: 0.476
Calculated Rv*: 0.95
Calculated Minimum RR_V: 1970 cf

Where:
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv* = 0.05 + 0.009 x I , where I is % impervious area (100%)
Ai = (S)(Aic)
Aic = Total area of new impervious cover

5) Stormwater Management Practice Design

Consider infiltating RRv

100% RRv =	5,112 cf	
RRv Infiltrated in Basin =	5,113 cf	From HydroCAD Model
Is RRV 100% infiltrated?	yes - acceptable	

Consider infiltrating CPv:
Determine Stream Channel Protection Volume (Cpv)

◆ 1-Year Storm Runoff Volume	0.180 acre-feet	From HydroCAD model
Cpv Infiltrated in Basin =	0.180 acre-feet	From HydroCAD Model
Is Cpv 100% infiltrated?	yes - acceptable	

3) See HydroCAD model for Overbank Flood Control (Qp) and Extreme Flood Control (Qf) computations

Project:	Edgewater			
Description:	Stormwater Management Design			
By/Date:	AG	1/28/2017	Reviewed/Date:	MAB

STORMWATER MANAGEMENT PRACTICE:
Subcatchment 4

1) Determine Required Water Quality Volume & Stormwater Management Practice

Water quality volume to be treated will be calculated using the 90% rule from Section 4.2 of the New York State Storm Water Design Manual (January 2015), hereinafter referred to as NYSSDM.

WQv = 43,560 x [P x Rv x A] / 12

Where:
WQv = Water quality volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area*
A = Watershed (ac)
* A minimum Rv of 0.2 will be applied to regulated sites.

Watershed	P (in)	Impervious Area (ac)	Impervious (Coverage %)	Rv	Total Area (ac)	WQv (cf)	Pre-Treatment Practice	Treatment Practice
Subcatchment 4	1.20	0.000	0.0	0.20	2.050	1,786	Overland	Filter Strip

Note: Pretreatment will be handeled via a overland flow, and use of stone check dams within diversion dikes.

2) Subsurface soil conditions N/A

Design Infiltration Rate (f_c): 5.00 inches per hour

3) Determine Required Pre-Treatment Volume

Determine Pre-Treatment Volume

Design Infiltration Rate: 5.00 inches per hour
Required Minimum Pretreatment Volume: 100%

Watershed	Required WQv (cf)	Required Pre-Treatment Volume (cf)	Pre-Treatment Practice	Treatment Practice
Subcatchment 4	1,786	1,786	Overland	Filter Strip

Notes:
1) Pretreatment volumes per § 6.3.3 of the NYSSDM (January 2015).

4) Determine Runoff Reduction Volume (RR_V)

Goal: Provide 100% RR_V by implementing Green Infrastructure techniques and Stormwater Management Practices

RR_V = 43,560 x [P x Rv x A] / 12

Where:
RR_V = Runoff Reduction Volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area — R_V: 0.05
A = Watershed (ac)
100% RR_V: 0,446 cf
* Minimum Rv of of 0.2 not applicable to RR_V calculations (use actual calculated Rv).

For projects that cannot meet 100% RR_V: Implement Specific Reduction Factor (S), which provides an absoulte minimum acceptable RR_V.

Drainage Area with Hydrologic Soil Group A:	0.000 acres	Corresponding S: 0.55
Drainage Area with Hydrologic Soil Group B:	1.020 acres	Corresponding S: 0.40
Drainage Area with Hydrologic Soil Group C:	0.000 acres	Corresponding S: 0.30
Drainage Area with Hydrologic Soil Group D:	1.030 acres	Corresponding S: 0.20
Total Area:	2.050 acres	
	Total Area Matches	Calculated S: 0.30

Minimum RR_V (acre-feet) = [(P)(Rv*)(Ai)]/12 — Calculated Ai: 0.000
Calculated Rv*: 0.95
Calculated Minimum RR_V: 0 cf

Where:
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv* = 0.05 + 0.009 x I , where I is % impervious area (100%)
Ai = (S)(Aic)
Aic = Total area of new impervious cover

Project:	Edgewater			
Description:	Stormwater Management Design			
By/Date:	AG 3/27/2017	Reviewed/Date:	MAB 3/27/2017	

STORMWATER MANAGEMENT PRACTICE:
Subcatchment 5

1) Determine Required Water Quality Volume & Stormwater Management Practice

Water quality volume to be treated will be calculated using the 90% rule from Section 4.2 of the New York State Storm Water Design Manual (January 2015), hereinafter referred to as NYSSDM.

