

STORMWATER POLLUTION PREVENTION PLAN AND CALCULATIONS REPORT

for

Hackett Boulevard Apartments

Prepared by

Engineering Ventures, PC

Vermont

208 Flynn Avenue, Suite 2A
Burlington, Vermont 05401

New York

414 Union Street
Schenectady, NY 12305

New Hampshire

85 Mechanic Street, Suite E2-3
Lebanon, NH 03766



Applicant

Ronald Stein
204 Winding Brook Road
New Rochelle, NY 10804



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Part 1:

Narrative

I. Project Description

The Applicant, Ron Stein is proposing a 39-unit, 4-story apartment building, with a building footprint of 15,750 SF+/- at 42 Besch Avenue, Albany NY 12208. Parking will be provided on the ground level of the proposed building. The total lot area is 0.67 acres and is located on Tax Parcels 76.46-4-29 & 30. The project will also include the construction of new sidewalks and access drives, stormwater management, utilities (water, sanitary sewer, electric), landscaping and other associated infrastructure.

II. Existing Conditions of Site and Surrounding Areas

The site is bordered by Hackett Boulevard to the north, an existing Marriot Hotel and Parking area to the east, and residential properties to the south and west. The site is mostly wooded and steeply sloped, sloping from south to north towards Hackett Boulevard at an average slope 25%+/- . A shallow surface stormwater detention area is located on the north portion of the property, along Hackett Boulevard. This stormwater area collects/attenuates runoff from the adjacent Marriot property and will be relocated as part of this project. An 84" diameter concrete combined sanitary/storm sewer crosses the northeastern corner of the property. A 16" waterline is located on the northern side of Hackett Boulevard.

III. Receiving Water

The project drains to an existing 84" diameter combined sanitary/storm sewer that crosses the northeastern corner of the property, as described above. The combined sewer flows to the east and ultimately to a wastewater treatment plant. Runoff from the wastewater treatment plant ultimately flows to the Hudson River, located to the east. The project is located within the City of Albany Combined Sewer Overlay (CSO).

IV. Potential Impacts to Natural Resources

There are no wetlands, floodplains, threatened or endangered species, or other natural resources located in the project area according to the New York State Environmental Resource Mapper.

V. Site Soils Information

The soils on the site were mapped using the NRCS Web Soil Survey. The following soils are located on the site:

- Uh– Udorthents, clayey-Urban land complex. These soils are typically consistent with previously developed land. The Hydrological Soil Group was determined by examining the surrounding, non-urban land soils, which are comprised mostly of Hudson silt loam, which are Hydrologic Soil Group C/D. Due to these soils being located in an area that is known to have flooding issues on the site, the saturated soil condition with a Hydrological Soil Group D was used.

- Ut – Urban Land-Udorthents complex, 0-8 percent slopes. These soils are typically consistent with previously developed land. The Hydrologic Soil Group was determined by examining the surrounding, non-urban land soils, which are comprised mostly of Hudson silt loam, which are Hydrologic Soil Group C/D. Since these soils are located primarily towards the rear of the site, on steep slopes, it was assumed that these soils are not saturated constantly. Therefore, a Hydrological Soil Group C was used.

The Geotechnical Engineering Report prepared by Terracon Consultants – NY, Inc. indicates that “no measurable ground water was present in the boreholes as they were drilled” and “expect that groundwater is present beginning at depths of about 10 to 20 feet below the ground surface”. There appears to be adequate depth to ground water to support the use of a infiltration stormwater planter (replacing the proposed rain garden) on this site.

Engineering Ventures performed infiltration testing, per Appendix D of the NYS Stormwater Manual, on April 8, 2021. Per the on-site testing, and infiltration rate of 2.25” per hour was measured. Applying a factor of safety of 0.5, the infiltration utilized in this report is 1.0” per hour.

VI. Proposed Conditions

As stated in the project description, a 4-story (15,750 SF+/- footprint) is proposed, along with access drives and sidewalk in the front of the building along Hackett Boulevard. Due to the development on the project site, the existing detention basin along Hackett Boulevard, described in Section II above, will need to be demolished. This detention basin, which stores a volume of runoff from the adjacent Marriot site to the north (TMPs# 76.46-5-22 and 76.46-5-1), will be replaced with subsurface detention at a 1:1 ratio of storage volume and relocated to the Marriott site.

The runoff generated from the new, on-site impervious area (consisting of the entire roof) will be collected with roof drains and conveyed to catch basins within the parking garage area. These catch basins, which will collect runoff from snowmelt or vehicles tracking runoff into the parking garage, combined with the roof runoff will be conveyed to a Contech CDS hydrodynamic separator unit, which will provide treatment for the 90% storm event. Once treated in the Contech CDS unit, runoff will be conveyed to a proposed 48,000-gallon concrete stormwater tank located under the proposed parking area, which will provide attenuation for larger storm events in accordance with the NYSDEC and City of Albany requirements. An outlet structure in this tank will reduce the flows to pre-development rates prior to discharging to the existing 84” combined sanitary/storm sewer. The storm system will utilize an existing 8” PVC storm pipe outlet from the removed detention basin as the outlet, in order to limit the new connections into the existing combined sewer.

In order to meet requirements of the State Pollutant Discharge Elimination System (SPDES) Discharge Permit for the City of Albany Combined Sewer Overflow, specifically Best Management Practices (BMPs) for Combined Sewer Overlays item 9, referring to the infiltration and inflow (I/I) requirement, the project will provide a rain garden/bio-retention area in front of the building to help infiltrate a portion of the roof runoff.

Section VII of this report discusses the stormwater management methodology in more detail.

VII. Stormwater Management Methodology

The stormwater design was prepared in accordance with the New York State Stormwater Management Manual and the City of Albany Regulations. The following objectives were established in the development of the Stormwater Management Plan for the proposed project:

1. **Reduction of Peak Runoff Rates**

Reduce the total post-development peak discharges to pre-development discharges for the 1-YR, 10-YR, and 100-YR storms in accordance with the New York State Stormwater Management Manual. In accordance with the City of Albany regulations, the 100-year post-development flow must be reduced to a 10-year pre-development flow when discharging to combined sewers. This 100-year post-development to 10-year pre-development reduction will be met for the on-site flows.

2. **Relocation of Existing Detention Basin Volume**

Relocate storage from the existing detention basin (which is to be removed) to subsurface detention basins on adjacent Marriott property at a 1:1 ratio of storage volume.

3. **Water Quality Volume and Compliance with Requirements of the NYS Stormwater Manual**

Provide water quality (WQv) Channel Protection (CPv), Overbank Flood Control (Qp), and Extreme Flood Control (Qf) in accordance with the New York State Stormwater Management Manual.

4. **Infiltration/Inflow (I/I) Requirements for Combined Sewer Discharges**

Per City of Albany and NYSDEC regulations, infiltration and inflow (I/I) reduction for proposed developments that discharge to the combined sewer shall be at least equal to the estimated increased peak hourly dry-weather flow or four (4) times the average daily dry-weather flow, whichever is greater.

- Total Bedrooms: (15) 1-bedroom units plus (24) 2-bedroom units
 $15 + 2 \times 24 = 63$ bedrooms
- Water/Sewer usage (with low-flow fixtures): 63 bedrooms x 90 GPD/bedroom = 5,670 GPD

$$\text{I/I Required} = 5,670 \text{ gallons} \times 4 = 22,680 \text{ gallons} = \mathbf{3,032 \text{ CF}}$$

For purposes of analyzing the development from this project, one (1) point of interest was established. The point of interest (shown on the drainage map as P.O.I.#1) is located at the point where the proposed development enters the combined sewer. Table 1 describes the total areas and land cover conditions for P.O.I.#1 in both the pre-development and post-development conditions. All land cover conditions have been modeled as woods in the pre-development condition.

Table 1: Summary of Areas

| | PRE-DEVELOPMENT | POST-DEVELOPMENT |
|--|------------------|------------------|
| <i>ON-SITE RUNOFF (Outside Hackett Boulevard ROW)</i> | | |
| Woods, C-soils | 0.502 Ac. | 0.211 Ac. |
| Woods, D-soils | 0.291 Ac. | 0 Ac. |
| Lawn, C-soils | 0 Ac. | 0.086 Ac. |
| Lawn, D-soils | 0 Ac. | 0.086 Ac. |
| Impervious Surfaces | 0 Ac. | 0.410 Ac. |
| TOTAL ON-SITE AREA | 0.793 Ac. | 0.793 Ac |
| <i>OFF-SITE RUNOFF (Within the Hackett Boulevard ROW)</i> | | |
| Woods, D-soils | 0.215 Ac. | 0 Ac. |
| Lawn, D-soils | 0 Ac. | 0.124 Ac. |
| Impervious Surfaces | 0 Ac. | 0.091 Ac. |
| TOTAL AREA | 0.215 Ac. | 0.215 Ac. |

PRE-DEVELOPMENT HYDROLOGY

Using the established Point of Interest, a drainage area was delineated. Time of concentrations and runoff curve numbers were determined the drainage area and input into HydroCAD. Pre-Development conditions were analyzed for the 1-, 2-, 10-, 50-, and 100-year frequency storm events using SCS TR-20 Method as provided by *HydroCAD version 10.10*. All program input and output can be found in Part 5 of this report.

POST-DEVELOPMENT HYDROLOGY

The runoff curve numbers and time of concentration values were adjusted for the post-development conditions. A minimum time of concentration value of 5 minutes was utilized for the catchment areas containing impervious areas in the post-development calculations. Again, by using the SCS TR-20 method as provided by *HydroCAD version 10.10*, the peak runoff rates were determined for the 1-, 2-, 10-, 50-, and 100-year frequency storm events. All program input and output can be found in Part 5 of this report.

See Section VIII for how the stated objectives were satisfied.

VIII. Stormwater Objectives

The following section outlines how the stated stormwater objectives, described in Section VII above, were satisfied for the project:

Objective 1: Reduction of Peak Runoff Rates

To mitigate the increase in runoff from pre-development to post-development condition, one (1) subsurface, 45,000-gallon concrete tank has been designed to attenuate and reduce the flows to pre-development levels prior to discharging from the site. This practice is described further in Section IX of this report.

- **ON-SITE Peak Runoff Rates:**

Table 2 summarizes the results of the stormwater management analysis for pre-development and post-development runoff rate control.

Table 2: P.O.I.#1 Summary of Peak Flows for On-Site Flows

| | 1-YR | 2-YR | 10-YR | 100-YR |
|-----------------------------------|-----------------|-----------------|-----------------|-----------------|
| <i>PRE-DEVELOPMENT (Node 1L)</i> | <i>0.48 cfs</i> | <i>0.76 cfs</i> | <i>2.11 cfs</i> | <i>5.07 cfs</i> |
| POST-DEVELOPMENT (Node 2L) | 0.19 cfs | 0.24 cfs | 0.46 cfs | 1.09 cfs |

As can be seen by Table 2, the 100-year post-development peak flow rate is reduced to less than the 10-year pre-development peak flow rate for the on-site flows, satisfying the City of Albany requirements for sites discharging to combined sewers.

- **TOTAL (OFF-SITE AND ON-SITE) Peak Runoff Rates:**

Table 3 summarizes the results of the stormwater management analysis for pre-development and post-development runoff rates for the entire project, including the areas within the Hackett Boulevard ROW.

Table 3: P.O.I.#1 Summary of Total Peak Flows

| | 1-YR | 2-YR | 10-YR | 50-YR | 100-YR |
|-----------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| <i>PRE-DEVELOPMENT (Node 3L)</i> | <i>0.66 cfs</i> | <i>1.03 cfs</i> | <i>2.76 cfs</i> | <i>4.53 cfs</i> | <i>6.52 cfs</i> |
| POST-DEVELOPMENT (Node 4L) | 0.64 cfs | 0.81 cfs | 1.51 cfs | 2.16 cfs | 3.03 cfs |
| % reduction | 3.0% | 21.4% | 45.3% | 52.3% | 53.5% |

As can be seen by Table 3, the post-development peak flow rates are reduced to less than the pre-development peak flow rates for all design storms. While site restrictions in the Hackett Boulevard ROW limit the opportunity to reduce peak rates further, the 50-year post-development storm is reduced to the 10-year pre-development storm, and the 100-year storm is reduced by more than 50% in the post-development condition.

Objective 2: Relocation of Existing Detention Basin Volume

The storage volume of the existing detention basin, estimated between the elevations of 164 and 166, is 3,915 CF. While there is a catch basin located at the bottom that functions as an outlet, in the larger storm events the basin is known to fill to the berm elevation of 166. Therefore, the entire volume below the berm is used as a conservative approach.

Due to the grades in the adjacent parking area, the storage volume replacement will be accomplished using two (2) subsurface detention basins, each consisting of a 47'L x 20.5'W x 3.5'D stone bed with 4 rows of arch chambers and 6 chambers to a row, totaling 24 arch chambers per basin. The basins will be wrapped in an impermeable liner. The storage volume for these basins were calculated assuming StormTECH SC-740 chambers. Basin #1 will be designed with an outlet structure that will allow the runoff to overflow in the larger storm events.

Each basin has a storage volume of 2,010 CF, totaling 4,020 CF of total volume, which exceeds the storage volume provided in the existing detention basin.

Objective 3: Water Quality Volume and Compliance with Requirements of the NYS Stormwater Manual

- **Water Quality Volume (WQv)**

The site design has made every practical attempt to capture all on-site impervious areas and direct them to a stormwater practice. Excluding the impervious areas within the City ROW and the small portion of driveways/sidewalks that are unable to be directed to a stormwater practice, the only areas contributing to the water quality for the project is the drainage area to the Stormwater Planter (which includes the entire building). The upslope areas do not contain impervious areas and therefore do not require water quality treatment.

Water Quality Volume Draining to Proposed Stormwater Planter

$$P = 1.20''$$

$$\text{Area} = 0.408 \text{ Ac};$$

$$I = 0.366 \text{ Ac.}/0.408 \text{ Ac.} = 89.70\%; R_v = 0.05 + 0.009 (89.73) = 0.8573$$

$$\text{WQv} = (P \cdot R_v \cdot A)/12 = 0.035 \text{ Ac-FT} = \mathbf{1,524 \text{ CF}}$$

A proposed stormwater planter has been designed to infiltrate the entire WQv storm. The storage volume of the proposed planter, below the overflow, is 1,822 CF, which means the entire WQv storm is held within the planter. The area of the planter that is more than 10 feet away from the building will have an open bottom that will allow for infiltration. With an infiltration rate of 1.0" per hour, and an infiltration footprint of 800 SF, the 1,822 CF WQv will infiltrate within 24 hrs, which satisfies the WQv requirement.

- **Channel Protection Volume (CPv)**

The Cpv required is the post-development 1-year storm volume draining from the on-site areas. Per HydroCAD Nodes 2S, 3S, and 4S, the total 1-YR volume from the on-site areas is 0.083 Ac-ft or 3,616 CF.

Per the routing of the 1-YR storm through the Stormwater Planter, the volume infiltrated is 0.066 Ac-ft or 2,874 CF. Because the entire 1-YR volume is unable to be directed to the stormwater planter, the proposed stormwater tank outlet has been designed with a minimum 1" diameter orifice to reduce the peak flow rate for the remaining 742 CF of the 1-YR storm volume, which satisfies the CPv requirement.

- **Total Overbank Flood Control Criteria (Qp)**

The post-development peak runoff rate during the 10-year storm event has been reduced to less than pre-development levels. The flows are as follows:

$$\text{Pre-Development} = 2.76 \text{ CFS}$$

$$\text{Post-Development} = 1.51 \text{ CFS (45.3\% reduction)}$$

- **Total Extreme Flood Control Criteria (Qf)**

The post-development peak runoff rate during the 100-year storm event has been reduced to less than pre-development levels. The flows are as follows:

Pre-Development = 6.52 CFS

Post-Development = 3.03 CFS (53.5% reduction)

Objective 4: Infiltration/Inflow (I/I) Requirements for Combined Sewer Discharges

A proposed Infiltration Stormwater Planter has been designed in accordance with Section 5.3.9 of the NYS Stormwater Manual to infiltrate the roof area in order to meet the I/I requirement for combined sewer discharges. The stormwater planter will consist of 12" of ponding, surface vegetation, 18" of growing medium consisting of organic soil media, and 12" of gravel. Runoff will filter through the growing medium and gravel and will infiltrate into the natural soil in an infiltration footprint located more than 10 feet away from the building. An overflow has been provided to allow the higher storm events to be directed to the proposed stormwater tank.

The storage volume of the proposed planter, below the overflow, is 1,822 CF. Using an infiltration rate of 1.0" per hour, and an infiltration footprint of 800 SF, the stormwater planter will infiltrate 0.072 Ac-ft, or 3,136 CF during the 2-YR storm event, which exceeds the required I/I volume of 3,032 CF. See Part 6 for the stormwater planter routing.

IX. Post-Construction Stormwater Management Treatment Practices

Subsurface Attenuation Tank:

A 45,000 Gallon subsurface stormwater attenuation tank has been designed to attenuate and reduce the post-development flows for the larger storm events to pre-development levels prior to discharging into the combined sanitary/storm sewer. Runoff will be conveyed to the tank as described in Sections VI. The bottom of the proposed attenuation tank is at elevation 162.0. An outlet structure consisting of a 1" diameter orifice, set at the bottom of the tank, has been designed to meet the flow rate requirements for CPv. A 4" diameter orifice and 8" diameter overflow have been designed to mitigate peak flows for the larger storm events. There is no pretreatment required for this practice, as the runoff will already have been treated in the proposed Stormwater Planter prior to entering the tank. In addition, the catch basins located in the parking garage area will have sumps in the bottoms to allow any larger particles tracked in by vehicles to settle before entering the tank.

Infiltration Stormwater Planter:

A proposed Infiltration Stormwater Planter has been designed in accordance with Section 5.3.9 of the NYS Stormwater Manual. The stormwater planter will consist of 12" of ponding, surface vegetation, 18" of growing medium consisting of organic soil media, and 12" of gravel. Runoff will filter through the growing medium and gravel and will infiltrate into the natural soil in an infiltration footprint located more than 10 feet away from the building. The proposed surface elevation for the planter is 167.0. An 18" diameter riser, with a rim elevation of 168.0 has been designed as an overflow to allow the higher storm events to be directed to the proposed subsurface attenuation tank. The planter will be surrounded with a concrete wall, with the lowest top of wall elevation set at 168.5. The 100-yr storm routing through the stormwater planter shows that runoff will not spill over the concrete wall.

Downspouts will direct runoff from the roof into the proposed planter. Gravel and splash blocks will be provided at each downspout location to prevent erosion to the planter surface.

Soil Restoration (per Section 5.1.6 of the NYS Stormwater Manual):

In accordance with Section 5.1.6 of the NYS Stormwater Manual, Soil Restoration techniques shall be applied to all proposed lawn areas. Soil Restoration shall consist of the following procedure:

- 1) Apply three (3) inches of compost of subsoil. Compost shall be aged, from plant derived materials, free of viable weed seeds, have no visible free water or dust produced when handling, pass through a 1/2" screen, and have a pH suitable to grow desired plants.
- 2) Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractor mounted disc, or tiller, mixing, and circulating air and compost into subsoils. In area of proposed infiltration basin, install orange construction fencing around basin bottom to keep construction equipment from crossing the proposed basin bottom.
- 3) Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site.
- 4) Apply topsoil to a depth of 6 inches.
- 5) Vegetate as required by approved plan.

X. Storm Sewer Collection and Conveyance Design

Stormwater catch basins and pipes within the development were designed using the SCS Method to safely convey the 100-year storm event without surcharging any of the catch basins. A HydroCAD analysis on the stormwater sewer system is provided in Part 7.

XI. Erosion and Sediment Control Design

Typical Erosion and Sediment Control facilities, details, and specifications are shown on the plan. These measures are intended to minimize the impact of the project on surrounding and downstream properties, both during and after construction. All erosion and sediment control measures will be installed in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Erosion and sediment control measures provided on the site include:

Temporary Measures

- Silt Fence
Silt Fence has been designed downslope of any disturbed areas, since all disturbed areas are small and will not contribute large amount of runoff. The silt fence provided shall meet the specifications in the NYS E&S Manual. Silt fence shall remain in place until all upslope areas have achieved permanent stabilization.
- Stabilized Construction Access
A Stabilized Construction Access will be provided to prevent the tracking of sediment onto Hackett Boulevard. The stabilized construction access shall remain in place until the site has been stabilized and there is no potential for sediment to be tracked off-site from construction vehicles.
- Erosion Control Blanket

Erosion Control Blanket (North American Green S75BN or approved equivalent) shall be provided on all disturbed 3:1 slopes or greater, and erosion control blanket (North American Green S150BN or approved equivalent) shall be provided in all channels.

- Storm Drain Inlet Protection
Inlet Protection will be provided on all new catch basins.
- Dust Control
Dust shall be controlled through the application of water, as required to prevent migration beyond the project limits. Control of dust remains an ongoing responsibility of the contractor until the site is fully stabilized.

Vegetative Measures

- Protecting Vegetation
Tree protection fencing or other type of temporary fencing shall be installed along any tree lines adjacent to work areas or around individual trees to remain to ensure that there is no unnecessary damage or disturbance to these trees. In addition, the area of the proposed subsurface infiltration basin shall be protected to prevent construction traffic from compacting the infiltration area.
- Topsoiling/Seeding/Mulching
All proposed grass/lawn areas will be covered with 6" of topsoil to achieve final grade. These areas will be seeded and mulched within 48 hours of final grading per the details and specs shown on the plan.

XII. Maintenance and Inspections

The operator shall comply with all aspects of the following regarding maintenance and inspections:

- 1) New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-0-20-001);
- 2) New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;
- 3) New York State Stormwater Management Design Manual, dated January 2015 (or most current);
- 4) City of Albany local codes and laws.

Please Note:

- **SWPPP Inspections must be performed by a qualified professional (see below) and submitted to MS4 Coordinator at Department of Water within 24 hours of inspection completion.**
- **A pre-construction meeting is required prior to any construction activities.**
- **A site assessment that certifies erosion and sediment controls described in the SWPPP are in place prior to construction commencement must be completed by a qualified professional and submitted to MS4 Coordinator at Department of Water within 24 hours of inspection completion.**

Requirements for the Qualified Inspector and Qualified Professional

The operator is responsible for designating a “qualified inspector” to perform the inspections for the site during construction. Per the SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-15-002), a qualified inspector means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or other Department endorsed individuals.

A qualified inspector can also be someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that the person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

A qualified inspector can also be a person that meets the “qualified professional” qualifications in addition to the qualified inspector qualifications. Per the SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001), a qualified professional means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Inspections

At a minimum, the qualified inspector shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved final stabilization, and all points of discharge. The qualified inspector shall prepare an inspection report subsequent to each and every inspection, including all aspects listed within Part IV.C.4 of the General Permit. Within one (1) 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 shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

During Construction, all inspections shall be conducted as follows:

- During construction and when soil disturbance is on-going, the qualified inspector shall conduct a site inspection at least every seven (7) calendar days AND as soon as reasonably possible during or after weather resulting in runoff from the site.
- When soil disturbances have been temporarily suspended (e.g. winter shutdown, etc.), and temporary 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 DOW Water (SPDES) Program contact at the Regional Office in writing prior to reducing the frequency of inspections.
- When soil disturbances have been stopped with partial project completion, the qualified inspector can stop conducting inspections if all areas disturbed as part 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 DOW Water (SPDES) Program contact at the Regional Office in writing prior to reducing the frequency of inspections. If soil disturbances are not resumed within two (2) years from the date of the shutdown, the owner or operator shall have the qualified inspector perform a final inspection and certify that all disturbed activities have achieved final stabilization, and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformation 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.

After construction, the post-construction stormwater management features shall be inspected on an annual basis to ensure that they are functioning properly. See the Long-Term Operation and Maintenance Plan.

Maintenance

- Temporary Erosion and Sediment Control Practices
Maintenance procedures and guidelines for specific temporary erosion and sediment control features are detailed in the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. The following detail maintenance procedures for temporary measures at a minimum:
 - Silt Fence:
Damaged silt fence shall be repaired as needed. Maintenance shall be performed and sediment shall be removed when sediment is visibly built up behind the silt fence (typically to a height of about 1/2 the fence height).

- Inlet Protection:
Remove sediment as needed and maintain stone around inlet to ensure that runoff passes over the stone into the catch basin and not past the structure. After rain storms, remove sediment to provide for accurate storage volume for subsequent rain storms. Fabric over catch basins shall be maintained to ensure that runoff is not bypassing the catch basin.
- Stabilized Construction Access:
The stabilized construction access shall be maintained in a condition which will prevent tracking of sediment onto public right-of-way. When washing is required, it shall be done on the area stabilized with aggregate, which drains to an approved sediment trapping device. All sediment shall be prevented from entering storm drains, ditches, or watercourses.
- Permanent Erosion and Sediment Control Practices and Post Construction Stormwater Features
Maintenance procedures and guidelines for specific permanent erosion and sediment control features are detailed in the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016 and the New York State Stormwater Management Design Manual, dated January 2015 (or most current). The following detail maintenance procedures for permanent measures at a minimum:
 - Stormwater Planter:
Debris and trash removal should be conducted on a weekly or monthly basis, depending on likelihood of accumulation. Following construction, planters should be inspected after each storm event greater than 0.5 inches, and at least twice in the first six months. Subsequently, inspections should be conducted seasonally and after storm events equal to or greater than the 1-year storm event. Routine maintenance activities include pruning and replacing dead or dying vegetation, plant thinning, and erosion repair. Since stormwater planters are not typically preceded by pre-treatment practices, the soil surface should be inspected for evidence of sediment build-up from the connected impervious surface and for surface ponding. Attention should be paid to additional seasonal maintenance needs as well as the first growing season.
 - Contech CDS Unit:
The Contech unit shall be maintained as recommended by the manufacturer's specifications, which are included in Part 8 of this Report.
 - Stormwater Attenuation Tank:
The proposed stormwater tank shall be inspected annually and shall be cleaned out if any sediment has accumulated in the tank.
 - Catch Basins
Catch basins shall be inspected annually and shall be cleaned out when sediment has accumulated to within 6 inches of the invert out.

Part 2:

E&S Checklist

APPENDIX E

EROSION AND SEDIMENT CONTROL

PLAN REVIEW CHECKLIST

Project Name Hackett Boulevard Apartments
(EV# 20483) Site Location City of Albany, Albany County, NY

Applicant's Name & Address Ron Stein
204 Winding Brook Road
New Rochelle, NY 10804

General

A narrative statement shall be provided that describes the proposed project nature and purpose; the existing site conditions including topography, vegetation and drainage; adjacent and off-site areas affected by the project; description of the soils on the site and key properties; notations of critical areas such as steep slopes, channels or wetlands; the overall phasing, sequencing and stabilization plan; total disturbed area and, areas not to be disturbed, and soil restoration plan.

I. Construction Drawings

| Are the following items shown on the construction drawings: | <u>Yes</u> | <u>No</u> | |
|---|------------|------------|------------------|
| 1. Vicinity Map with scale and north arrow | <u>X</u> | _____ | C0.0 |
| 2. Legend, scales, N arrow on plan view | <u>X</u> | _____ | ALL PLANS |
| 3. Existing and proposed topography shown with contours labeled with spots elevations in critical areas | <u>X</u> | _____ | C1.0, C2.0, C2.1 |
| 4. Scope of the plan noted in the Title Block | <u>X</u> | _____ | ALL PLANS |
| 5. Limits of clearing and grading shown , and methods of spoil disposal | <u>X</u> | _____ | C1.0 |
| 6. Existing vegetation delineated | <u>X</u> | _____ | C1.0 |
| 7. Soil boundaries shown on the existing and proposed plan views | <u>X</u> | _____ | C2.4 |
| 8. Existing drainage patterns, 100 year floodplain and sub-areas shown, runoff outfall locations identified | <u>X</u> | _____ | DRAINAGE MAPS |
| 9. Existing and proposed development facilities/improvements shown | <u>X</u> | _____ | C1.0, C2.0 |
| 10. Location of Erosion and Sediment control practices as phased with construction, with dimensions and material specifications | <u>X</u> | _____ | C2.4 |
| 11. Phasing plan with 5 acre threshold limits shown | _____ | <u>N/A</u> | |
| 12. Stockpile locations, staging areas, access points, and concrete trunk washout locations clearly defined | <u>X</u> | _____ | C2.4 |
| 13. Street profiles, utility locations, property boundaries and, easement delineations shown | <u>N/A</u> | _____ | |
| 14. Soil Restoration Plan detailed on the site plan | <u>X</u> | _____ | C2.4 |

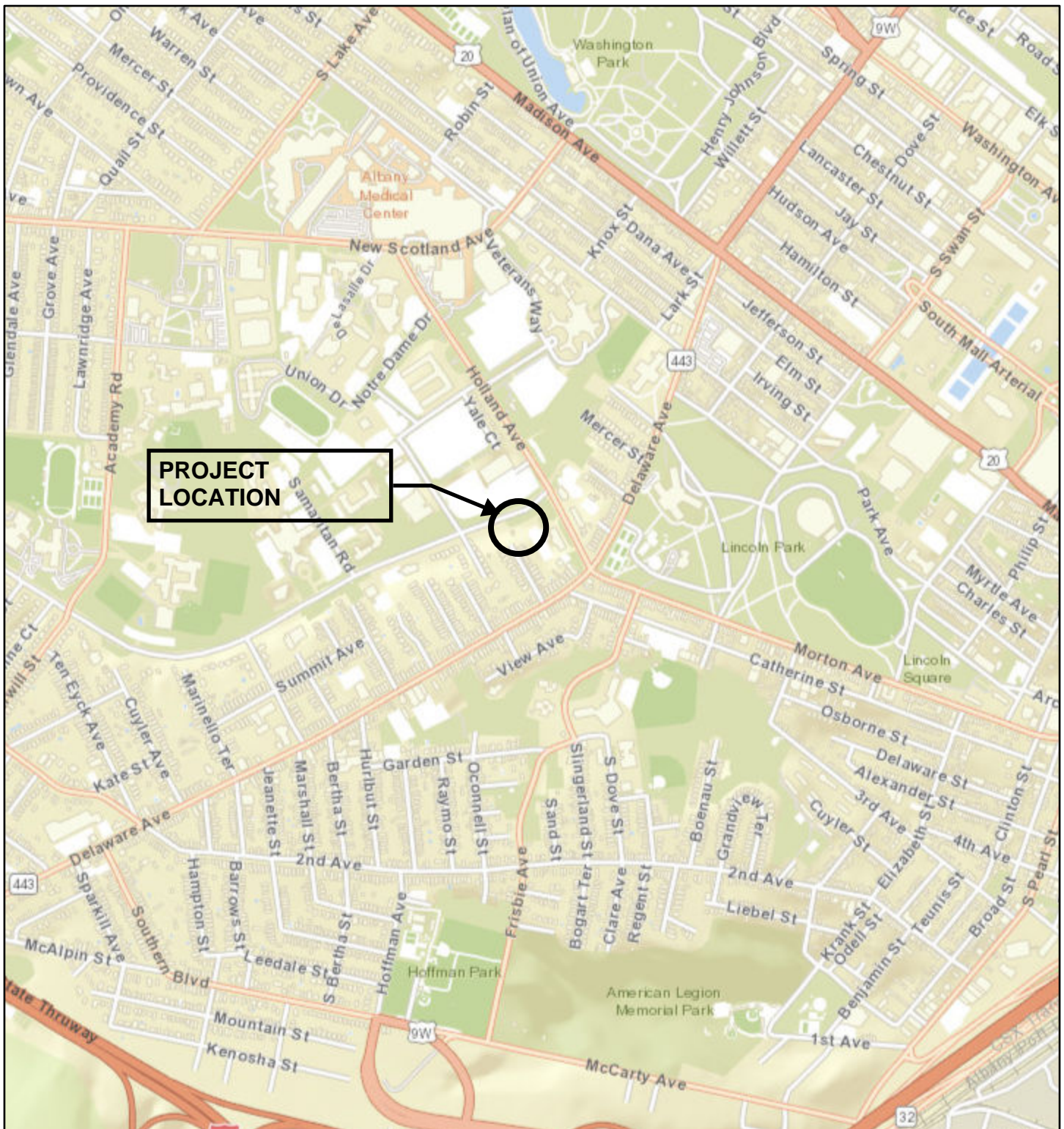
| | | | | |
|--|---------------|---------------|---------------------|--|
| II. <u>Construction Notes & Details</u> | | <u>Yes</u> | <u>No</u> | |
| 1. Specific sequence of operation given for each phase | <u>X</u> | <u> </u> | C2.4 | |
| 2. Inspection and maintenance schedule shown for the specific practices | <u>X</u> | <u> </u> | NARRATIVE | |
| 3. Design details show all dimensions and installation details necessary for construction | <u>X</u> | <u> </u> | C3.0-C3.5 | |
| 4. Implementation schedule for E&S practices is provided with removal criteria stated | <u>X</u> | <u> </u> | C2.4 | |
| 5. Site pollution and construction waste management plan incorporated in the notes | <u>X</u> | <u> </u> | C2.4 | |
| 6. Site Inspections during construction are noted on the drawings and are in accordance with the General Permit for Stormwater Discharges from Construction Activities | <u>X</u> | <u> </u> | C2.4 | |
| III. <u>Erosion & Sediment Control Practices</u> | | | | |
| A. General | | <u>Yes</u> | <u>No</u> | |
| 1. Practice meets purpose and design criteria | <u>X</u> | <u> </u> | C2.4 - Narrative | |
| 2. Standard details and construction notes are provided | <u>X</u> | <u> </u> | C2.4, C3.3 and C3.4 | |
| 3. Special timing of practice noted if applicable | <u>X</u> | <u> </u> | C2.4 (Sequencing) | |
| 4. Provisions for traffic crossings shown on the drawings where necessary | <u> </u> | <u>N/A</u> | | |
| B. Practices Controlling Runoff | | <u>Yes</u> | <u>No</u> | |
| 1. Positive drainage is maintained with contributing drainage area shown | <u>X</u> | <u> </u> | C2.4 | |
| 2. Flow grades properly stabilized | <u>X</u> | <u> </u> | C2.4 | |
| 3. Adequate outlet or discharge condition stabilized | <u>X</u> | <u> </u> | C2.4 | |
| 4. Necessary dimensions, gradations, calculations, and materials shown | <u>X</u> | <u> </u> | C2.4, Narrative | |
| C. Practices Stabilizing Soil | | <u>Yes</u> | <u>No</u> | |
| 1. Seeding rates and areas properly shown on the drawings | <u>X</u> | <u> </u> | C3.3 | |
| 2. Mulch materials and rates specified on the drawings | <u>X</u> | <u> </u> | C3.3 | |
| 3. Sequencing and timing provisions limit soil exposure to 7 to 14 days as appropriate | <u>X</u> | <u> </u> | C2.4 | |

| C. Practices Stabilizing Soil (cont'd) | <u>Yes</u> | <u>No</u> | |
|--|---------------|---------------|------|
| 4. Rolled Erosion Control Products (RECP's) used are specified to location and appropriate weight/tie down | <u>X</u> | <u> </u> | C2.4 |
| 5. All soil seed bed preparation and amendments are specified on the drawings or in the specifications | <u>X</u> | <u> </u> | C2.4 |
| 6. The seeding dates are specified to cover the entire year for both temporary and permanent seedings | <u>X</u> | <u> </u> | C2.4 |
| 7. Maximum created slopes are no steeper than 2 foot horizontal to 1 foot vertical with Cut and Fill slopes shown | <u>X</u> | <u> </u> | C2.4 |
| D. Practices Controlling Sediment | <u>Yes</u> | <u>No</u> | |
| 1. Sediment traps/basins are sized in accordance with criteria | <u> </u> | <u>N/A</u> | |
| 2. The contributing drainage area is shown on the grading plan | <u>X</u> | <u> </u> | C2.4 |
| 3. All scaled dimensions and volumes are shown on the plan | <u>X</u> | <u> </u> | C2.4 |
| 4. Maintenance requirements and clean out elevations established for all sediment control practices (50% capacity) | <u>X</u> | <u> </u> | C2.4 |
| 5. All access points of the project are shown to be stabilized | <u>X</u> | <u> </u> | C2.4 |
| 6. Storm drain inlets adequately protected | <u>X</u> | <u> </u> | C2.4 |
| 7. Buffer filter strips are appropriately sited and installed | <u>N/A</u> | <u> </u> | |
| 7. Silt fences are shown on the contour lines with no more than one quarter acre per 100 foot drainage to it | <u>X</u> | <u> </u> | C2.4 |
| 8. Temporary sediment traps are not being used at locations of future stormwater infiltration facilities | <u>X</u> | <u> </u> | C2.4 |
| 9. Dewatering devices for traps and basins are adequately designed with details shown on the plans | <u> </u> | <u>N/A</u> | |
| 10. Geotextile filter bags are properly sited, sized, and have their maintenance requirements detailed on the drawings | <u> </u> | <u>N/A</u> | |
| 11. Turbidity curtains are properly located with installation, anchoring, and maintenance details shown on the plans | <u> </u> | <u>N/A</u> | |

Part 3:

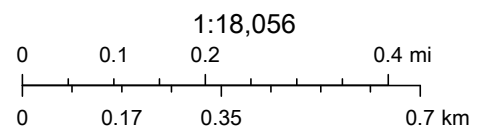
Site Location and Natural Resource Maps

Hackett Boulevard Apartments Location Map



1/21/2021, 8:48:13 AM

 Municipal Boundaries



Esri, HERE, Garmin, INCREMENT P, NGA, USGS

In Cooperation with CHA, Inc.
Esri, HERE, Garmin, INCREMENT P, NGA, USGS |

Aerial Map



MAP FOR REFERENCE ONLY NOT A LEGAL DOCUMENT

City of Albany, New York makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Environmental Resource Mapper



The coordinates of the point you clicked on are:

UTM 18

Easting: 600496.4653000907

Northing: 4722290.807754592

Longitude/Latitude

Longitude: -73.77405442007937

Latitude: 42.64652596107203

The approximate address of the point you clicked on is:

47 Besch Ave, Albany, New York, 12209

County: Albany

City: Albany

USGS Quad: ALBANY

DEC Region

Region 4:

(Capital Region/Northern Catskills) Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie counties. For more information visit <http://www.dec.ny.gov/about/611.html>.