WQv = 43,560 x [P x Rv x A] / 12

Where:
WQv = Water quality volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area*
A = Watershed (ac)
* A minimum Rv of 0.2 will be applied to regulated sites.

Watershed	P (in)	Impervious Area (ac)	Impervious (Coverage %)	Rv	Total Area (ac)	WQv (cf)	Pre-Treatment Practice	Treatment Practice
Subcatchment 5	1.20	0.205	13.8	0.20	1.490	1,298	Overland	Filter Strip

Note: Pretreatment will be handeled via a overland flow, and use of stone check dams within diversion dikes.

2) Subsurface soil conditions N/A

Design Infiltration Rate (f_c): 5.00 inches per hour

3) Determine Required Pre-Treatment Volume

Determine Pre-Treatment Volume

Design Infiltration Rate: 5.00 inches per hour
Required Minimum Pretreatment Volume: 100%

Watershed	Required WQv (cf)	Required Pre-Treatment Volume (cf)	Pre-Treatment Practice	Treatment Practice
Subcatchment 5	1,298	1,298	Overland	Filter Strip

Notes:
1) Pretreatment volumes per § 6.3.3 of the NYSSDM (January 2015).

4) Determine Runoff Reduction Volume (RR_V)

Goal: Provide 100% RR_V by implementing Green Infrastructure techniques and Stormwater Management Practices

RR_V = 43,560 x [P x Rv x A] / 12

Where:
RR_V = Runoff Reduction Volume (cf)
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv = 0.05 + 0.009 x I , where I is % impervious area — R_V: 0.17
A = Watershed (ac)
100% RR_V: 1,128 cf
* Minimum Rv of of 0.2 not applicable to RR_V calculations (use actual calculated Rv).

For projects that cannot meet 100% RR_V: Implement Specific Reduction Factor (S), which provides an absoulte minimum acceptable RR_V.

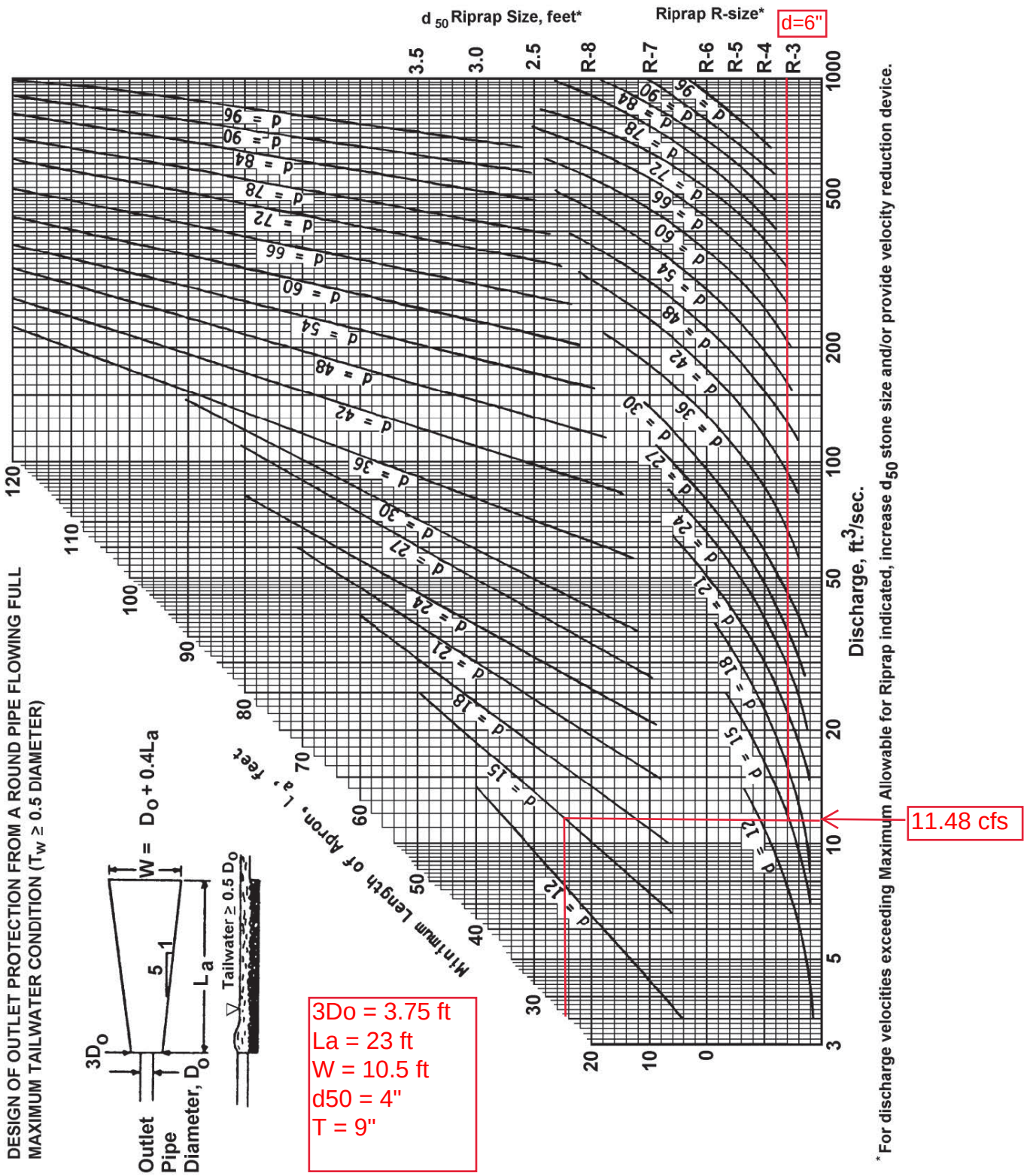
Drainage Area with Hydrologic Soil Group A:	0.000 acres	Corresponding S: 0.55
Drainage Area with Hydrologic Soil Group B:	1.490 acres	Corresponding S: 0.40
Drainage Area with Hydrologic Soil Group C:	0.000 acres	Corresponding S: 0.30
Drainage Area with Hydrologic Soil Group D:	0.000 acres	Corresponding S: 0.20
Total Area:	1.490 acres	
	Total Area Matches	Calculated S: 0.40