National Wetands Inventory

Attribute: undefined

Type: undefined

Acres: undefined

For more information about the National Wetands Inventory wetlands visit <http://www.fws.gov/wetlands/>

If your project or action is within or near an area with a rare animal, a permit may be required if the species is listed as endangered or threatened and the department determines the action may be harmful to the species or its habitat.

If your project or action is within or near an area with rare plants and/or significant natural communities, the environmental impacts may need to be addressed.

The presence of a unique geological feature or landform near a project, unto itself, does not trigger a requirement for a NYS DEC permit. Readers are advised, however, that there is the chance that a unique feature may also show in another data layer (ie. a wetland) and thus be subject to permit jurisdiction.

Please refer to the "Need a Permit?" tab for permit information or other authorizations regarding these natural resources.

Disclaimer: If you are considering a project or action in, or near, a wetland or a stream, a NYS DEC permit may be required. The Environmental Resources Mapper does not show all natural resources which are regulated by NYS DEC, and for which permits from NYS DEC are required. For example, Regulated Tidal Wetlands, and Wild, Scenic, and Recreational Rivers, are currently not included on the maps.

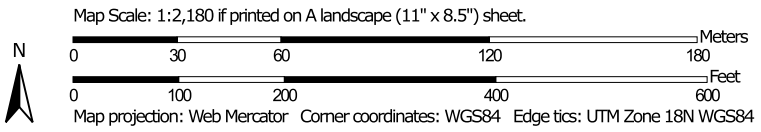
Part 4:

Soils Mapping and Information

Soil Map—Albany County, New York




Soil Map may not be valid at this scale.




MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

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 1:15,800.

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: Albany County, New York

Survey Area Data: Version 18, Jun 11, 2020

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

Date(s) aerial images were photographed: Jul 1, 2014—Sep 22, 2017

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.

Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|------------------------------------|--|--------------|----------------|
| Uh | Udorthents, clayey-Urban land complex | 9.3 | 40.6% |
| Ut | Urban land-Udorthents complex, 0 to 8 percent slopes | 13.6 | 59.4% |
| Totals for Area of Interest | | 22.9 | 100.0% |

Albany County, New York

Uh—Udorthents, clayey-Urban land complex

Map Unit Setting

National map unit symbol: 9pj2

Elevation: 20 to 310 feet

Mean annual precipitation: 36 to 41 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 100 to 170 days

Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, clayey, and similar soils: 40 percent

Urban land: 30 percent

Minor components: 30 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Clayey

Typical profile

H1 - 0 to 18 inches: silty clay

H2 - 18 to 72 inches: stratified silt loam to clay

Properties and qualities

Slope: 0 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water

(Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 6 to 18 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Moderate (about 8.2 inches)

Description of Urban Land

Typical profile

H1 - 0 to 6 inches: variable

Minor Components

Scio

Percent of map unit: 10 percent

Hydric soil rating: No

Hudson

Percent of map unit: 10 percent

Hydric soil rating: No

Rhinebeck

Percent of map unit: 7 percent

Hydric soil rating: No

Madalin

Percent of map unit: 3 percent

Landform: Depressions

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Albany County, New York

Survey Area Data: Version 18, Jun 11, 2020

Albany County, New York

Ut—Urban land-Udorthents complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9pjb

Elevation: 0 to 460 feet

Mean annual precipitation: 36 to 41 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 100 to 170 days

Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 50 percent

Udorthents and similar soils: 30 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

H1 - 0 to 6 inches: variable

Description of Udorthents

Typical profile

H1 - 0 to 4 inches: channery loam

H2 - 4 to 70 inches: channery loam

Properties and qualities

Slope: 0 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water

(Ksat): Moderately low to high (0.06 to 5.95 in/hr)

Depth to water table: About 36 to 72 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Available water capacity: Low (about 5.4 inches)

Minor Components

Unnamed soils, moderately well

Percent of map unit: 10 percent

Unnamed soils, poorly

Percent of map unit: 10 percent

Data Source Information

Soil Survey Area: Albany County, New York

Survey Area Data: Version 18, Jun 11, 2020

Part 5:

**HydroCAD Report
(1-YR, 2-YR, 10-YR, 50-YR and 100-YR)**

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 | 73.774 degrees West |
| Latitude | 42.646 degrees North |
| Elevation | 0 feet |
| Date/Time | Wed, 10 Feb 2021 19:42:31 -0500 |

Extreme Precipitation Estimates

| | 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 | 0.71 | 0.89 | 1.10 | 1yr | 0.77 | 0.95 | 1.25 | 1.53 | 1.85 | 2.24 | 2.51 | 1yr | 1.98 | 2.41 | 2.83 | 3.39 | 3.89 | 1yr |
| 2yr | 0.34 | 0.53 | 0.66 | 0.87 | 1.09 | 1.35 | 2yr | 0.94 | 1.21 | 1.54 | 1.85 | 2.21 | 2.62 | 2.95 | 2yr | 2.32 | 2.84 | 3.30 | 3.90 | 4.45 | 2yr |
| 5yr | 0.41 | 0.63 | 0.79 | 1.06 | 1.36 | 1.69 | 5yr | 1.17 | 1.47 | 1.93 | 2.32 | 2.75 | 3.24 | 3.66 | 5yr | 2.87 | 3.52 | 4.08 | 4.71 | 5.36 | 5yr |
| 10yr | 0.45 | 0.71 | 0.90 | 1.23 | 1.60 | 2.00 | 10yr | 1.38 | 1.71 | 2.29 | 2.75 | 3.25 | 3.81 | 4.31 | 10yr | 3.37 | 4.15 | 4.78 | 5.43 | 6.17 | 10yr |
| 25yr | 0.54 | 0.85 | 1.09 | 1.50 | 1.99 | 2.50 | 25yr | 1.71 | 2.09 | 2.86 | 3.44 | 4.05 | 4.71 | 5.37 | 25yr | 4.17 | 5.16 | 5.92 | 6.57 | 7.43 | 25yr |
| 50yr | 0.60 | 0.96 | 1.24 | 1.74 | 2.34 | 2.98 | 50yr | 2.02 | 2.43 | 3.41 | 4.09 | 4.79 | 5.53 | 6.33 | 50yr | 4.90 | 6.09 | 6.96 | 7.59 | 8.57 | 50yr |
| 100yr | 0.69 | 1.11 | 1.43 | 2.03 | 2.77 | 3.52 | 100yr | 2.39 | 2.82 | 4.04 | 4.84 | 5.66 | 6.51 | 7.47 | 100yr | 5.76 | 7.19 | 8.19 | 8.77 | 9.88 | 100yr |
| 200yr | 0.78 | 1.27 | 1.65 | 2.37 | 3.27 | 4.19 | 200yr | 2.82 | 3.29 | 4.80 | 5.74 | 6.69 | 7.66 | 8.83 | 200yr | 6.78 | 8.49 | 9.64 | 10.14 | 11.39 | 200yr |
| 500yr | 0.93 | 1.53 | 2.00 | 2.91 | 4.08 | 5.25 | 500yr | 3.52 | 4.03 | 6.02 | 7.19 | 8.35 | 9.51 | 11.02 | 500yr | 8.42 | 10.60 | 11.96 | 12.29 | 13.78 | 500yr |

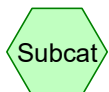
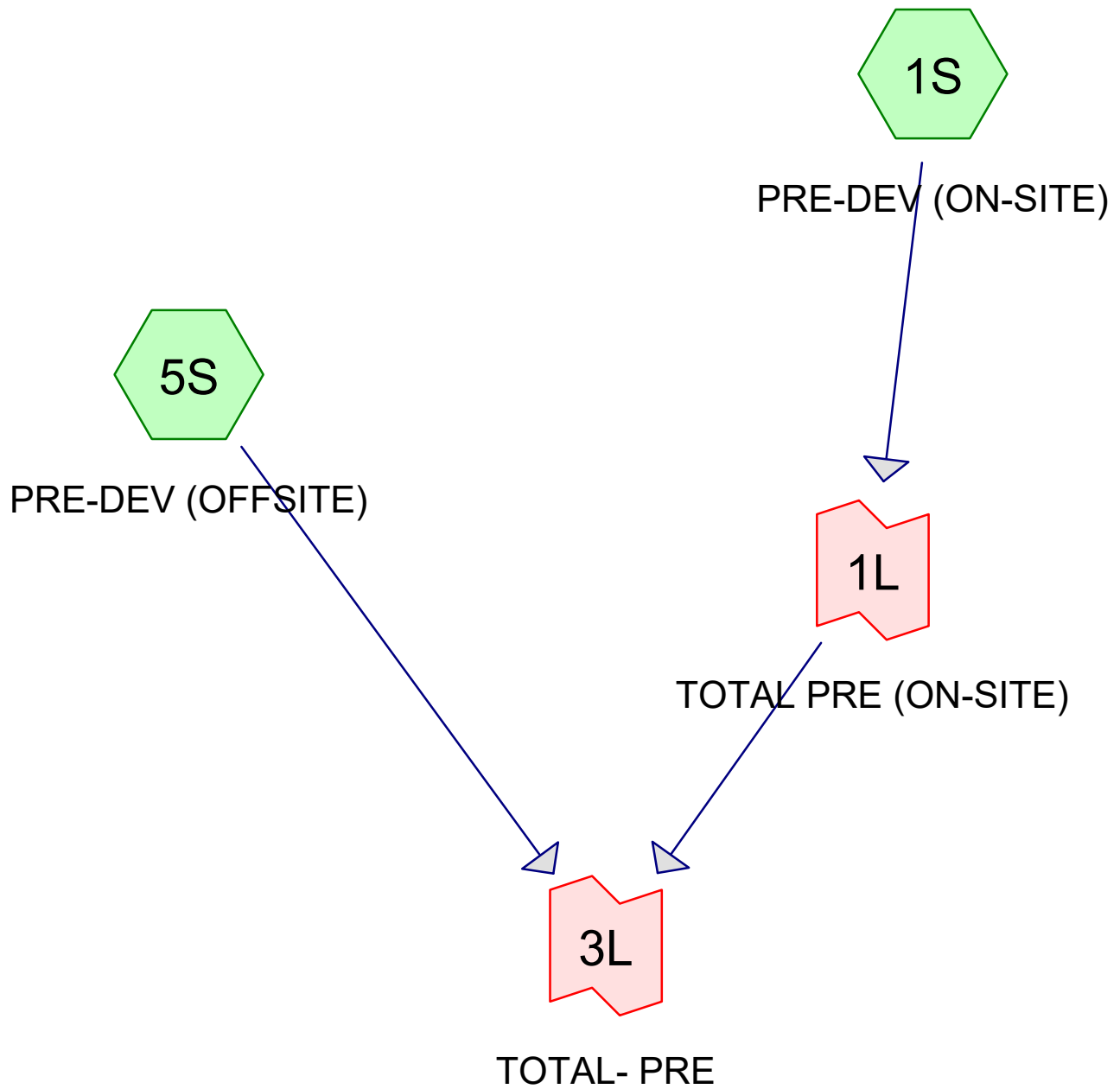
Lower Confidence Limits

| | 5min | 10min | 15min | 30min | 60min | 120min | | 1hr | 2hr | 3hr | 6hr | 12hr | 24hr | 48hr | | 1day | 2day | 4day | 7day | 10day | |
|-------|------|-------|-------|-------|-------|--------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|-------|-------|
| 1yr | 0.20 | 0.30 | 0.37 | 0.50 | 0.61 | 0.84 | 1yr | 0.53 | 0.82 | 0.92 | 1.17 | 1.42 | 1.84 | 2.14 | 1yr | 1.63 | 2.06 | 2.34 | 3.12 | 3.67 | 1yr |
| 2yr | 0.33 | 0.51 | 0.63 | 0.86 | 1.05 | 1.19 | 2yr | 0.91 | 1.16 | 1.32 | 1.70 | 2.19 | 2.55 | 2.87 | 2yr | 2.26 | 2.76 | 3.21 | 3.80 | 4.33 | 2yr |
| 5yr | 0.37 | 0.57 | 0.70 | 0.96 | 1.23 | 1.37 | 5yr | 1.06 | 1.34 | 1.53 | 1.97 | 2.50 | 3.03 | 3.43 | 5yr | 2.68 | 3.30 | 3.79 | 4.41 | 5.00 | 5yr |
| 10yr | 0.39 | 0.60 | 0.75 | 1.05 | 1.35 | 1.54 | 10yr | 1.17 | 1.50 | 1.70 | 2.17 | 2.82 | 3.42 | 3.92 | 10yr | 3.03 | 3.77 | 4.29 | 4.95 | 5.56 | 10yr |
| 25yr | 0.43 | 0.65 | 0.81 | 1.16 | 1.53 | 1.78 | 25yr | 1.32 | 1.74 | 1.95 | 2.50 | 3.22 | 3.98 | 4.69 | 25yr | 3.52 | 4.51 | 5.06 | 5.76 | 6.37 | 25yr |
| 50yr | 0.46 | 0.69 | 0.86 | 1.24 | 1.67 | 2.00 | 50yr | 1.44 | 1.96 | 2.17 | 2.77 | 3.54 | 4.47 | 5.38 | 50yr | 3.95 | 5.18 | 5.71 | 6.46 | 7.06 | 50yr |
| 100yr | 0.49 | 0.74 | 0.93 | 1.34 | 1.84 | 2.26 | 100yr | 1.59 | 2.21 | 2.42 | 3.09 | 3.88 | 5.01 | 6.18 | 100yr | 4.43 | 5.94 | 6.47 | 7.26 | 7.84 | 100yr |
| 200yr | 0.53 | 0.80 | 1.01 | 1.46 | 2.04 | 2.55 | 200yr | 1.76 | 2.50 | 2.71 | 3.46 | 4.25 | 5.60 | 7.12 | 200yr | 4.95 | 6.84 | 7.33 | 8.16 | 8.69 | 200yr |
| 500yr | 0.60 | 0.89 | 1.14 | 1.66 | 2.36 | 3.02 | 500yr | 2.04 | 2.95 | 3.14 | 4.02 | 4.78 | 6.50 | 8.59 | 500yr | 5.75 | 8.26 | 8.65 | 9.53 | 9.98 | 500yr |

Upper Confidence Limits

| | 5min | 10min | 15min | 30min | 60min | 120min | | 1hr | 2hr | 3hr | 6hr | 12hr | 24hr | 48hr | | 1day | 2day | 4day | 7day | 10day | |
|-------|------|-------|-------|-------|-------|--------|-------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1yr | 0.32 | 0.50 | 0.61 | 0.82 | 1.00 | 1.05 | 1yr | 0.87 | 1.02 | 1.29 | 1.63 | 2.06 | 2.41 | 2.68 | 1yr | 2.14 | 2.58 | 2.99 | 3.56 | 4.11 | 1yr |
| 2yr | 0.37 | 0.57 | 0.70 | 0.95 | 1.18 | 1.29 | 2yr | 1.01 | 1.26 | 1.46 | 1.86 | 2.32 | 2.73 | 3.04 | 2yr | 2.42 | 2.92 | 3.40 | 4.03 | 4.60 | 2yr |
| 5yr | 0.44 | 0.68 | 0.84 | 1.16 | 1.47 | 1.65 | 5yr | 1.27 | 1.62 | 1.90 | 2.37 | 2.99 | 3.43 | 3.91 | 5yr | 3.03 | 3.76 | 4.36 | 5.03 | 5.73 | 5yr |
| 10yr | 0.52 | 0.80 | 0.99 | 1.38 | 1.79 | 2.00 | 10yr | 1.54 | 1.95 | 2.32 | 2.87 | 3.46 | 4.14 | 4.76 | 10yr | 3.67 | 4.57 | 5.28 | 6.01 | 6.79 | 10yr |
| 25yr | 0.65 | 0.98 | 1.22 | 1.74 | 2.29 | 2.55 | 25yr | 1.98 | 2.50 | 3.04 | 3.67 | 4.34 | 5.31 | 6.13 | 25yr | 4.70 | 5.90 | 6.80 | 7.56 | 8.51 | 25yr |
| 50yr | 0.76 | 1.15 | 1.44 | 2.06 | 2.78 | 3.08 | 50yr | 2.40 | 3.01 | 3.71 | 4.45 | 5.15 | 6.41 | 7.45 | 50yr | 5.67 | 7.16 | 8.23 | 8.99 | 10.11 | 50yr |
| 100yr | 0.90 | 1.36 | 1.70 | 2.45 | 3.36 | 3.70 | 100yr | 2.90 | 3.62 | 4.54 | 5.37 | 6.11 | 7.76 | 9.04 | 100yr | 6.87 | 8.69 | 9.99 | 10.71 | 12.01 | 100yr |
| 200yr | 1.06 | 1.60 | 2.02 | 2.93 | 4.08 | 4.46 | 200yr | 3.52 | 4.36 | 5.54 | 6.49 | 7.29 | 9.41 | 10.98 | 200yr | 8.33 | 10.56 | 12.12 | 12.76 | 14.27 | 200yr |
| 500yr | 1.33 | 1.98 | 2.55 | 3.70 | 5.26 | 5.68 | 500yr | 4.54 | 5.55 | 7.25 | 8.35 | 9.25 | 12.18 | 14.20 | 500yr | 10.78 | 13.65 | 15.69 | 16.09 | 17.98 | 500yr |

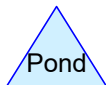
Pre-Development



Subcat



Reach



Pond



Link

Routing Diagram for 20483-hydro

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20483-hydro

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Page 2

Area Listing (selected nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|-----------------|-----------|---------------------------------------|
| 0.502 | 70 | Woods, Good, HSG C (1S) |
| 0.506 | 77 | Woods, Good, HSG D (1S, 5S) |
| 1.008 | 74 | TOTAL AREA |

20483-hydro

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Page 3

Soil Listing (selected nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|-----------------|---------------|-------------------------|
| 0.000 | HSG A | |
| 0.000 | HSG B | |
| 0.502 | HSG C | 1S |
| 0.506 | HSG D | 1S, 5S |
| 0.000 | Other | |
| 1.008 | | TOTAL AREA |

Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment1S: PRE-DEV (ON-SITE) Runoff Area=0.793 ac 0.00% Impervious Runoff Depth=0.42"
Flow Length=272' Tc=8.1 min CN=WQ Runoff=0.48 cfs 0.028 af

Subcatchment5S: PRE-DEV (OFFSITE) Runoff Area=0.215 ac 0.00% Impervious Runoff Depth=0.58"
Tc=5.0 min CN=77 Runoff=0.22 cfs 0.010 af

Link 1L: TOTAL PRE (ON-SITE) Inflow=0.48 cfs 0.028 af
Primary=0.48 cfs 0.028 af

Link 3L: TOTAL-PRE Inflow=0.66 cfs 0.038 af
Primary=0.66 cfs 0.038 af

Total Runoff Area = 1.008 ac Runoff Volume = 0.038 af Average Runoff Depth = 0.46"
100.00% Pervious = 1.008 ac 0.00% Impervious = 0.000 ac

Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment1S: PRE-DEV (ON-SITE) Runoff Area=0.793 ac 0.00% Impervious Runoff Depth=0.62"
Flow Length=272' Tc=8.1 min CN=WQ Runoff=0.76 cfs 0.041 af

Subcatchment5S: PRE-DEV (OFFSITE) Runoff Area=0.215 ac 0.00% Impervious Runoff Depth=0.82"
Tc=5.0 min CN=77 Runoff=0.32 cfs 0.015 af

Link 1L: TOTAL PRE (ON-SITE) Inflow=0.76 cfs 0.041 af
Primary=0.76 cfs 0.041 af

Link 3L: TOTAL-PRE Inflow=1.03 cfs 0.056 af
Primary=1.03 cfs 0.056 af

Total Runoff Area = 1.008 ac Runoff Volume = 0.056 af Average Runoff Depth = 0.67"
100.00% Pervious = 1.008 ac 0.00% Impervious = 0.000 ac

Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment1S: PRE-DEV (ON-SITE) Runoff Area=0.793 ac 0.00% Impervious Runoff Depth=1.61"
Flow Length=272' Tc=8.1 min CN=WQ Runoff=2.11 cfs 0.107 af

Subcatchment5S: PRE-DEV (OFFSITE) Runoff Area=0.215 ac 0.00% Impervious Runoff Depth=1.93"
Tc=5.0 min CN=77 Runoff=0.77 cfs 0.035 af

Link 1L: TOTAL PRE (ON-SITE) Inflow=2.11 cfs 0.107 af
Primary=2.11 cfs 0.107 af

Link 3L: TOTAL-PRE Inflow=2.76 cfs 0.141 af
Primary=2.76 cfs 0.141 af

Total Runoff Area = 1.008 ac Runoff Volume = 0.141 af Average Runoff Depth = 1.68"
100.00% Pervious = 1.008 ac 0.00% Impervious = 0.000 ac

Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment1S: PRE-DEV (ON-SITE) Runoff Area=0.793 ac 0.00% Impervious Runoff Depth=2.67"
Flow Length=272' Tc=8.1 min CN=WQ Runoff=3.50 cfs 0.176 af

Subcatchment5S: PRE-DEV (OFFSITE) Runoff Area=0.215 ac 0.00% Impervious Runoff Depth=3.07"
Tc=5.0 min CN=77 Runoff=1.21 cfs 0.055 af

Link 1L: TOTAL PRE (ON-SITE) Inflow=3.50 cfs 0.176 af
Primary=3.50 cfs 0.176 af

Link 3L: TOTAL-PRE Inflow=4.53 cfs 0.232 af
Primary=4.53 cfs 0.232 af

Total Runoff Area = 1.008 ac Runoff Volume = 0.232 af Average Runoff Depth = 2.76"
100.00% Pervious = 1.008 ac 0.00% Impervious = 0.000 ac

Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment1S: PRE-DEV (ON-SITE) Runoff Area=0.793 ac 0.00% Impervious Runoff Depth=3.89"
Flow Length=272' Tc=8.1 min CN=WQ Runoff=5.07 cfs 0.257 af

Subcatchment5S: PRE-DEV (OFFSITE) Runoff Area=0.215 ac 0.00% Impervious Runoff Depth=4.37"
Tc=5.0 min CN=77 Runoff=1.70 cfs 0.078 af

Link 1L: TOTAL PRE (ON-SITE) Inflow=5.07 cfs 0.257 af
Primary=5.07 cfs 0.257 af

Link 3L: TOTAL-PRE Inflow=6.52 cfs 0.335 af
Primary=6.52 cfs 0.335 af

Total Runoff Area = 1.008 ac Runoff Volume = 0.335 af Average Runoff Depth = 3.99"
100.00% Pervious = 1.008 ac 0.00% Impervious = 0.000 ac

20483-hydro

Type II 24-hr 1-YR Rainfall=2.23"

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Page 1

Summary for Subcatchment 1S: PRE-DEV (ON-SITE)

Runoff = 0.48 cfs @ 12.01 hrs, Volume= 0.028 af, Depth= 0.42"

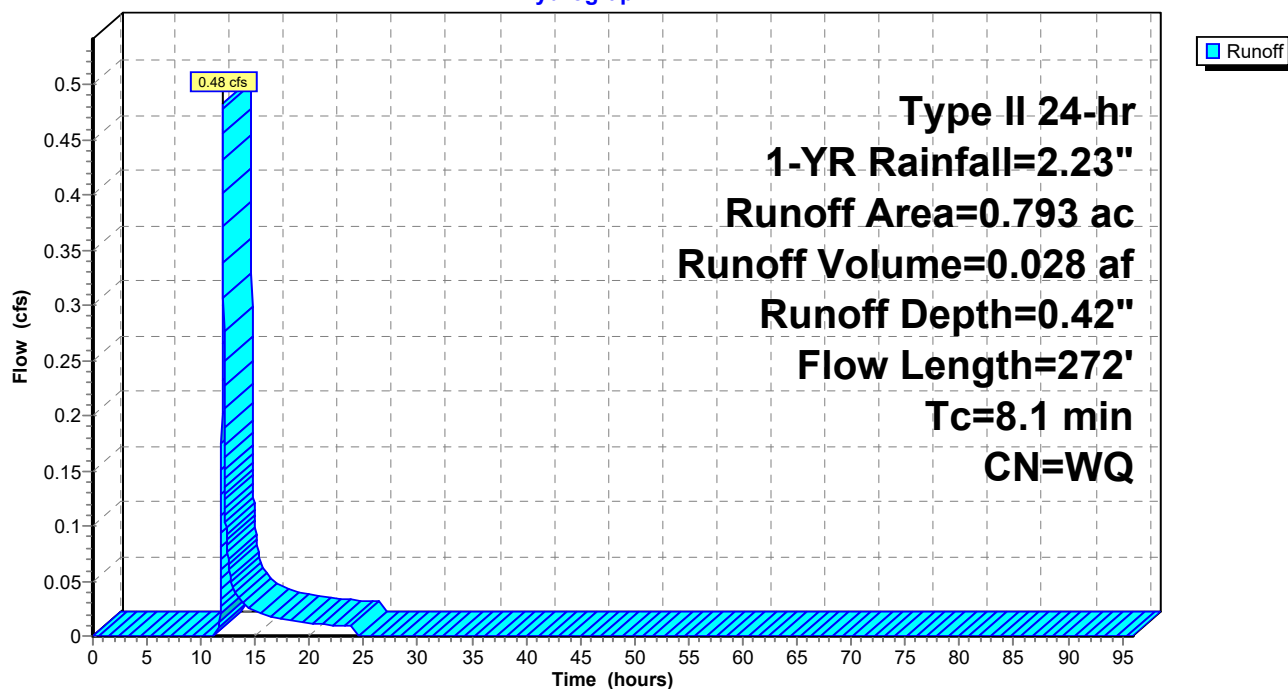
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.23"

| Area (ac) | CN | Description |
|-----------|----|-----------------------|
| 0.502 | 70 | Woods, Good, HSG C |
| 0.291 | 77 | Woods, Good, HSG D |
| 0.793 | | Weighted Average |
| 0.793 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|---|
| 5.7 | 60 | 0.2500 | 0.17 | | Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 2.62" |
| 0.6 | 85 | 0.2500 | 2.50 | | Shallow Concentrated Flow, BC Woodland Kv= 5.0 fps |
| 1.7 | 107 | 0.0230 | 1.06 | | Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps |
| 0.1 | 20 | 0.0200 | 6.42 | 5.04 | Pipe Channel, DE 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 8.1 | 272 | Total | | | |

Subcatchment 1S: PRE-DEV (ON-SITE)

Hydrograph



20483-hydro

Type II 24-hr 1-YR Rainfall=2.23"

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Summary for Subcatchment 5S: PRE-DEV (OFFSITE)

Runoff = 0.22 cfs @ 11.97 hrs, Volume= 0.010 af, Depth= 0.58"

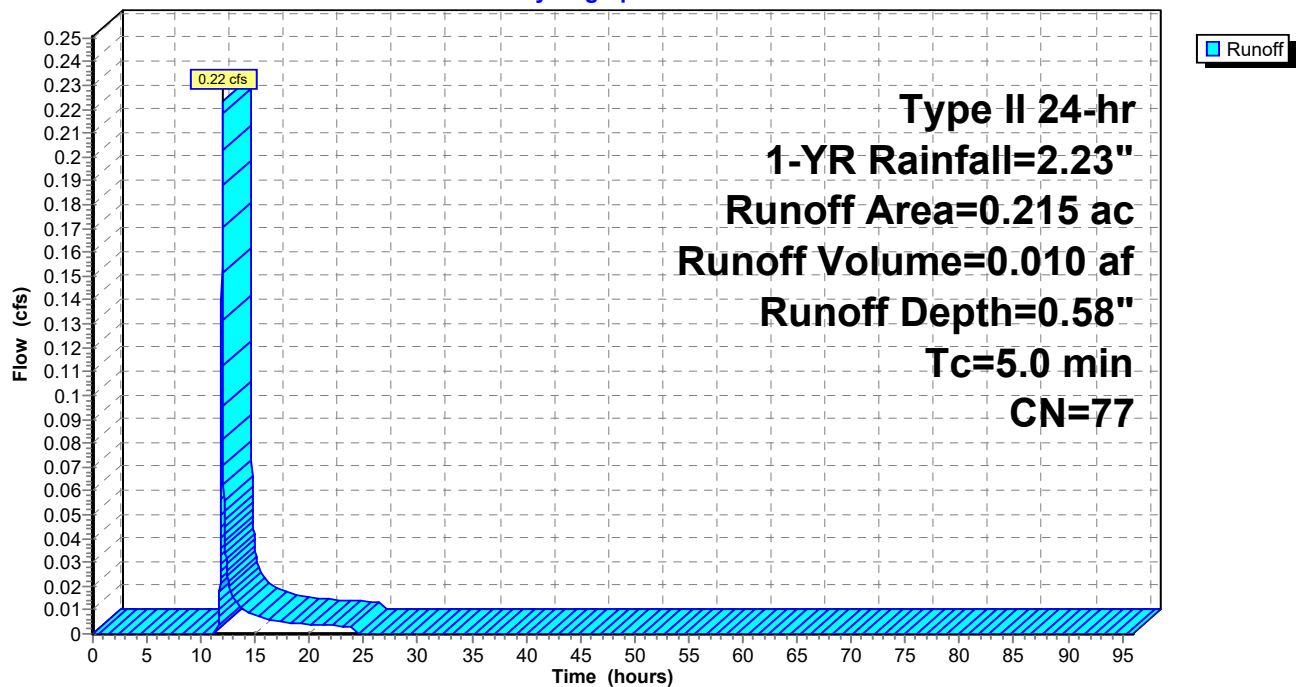
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.23"

| Area (ac) | CN | Description |
|-----------|----|-----------------------|
| 0.215 | 77 | Woods, Good, HSG D |
| 0.215 | | 100.00% Pervious Area |