Minimum RR_V (acre-feet) = [(P)(Rv*)(Ai)]/12
Calculated Ai: 0.082
Calculated Rv*: 0.95
Calculated Minimum RR_V: 339 cf

Where:
P = 90 % Rainfall Event Number (in), per Figure 4.1
Rv* = 0.05 + 0.009 x I , where I is % impervious area (100%)
Ai = (S)(Aic)
Aic = Total area of new impervious cover

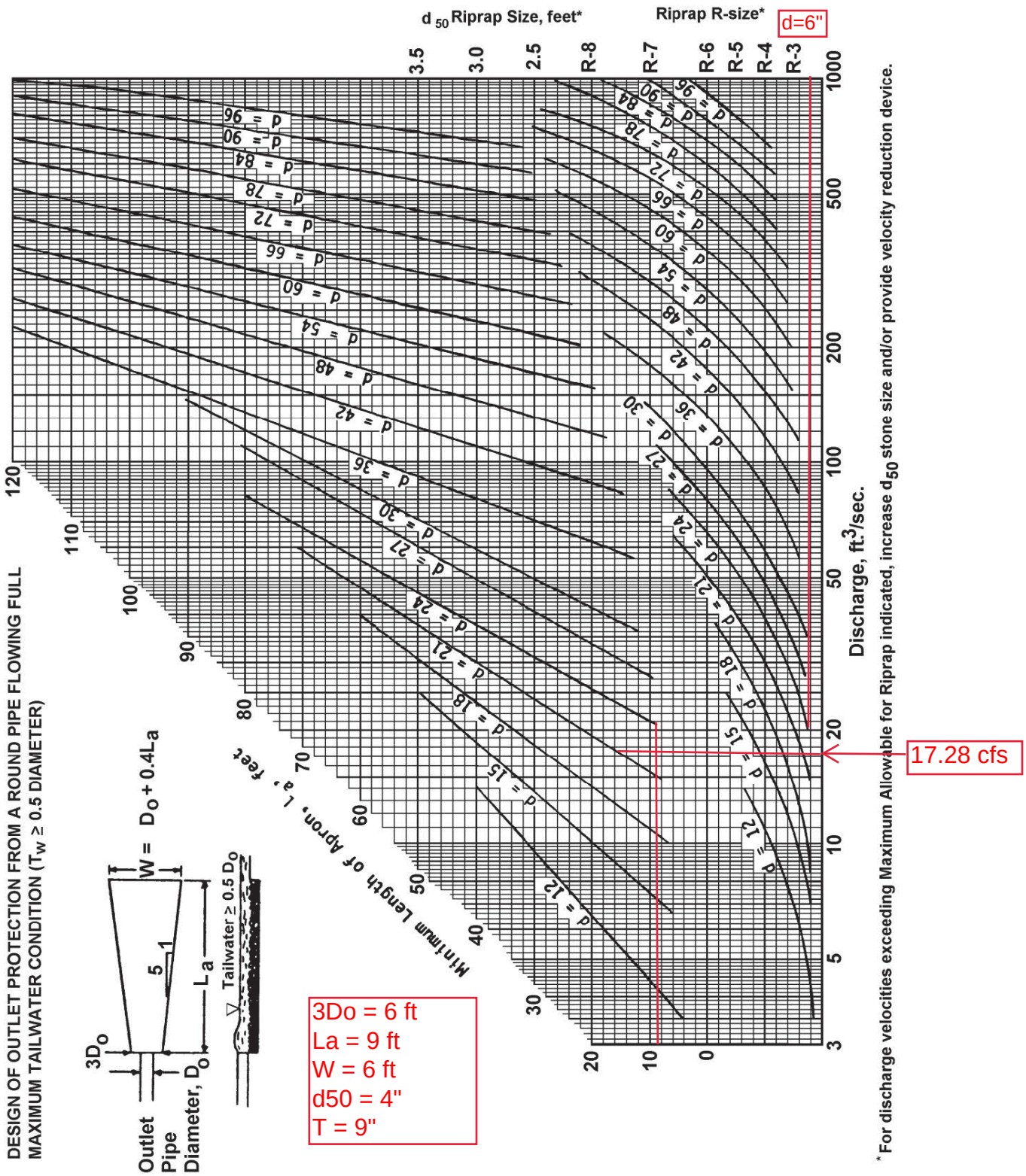
FES A
Q25 = 11.40 cfs
Pipe dia = 15" HDPE

Figure 3.17
Outlet Protection Design—Maximum Tailwater Condition Chart (Design of Outlet Protection from a Round Pipe Flowing Full, Maximum Tailwater Condition: $T_w \geq 0.5D_o$) (USDA - NRCS)