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

Subcatchment 5S: PRE-DEV (OFFSITE)

Hydrograph

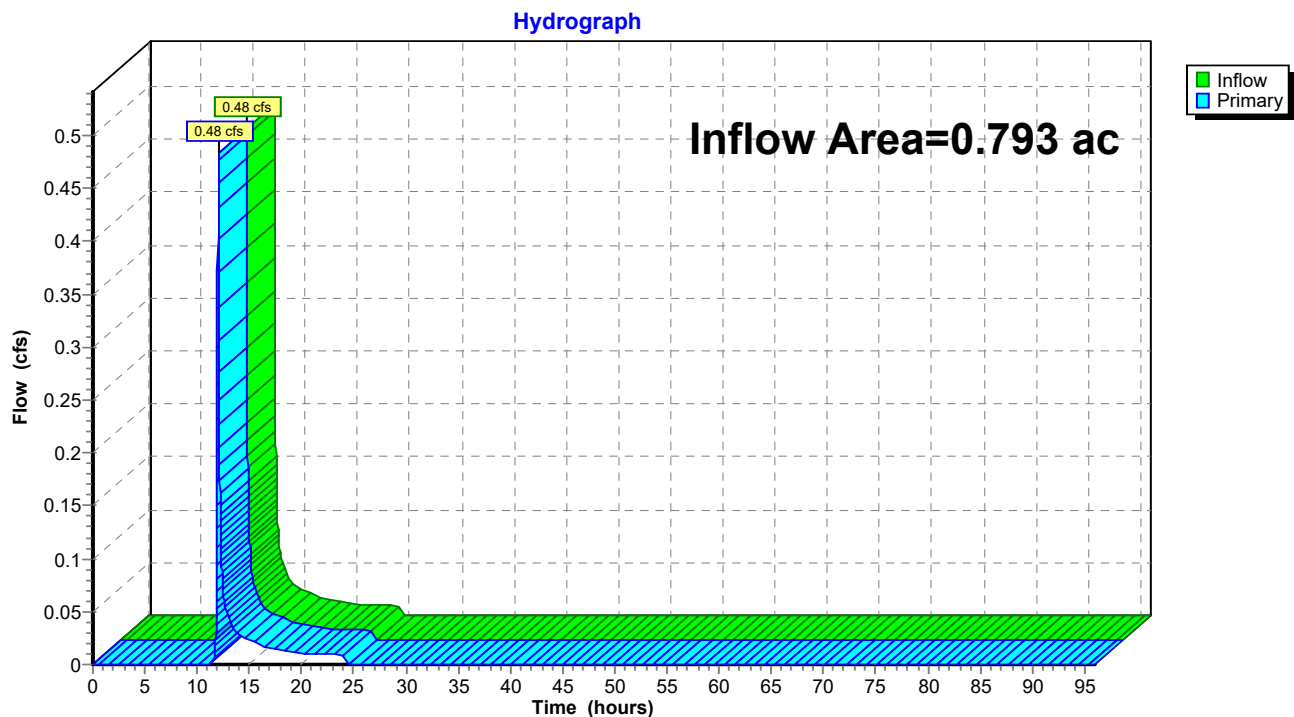


Summary for Link 1L: TOTAL PRE (ON-SITE)

Inflow Area = 0.793 ac, 0.00% Impervious, Inflow Depth = 0.42" for 1-YR event
Inflow = 0.48 cfs @ 12.01 hrs, Volume= 0.028 af
Primary = 0.48 cfs @ 12.02 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 1L: TOTAL PRE (ON-SITE)



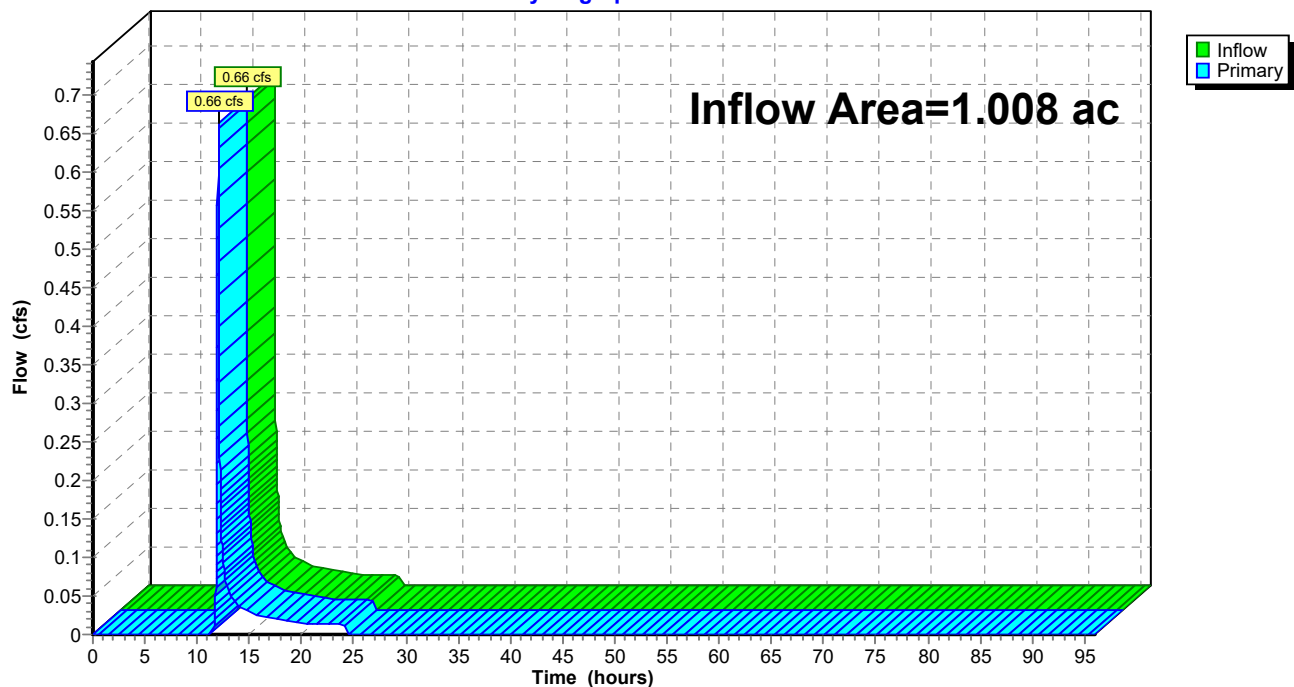
Summary for Link 3L: TOTAL- PRE

Inflow Area = 1.008 ac, 0.00% Impervious, Inflow Depth = 0.46" for 1-YR event
Inflow = 0.66 cfs @ 12.01 hrs, Volume= 0.038 af
Primary = 0.66 cfs @ 12.02 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 3L: TOTAL- PRE

Hydrograph



20483-hydro

Type II 24-hr 2-YR Rainfall=2.62"

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Summary for Subcatchment 1S: PRE-DEV (ON-SITE)

Runoff = 0.76 cfs @ 12.01 hrs, Volume= 0.041 af, Depth= 0.62"

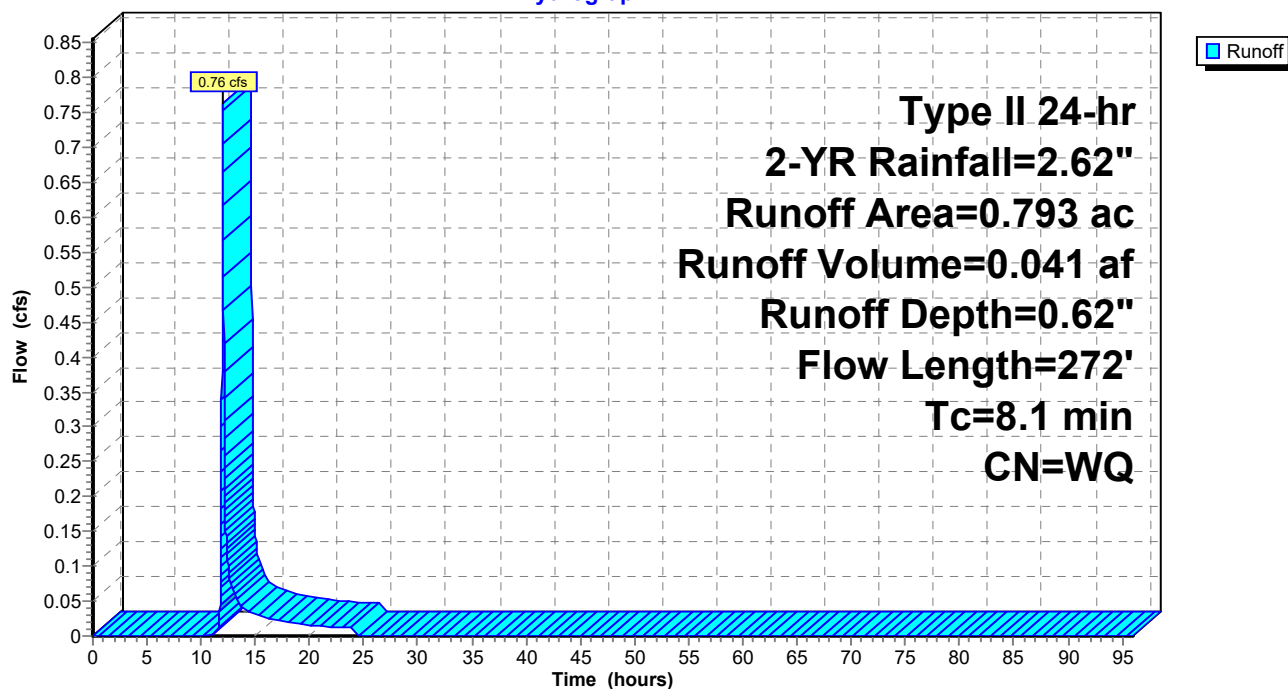
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=2.62"

| Area (ac) | CN | Description |
|-----------|----|-----------------------|
| 0.502 | 70 | Woods, Good, HSG C |
| 0.291 | 77 | Woods, Good, HSG D |
| 0.793 | | Weighted Average |
| 0.793 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|---|
| 5.7 | 60 | 0.2500 | 0.17 | | Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 2.62" |
| 0.6 | 85 | 0.2500 | 2.50 | | Shallow Concentrated Flow, BC Woodland Kv= 5.0 fps |
| 1.7 | 107 | 0.0230 | 1.06 | | Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps |
| 0.1 | 20 | 0.0200 | 6.42 | 5.04 | Pipe Channel, DE 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 8.1 | 272 | Total | | | |

Subcatchment 1S: PRE-DEV (ON-SITE)

Hydrograph



20483-hydro

Type II 24-hr 2-YR Rainfall=2.62"

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Summary for Subcatchment 5S: PRE-DEV (OFFSITE)

Runoff = 0.32 cfs @ 11.97 hrs, Volume= 0.015 af, Depth= 0.82"

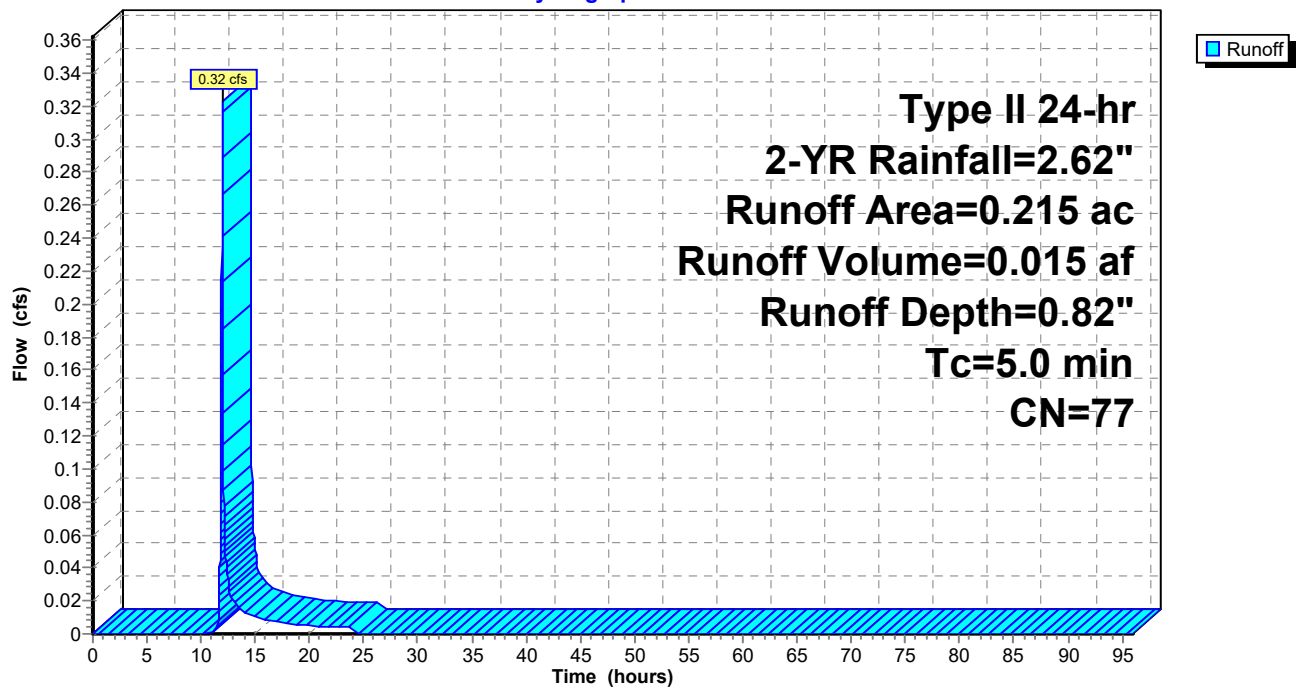
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=2.62"

| Area (ac) | CN | Description |
|-----------|----|-----------------------|
| 0.215 | 77 | Woods, Good, HSG D |
| 0.215 | | 100.00% Pervious Area |

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

Subcatchment 5S: PRE-DEV (OFFSITE)

Hydrograph



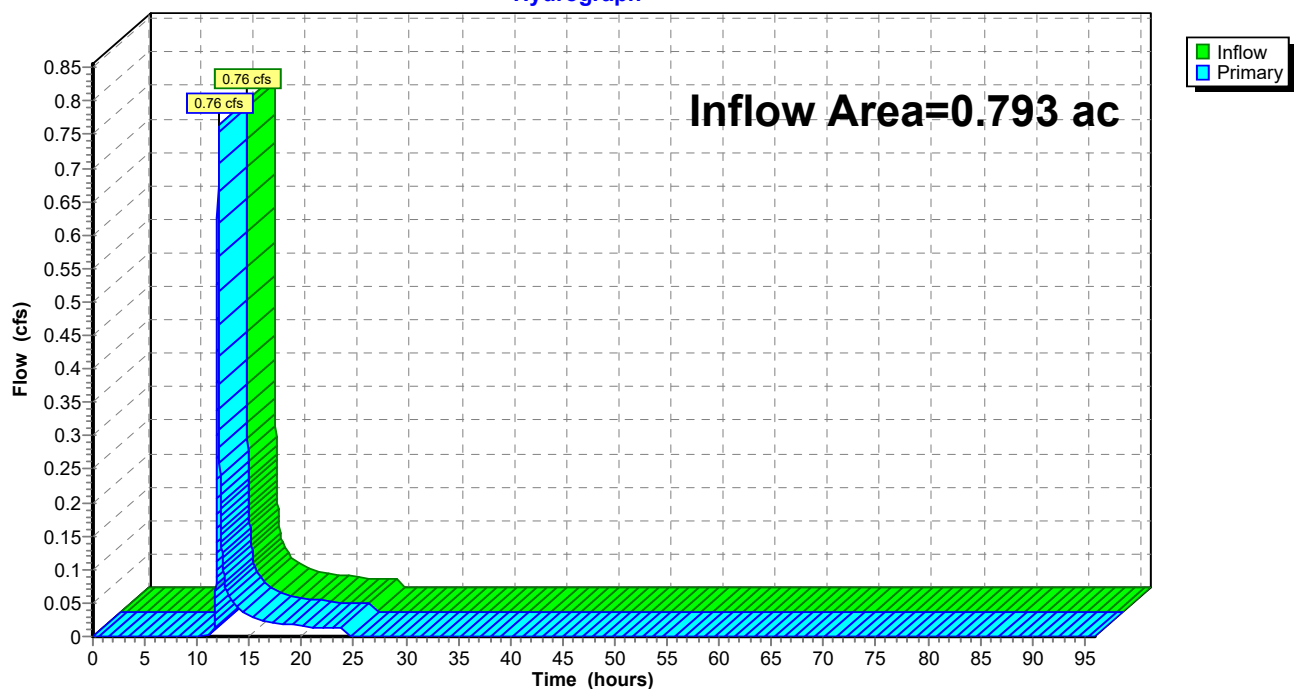
Summary for Link 1L: TOTAL PRE (ON-SITE)

Inflow Area = 0.793 ac, 0.00% Impervious, Inflow Depth = 0.62" for 2-YR event
Inflow = 0.76 cfs @ 12.01 hrs, Volume= 0.041 af
Primary = 0.76 cfs @ 12.02 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 1L: TOTAL PRE (ON-SITE)

Hydrograph

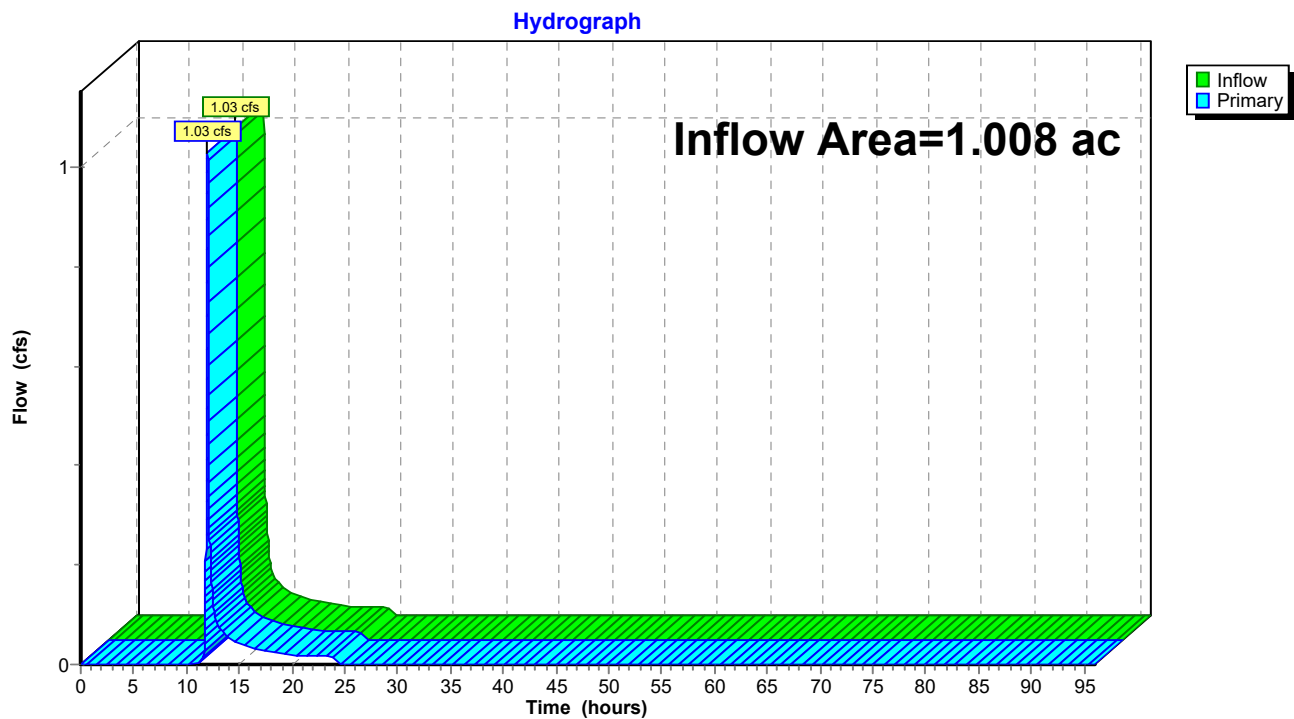


Summary for Link 3L: TOTAL- PRE

Inflow Area = 1.008 ac, 0.00% Impervious, Inflow Depth = 0.67" for 2-YR event
Inflow = 1.03 cfs @ 12.00 hrs, Volume= 0.056 af
Primary = 1.03 cfs @ 12.01 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 3L: TOTAL- PRE



Summary for Subcatchment 1S: PRE-DEV (ON-SITE)

Runoff = 2.11 cfs @ 12.00 hrs, Volume= 0.107 af, Depth= 1.61"

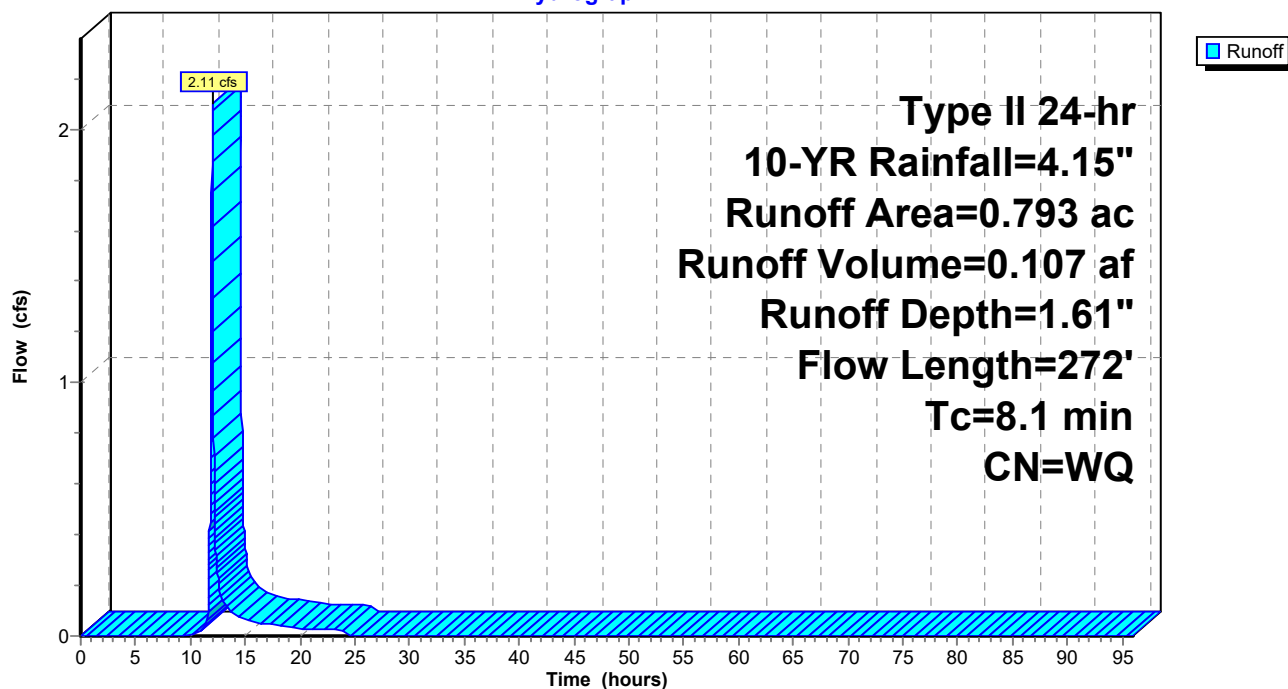
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.15"

| Area (ac) | CN | Description |
|-----------|----|-----------------------|
| 0.502 | 70 | Woods, Good, HSG C |
| 0.291 | 77 | Woods, Good, HSG D |
| 0.793 | | Weighted Average |
| 0.793 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|---|
| 5.7 | 60 | 0.2500 | 0.17 | | Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 2.62" |
| 0.6 | 85 | 0.2500 | 2.50 | | Shallow Concentrated Flow, BC Woodland Kv= 5.0 fps |
| 1.7 | 107 | 0.0230 | 1.06 | | Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps |
| 0.1 | 20 | 0.0200 | 6.42 | 5.04 | Pipe Channel, DE 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 8.1 | 272 | Total | | | |

Subcatchment 1S: PRE-DEV (ON-SITE)

Hydrograph



20483-hydro

Type II 24-hr 10-YR Rainfall=4.15"

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Summary for Subcatchment 5S: PRE-DEV (OFFSITE)

Runoff = 0.77 cfs @ 11.96 hrs, Volume= 0.035 af, Depth= 1.93"

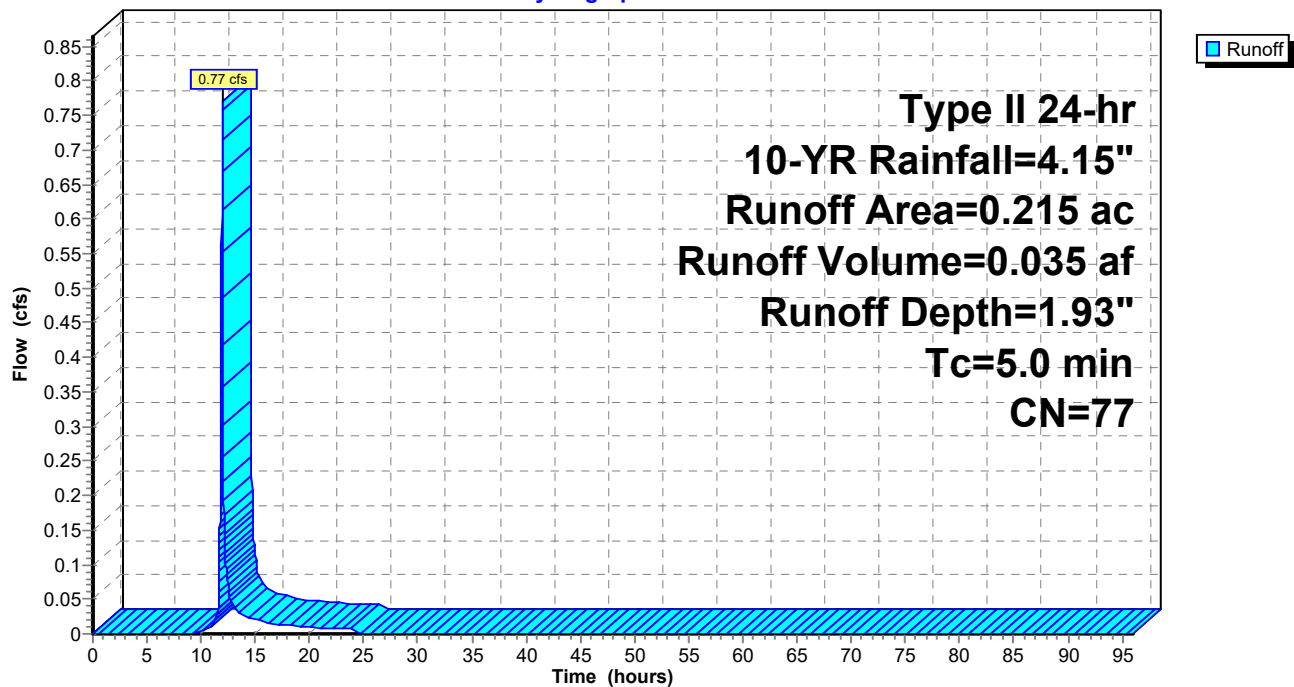
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.15"

| Area (ac) | CN | Description |
|-----------|----|-----------------------|
| 0.215 | 77 | Woods, Good, HSG D |
| 0.215 | | 100.00% Pervious Area |

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

Subcatchment 5S: PRE-DEV (OFFSITE)

Hydrograph

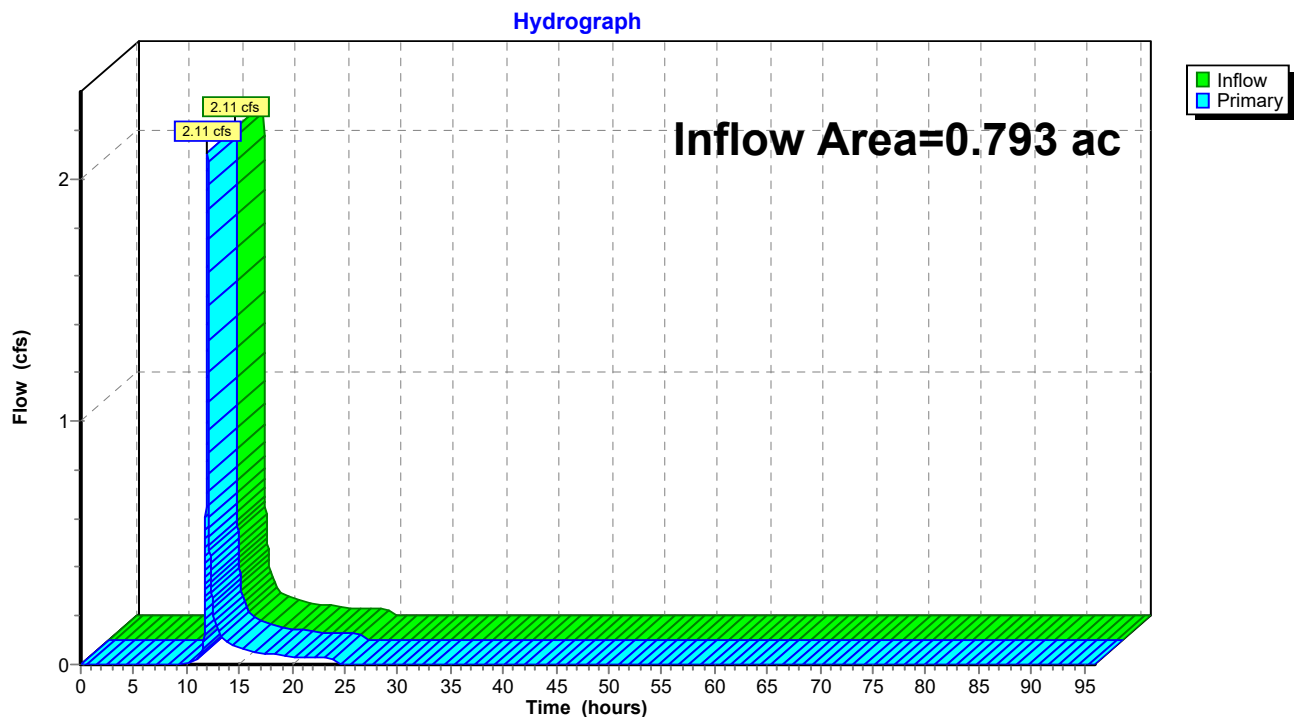


Summary for Link 1L: TOTAL PRE (ON-SITE)

Inflow Area = 0.793 ac, 0.00% Impervious, Inflow Depth = 1.61" for 10-YR event
Inflow = 2.11 cfs @ 12.00 hrs, Volume= 0.107 af
Primary = 2.11 cfs @ 12.01 hrs, Volume= 0.107 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 1L: TOTAL PRE (ON-SITE)

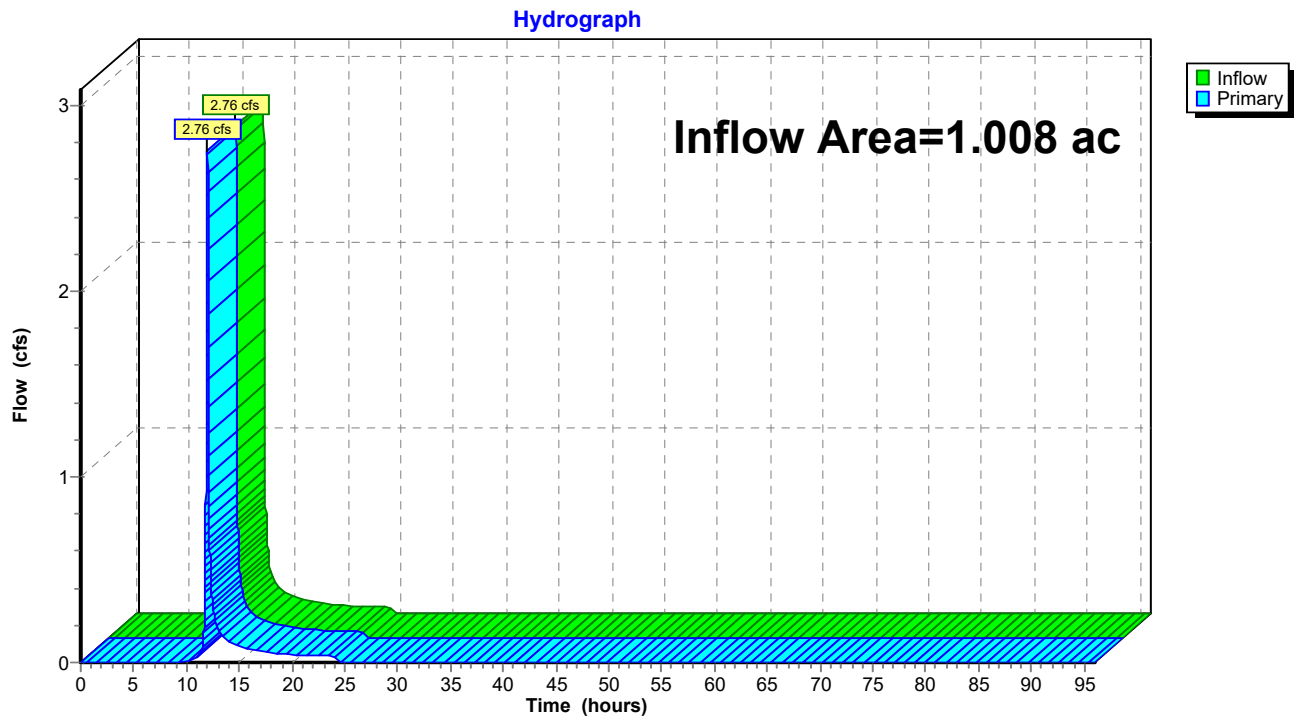


Summary for Link 3L: TOTAL- PRE

Inflow Area = 1.008 ac, 0.00% Impervious, Inflow Depth = 1.68" for 10-YR event
Inflow = 2.76 cfs @ 12.00 hrs, Volume= 0.141 af
Primary = 2.76 cfs @ 12.01 hrs, Volume= 0.141 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 3L: TOTAL- PRE



Summary for Subcatchment 1S: PRE-DEV (ON-SITE)

Runoff = 3.50 cfs @ 12.00 hrs, Volume= 0.176 af, Depth= 2.67"

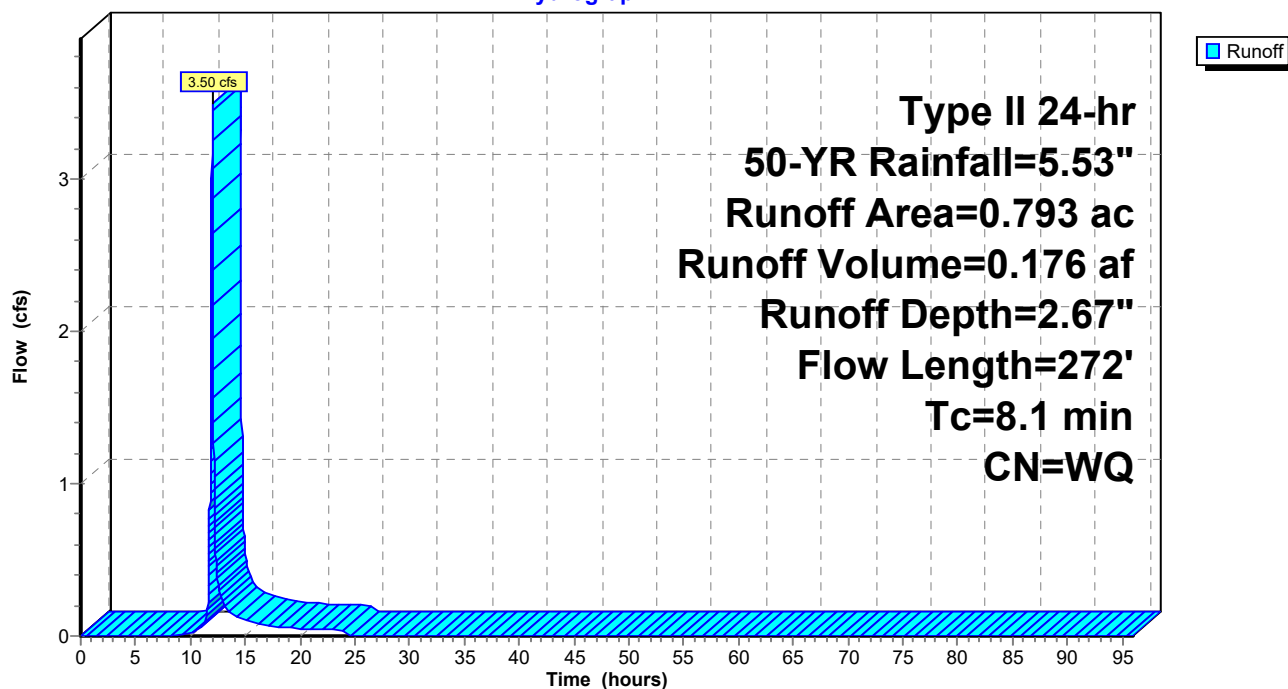
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=5.53"

| Area (ac) | CN | Description |
|-----------|----|-----------------------|
| 0.502 | 70 | Woods, Good, HSG C |
| 0.291 | 77 | Woods, Good, HSG D |
| 0.793 | | Weighted Average |
| 0.793 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|---|
| 5.7 | 60 | 0.2500 | 0.17 | | Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 2.62" |
| 0.6 | 85 | 0.2500 | 2.50 | | Shallow Concentrated Flow, BC Woodland Kv= 5.0 fps |
| 1.7 | 107 | 0.0230 | 1.06 | | Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps |
| 0.1 | 20 | 0.0200 | 6.42 | 5.04 | Pipe Channel, DE 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 8.1 | 272 | Total | | | |

Subcatchment 1S: PRE-DEV (ON-SITE)

Hydrograph



20483-hydro

Type II 24-hr 50-YR Rainfall=5.53"

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Summary for Subcatchment 5S: PRE-DEV (OFFSITE)

Runoff = 1.21 cfs @ 11.96 hrs, Volume= 0.055 af, Depth= 3.07"

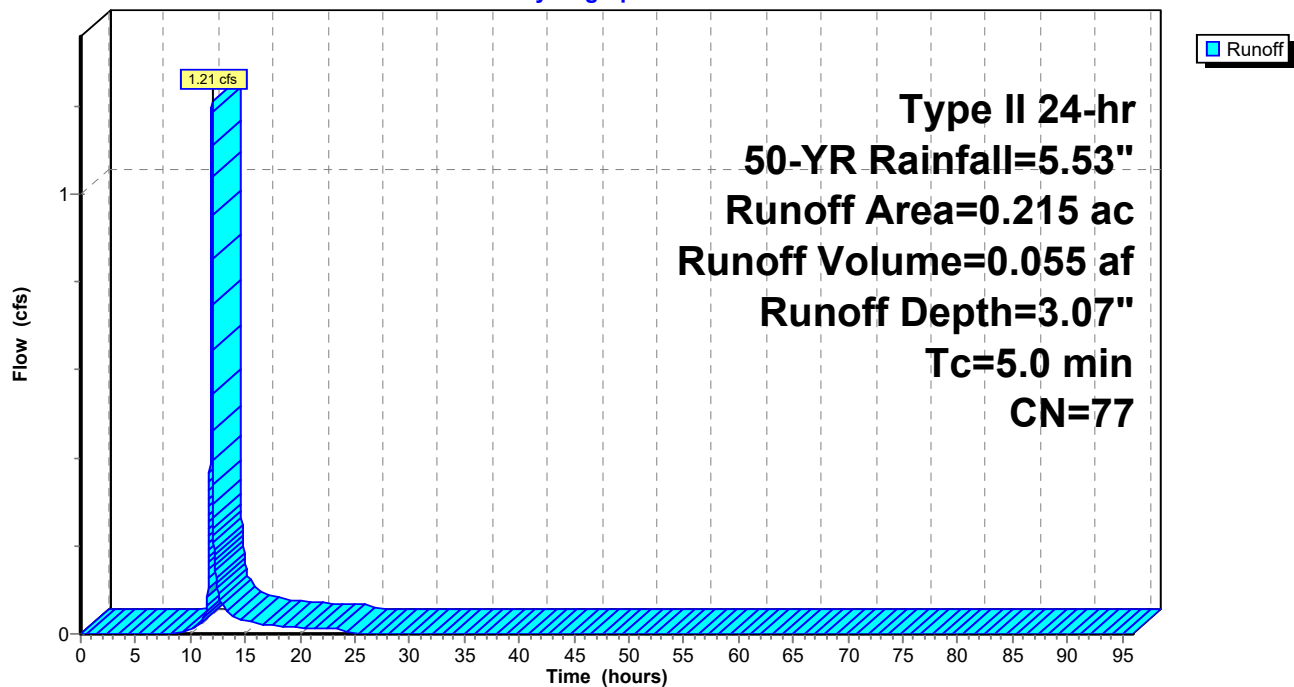
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=5.53"

| Area (ac) | CN | Description |
|-----------|----|-----------------------|
| 0.215 | 77 | Woods, Good, HSG D |
| 0.215 | | 100.00% Pervious Area |

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

Subcatchment 5S: PRE-DEV (OFFSITE)

Hydrograph

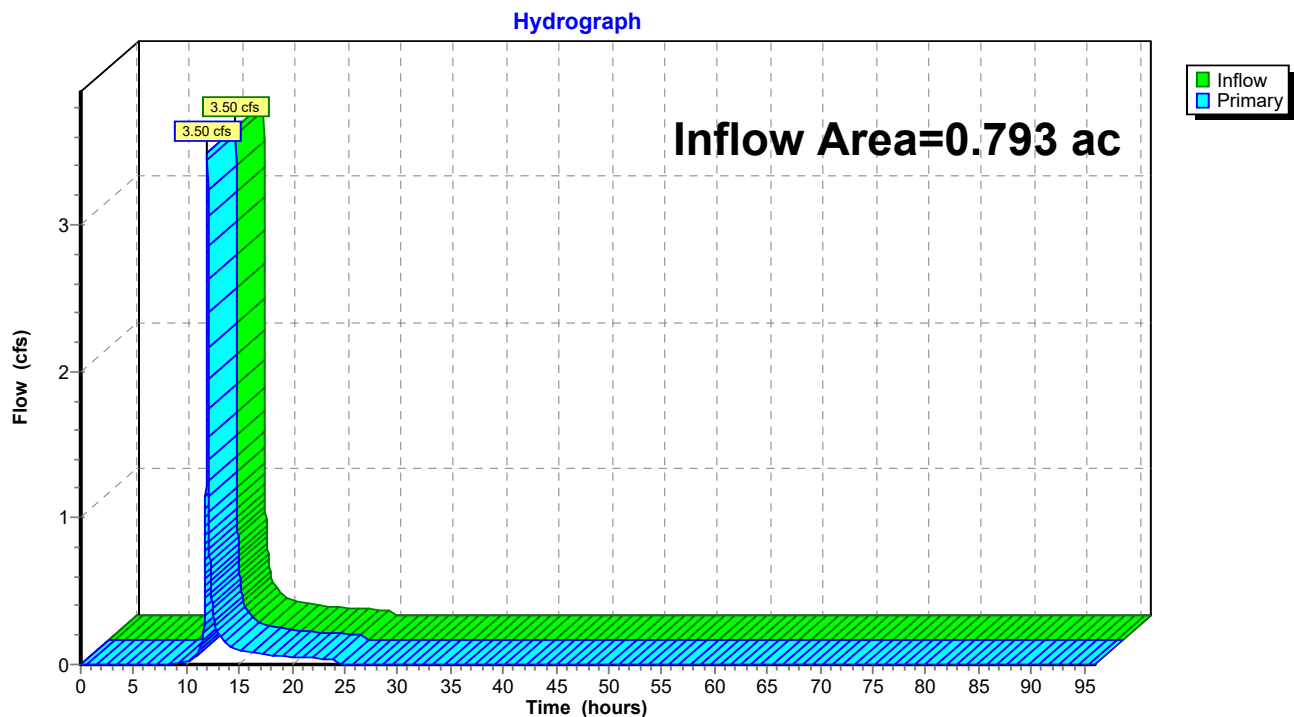


Summary for Link 1L: TOTAL PRE (ON-SITE)

Inflow Area = 0.793 ac, 0.00% Impervious, Inflow Depth = 2.67" for 50-YR event
Inflow = 3.50 cfs @ 12.00 hrs, Volume= 0.176 af
Primary = 3.50 cfs @ 12.01 hrs, Volume= 0.176 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 1L: TOTAL PRE (ON-SITE)

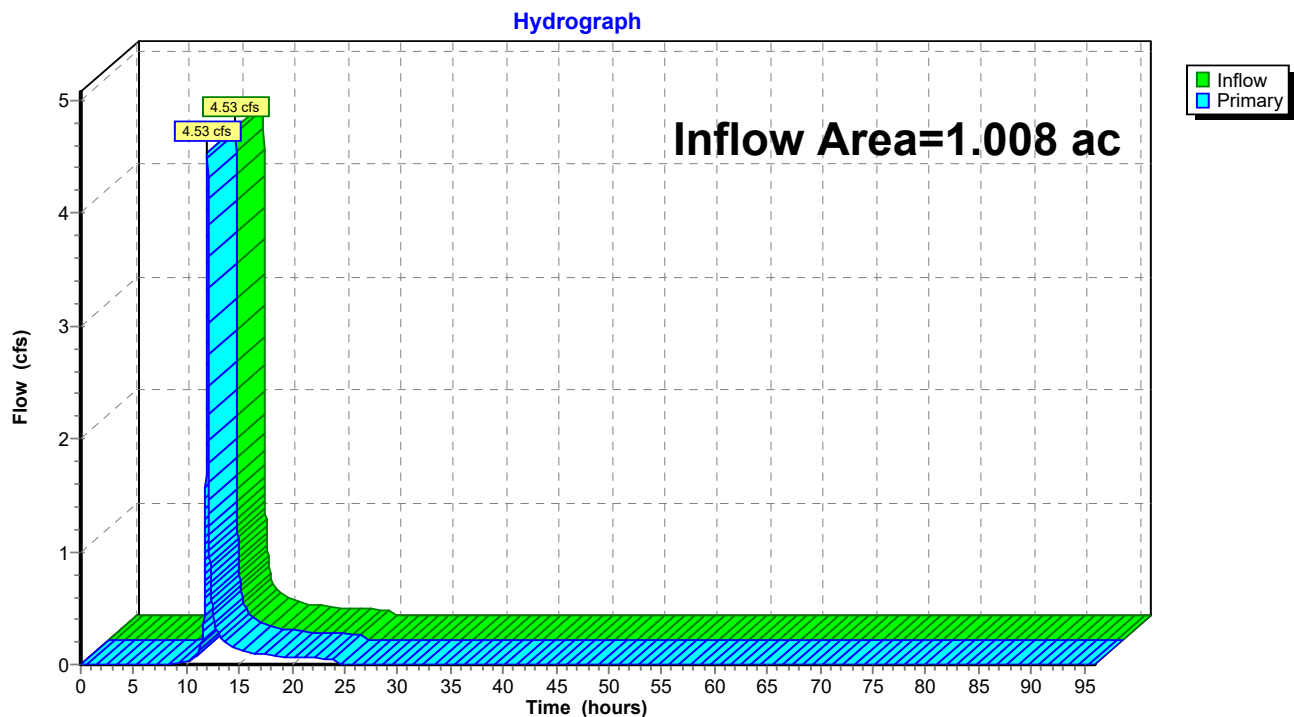


Summary for Link 3L: TOTAL- PRE

Inflow Area = 1.008 ac, 0.00% Impervious, Inflow Depth = 2.76" for 50-YR event
Inflow = 4.53 cfs @ 11.99 hrs, Volume= 0.232 af
Primary = 4.53 cfs @ 12.00 hrs, Volume= 0.232 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 3L: TOTAL- PRE



Summary for Subcatchment 1S: PRE-DEV (ON-SITE)

Runoff = 5.07 cfs @ 12.00 hrs, Volume= 0.257 af, Depth= 3.89"

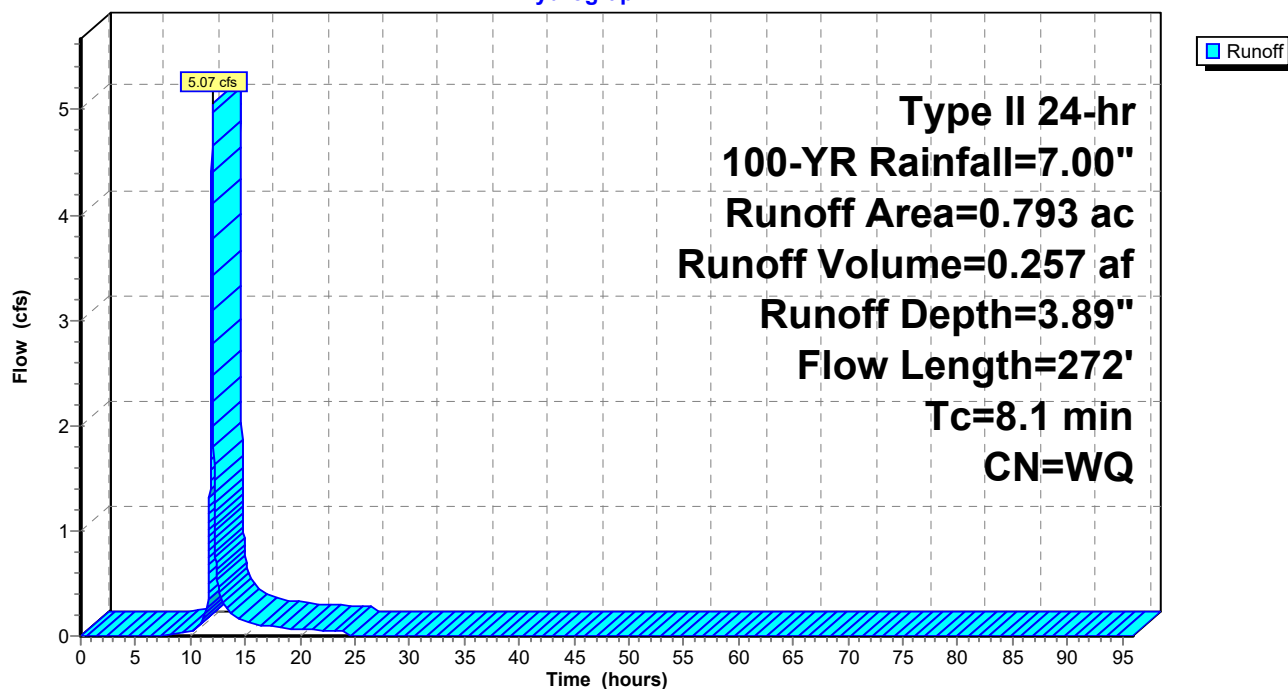
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.00"

| Area (ac) | CN | Description |
|-----------|----|-----------------------|
| 0.502 | 70 | Woods, Good, HSG C |
| 0.291 | 77 | Woods, Good, HSG D |
| 0.793 | | Weighted Average |
| 0.793 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|---|
| 5.7 | 60 | 0.2500 | 0.17 | | Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 2.62" |
| 0.6 | 85 | 0.2500 | 2.50 | | Shallow Concentrated Flow, BC Woodland Kv= 5.0 fps |
| 1.7 | 107 | 0.0230 | 1.06 | | Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps |
| 0.1 | 20 | 0.0200 | 6.42 | 5.04 | Pipe Channel, DE 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 8.1 | 272 | Total | | | |

Subcatchment 1S: PRE-DEV (ON-SITE)

Hydrograph



20483-hydro

Type II 24-hr 100-YR Rainfall=7.00"

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Summary for Subcatchment 5S: PRE-DEV (OFFSITE)

Runoff = 1.70 cfs @ 11.96 hrs, Volume= 0.078 af, Depth= 4.37"

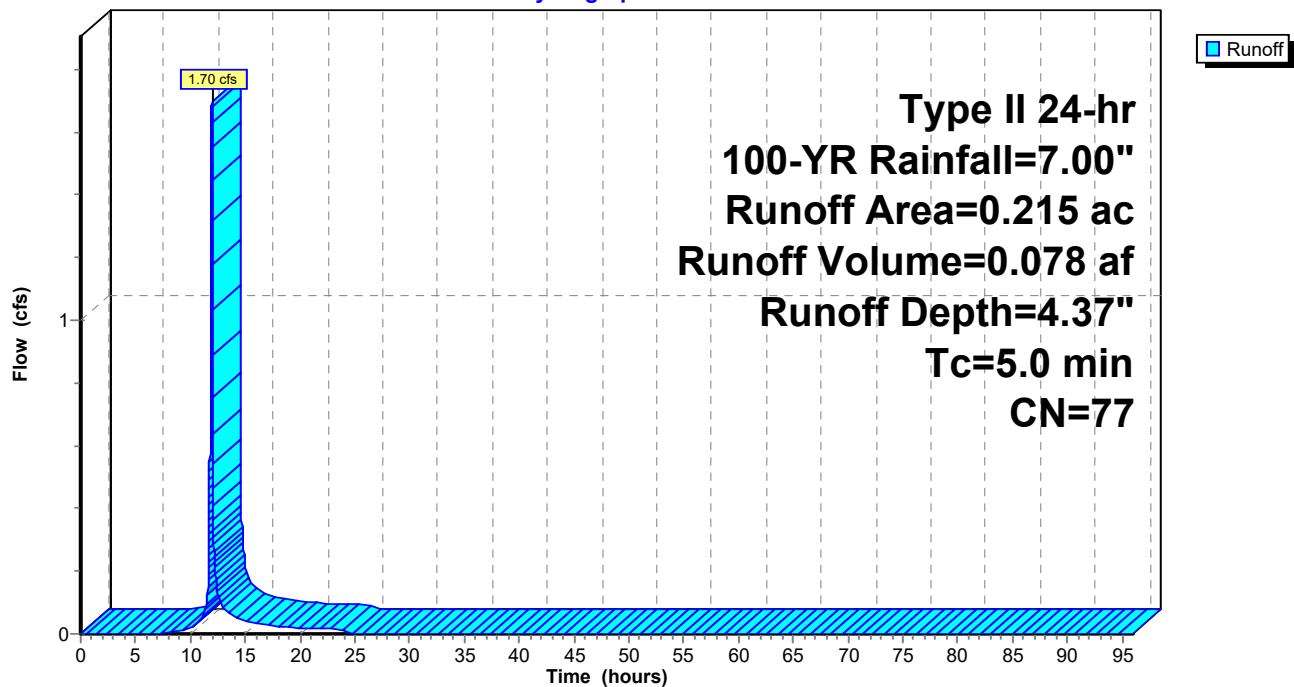
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.00"

| Area (ac) | CN | Description |
|-----------|----|-----------------------|
| 0.215 | 77 | Woods, Good, HSG D |
| 0.215 | | 100.00% Pervious Area |

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

Subcatchment 5S: PRE-DEV (OFFSITE)

Hydrograph

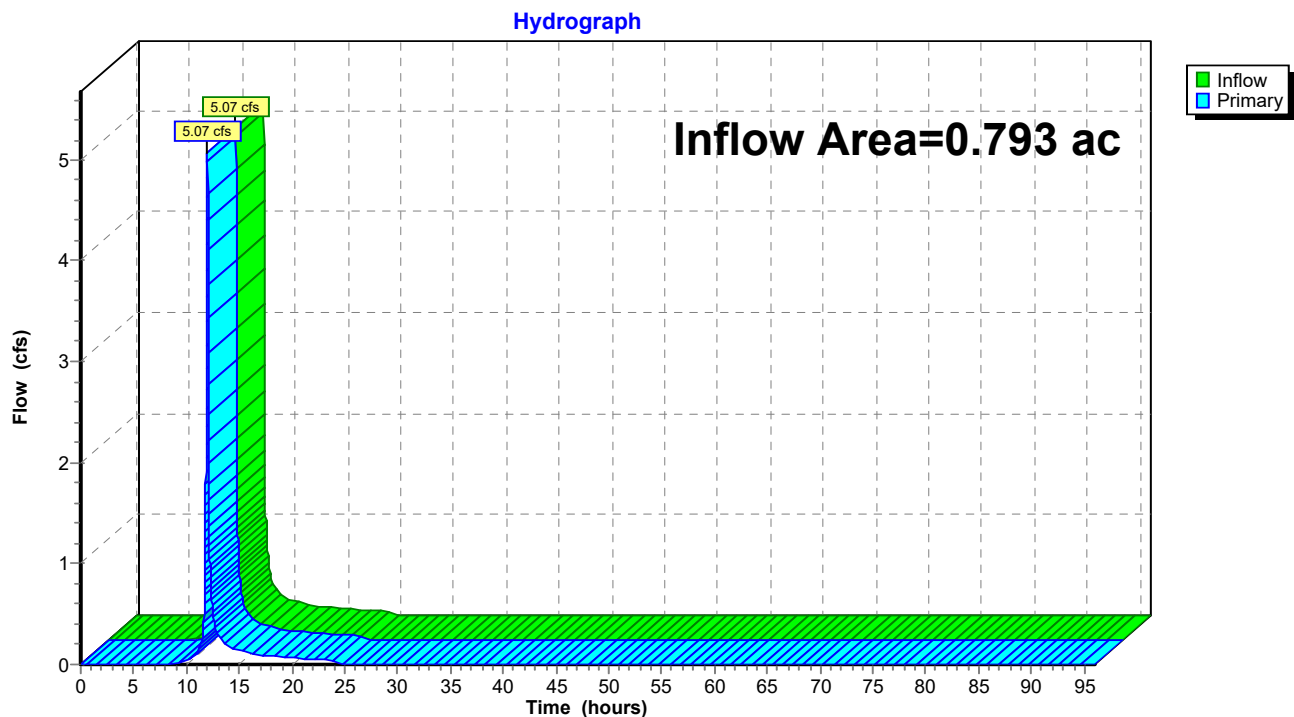


Summary for Link 1L: TOTAL PRE (ON-SITE)

Inflow Area = 0.793 ac, 0.00% Impervious, Inflow Depth = 3.89" for 100-YR event
Inflow = 5.07 cfs @ 12.00 hrs, Volume= 0.257 af
Primary = 5.07 cfs @ 12.01 hrs, Volume= 0.257 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 1L: TOTAL PRE (ON-SITE)



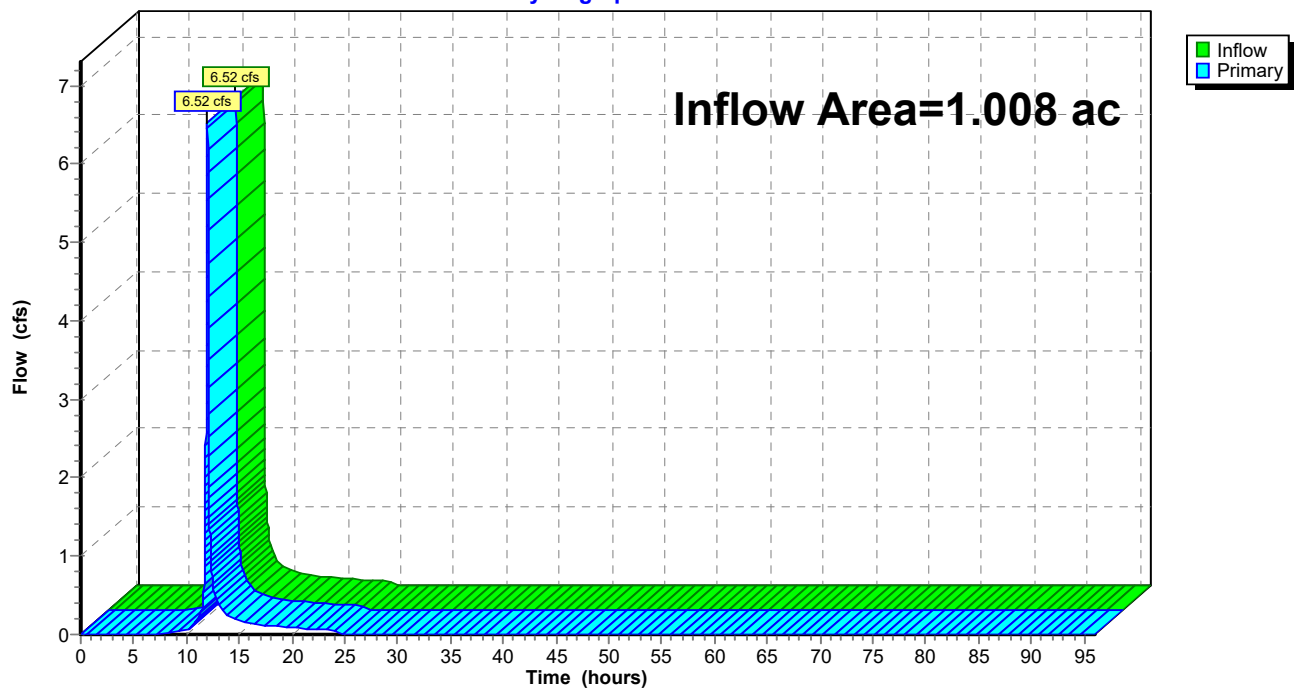
Summary for Link 3L: TOTAL- PRE

Inflow Area = 1.008 ac, 0.00% Impervious, Inflow Depth = 3.99" for 100-YR event
Inflow = 6.52 cfs @ 11.99 hrs, Volume= 0.335 af
Primary = 6.52 cfs @ 12.00 hrs, Volume= 0.335 af, Atten= 0%, Lag= 0.6 min

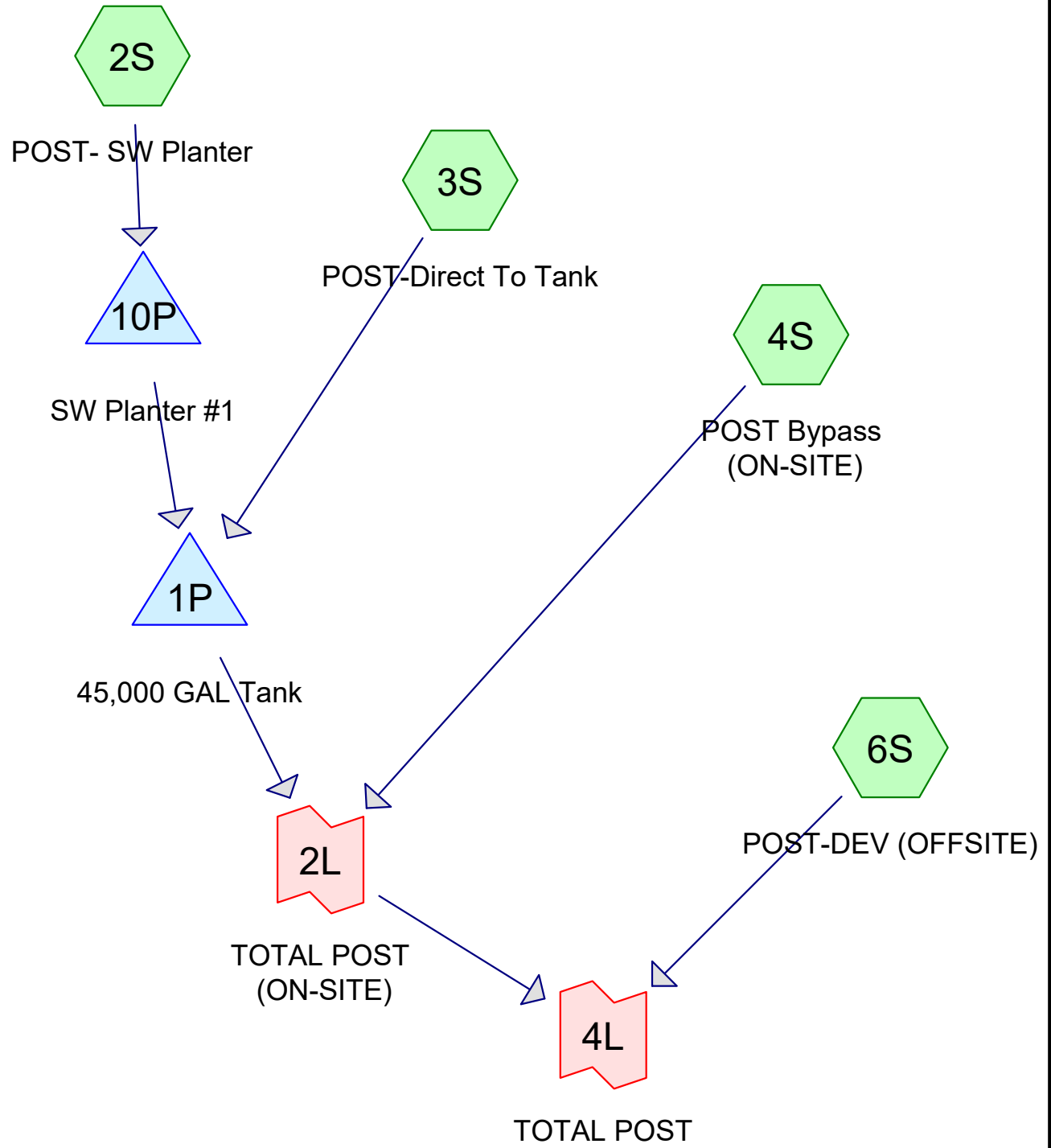
Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 3L: TOTAL- PRE

Hydrograph



Post-Development



Routing Diagram for 20483-hydro

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20483-hydro

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Page 2

Area Listing (selected nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|-----------------|-----------|--|
| 0.086 | 74 | >75% Grass cover, Good, HSG C (3S, 4S) |
| 0.210 | 80 | >75% Grass cover, Good, HSG D (2S, 4S, 6S) |
| 0.362 | 98 | Building (2S) |
| 0.004 | 98 | Planter Ret Wall (2S) |
| 0.006 | 98 | Ret Wall (3S) |
| 0.038 | 98 | Sidewalks/Driveway (4S) |
| 0.091 | 98 | Sidewalks/Driveways (6S) |
| 0.211 | 70 | Woods, Good, HSG C (3S) |
| 1.008 | 86 | TOTAL AREA |

20483-hydro

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Soil Listing (selected nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|-----------------|---------------|-------------------------|
| 0.000 | HSG A | |
| 0.000 | HSG B | |
| 0.297 | HSG C | 3S, 4S |
| 0.210 | HSG D | 2S, 4S, 6S |
| 0.501 | Other | 2S, 3S, 4S, 6S |
| 1.008 | | TOTAL AREA |

Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment2S: POST- SW Planter Runoff Area=0.408 ac 89.71% Impervious Runoff Depth=1.87"
Tc=5.0 min CN=WQ Runoff=1.23 cfs 0.064 af

Subcatchment3S: POST-DirectTo Tank Runoff Area=0.290 ac 2.07% Impervious Runoff Depth=0.40"
Flow Length=298' Tc=6.4 min CN=WQ Runoff=0.17 cfs 0.010 af

Subcatchment4S: POST Bypass (ON-SITE) Runoff Area=0.095 ac 40.00% Impervious Runoff Depth=1.19"
Tc=5.0 min CN=WQ Runoff=0.19 cfs 0.009 af