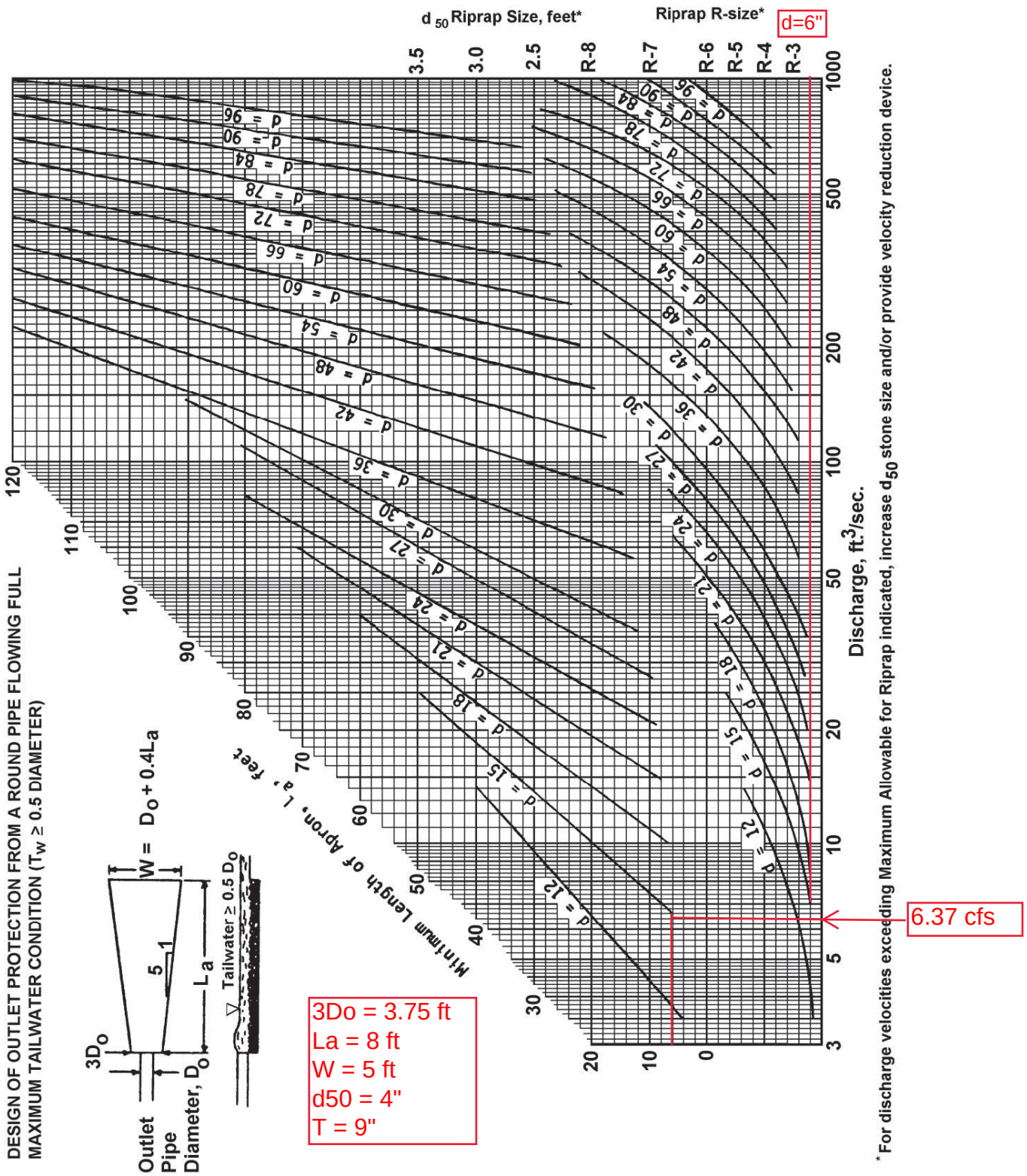
FES B
Q25 = 17.28 cfs
Pipe dia = 24" HDPE

Figure 3.17
Outlet Protection Design—Maximum Tailwater Condition Chart (Design of Outlet Protection