Subcatchment6S: POST-DEV (OFFSITE) Runoff Area=0.215 ac 42.33% Impervious Runoff Depth=1.26"
Tc=5.0 min CN=WQ Runoff=0.45 cfs 0.022 af

Pond 1P: 45,000 GAL Tank Peak Elev=162.16' Storage=180 cf Inflow=0.17 cfs 0.010 af
Outflow=0.01 cfs 0.010 af

Pond 10P: SW Planter #1 Peak Elev=167.91' Storage=1,664 cf Inflow=1.23 cfs 0.064 af
Discarded=0.02 cfs 0.066 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.066 af

Link 2L: TOTAL POST (ON-SITE) Inflow=0.19 cfs 0.019 af
Primary=0.19 cfs 0.019 af

Link 4L: TOTAL POST Inflow=0.64 cfs 0.042 af
Primary=0.64 cfs 0.042 af

Total Runoff Area = 1.008 ac Runoff Volume = 0.105 af Average Runoff Depth = 1.25"
50.30% Pervious = 0.507 ac 49.70% Impervious = 0.501 ac

Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment2S: POST- SW Planter Runoff Area=0.408 ac 89.71% Impervious Runoff Depth=2.24"
Tc=5.0 min CN=WQ Runoff=1.47 cfs 0.076 af

Subcatchment3S: POST-DirectTo Tank Runoff Area=0.290 ac 2.07% Impervious Runoff Depth=0.59"
Flow Length=298' Tc=6.4 min CN=WQ Runoff=0.28 cfs 0.014 af

Subcatchment4S: POST Bypass (ON-SITE) Runoff Area=0.095 ac 40.00% Impervious Runoff Depth=1.50"
Tc=5.0 min CN=WQ Runoff=0.24 cfs 0.012 af

Subcatchment6S: POST-DEV (OFFSITE) Runoff Area=0.215 ac 42.33% Impervious Runoff Depth=1.57"
Tc=5.0 min CN=WQ Runoff=0.57 cfs 0.028 af

Pond 1P: 45,000 GAL Tank Peak Elev=162.45' Storage=501 cf Inflow=0.28 cfs 0.021 af
Outflow=0.02 cfs 0.021 af

Pond 10P: SW Planter #1 Peak Elev=168.02' Storage=1,863 cf Inflow=1.47 cfs 0.076 af
Discarded=0.02 cfs 0.072 af Primary=0.04 cfs 0.006 af Outflow=0.06 cfs 0.078 af

Link 2L: TOTAL POST (ON-SITE) Inflow=0.24 cfs 0.033 af
Primary=0.24 cfs 0.033 af

Link 4L: TOTAL POST Inflow=0.81 cfs 0.061 af
Primary=0.81 cfs 0.061 af

Total Runoff Area = 1.008 ac Runoff Volume = 0.131 af Average Runoff Depth = 1.56"
50.30% Pervious = 0.507 ac 49.70% Impervious = 0.501 ac

Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment2S: POST- SW Planter Runoff Area=0.408 ac 89.71% Impervious Runoff Depth=3.73"
Tc=5.0 min CN=WQ Runoff=2.39 cfs 0.127 af

Subcatchment3S: POST-DirectTo Tank Runoff Area=0.290 ac 2.07% Impervious Runoff Depth=1.55"
Flow Length=298' Tc=6.4 min CN=WQ Runoff=0.78 cfs 0.038 af

Subcatchment4S: POST Bypass (ON-SITE) Runoff Area=0.095 ac 40.00% Impervious Runoff Depth=2.80"
Tc=5.0 min CN=WQ Runoff=0.45 cfs 0.022 af

Subcatchment6S: POST-DEV (OFFSITE) Runoff Area=0.215 ac 42.33% Impervious Runoff Depth=2.91"
Tc=5.0 min CN=WQ Runoff=1.05 cfs 0.052 af

Pond 1P: 45,000 GAL Tank Peak Elev=164.01' Storage=2,234 cf Inflow=2.33 cfs 0.088 af
Outflow=0.12 cfs 0.088 af

Pond 10P: SW Planter #1 Peak Elev=168.25' Storage=2,283 cf Inflow=2.39 cfs 0.127 af
Discarded=0.02 cfs 0.078 af Primary=1.63 cfs 0.050 af Outflow=1.65 cfs 0.128 af

Link 2L: TOTAL POST (ON-SITE) Inflow=0.46 cfs 0.110 af
Primary=0.46 cfs 0.110 af

Link 4L: TOTAL POST Inflow=1.51 cfs 0.162 af
Primary=1.51 cfs 0.162 af

Total Runoff Area = 1.008 ac Runoff Volume = 0.239 af Average Runoff Depth = 2.84"
50.30% Pervious = 0.507 ac 49.70% Impervious = 0.501 ac

Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment2S: POST- SW Planter Runoff Area=0.408 ac 89.71% Impervious Runoff Depth=5.09"
Tc=5.0 min CN=WQ Runoff=3.23 cfs 0.173 af

Subcatchment3S: POST-DirectTo Tank Runoff Area=0.290 ac 2.07% Impervious Runoff Depth=2.59"
Flow Length=298' Tc=6.4 min CN=WQ Runoff=1.31 cfs 0.062 af

Subcatchment4S: POST Bypass (ON-SITE) Runoff Area=0.095 ac 40.00% Impervious Runoff Depth=4.06"
Tc=5.0 min CN=WQ Runoff=0.64 cfs 0.032 af

Subcatchment6S: POST-DEV (OFFSITE) Runoff Area=0.215 ac 42.33% Impervious Runoff Depth=4.18"
Tc=5.0 min CN=WQ Runoff=1.50 cfs 0.075 af

Pond 1P: 45,000 GAL Tank Peak Elev=165.26' Storage=3,620 cf Inflow=4.21 cfs 0.157 af
Outflow=0.33 cfs 0.157 af

Pond 10P: SW Planter #1 Peak Elev=168.37' Storage=2,499 cf Inflow=3.23 cfs 0.173 af
Discarded=0.02 cfs 0.079 af Primary=2.91 cfs 0.095 af Outflow=2.93 cfs 0.174 af

Link 2L: TOTAL POST (ON-SITE) Inflow=0.67 cfs 0.189 af
Primary=0.67 cfs 0.189 af

Link 4L: TOTAL POST Inflow=2.16 cfs 0.264 af
Primary=2.16 cfs 0.264 af

Total Runoff Area = 1.008 ac Runoff Volume = 0.343 af Average Runoff Depth = 4.08"
50.30% Pervious = 0.507 ac 49.70% Impervious = 0.501 ac

Time span=0.00-96.00 hrs, dt=0.01 hrs, 9601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment2S: POST- SW Planter Runoff Area=0.408 ac 89.71% Impervious Runoff Depth=6.55"
Tc=5.0 min CN=WQ Runoff=4.13 cfs 0.223 af

Subcatchment3S: POST-DirectTo Tank Runoff Area=0.290 ac 2.07% Impervious Runoff Depth=3.79"
Flow Length=298' Tc=6.4 min CN=WQ Runoff=1.91 cfs 0.092 af

Subcatchment4S: POST Bypass (ON-SITE) Runoff Area=0.095 ac 40.00% Impervious Runoff Depth=5.43"
Tc=5.0 min CN=WQ Runoff=0.86 cfs 0.043 af

Subcatchment6S: POST-DEV (OFFSITE) Runoff Area=0.215 ac 42.33% Impervious Runoff Depth=5.57"
Tc=5.0 min CN=WQ Runoff=1.98 cfs 0.100 af

Pond 1P: 45,000 GAL Tank Peak Elev=166.95' Storage=5,500 cf Inflow=5.73 cfs 0.235 af
Outflow=0.56 cfs 0.234 af

Pond 10P: SW Planter #1 Peak Elev=168.45' Storage=2,635 cf Inflow=4.13 cfs 0.223 af
Discarded=0.02 cfs 0.080 af Primary=3.83 cfs 0.143 af Outflow=3.85 cfs 0.223 af

Link 2L: TOTAL POST (ON-SITE) Inflow=1.09 cfs 0.277 af
Primary=1.09 cfs 0.277 af

Link 4L: TOTAL POST Inflow=3.03 cfs 0.377 af
Primary=3.03 cfs 0.377 af

Total Runoff Area = 1.008 ac Runoff Volume = 0.457 af Average Runoff Depth = 5.44"
50.30% Pervious = 0.507 ac 49.70% Impervious = 0.501 ac

20483-hydro

Type II 24-hr 1-YR Rainfall=2.23"

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Page 1

Summary for Subcatchment 2S: POST- SW Planter

Runoff = 1.23 cfs @ 11.96 hrs, Volume= 0.064 af, Depth= 1.87"

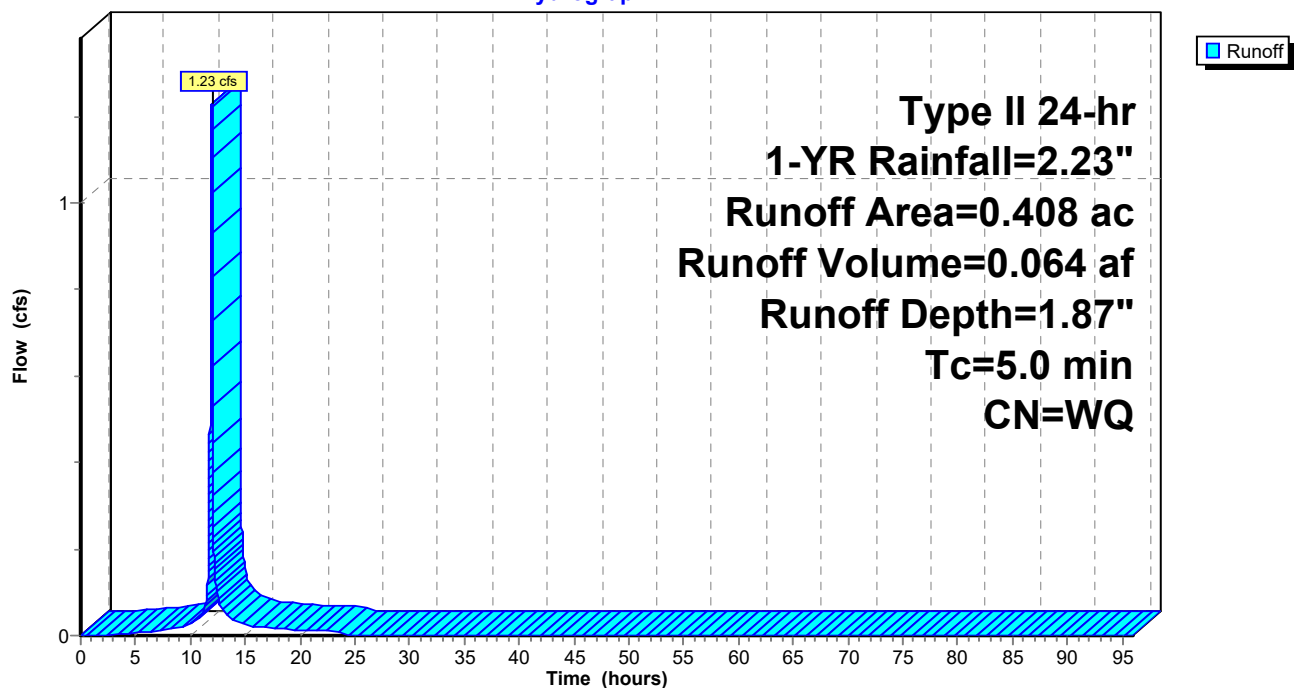
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.23"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.362 | 98 | Building |
| * 0.004 | 98 | Planter Ret Wall |
| 0.042 | 80 | >75% Grass cover, Good, HSG D |
| 0.408 | | Weighted Average |
| 0.042 | | 10.29% Pervious Area |
| 0.366 | | 89.71% Impervious Area |

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

Subcatchment 2S: POST- SW Planter

Hydrograph



20483-hydro

Type II 24-hr 1-YR Rainfall=2.23"

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Summary for Subcatchment 3S: POST-Direct To Tank

Runoff = 0.17 cfs @ 12.00 hrs, Volume= 0.010 af, Depth= 0.40"

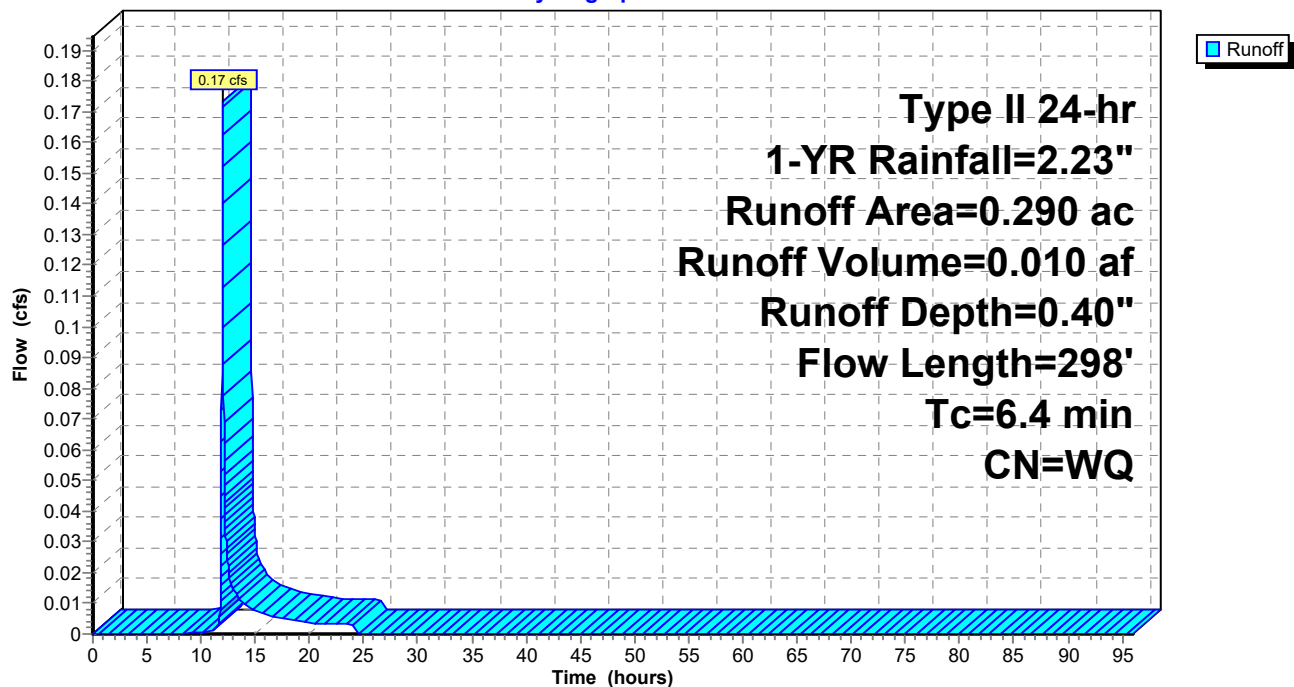
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.23"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.006 | 98 | Ret Wall |
| 0.211 | 70 | Woods, Good, HSG C |
| 0.073 | 74 | >75% Grass cover, Good, HSG C |
| 0.290 | | Weighted Average |
| 0.284 | | 97.93% Pervious Area |
| 0.006 | | 2.07% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|---|
| 5.7 | 60 | 0.2500 | 0.17 | | Sheet Flow, AB |
| | | | | | Woods: Light underbrush n= 0.400 P2= 2.62" |
| 0.2 | 25 | 0.0200 | 2.28 | | Shallow Concentrated Flow, BC |
| | | | | | Unpaved Kv= 16.1 fps |
| 0.5 | 213 | 0.0250 | 7.17 | 5.63 | Pipe Channel, CD |
| | | | | | 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' |
| | | | | | n= 0.013 Corrugated PE, smooth interior |
| 6.4 | 298 | Total | | | |

Subcatchment 3S: POST-Direct To Tank

Hydrograph



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Type II 24-hr 1-YR Rainfall=2.23"

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Summary for Subcatchment 4S: POST Bypass (ON-SITE)

Runoff = 0.19 cfs @ 11.96 hrs, Volume= 0.009 af, Depth= 1.19"

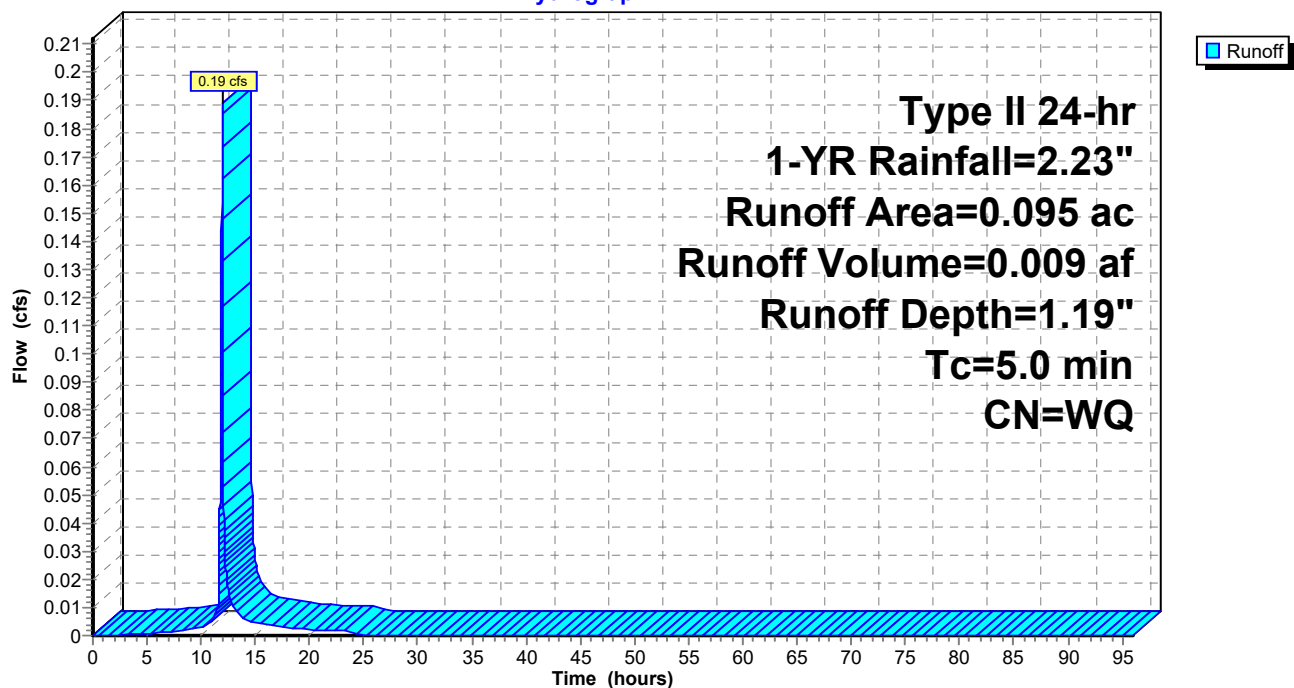
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.23"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.038 | 98 | Sidewalks/Driveway |
| 0.013 | 74 | >75% Grass cover, Good, HSG C |
| 0.044 | 80 | >75% Grass cover, Good, HSG D |
| 0.095 | | Weighted Average |
| 0.057 | | 60.00% Pervious Area |
| 0.038 | | 40.00% Impervious Area |

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

Subcatchment 4S: POST Bypass (ON-SITE)

Hydrograph



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Type II 24-hr 1-YR Rainfall=2.23"

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Summary for Subcatchment 6S: POST-DEV (OFFSITE)

Runoff = 0.45 cfs @ 11.96 hrs, Volume= 0.022 af, Depth= 1.26"

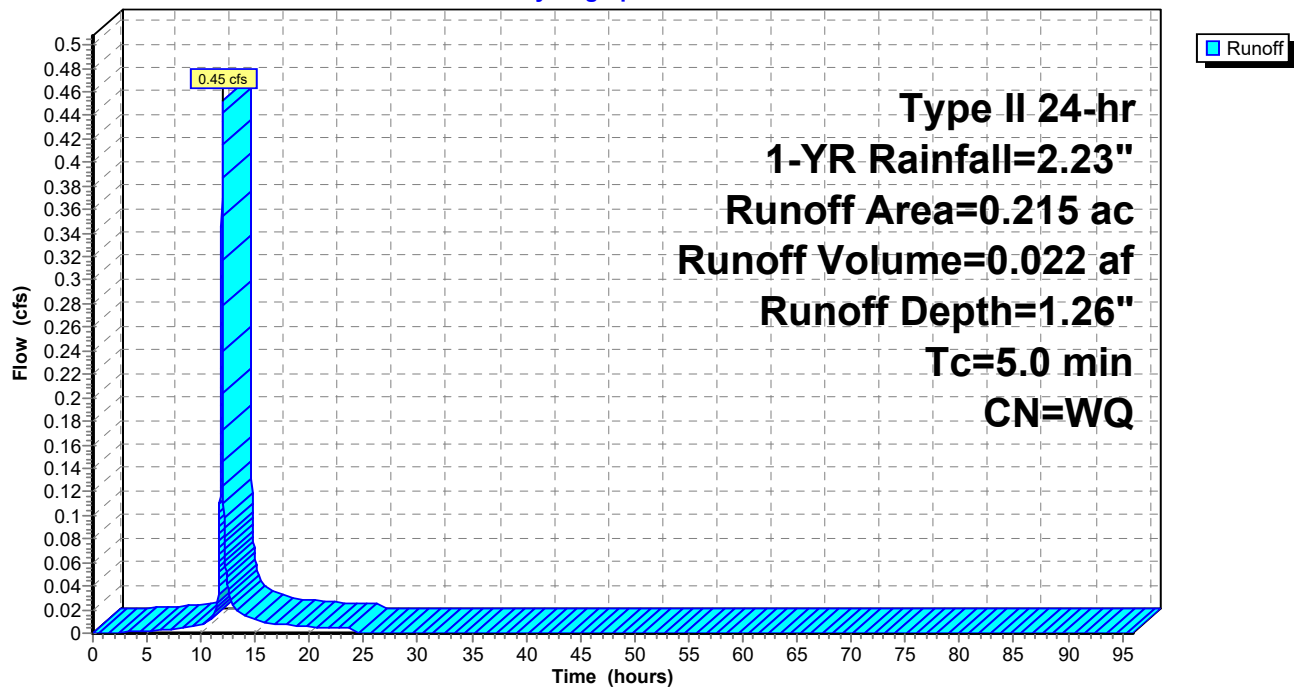
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.23"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.091 | 98 | Sidewalks/Driveways |
| 0.124 | 80 | >75% Grass cover, Good, HSG D |
| 0.215 | | Weighted Average |
| 0.124 | | 57.67% Pervious Area |
| 0.091 | | 42.33% Impervious Area |

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

Subcatchment 6S: POST-DEV (OFFSITE)

Hydrograph



Summary for Pond 1P: 45,000 GAL Tank

Inflow Area = 0.698 ac, 53.30% Impervious, Inflow Depth = 0.17" for 1-YR event
 Inflow = 0.17 cfs @ 12.00 hrs, Volume= 0.010 af
 Outflow = 0.01 cfs @ 14.08 hrs, Volume= 0.010 af, Atten= 95%, Lag= 124.9 min
 Primary = 0.01 cfs @ 14.08 hrs, Volume= 0.010 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 162.16' @ 14.08 hrs Surf.Area= 1,110 sf Storage= 180 cf

Plug-Flow detention time= 347.4 min calculated for 0.010 af (99% of inflow)
 Center-of-Mass det. time= 342.6 min (1,229.6 - 887.0)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|---------|---------------|---|
| #1 | 162.00' | 5,828 cf | 18.50'W x 60.00'L x 5.25'H Prismatic |

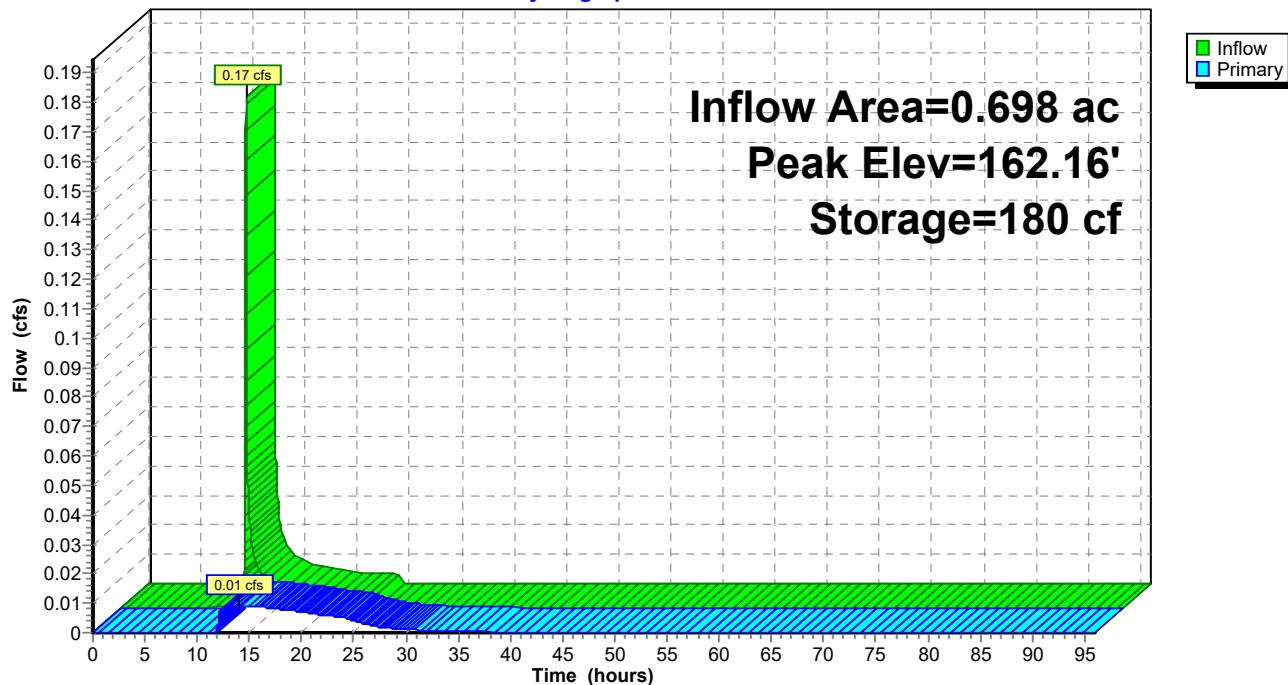
| Device | Routing | Invert | Outlet Devices |
|--------|----------|---------|--|
| #1 | Primary | 162.00' | 12.0" Round Culvert L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.90' S= 0.0167 ' / Cc= 0.900 n= 0.012, Flow Area= 0.79 sf |
| #2 | Device 1 | 162.00' | 1.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads |
| #3 | Device 1 | 163.75' | 3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads |
| #4 | Device 1 | 166.90' | 8.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads |

Primary OutFlow Max=0.01 cfs @ 14.08 hrs HW=162.16' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 0.01 cfs of 0.11 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.01 cfs @ 1.67 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Orifice/Grate (Controls 0.00 cfs)

Pond 1P: 45,000 GAL Tank

Hydrograph



Summary for Pond 10P: SW Planter #1

Inflow Area = 0.408 ac, 89.71% Impervious, Inflow Depth = 1.87" for 1-YR event
 Inflow = 1.23 cfs @ 11.96 hrs, Volume= 0.064 af
 Outflow = 0.02 cfs @ 1.70 hrs, Volume= 0.066 af, Atten= 98%, Lag= 0.0 min
 Discarded = 0.02 cfs @ 1.70 hrs, Volume= 0.066 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 167.91' @ 16.12 hrs Surf.Area= 1,822 sf Storage= 1,664 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 702.4 min (1,466.2 - 763.9)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|---------|---------------|--|
| #1 | 167.00' | 2,733 cf | Custom Stage Data (Prismatic) Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 167.00 | 1,822 | 0 | 0 |
| 168.00 | 1,822 | 1,822 | 1,822 |
| 168.50 | 1,822 | 911 | 2,733 |

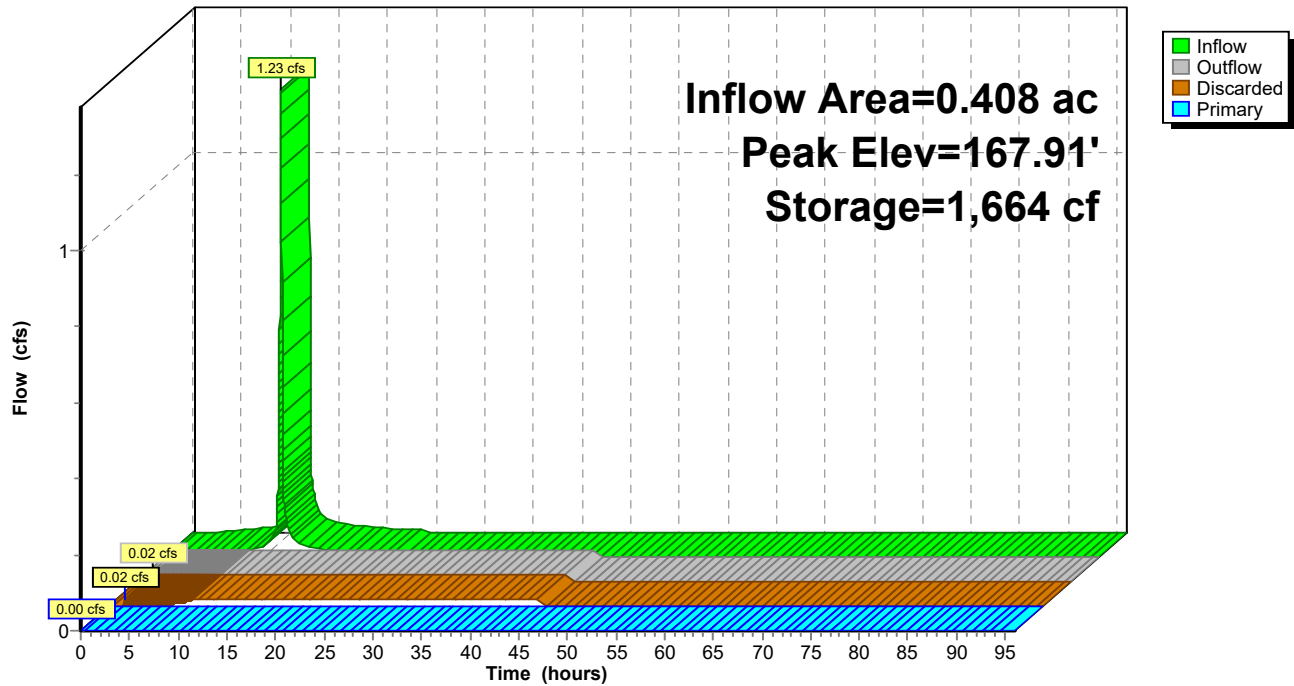
| Device | Routing | Invert | Outlet Devices |
|--------|-----------|---------|--|
| #1 | Discarded | 167.00' | 0.02 cfs Exfiltration at all elevations |
| #2 | Primary | 164.00' | 12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.00' / 162.00' S= 0.0667 ' S= 0.0667 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #3 | Device 2 | 168.00' | 15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads |

Discarded OutFlow Max=0.02 cfs @ 1.70 hrs HW=167.00' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.00' TW=162.00' (Dynamic Tailwater)
 ↑ **2=Culvert** (Passes 0.00 cfs of 5.98 cfs potential flow)
 ↑ **3=Orifice/Grate** (Controls 0.00 cfs)

Pond 10P: SW Planter #1

Hydrograph



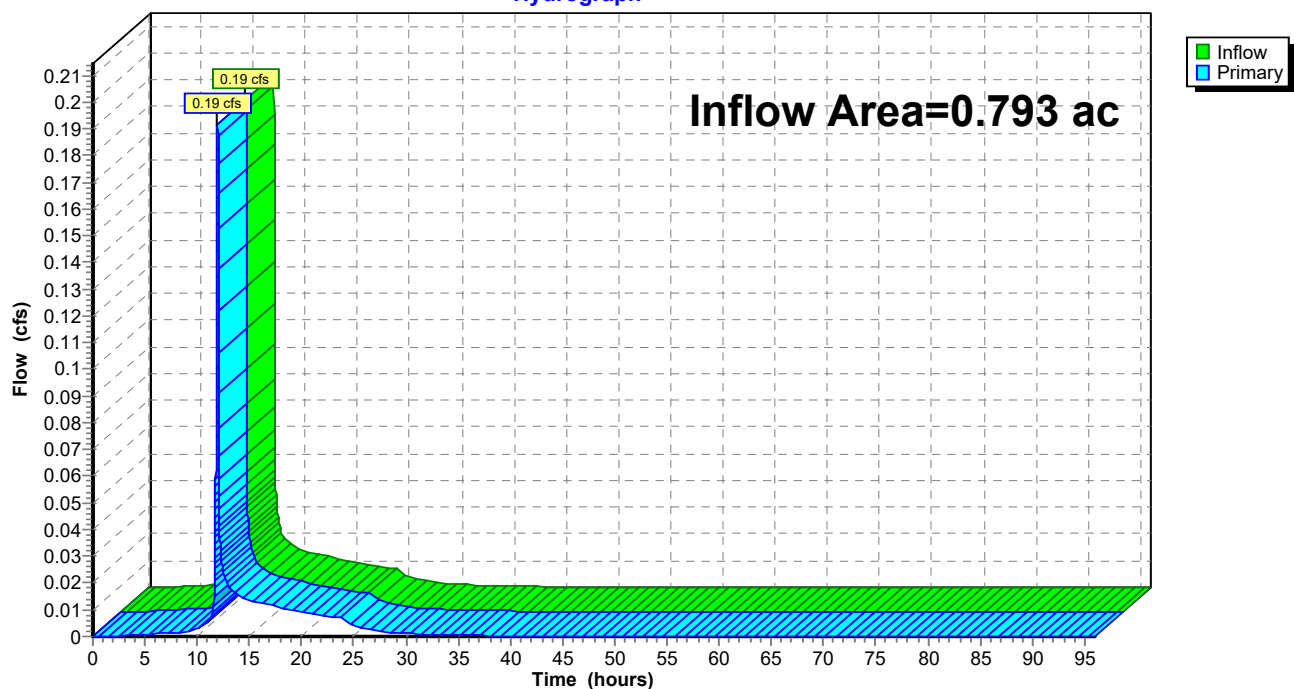
Summary for Link 2L: TOTAL POST (ON-SITE)

Inflow Area = 0.793 ac, 51.70% Impervious, Inflow Depth = 0.29" for 1-YR event
Inflow = 0.19 cfs @ 11.96 hrs, Volume= 0.019 af
Primary = 0.19 cfs @ 11.97 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 2L: TOTAL POST (ON-SITE)

Hydrograph



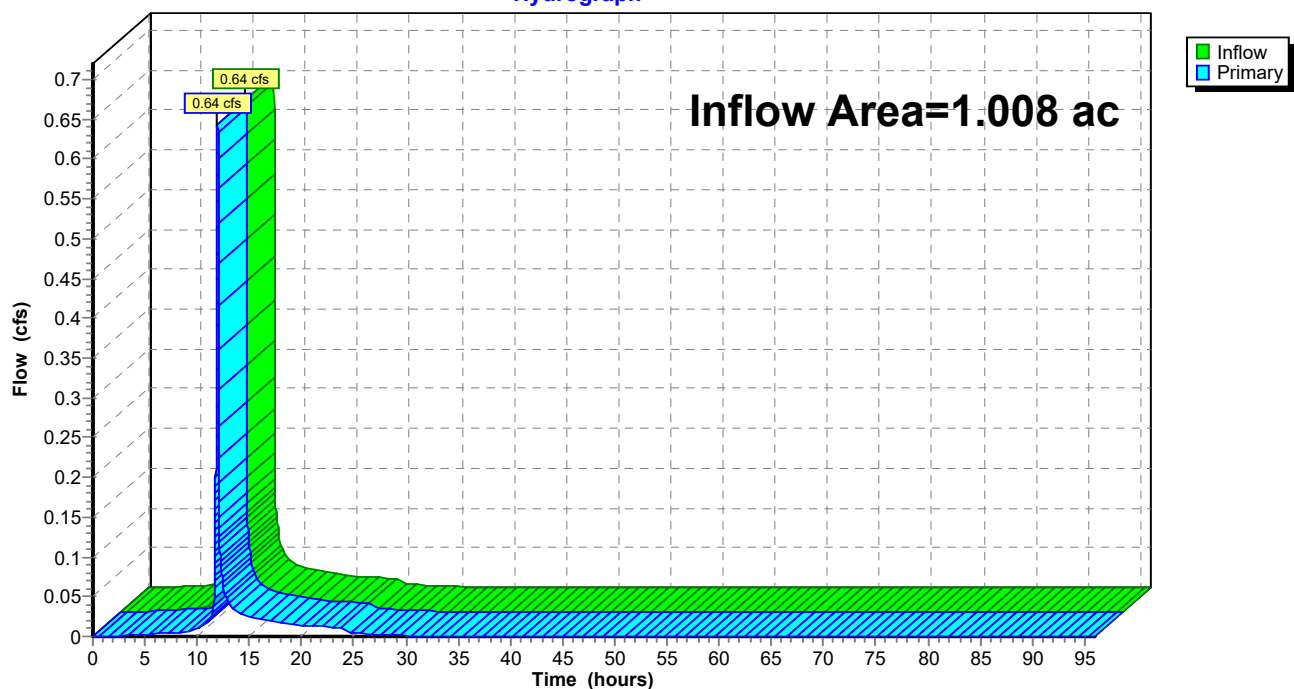
Summary for Link 4L: TOTAL POST

Inflow Area = 1.008 ac, 49.70% Impervious, Inflow Depth = 0.49" for 1-YR event
Inflow = 0.64 cfs @ 11.96 hrs, Volume= 0.042 af
Primary = 0.64 cfs @ 11.97 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 4L: TOTAL POST

Hydrograph



20483-hydro

Type II 24-hr 2-YR Rainfall=2.62"

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Summary for Subcatchment 2S: POST- SW Planter

Runoff = 1.47 cfs @ 11.96 hrs, Volume= 0.076 af, Depth= 2.24"

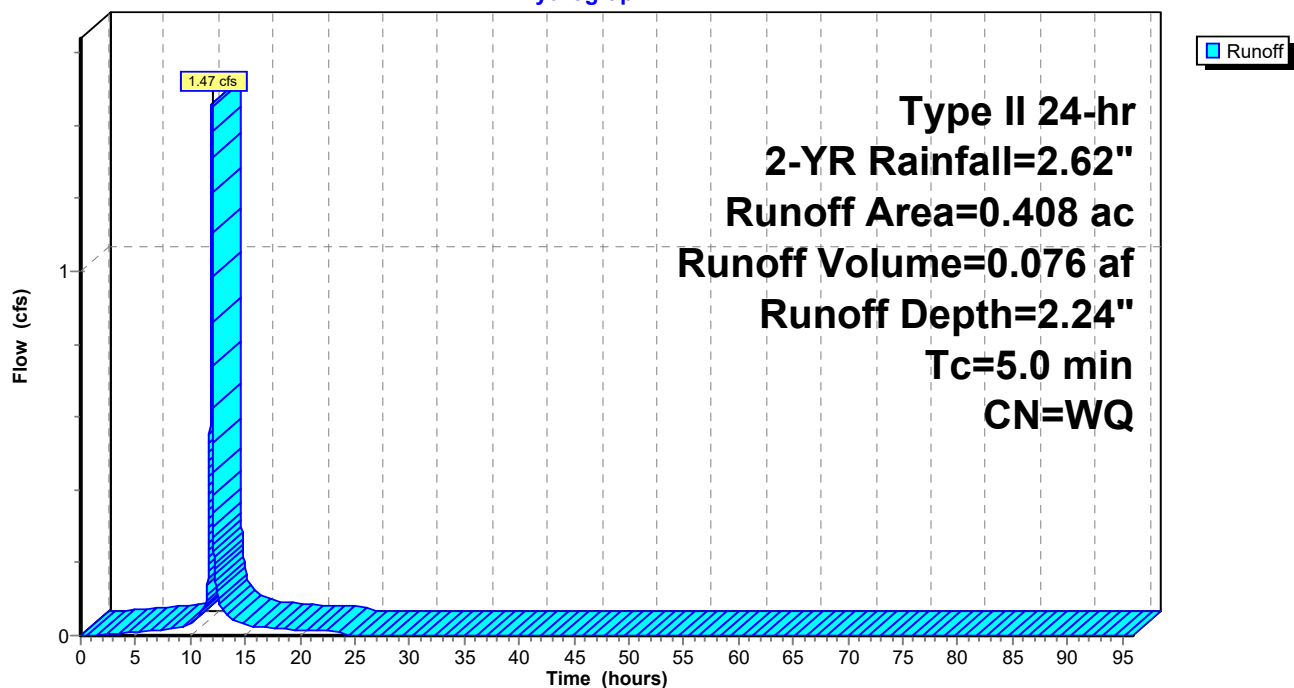
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=2.62"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.362 | 98 | Building |
| * 0.004 | 98 | Planter Ret Wall |
| 0.042 | 80 | >75% Grass cover, Good, HSG D |
| 0.408 | | Weighted Average |
| 0.042 | | 10.29% Pervious Area |
| 0.366 | | 89.71% Impervious Area |

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

Subcatchment 2S: POST- SW Planter

Hydrograph



20483-hydro

Type II 24-hr 2-YR Rainfall=2.62"

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Summary for Subcatchment 3S: POST-Direct To Tank

Runoff = 0.28 cfs @ 11.99 hrs, Volume= 0.014 af, Depth= 0.59"

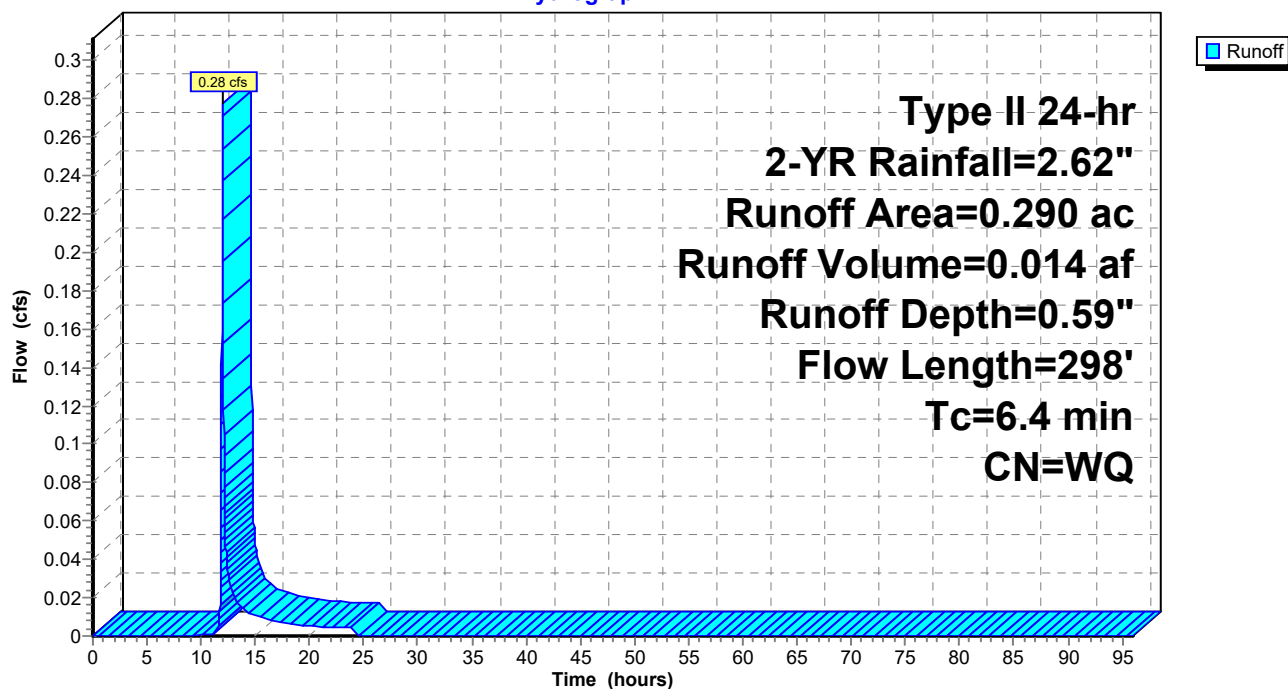
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=2.62"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.006 | 98 | Ret Wall |
| 0.211 | 70 | Woods, Good, HSG C |
| 0.073 | 74 | >75% Grass cover, Good, HSG C |
| 0.290 | | Weighted Average |
| 0.284 | | 97.93% Pervious Area |
| 0.006 | | 2.07% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|---|
| 5.7 | 60 | 0.2500 | 0.17 | | Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 2.62" |
| 0.2 | 25 | 0.0200 | 2.28 | | Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps |
| 0.5 | 213 | 0.0250 | 7.17 | 5.63 | Pipe Channel, CD 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 6.4 | 298 | Total | | | |

Subcatchment 3S: POST-Direct To Tank

Hydrograph



20483-hydro

Type II 24-hr 2-YR Rainfall=2.62"

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Summary for Subcatchment 4S: POST Bypass (ON-SITE)

Runoff = 0.24 cfs @ 11.96 hrs, Volume= 0.012 af, Depth= 1.50"

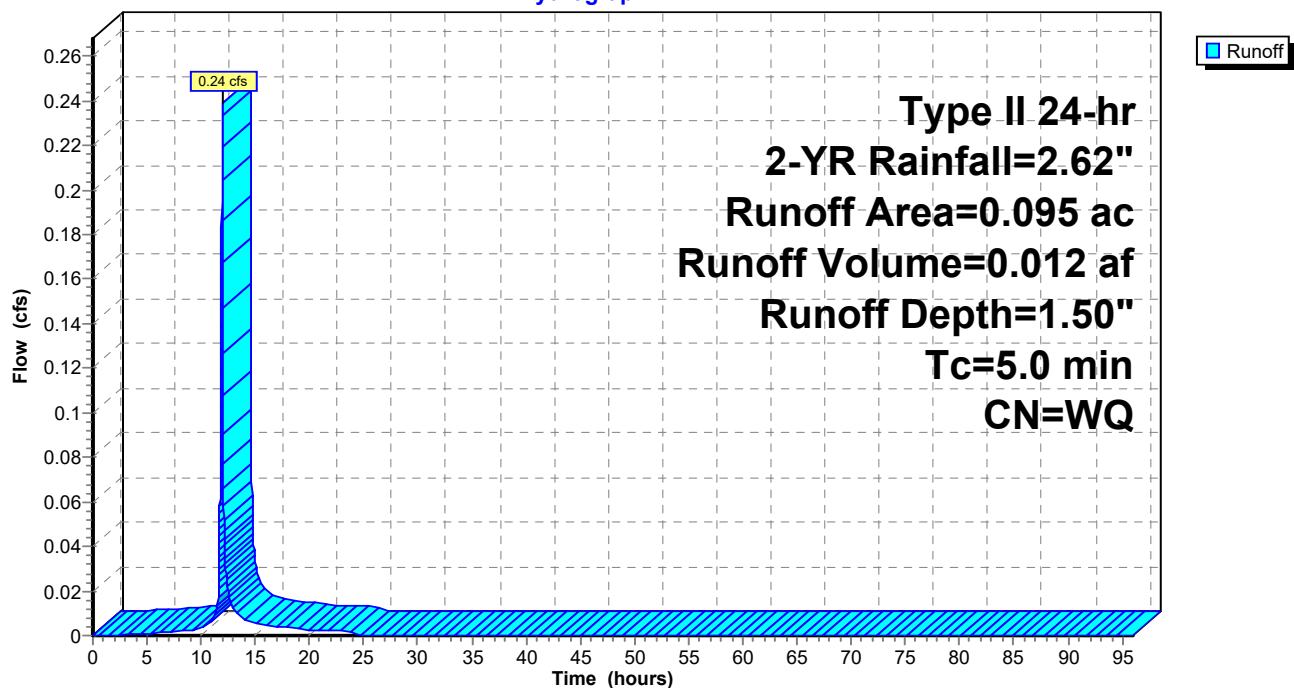
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=2.62"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.038 | 98 | Sidewalks/Driveway |
| 0.013 | 74 | >75% Grass cover, Good, HSG C |
| 0.044 | 80 | >75% Grass cover, Good, HSG D |
| 0.095 | | Weighted Average |
| 0.057 | | 60.00% Pervious Area |
| 0.038 | | 40.00% Impervious Area |

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

Subcatchment 4S: POST Bypass (ON-SITE)

Hydrograph



20483-hydro

Type II 24-hr 2-YR Rainfall=2.62"

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Summary for Subcatchment 6S: POST-DEV (OFFSITE)

Runoff = 0.57 cfs @ 11.96 hrs, Volume= 0.028 af, Depth= 1.57"

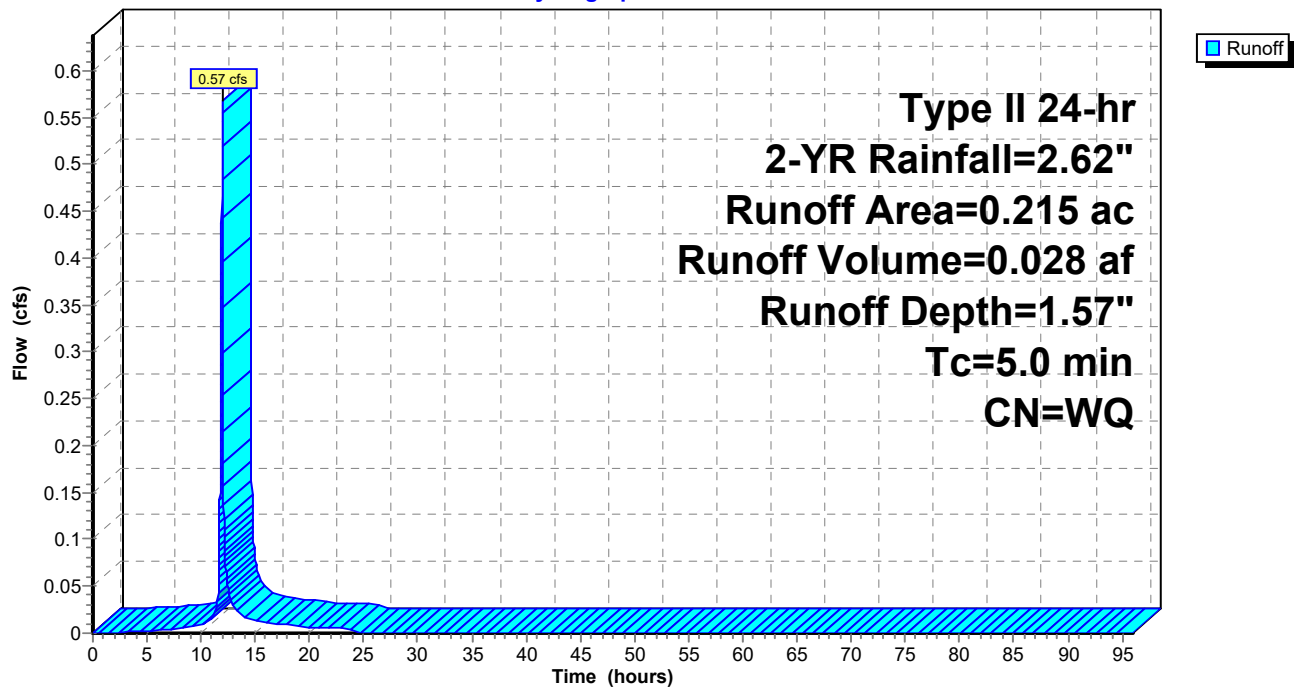
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=2.62"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.091 | 98 | Sidewalks/Driveways |
| 0.124 | 80 | >75% Grass cover, Good, HSG D |
| 0.215 | | Weighted Average |
| 0.124 | | 57.67% Pervious Area |
| 0.091 | | 42.33% Impervious Area |

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

Subcatchment 6S: POST-DEV (OFFSITE)

Hydrograph



Summary for Pond 1P: 45,000 GAL Tank

Inflow Area = 0.698 ac, 53.30% Impervious, Inflow Depth = 0.36" for 2-YR event
 Inflow = 0.28 cfs @ 11.99 hrs, Volume= 0.021 af
 Outflow = 0.02 cfs @ 15.82 hrs, Volume= 0.021 af, Atten= 94%, Lag= 229.6 min
 Primary = 0.02 cfs @ 15.82 hrs, Volume= 0.021 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 162.45' @ 15.82 hrs Surf.Area= 1,110 sf Storage= 501 cf

Plug-Flow detention time= 426.3 min calculated for 0.021 af (100% of inflow)
 Center-of-Mass det. time= 424.2 min (1,289.8 - 865.6)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|---------|---------------|---|
| #1 | 162.00' | 5,828 cf | 18.50'W x 60.00'L x 5.25'H Prismatic |

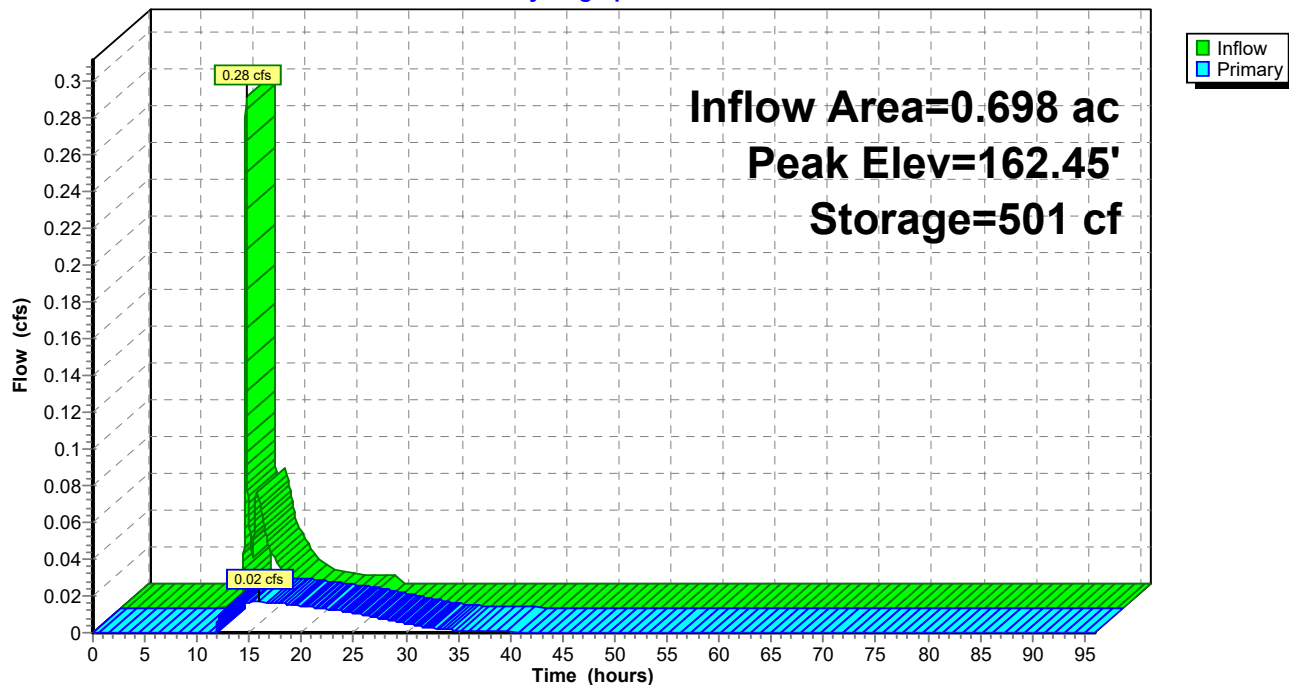
| Device | Routing | Invert | Outlet Devices |
|--------|----------|---------|--|
| #1 | Primary | 162.00' | 12.0" Round Culvert L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.90' S= 0.0167 ' / Cc= 0.900 n= 0.012, Flow Area= 0.79 sf |
| #2 | Device 1 | 162.00' | 1.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads |
| #3 | Device 1 | 163.75' | 3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads |
| #4 | Device 1 | 166.90' | 8.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads |

Primary OutFlow Max=0.02 cfs @ 15.82 hrs HW=162.45' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 0.02 cfs of 0.66 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.02 cfs @ 3.08 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Orifice/Grate (Controls 0.00 cfs)

Pond 1P: 45,000 GAL Tank

Hydrograph



Summary for Pond 10P: SW Planter #1

Inflow Area = 0.408 ac, 89.71% Impervious, Inflow Depth = 2.24" for 2-YR event
 Inflow = 1.47 cfs @ 11.96 hrs, Volume= 0.076 af
 Outflow = 0.06 cfs @ 13.07 hrs, Volume= 0.078 af, Atten= 96%, Lag= 66.7 min
 Discarded = 0.02 cfs @ 1.47 hrs, Volume= 0.072 af
 Primary = 0.04 cfs @ 13.07 hrs, Volume= 0.006 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 168.02' @ 13.07 hrs Surf.Area= 1,822 sf Storage= 1,863 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 725.9 min (1,486.1 - 760.2)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|---------|---------------|--|
| #1 | 167.00' | 2,733 cf | Custom Stage Data (Prismatic) Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 167.00 | 1,822 | 0 | 0 |
| 168.00 | 1,822 | 1,822 | 1,822 |
| 168.50 | 1,822 | 911 | 2,733 |

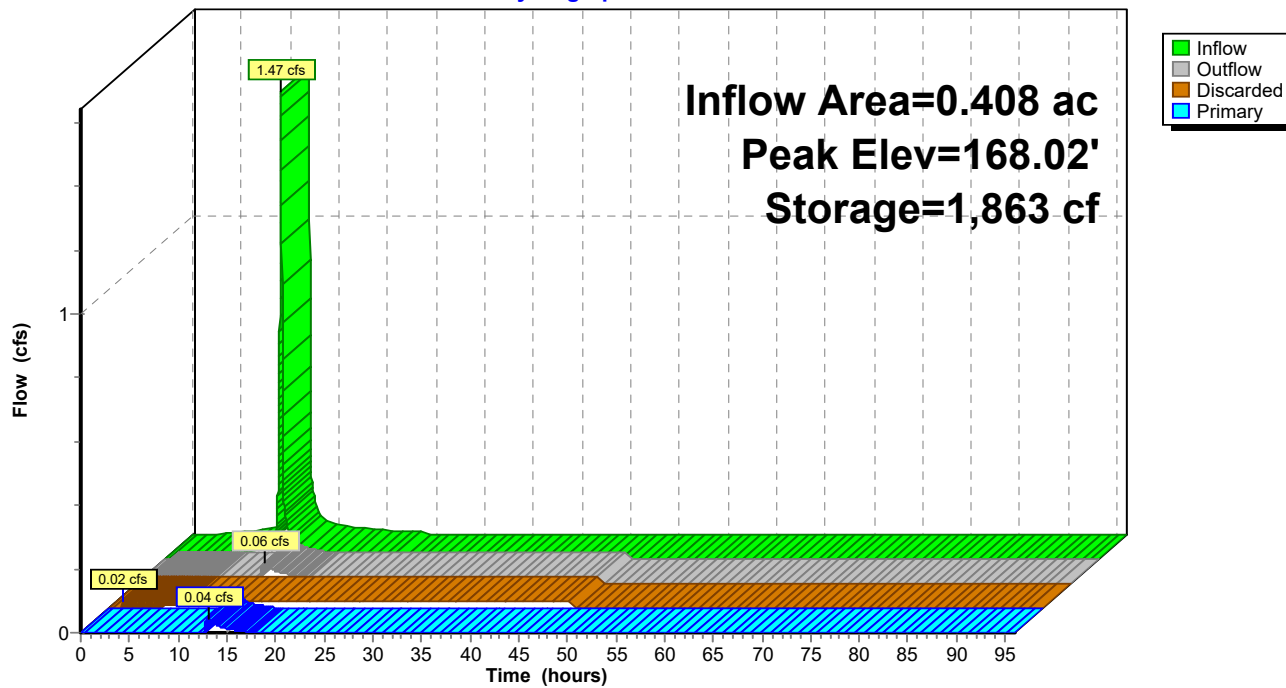
| Device | Routing | Invert | Outlet Devices |
|--------|-----------|---------|--|
| #1 | Discarded | 167.00' | 0.02 cfs Exfiltration at all elevations |
| #2 | Primary | 164.00' | 12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.00' / 162.00' S= 0.0667 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #3 | Device 2 | 168.00' | 15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads |

Discarded OutFlow Max=0.02 cfs @ 1.47 hrs HW=167.00' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.04 cfs @ 13.07 hrs HW=168.02' TW=162.29' (Dynamic Tailwater)
 ↑ **2=Culvert** (Passes 0.04 cfs of 7.10 cfs potential flow)
 ↑ **3=Orifice/Grate** (Weir Controls 0.04 cfs @ 0.49 fps)

Pond 10P: SW Planter #1

Hydrograph



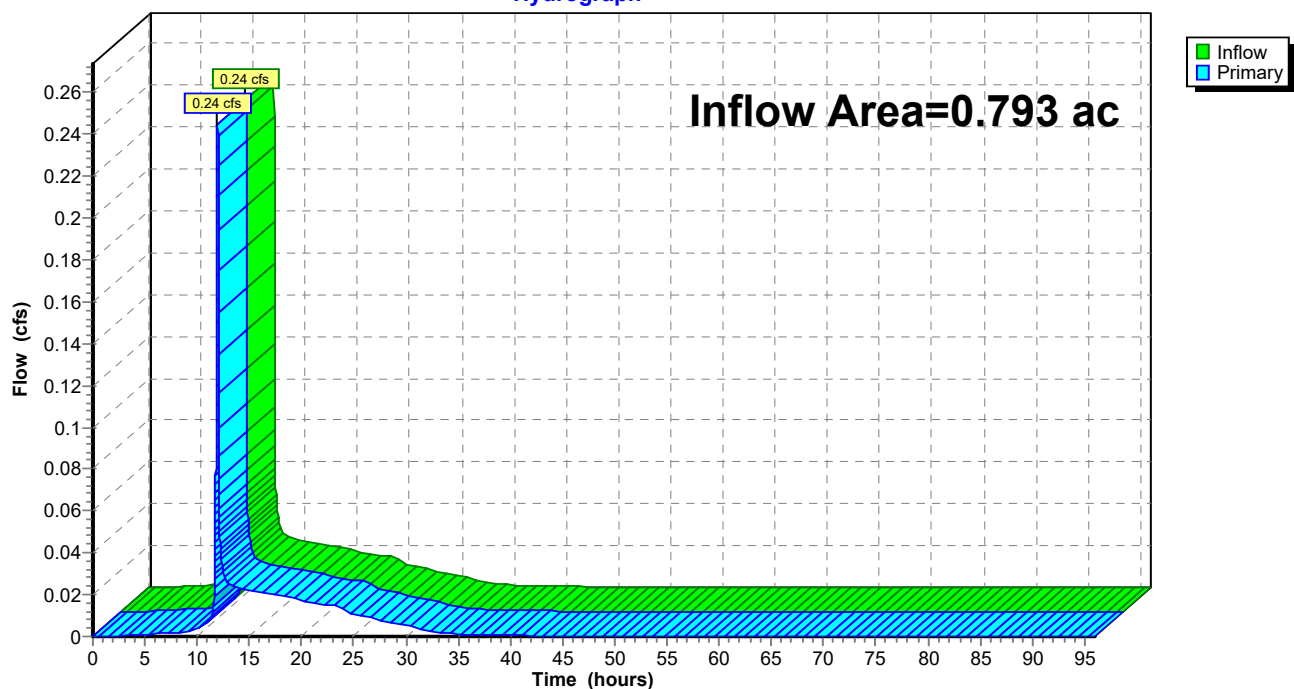
Summary for Link 2L: TOTAL POST (ON-SITE)

Inflow Area = 0.793 ac, 51.70% Impervious, Inflow Depth = 0.49" for 2-YR event
Inflow = 0.24 cfs @ 11.96 hrs, Volume= 0.033 af
Primary = 0.24 cfs @ 11.97 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 2L: TOTAL POST (ON-SITE)

Hydrograph

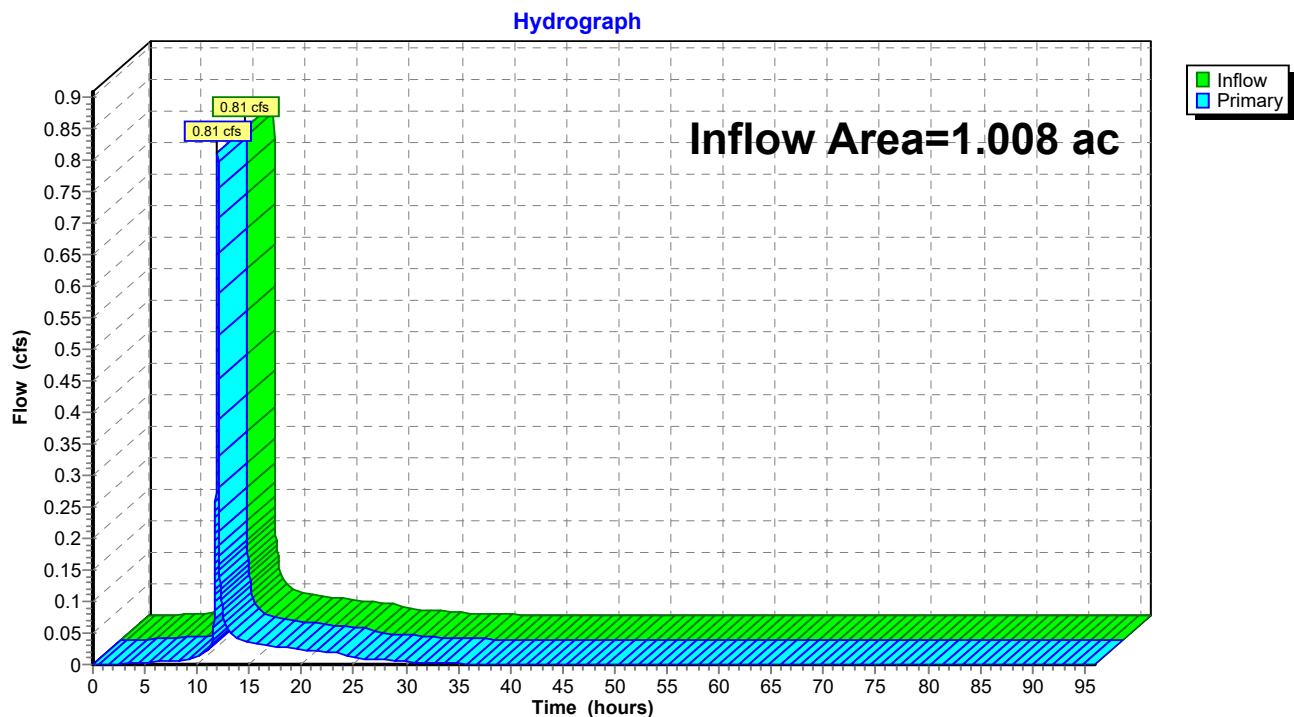


Summary for Link 4L: TOTAL POST

Inflow Area = 1.008 ac, 49.70% Impervious, Inflow Depth = 0.72" for 2-YR event
Inflow = 0.81 cfs @ 11.96 hrs, Volume= 0.061 af
Primary = 0.81 cfs @ 11.97 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 4L: TOTAL POST