from a Round Pipe Flowing Full, Maximum Tailwater Condition: $T_w \geq 0.5D_o$) (USDA - NRCS)



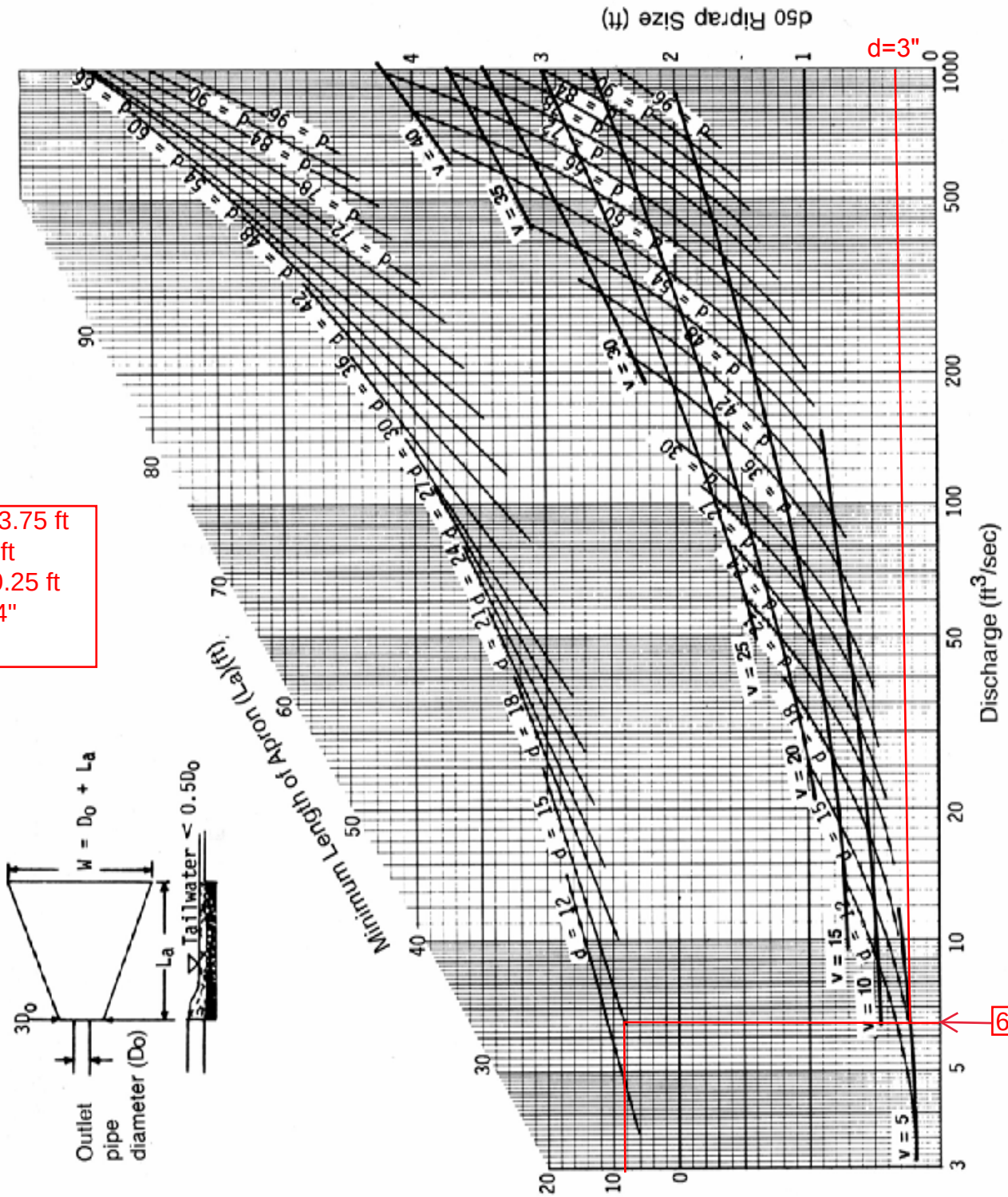
FES C
Q25 = 6.37 cfs
Pipe dia = 15" HDPE

Figure 3.17
Outlet Protection Design—Maximum Tailwater Condition Chart (Design of Outlet Protection from a Round Pipe Flowing Full, Maximum Tailwater Condition: $T_w \geq 0.5D_o$) (USDA - NRCS)



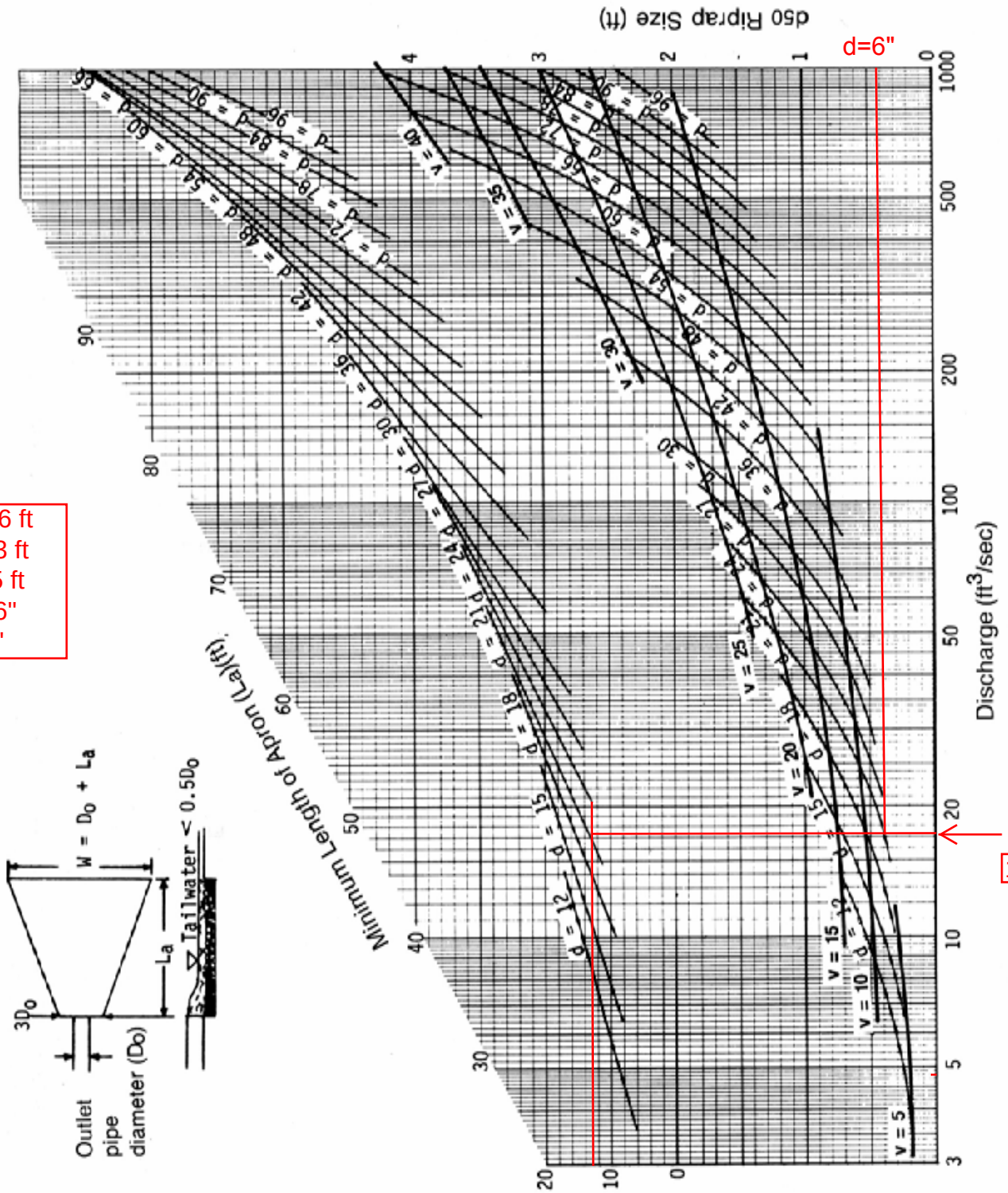
FES D
Q25 = 6.37 cfs
Pipe - 15" HDPE

Figure 5B.12
Outlet Protection Design—Minimum Tailwater Condition (Design of Outlet Protection from a Round Pipe Flowing Full, Minimum Tailwater Condition: $T_w < 0.5D_o$) (USDA - NRCS)



FES E
Q25 = 17.28 cfs
Pipe - 24" HDPE

Figure 5B.12
Outlet Protection Design—Minimum Tailwater Condition (Design of Outlet Protection from a Round Pipe Flowing Full, Minimum Tailwater Condition: $T_w < 0.5D_o$) (USDA - NRCS)



3Do = 6 ft
La = 13 ft
W = 15 ft
d50 = 6"
T = 14"

APPENDIX G

PRE-CONSTRUCTION SITE ASSESSMENT CHECKLIST

I. PRE-CONSTRUCTION MEETING DOCUMENTS
Project Name _____
Permit No. _____ **Date of Authorization** _____
Name of Operator _____
Prime Contractor _____

a. Preamble to Site Assessment and Inspections
The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).
2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.
3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

c. Qualified Professional's Credentials & Certification

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print): _____

Title _____ **Date:**_____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

d. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page _____
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

APPENDIX H

INFILTRATION CONSTRUCTION INSPECTION CHECKLIST

Infiltration Basin Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Runoff diverted		
Soil permeability tested		