20483-hydro

Type II 24-hr 10-YR Rainfall=4.15"

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Summary for Subcatchment 2S: POST- SW Planter

Runoff = 2.39 cfs @ 11.96 hrs, Volume= 0.127 af, Depth= 3.73"

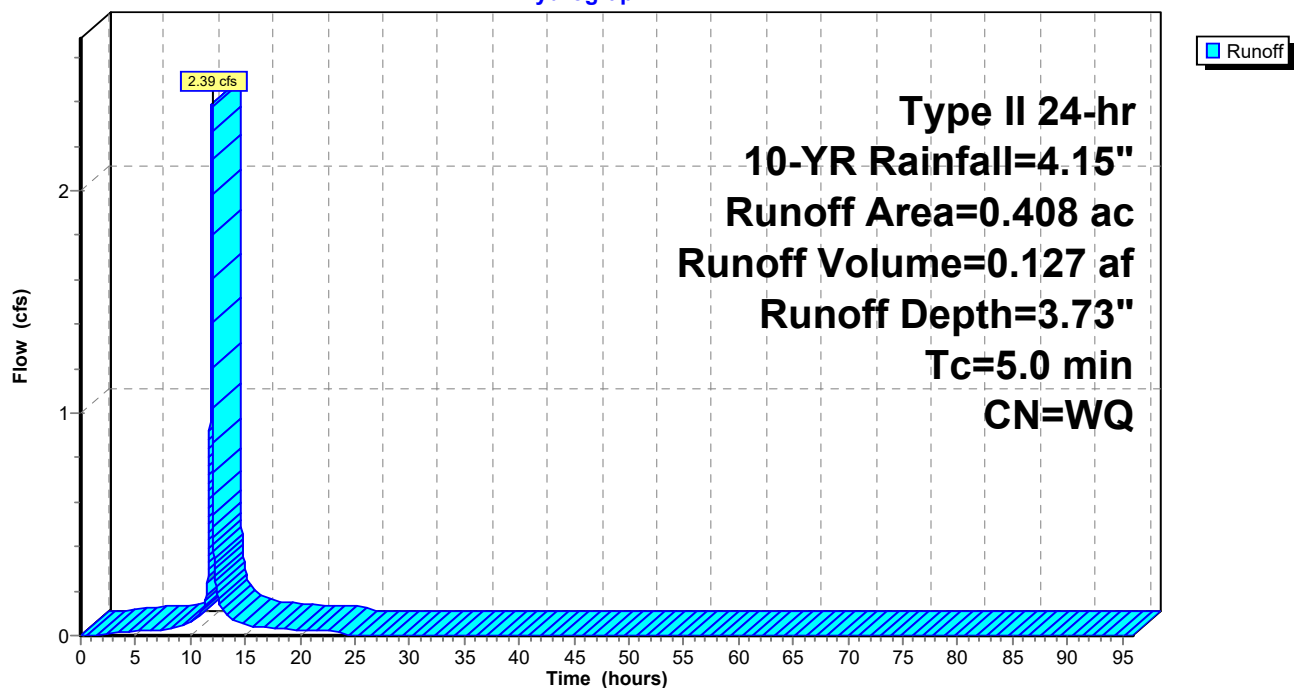
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.15"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.362 | 98 | Building |
| * 0.004 | 98 | Planter Ret Wall |
| 0.042 | 80 | >75% Grass cover, Good, HSG D |
| 0.408 | | Weighted Average |
| 0.042 | | 10.29% Pervious Area |
| 0.366 | | 89.71% Impervious Area |

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

Subcatchment 2S: POST- SW Planter

Hydrograph



Summary for Subcatchment 3S: POST-Direct To Tank

Runoff = 0.78 cfs @ 11.98 hrs, Volume= 0.038 af, Depth= 1.55"

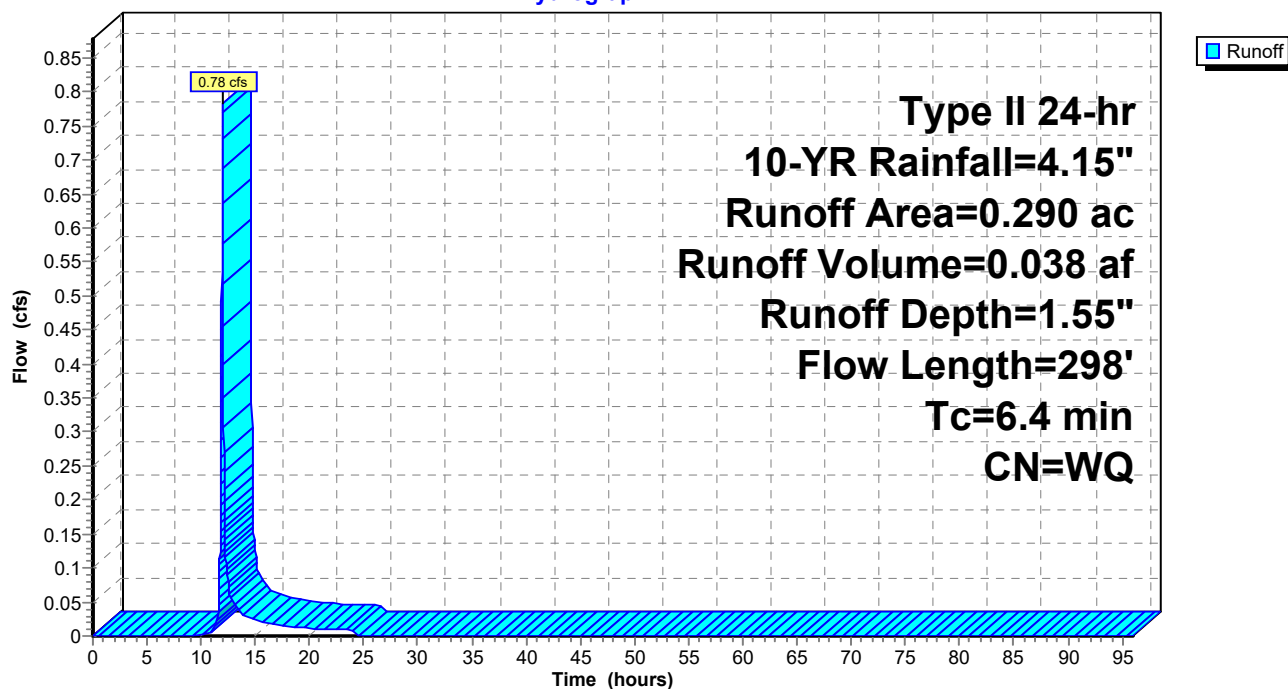
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.15"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.006 | 98 | Ret Wall |
| 0.211 | 70 | Woods, Good, HSG C |
| 0.073 | 74 | >75% Grass cover, Good, HSG C |
| 0.290 | | Weighted Average |
| 0.284 | | 97.93% Pervious Area |
| 0.006 | | 2.07% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|---|
| 5.7 | 60 | 0.2500 | 0.17 | | Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 2.62" |
| 0.2 | 25 | 0.0200 | 2.28 | | Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps |
| 0.5 | 213 | 0.0250 | 7.17 | 5.63 | Pipe Channel, CD 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 6.4 | 298 | Total | | | |

Subcatchment 3S: POST-Direct To Tank

Hydrograph



20483-hydro

Type II 24-hr 10-YR Rainfall=4.15"

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Summary for Subcatchment 4S: POST Bypass (ON-SITE)

Runoff = 0.45 cfs @ 11.96 hrs, Volume= 0.022 af, Depth= 2.80"

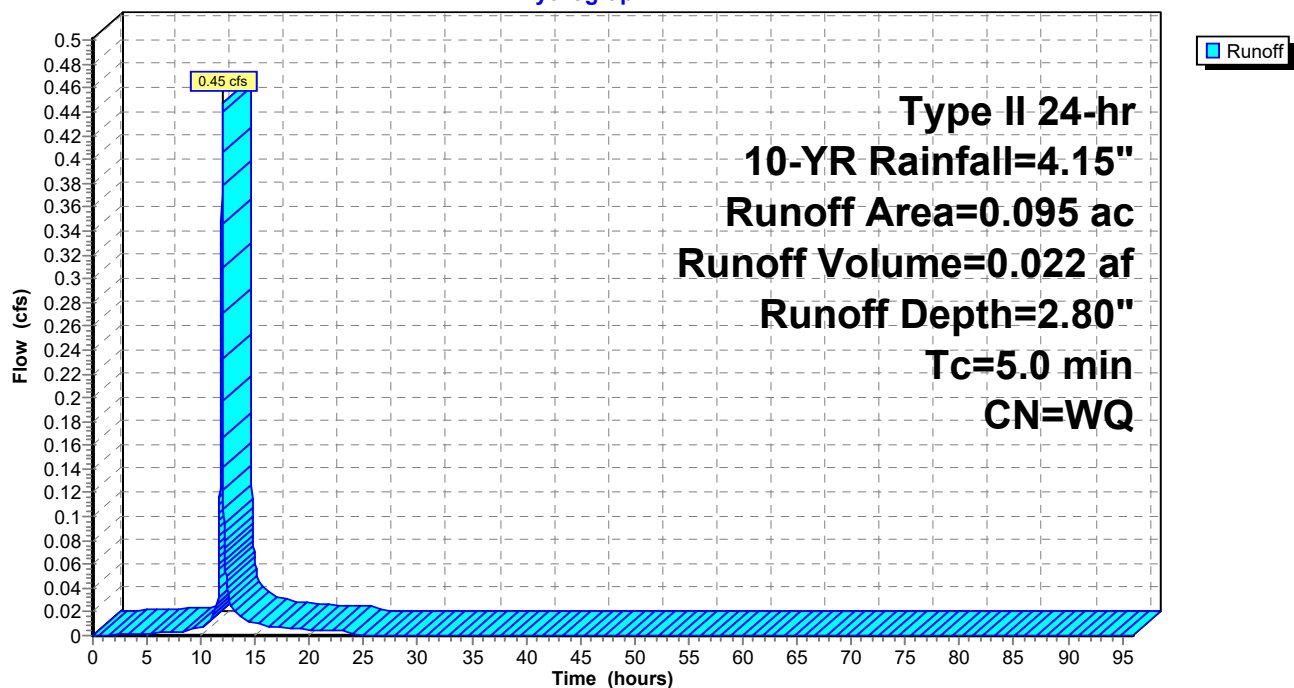
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.15"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.038 | 98 | Sidewalks/Driveway |
| 0.013 | 74 | >75% Grass cover, Good, HSG C |
| 0.044 | 80 | >75% Grass cover, Good, HSG D |
| 0.095 | | Weighted Average |
| 0.057 | | 60.00% Pervious Area |
| 0.038 | | 40.00% Impervious Area |

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

Subcatchment 4S: POST Bypass (ON-SITE)

Hydrograph



20483-hydro

Type II 24-hr 10-YR Rainfall=4.15"

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Summary for Subcatchment 6S: POST-DEV (OFFSITE)

Runoff = 1.05 cfs @ 11.96 hrs, Volume= 0.052 af, Depth= 2.91"

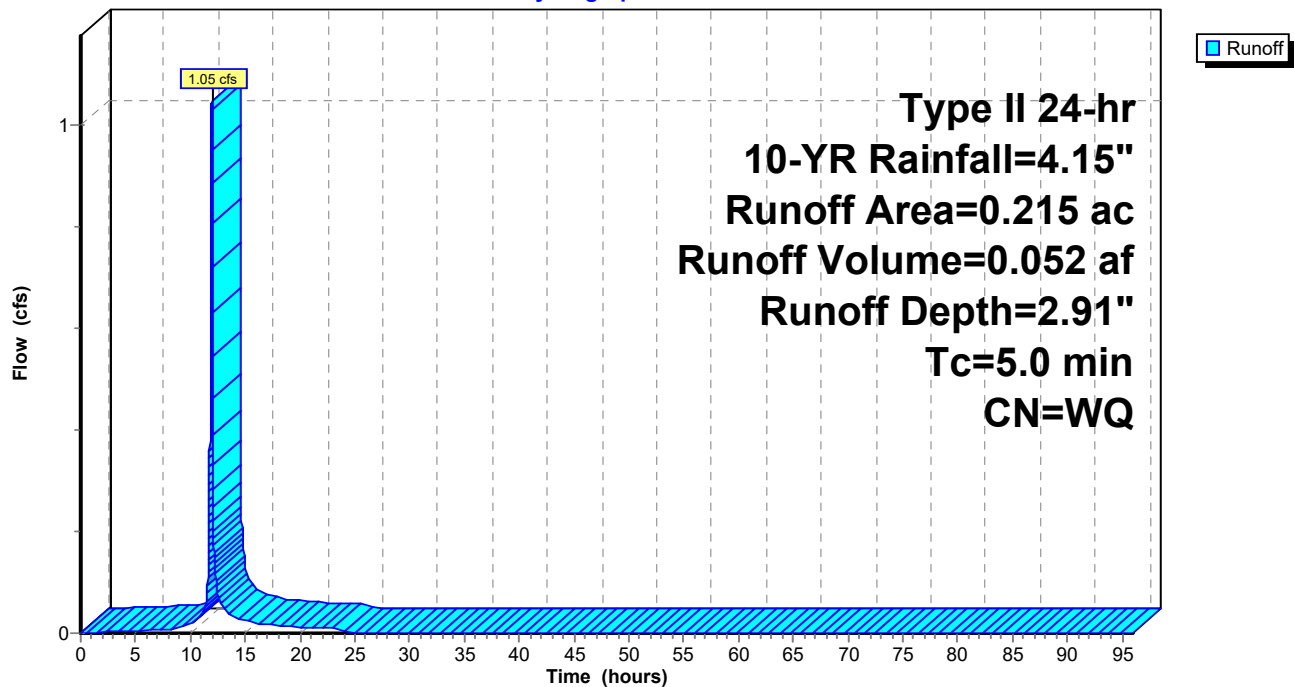
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-YR Rainfall=4.15"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.091 | 98 | Sidewalks/Driveways |
| 0.124 | 80 | >75% Grass cover, Good, HSG D |
| 0.215 | | Weighted Average |
| 0.124 | | 57.67% Pervious Area |
| 0.091 | | 42.33% Impervious Area |

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

Subcatchment 6S: POST-DEV (OFFSITE)

Hydrograph



Summary for Pond 1P: 45,000 GAL Tank

Inflow Area = 0.698 ac, 53.30% Impervious, Inflow Depth = 1.51" for 10-YR event
 Inflow = 2.33 cfs @ 12.01 hrs, Volume= 0.088 af
 Outflow = 0.12 cfs @ 13.24 hrs, Volume= 0.088 af, Atten= 95%, Lag= 73.8 min
 Primary = 0.12 cfs @ 13.24 hrs, Volume= 0.088 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 164.01' @ 13.24 hrs Surf.Area= 1,110 sf Storage= 2,234 cf

Plug-Flow detention time= 607.0 min calculated for 0.088 af (100% of inflow)
 Center-of-Mass det. time= 606.5 min (1,418.7 - 812.3)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|---------|---------------|---|
| #1 | 162.00' | 5,828 cf | 18.50'W x 60.00'L x 5.25'H Prismatic |

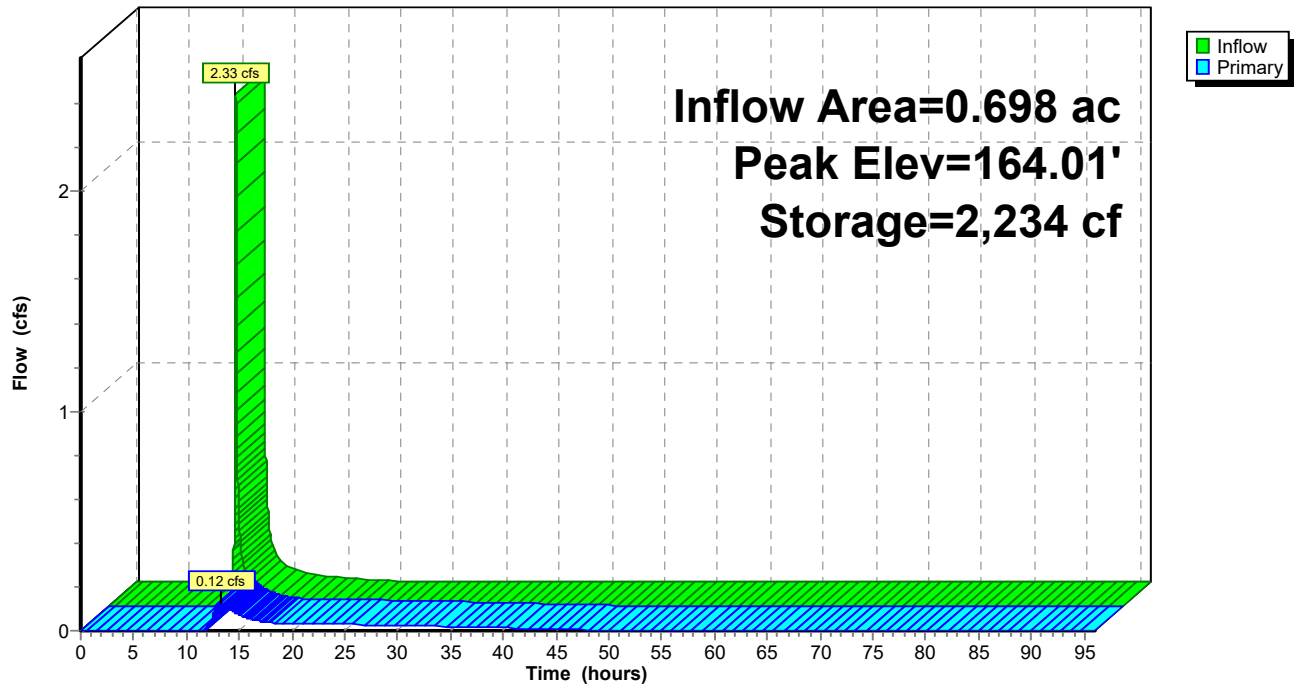
| Device | Routing | Invert | Outlet Devices |
|--------|----------|---------|--|
| #1 | Primary | 162.00' | 12.0" Round Culvert L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.90' S= 0.0167 ' / Cc= 0.900 n= 0.012, Flow Area= 0.79 sf |
| #2 | Device 1 | 162.00' | 1.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads |
| #3 | Device 1 | 163.75' | 3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads |
| #4 | Device 1 | 166.90' | 8.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads |

Primary OutFlow Max=0.12 cfs @ 13.24 hrs HW=164.01' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 0.12 cfs of 4.65 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.04 cfs @ 6.76 fps)
 3=Orifice/Grate (Orifice Controls 0.09 cfs @ 1.79 fps)
 4=Orifice/Grate (Controls 0.00 cfs)

Pond 1P: 45,000 GAL Tank

Hydrograph



Summary for Pond 10P: SW Planter #1

Inflow Area = 0.408 ac, 89.71% Impervious, Inflow Depth = 3.73" for 10-YR event
 Inflow = 2.39 cfs @ 11.96 hrs, Volume= 0.127 af
 Outflow = 1.65 cfs @ 12.02 hrs, Volume= 0.128 af, Atten= 31%, Lag= 4.0 min
 Discarded = 0.02 cfs @ 0.95 hrs, Volume= 0.078 af
 Primary = 1.63 cfs @ 12.02 hrs, Volume= 0.050 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 168.25' @ 12.02 hrs Surf.Area= 1,822 sf Storage= 2,283 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 499.0 min (1,250.1 - 751.1)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|---------|---------------|--|
| #1 | 167.00' | 2,733 cf | Custom Stage Data (Prismatic) Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 167.00 | 1,822 | 0 | 0 |
| 168.00 | 1,822 | 1,822 | 1,822 |
| 168.50 | 1,822 | 911 | 2,733 |

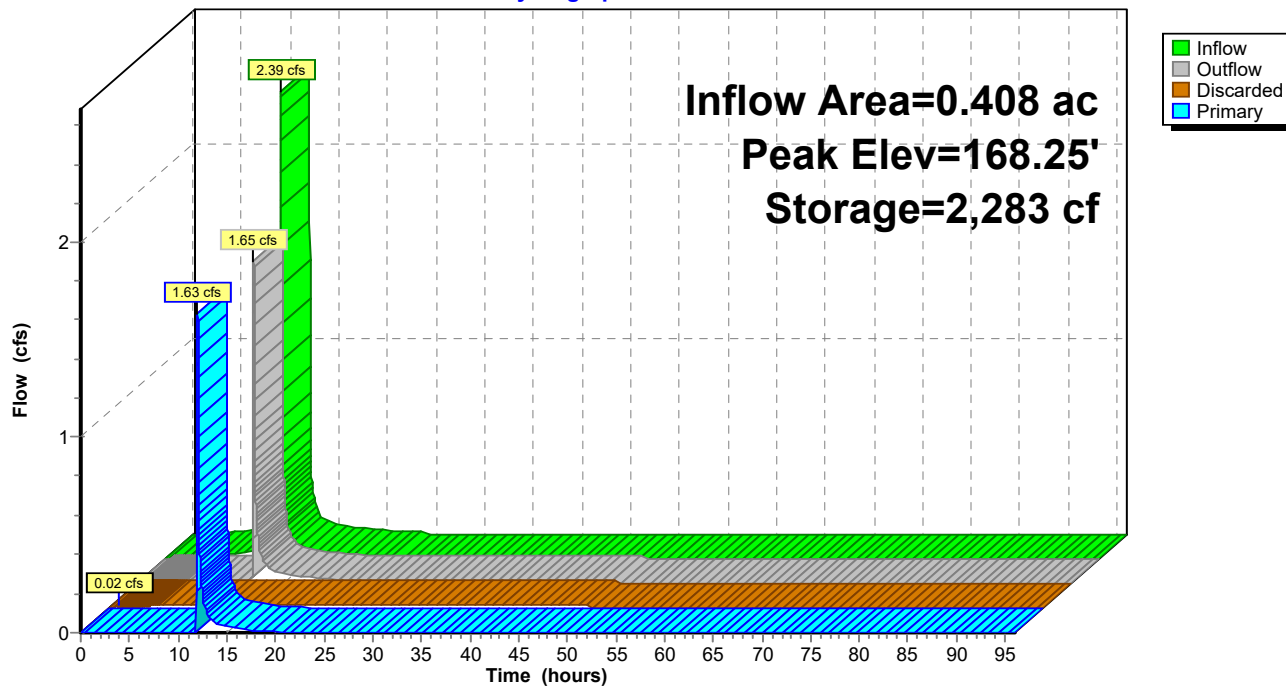
| Device | Routing | Invert | Outlet Devices |
|--------|-----------|---------|--|
| #1 | Discarded | 167.00' | 0.02 cfs Exfiltration at all elevations |
| #2 | Primary | 164.00' | 12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.00' / 162.00' S= 0.0667 ' S= 0.0667 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #3 | Device 2 | 168.00' | 15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads |

Discarded OutFlow Max=0.02 cfs @ 0.95 hrs HW=167.00' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=1.63 cfs @ 12.02 hrs HW=168.25' TW=162.75' (Dynamic Tailwater)
 ↑ **2=Culvert** (Passes 1.63 cfs of 7.33 cfs potential flow)
 ↑ **3=Orifice/Grate** (Weir Controls 1.63 cfs @ 1.64 fps)

Pond 10P: SW Planter #1

Hydrograph

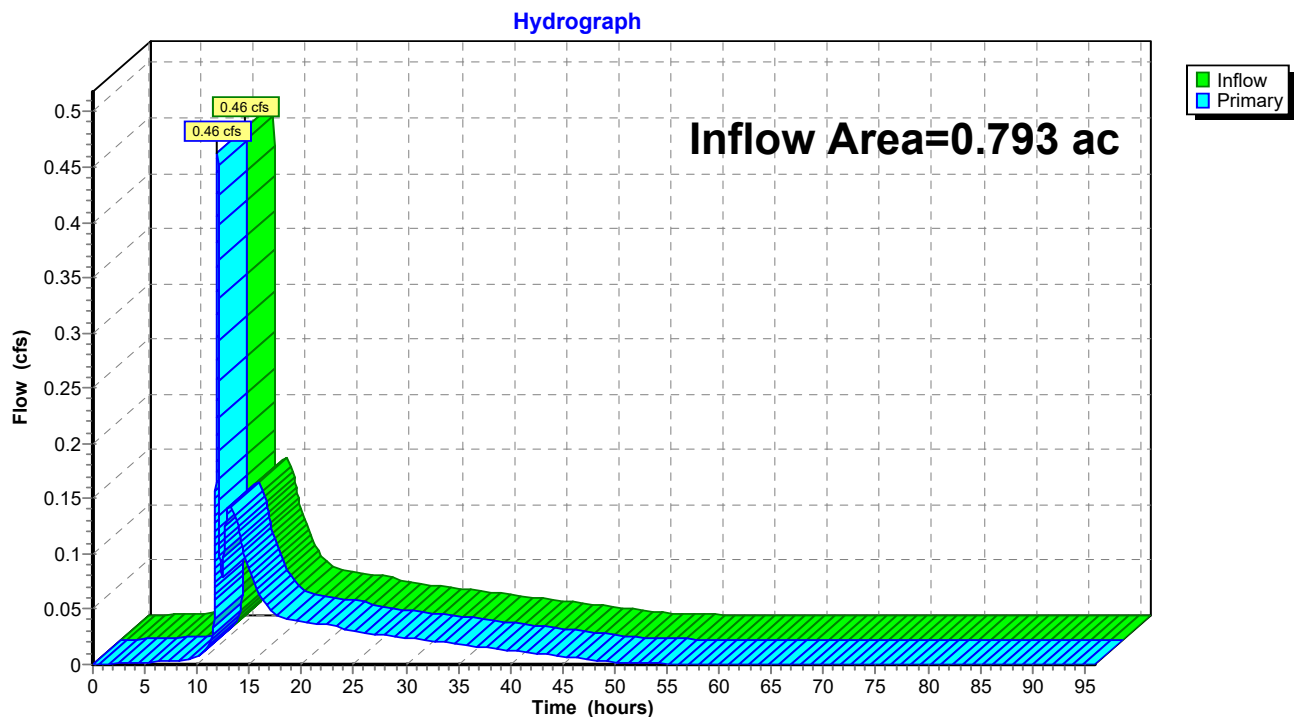


Summary for Link 2L: TOTAL POST (ON-SITE)

Inflow Area = 0.793 ac, 51.70% Impervious, Inflow Depth = 1.66" for 10-YR event
Inflow = 0.46 cfs @ 11.96 hrs, Volume= 0.110 af
Primary = 0.46 cfs @ 11.97 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 2L: TOTAL POST (ON-SITE)

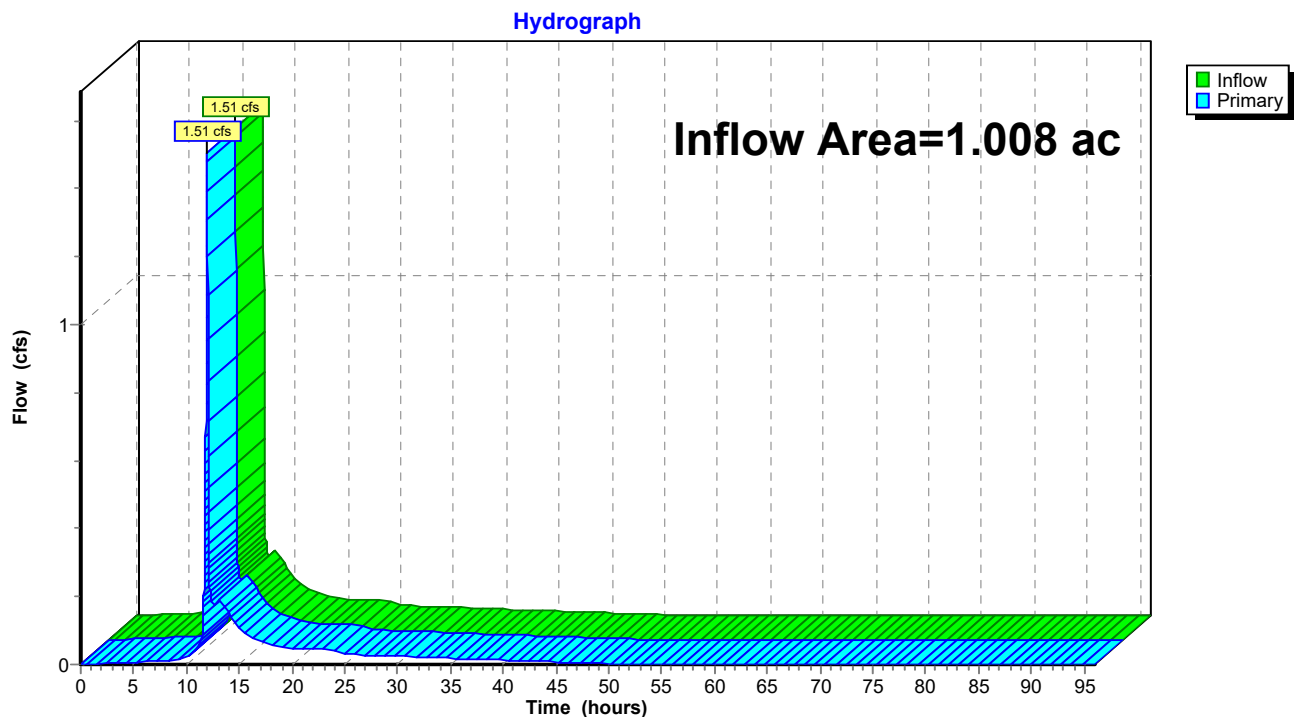


Summary for Link 4L: TOTAL POST

Inflow Area = 1.008 ac, 49.70% Impervious, Inflow Depth = 1.93" for 10-YR event
Inflow = 1.51 cfs @ 11.96 hrs, Volume= 0.162 af
Primary = 1.51 cfs @ 11.97 hrs, Volume= 0.162 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 4L: TOTAL POST



20483-hydro

Type II 24-hr 50-YR Rainfall=5.53"

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Summary for Subcatchment 2S: POST- SW Planter

Runoff = 3.23 cfs @ 11.96 hrs, Volume= 0.173 af, Depth= 5.09"

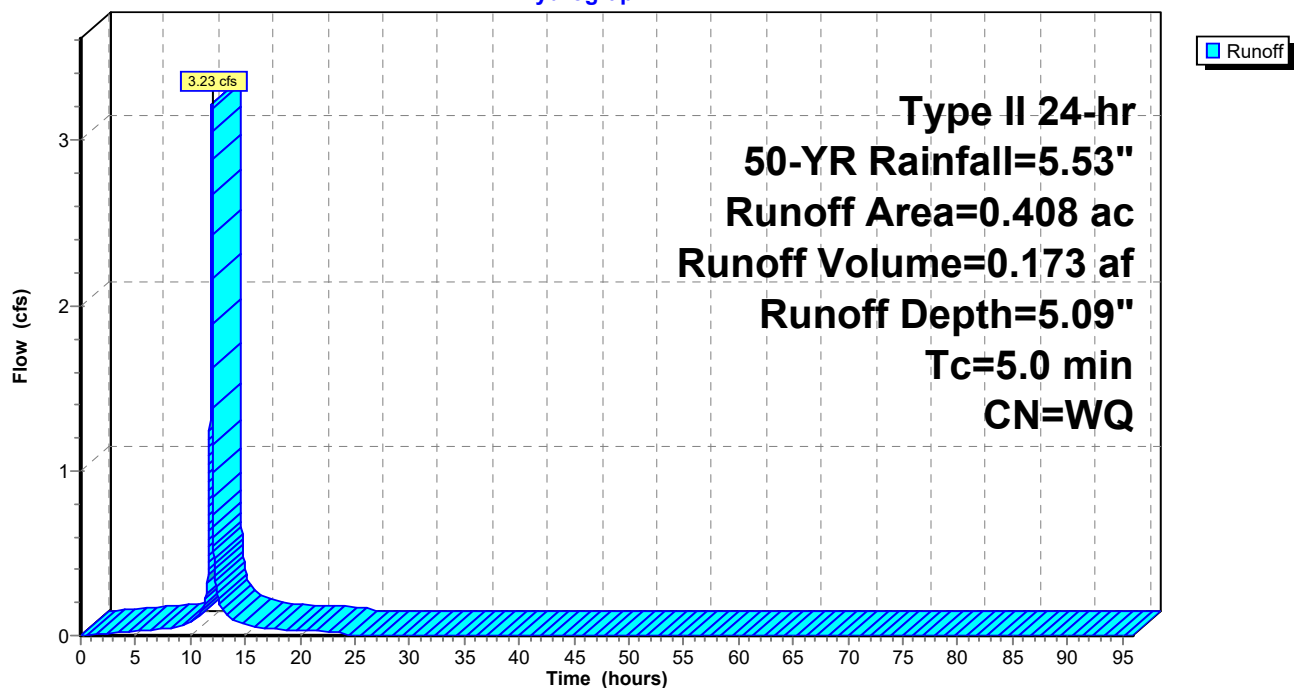
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=5.53"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.362 | 98 | Building |
| * 0.004 | 98 | Planter Ret Wall |
| 0.042 | 80 | >75% Grass cover, Good, HSG D |
| 0.408 | | Weighted Average |
| 0.042 | | 10.29% Pervious Area |
| 0.366 | | 89.71% Impervious Area |

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

Subcatchment 2S: POST- SW Planter

Hydrograph



Summary for Subcatchment 3S: POST-Direct To Tank

Runoff = 1.31 cfs @ 11.98 hrs, Volume= 0.062 af, Depth= 2.59"