Groundwater / bedrock depth		
2. Excavation		
Size and location		
Side slopes stable		
Excavation does not compact subsoils		
3. Embankment		
Barrel		
Anti-seep collar or Filter diaphragm		
Fill material		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
4. Final Excavation		
Drainage area stabilized		
Sediment removed from facility		
Basin floor tilled		
Facility stabilized		
5. Final Inspection		
Pretreatment facility in place		
Inlets / outlets		
Contributing watershed stabilized before flow is routed to the factility		

Comments:

Actions to be Taken:

Open Channel System Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Pre-construction meeting		
Runoff diverted		
Facility location staked out		
2. Excavation		
Size and location		
Side slope stable		
Soil permeability		
Groundwater / bedrock		
Lateral slopes completely level		
Longitudinal slopes within design range		
Excavation does not compact subsoils		
3. Check dams		
Dimensions		
Spacing		
Materials		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
4. Structural Components		
Underdrain installed correctly		
Inflow installed correctly		
Pretreatment devices installed		
5. Vegetation		
Complies with planting specifications		
Topsoil adequate in composition and placement		
Adequate erosion control measures in place		
6. Final inspection		
Dimensions		
Check dams		
Proper outlet		
Effective stand of vegetation and stabilization		
Contributing watershed stabilized before flow is routed to the factility		

Comments:

Actions to be Taken:

APPENDIX I

CONTRACTOR AND SUBCONTRACTOR CERTIFICATIONS

CERTIFICATION STATEMENT

"I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings."

Contractor:

Name:_____

Signature:_____

Title:_____

Company Name:_____

Company Address:_____

_____

_____

_____

Company Phone Number:_____

Site Address:_____

_____

_____

_____

Specific SWPPP Responsibilities:

_____

_____

_____

_____

_____

Date of Certification: _____

Name and Title of Trained Contractor for SWPPP Implementation:_____

_____

CERTIFICATION STATEMENT

"I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings."

Sub-Contractor:

Name:_____

Signature:_____

Title:_____

Company Name:_____

Company Address:_____

_____

_____

_____

Company Phone Number:_____

Site Address:_____

_____

_____

_____

Specific SWPPP Responsibilities:

_____

_____

_____

_____

_____

Date of Certification: _____

Name and Title of Trained Contractor for SWPPP Implementation:_____

_____

APPENDIX J

QUALIFIED PROFESSIONAL'S CERTIFICATION

QUALIFIED PROFESSIONAL'S CERTIFICATION

" I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the Pre-Construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (Print):_____

Title:_____

Date:_____

Company Name:_____

Company Address:_____

_____

_____

_____

Company Phone Number:_____

Company Email:_____

Signature:_____

APPENDIX K

OWNER / OPERATOR CERTIFICATION

CERTIFICATION STATEMENT

" I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I also certify under penalty of law that that this document and the corresponding documents were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Further, I am acknowledging that this SWPPP has been developed and will be implemented as the first element of construction and agree to comply with all the terms and conditions of the general permit for which the NOI is being submitted."

Name (Print):_____

Title:_____

Date:_____

Company Name:_____

Company Address:_____

_____

_____

_____

Company Phone Number:_____

Company Email:_____

Signature:_____

APPENDIX L

POST DEVELOPMENT MAINTENANCE AND INSPECTION CHECKLIST

Infiltration Trench Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Trench surface clear of debris		
Inflow pipes clear of debris		
Overflow spillway clear of debris		
Inlet area clear of debris		
2. Sediment Traps or Forebays (Annual)		
Obviously trapping sediment		
Greater than 50% of storage volume remaining		
3. Dewatering (Monthly)		
Trench dewaters between storms		
4. Sediment Cleanout of Trench (Annual)		
No evidence of sedimentation in trench		
Sediment accumulation doesn't yet require cleanout		
5. Inlets (Annual)		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Good condition		
No evidence of erosion		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repair		
No evidence of erosion		
7. Aggregate Repairs (Annual)		
Surface of aggregate clean		
Top layer of stone does not need replacement		
Trench does not need rehabilitation		

Comments:

_____

_____

_____

_____

_____

_____

Actions to be Taken:

_____

_____

_____

_____

_____

_____

Open Channel Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Contributing areas clean of debris		
2. Check Dams or Energy Dissipators (Annual, After Major Storms)		
No evidence of flow going around structures		
No evidence of erosion at downstream toe		
Soil permeability		
Groundwater / bedrock		
3. Vegetation (Monthly)		
Mowing done when needed		
Minimum mowing depth not exceeded		
No evidence of erosion		
Fertilized per specification		
4. Dewatering (Monthly)		
Dewaters between storms		

MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Sediment deposition (Annual)		
Clean of sediment		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repairs		
No evidence of erosion		

Comments:

Actions to be Taken:

APPENDIX M

CONSTRUCTION INSPECTION REPORT

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

(4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

_____	_____
Inspector (print name)	**Date of Inspection**
_____	_____
Qualified Professional (print name)	**Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions
Yes No NA
[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing
Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales
Yes No NA
[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:

1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	**Today's Date:**	**Reporting Month:**
Location:	**Permit Identification #:**	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Signature of Permittee or Duly Authorized Representative

Name of Permittee or Duly Authorized Representative Date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.

APPENDIX N

NOTICE OF TERMINATION

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person:	4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. □ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. □ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? □ yes □ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? □ yes □ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? □ yes □ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

□ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

□ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

□ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? □ yes □ no

(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:	Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued	
VII. Qualified Inspector Certification - Final Stabilization:	
I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):	
I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:
IX. Owner or Operator Certification	
I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.	
Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)