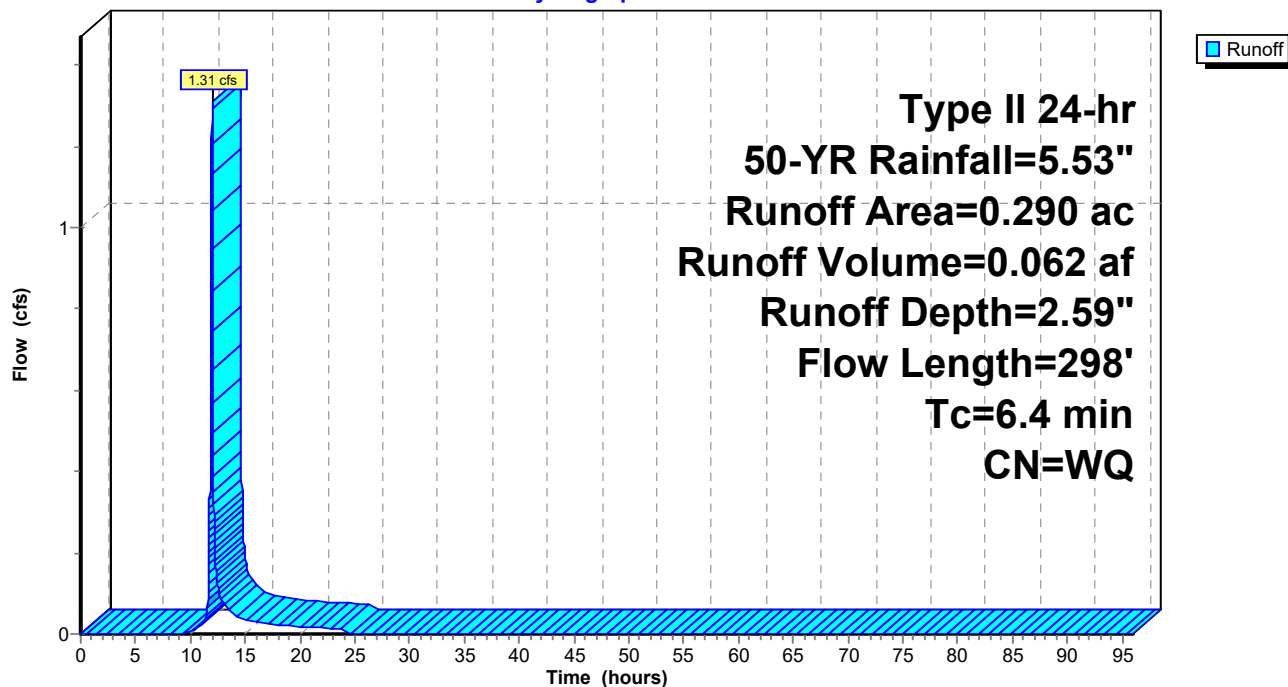
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=5.53"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.006 | 98 | Ret Wall |
| 0.211 | 70 | Woods, Good, HSG C |
| 0.073 | 74 | >75% Grass cover, Good, HSG C |
| 0.290 | | Weighted Average |
| 0.284 | | 97.93% Pervious Area |
| 0.006 | | 2.07% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|---|
| 5.7 | 60 | 0.2500 | 0.17 | | Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 2.62" |
| 0.2 | 25 | 0.0200 | 2.28 | | Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps |
| 0.5 | 213 | 0.0250 | 7.17 | 5.63 | Pipe Channel, CD 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 6.4 | 298 | Total | | | |

Subcatchment 3S: POST-Direct To Tank

Hydrograph



20483-hydro

Type II 24-hr 50-YR Rainfall=5.53"

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Summary for Subcatchment 4S: POST Bypass (ON-SITE)

Runoff = 0.64 cfs @ 11.96 hrs, Volume= 0.032 af, Depth= 4.06"

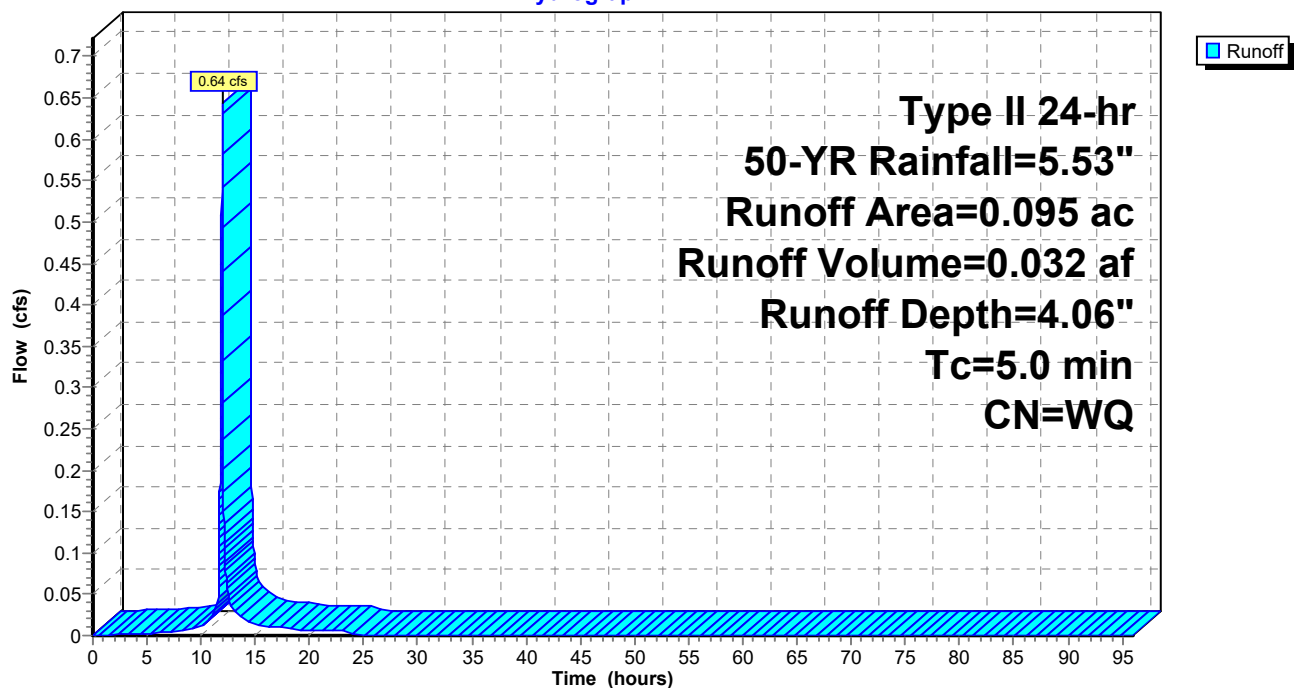
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=5.53"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.038 | 98 | Sidewalks/Driveway |
| 0.013 | 74 | >75% Grass cover, Good, HSG C |
| 0.044 | 80 | >75% Grass cover, Good, HSG D |
| 0.095 | | Weighted Average |
| 0.057 | | 60.00% Pervious Area |
| 0.038 | | 40.00% Impervious Area |

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

Subcatchment 4S: POST Bypass (ON-SITE)

Hydrograph



20483-hydro

Type II 24-hr 50-YR Rainfall=5.53"

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Summary for Subcatchment 6S: POST-DEV (OFFSITE)

Runoff = 1.50 cfs @ 11.96 hrs, Volume= 0.075 af, Depth= 4.18"

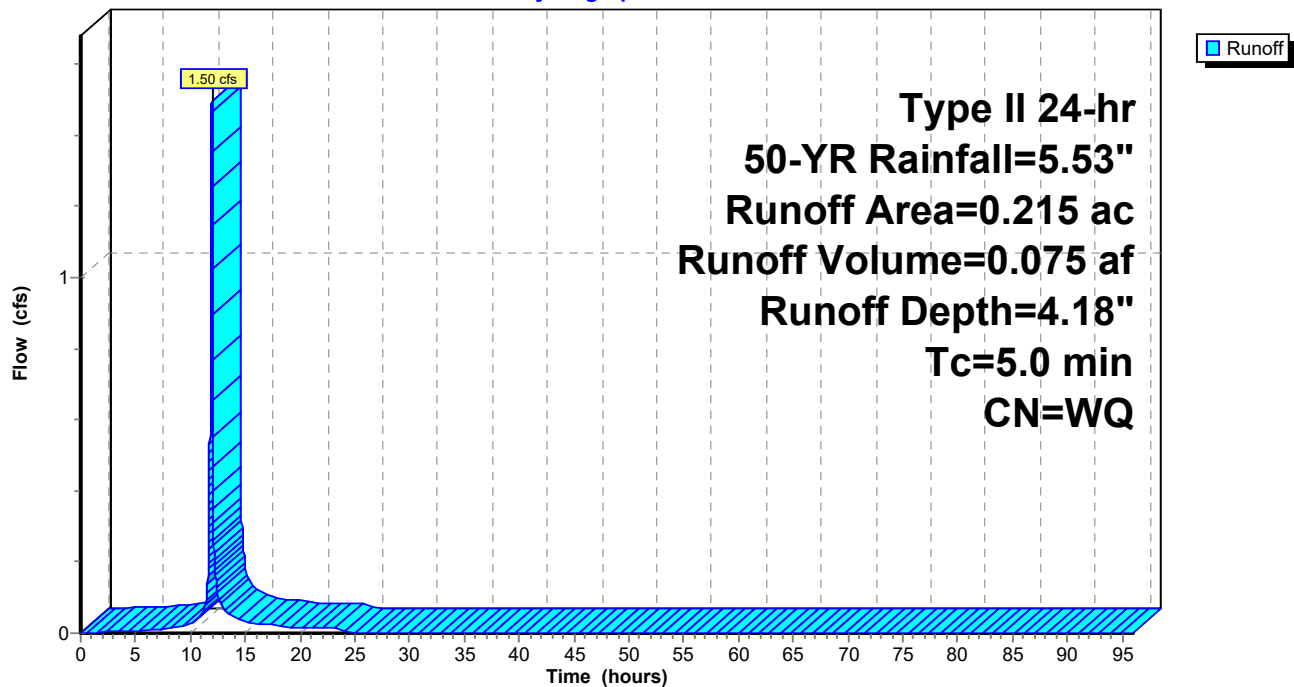
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 50-YR Rainfall=5.53"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.091 | 98 | Sidewalks/Driveways |
| 0.124 | 80 | >75% Grass cover, Good, HSG D |
| 0.215 | | Weighted Average |
| 0.124 | | 57.67% Pervious Area |
| 0.091 | | 42.33% Impervious Area |

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

Subcatchment 6S: POST-DEV (OFFSITE)

Hydrograph



Summary for Pond 1P: 45,000 GAL Tank

Inflow Area = 0.698 ac, 53.30% Impervious, Inflow Depth = 2.70" for 50-YR event
 Inflow = 4.21 cfs @ 11.99 hrs, Volume= 0.157 af
 Outflow = 0.33 cfs @ 12.59 hrs, Volume= 0.157 af, Atten= 92%, Lag= 36.1 min
 Primary = 0.33 cfs @ 12.59 hrs, Volume= 0.157 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 165.26' @ 12.59 hrs Surf.Area= 1,110 sf Storage= 3,620 cf

Plug-Flow detention time= 415.7 min calculated for 0.157 af (100% of inflow)
 Center-of-Mass det. time= 415.2 min (1,222.8 - 807.6)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|---------|---------------|---|
| #1 | 162.00' | 5,828 cf | 18.50'W x 60.00'L x 5.25'H Prismatic |

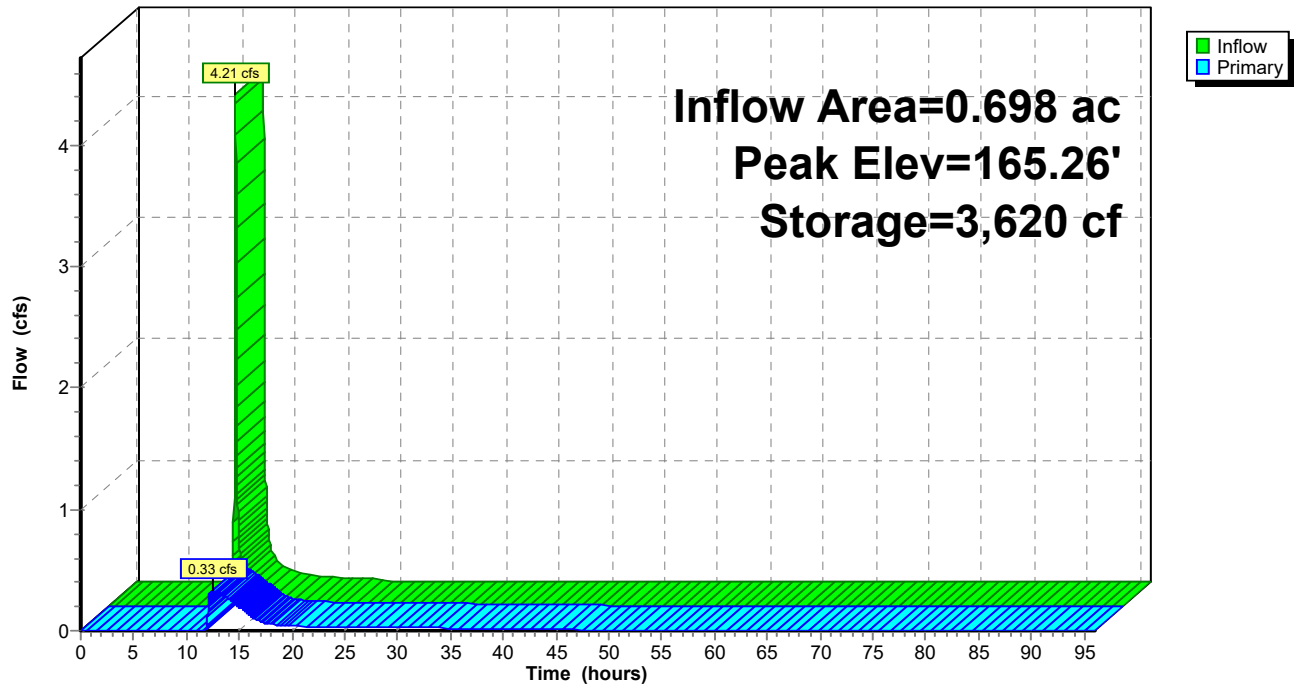
| Device | Routing | Invert | Outlet Devices |
|--------|----------|---------|--|
| #1 | Primary | 162.00' | 12.0" Round Culvert L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.90' S= 0.0167 ' / Cc= 0.900 n= 0.012, Flow Area= 0.79 sf |
| #2 | Device 1 | 162.00' | 1.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads |
| #3 | Device 1 | 163.75' | 3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads |
| #4 | Device 1 | 166.90' | 8.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads |

Primary OutFlow Max=0.33 cfs @ 12.59 hrs HW=165.26' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 0.33 cfs of 6.28 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.05 cfs @ 8.64 fps)
 3=Orifice/Grate (Orifice Controls 0.28 cfs @ 5.67 fps)
 4=Orifice/Grate (Controls 0.00 cfs)

Pond 1P: 45,000 GAL Tank

Hydrograph



Summary for Pond 10P: SW Planter #1

Inflow Area = 0.408 ac, 89.71% Impervious, Inflow Depth = 5.09" for 50-YR event
 Inflow = 3.23 cfs @ 11.96 hrs, Volume= 0.173 af
 Outflow = 2.93 cfs @ 11.99 hrs, Volume= 0.174 af, Atten= 9%, Lag= 2.2 min
 Discarded = 0.02 cfs @ 0.73 hrs, Volume= 0.079 af
 Primary = 2.91 cfs @ 11.99 hrs, Volume= 0.095 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 168.37' @ 11.99 hrs Surf.Area= 1,822 sf Storage= 2,499 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 383.0 min (1,129.2 - 746.2)

| Volume | Invert | Avail.Storage | Storage Description |
|---------------------|----------------------|---------------------------|--|
| #1 | 167.00' | 2,733 cf | Custom Stage Data (Prismatic) Listed below (Recalc) |
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
| 167.00 | 1,822 | 0 | 0 |
| 168.00 | 1,822 | 1,822 | 1,822 |
| 168.50 | 1,822 | 911 | 2,733 |

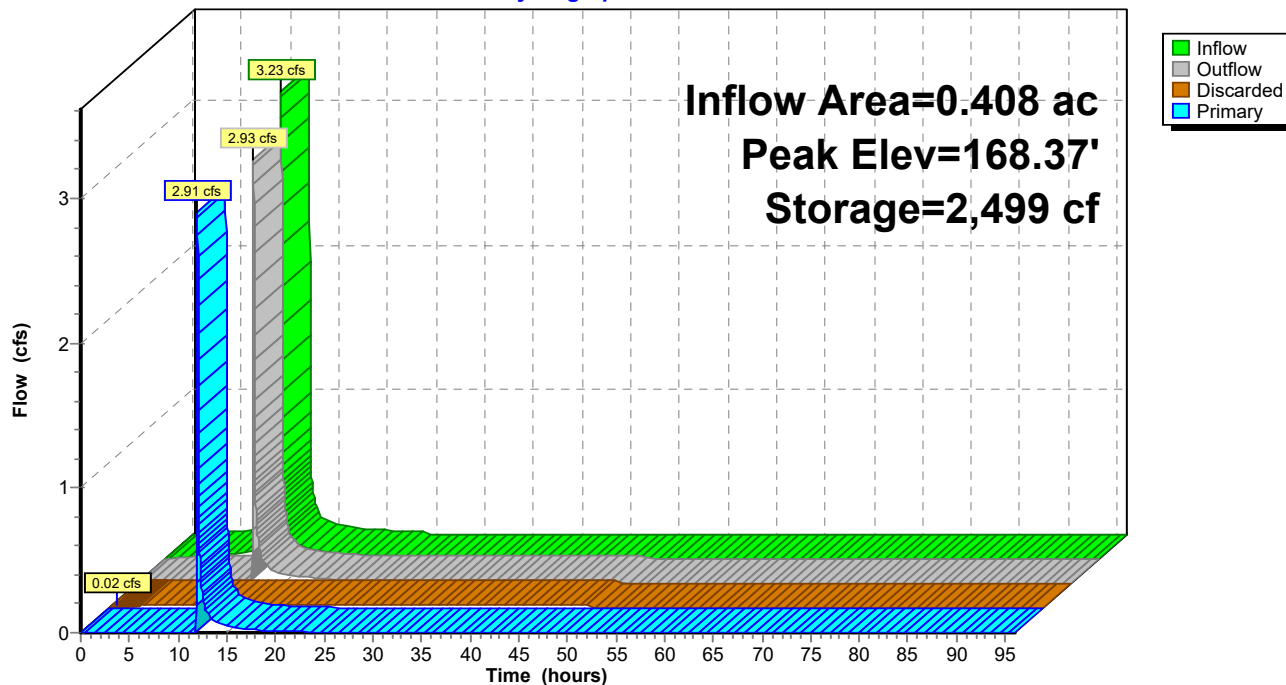
| Device | Routing | Invert | Outlet Devices |
|--------|-----------|---------|--|
| #1 | Discarded | 167.00' | 0.02 cfs Exfiltration at all elevations |
| #2 | Primary | 164.00' | 12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.00' / 162.00' S= 0.0667 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #3 | Device 2 | 168.00' | 15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads |

Discarded OutFlow Max=0.02 cfs @ 0.73 hrs HW=167.00' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=2.91 cfs @ 11.99 hrs HW=168.37' TW=163.63' (Dynamic Tailwater)
 ↑ **2=Culvert** (Passes 2.91 cfs of 7.44 cfs potential flow)
 ↑ **3=Orifice/Grate** (Weir Controls 2.91 cfs @ 1.99 fps)

Pond 10P: SW Planter #1

Hydrograph

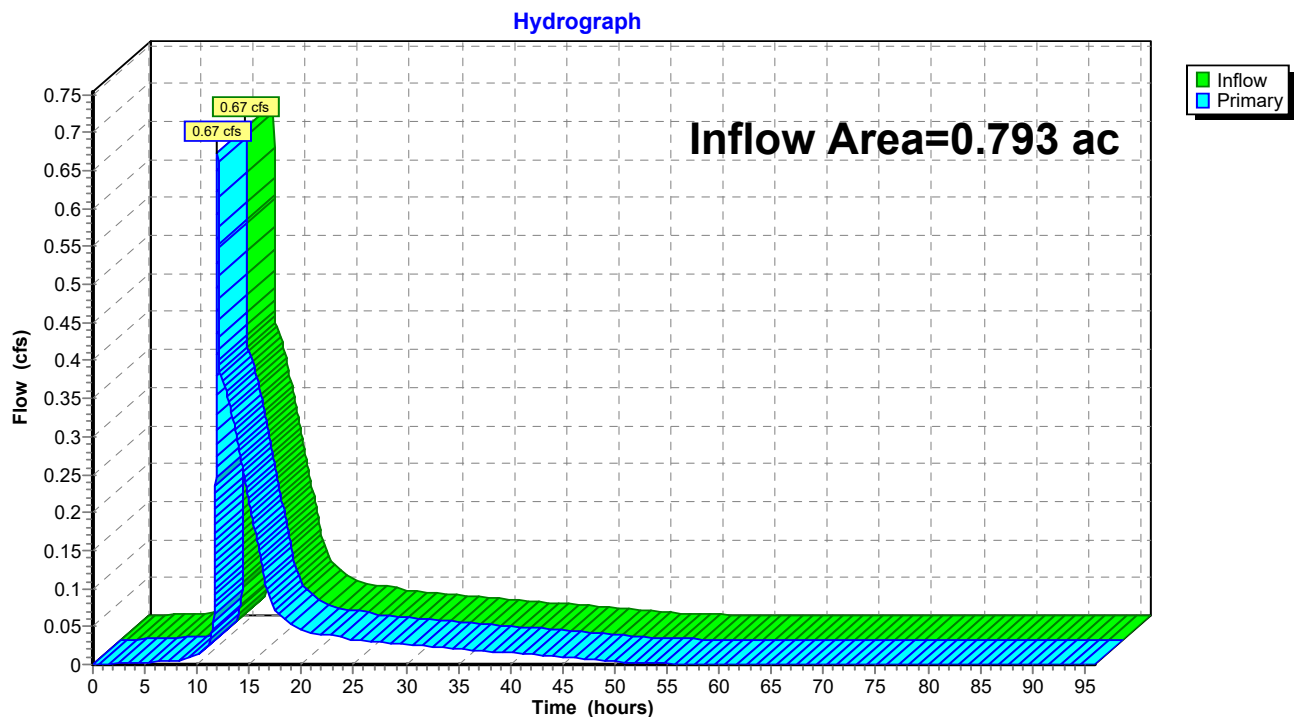


Summary for Link 2L: TOTAL POST (ON-SITE)

Inflow Area = 0.793 ac, 51.70% Impervious, Inflow Depth = 2.86" for 50-YR event
Inflow = 0.67 cfs @ 11.96 hrs, Volume= 0.189 af
Primary = 0.67 cfs @ 11.97 hrs, Volume= 0.189 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 2L: TOTAL POST (ON-SITE)

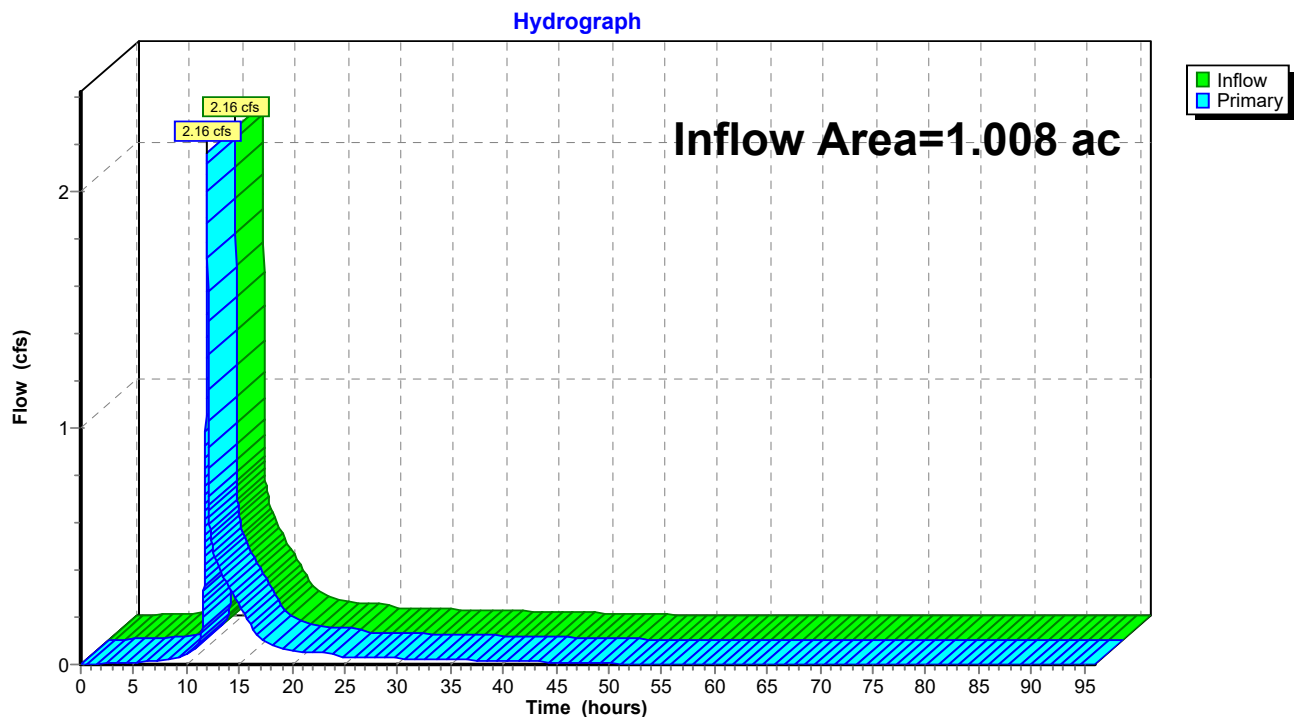


Summary for Link 4L: TOTAL POST

Inflow Area = 1.008 ac, 49.70% Impervious, Inflow Depth = 3.14" for 50-YR event
Inflow = 2.16 cfs @ 11.96 hrs, Volume= 0.264 af
Primary = 2.16 cfs @ 11.97 hrs, Volume= 0.264 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 4L: TOTAL POST



20483-hydro

Type II 24-hr 100-YR Rainfall=7.00"

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Summary for Subcatchment 2S: POST- SW Planter

Runoff = 4.13 cfs @ 11.96 hrs, Volume= 0.223 af, Depth= 6.55"

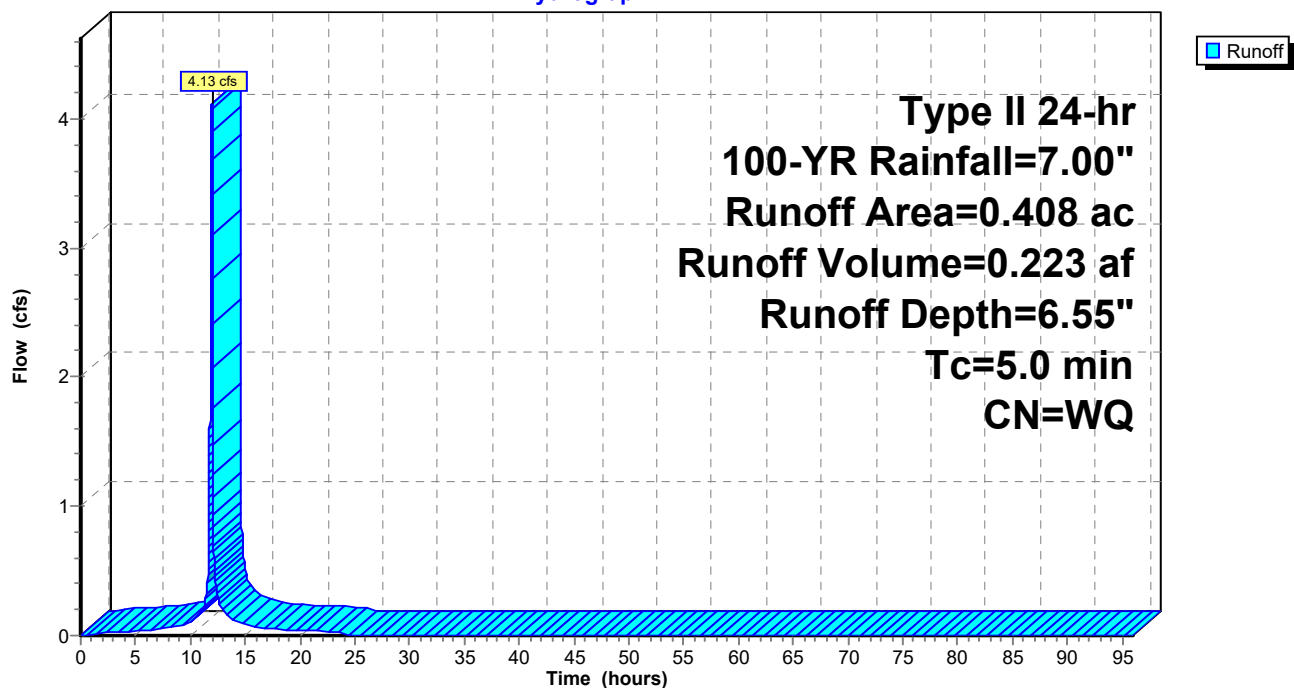
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.00"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.362 | 98 | Building |
| * 0.004 | 98 | Planter Ret Wall |
| 0.042 | 80 | >75% Grass cover, Good, HSG D |
| 0.408 | | Weighted Average |
| 0.042 | | 10.29% Pervious Area |
| 0.366 | | 89.71% Impervious Area |

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

Subcatchment 2S: POST- SW Planter

Hydrograph



20483-hydro

Type II 24-hr 100-YR Rainfall=7.00"

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Summary for Subcatchment 3S: POST-Direct To Tank

Runoff = 1.91 cfs @ 11.98 hrs, Volume= 0.092 af, Depth= 3.79"

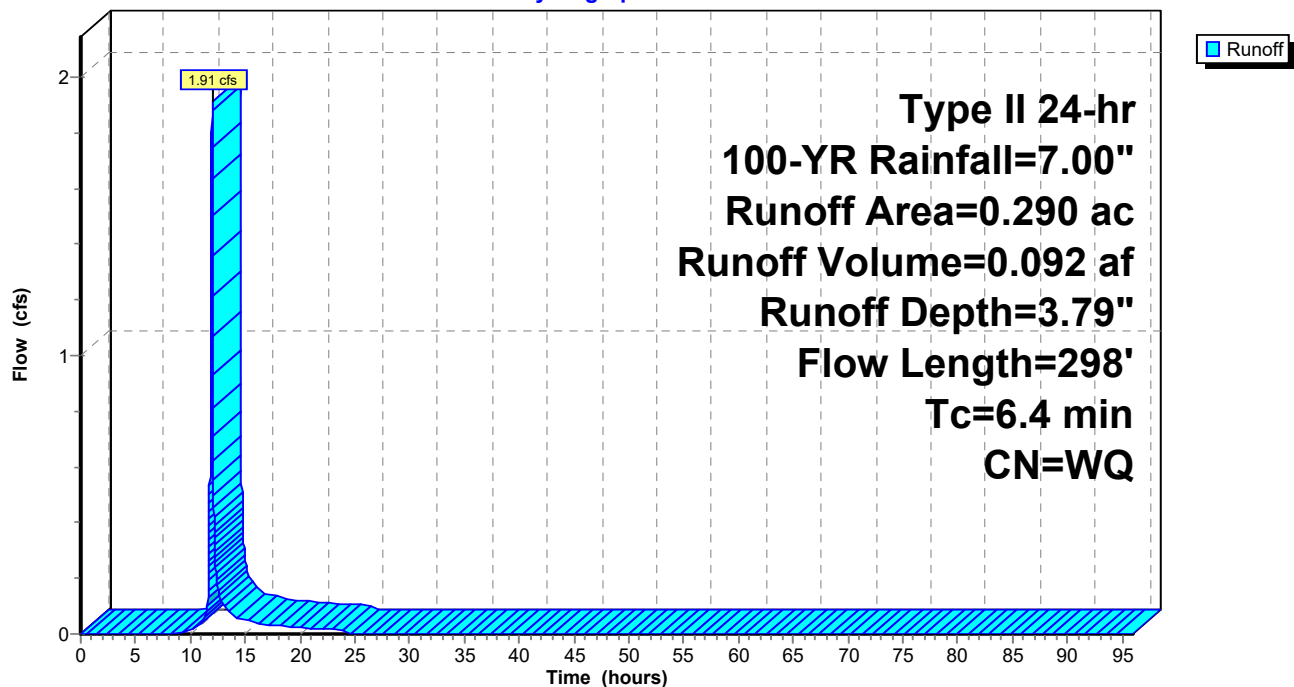
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.00"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.006 | 98 | Ret Wall |
| 0.211 | 70 | Woods, Good, HSG C |
| 0.073 | 74 | >75% Grass cover, Good, HSG C |
| 0.290 | | Weighted Average |
| 0.284 | | 97.93% Pervious Area |
| 0.006 | | 2.07% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|---|
| 5.7 | 60 | 0.2500 | 0.17 | | Sheet Flow, AB Woods: Light underbrush n= 0.400 P2= 2.62" |
| 0.2 | 25 | 0.0200 | 2.28 | | Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps |
| 0.5 | 213 | 0.0250 | 7.17 | 5.63 | Pipe Channel, CD 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior |
| 6.4 | 298 | Total | | | |

Subcatchment 3S: POST-Direct To Tank

Hydrograph



20483-hydro

Type II 24-hr 100-YR Rainfall=7.00"

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Summary for Subcatchment 4S: POST Bypass (ON-SITE)

Runoff = 0.86 cfs @ 11.96 hrs, Volume= 0.043 af, Depth= 5.43"

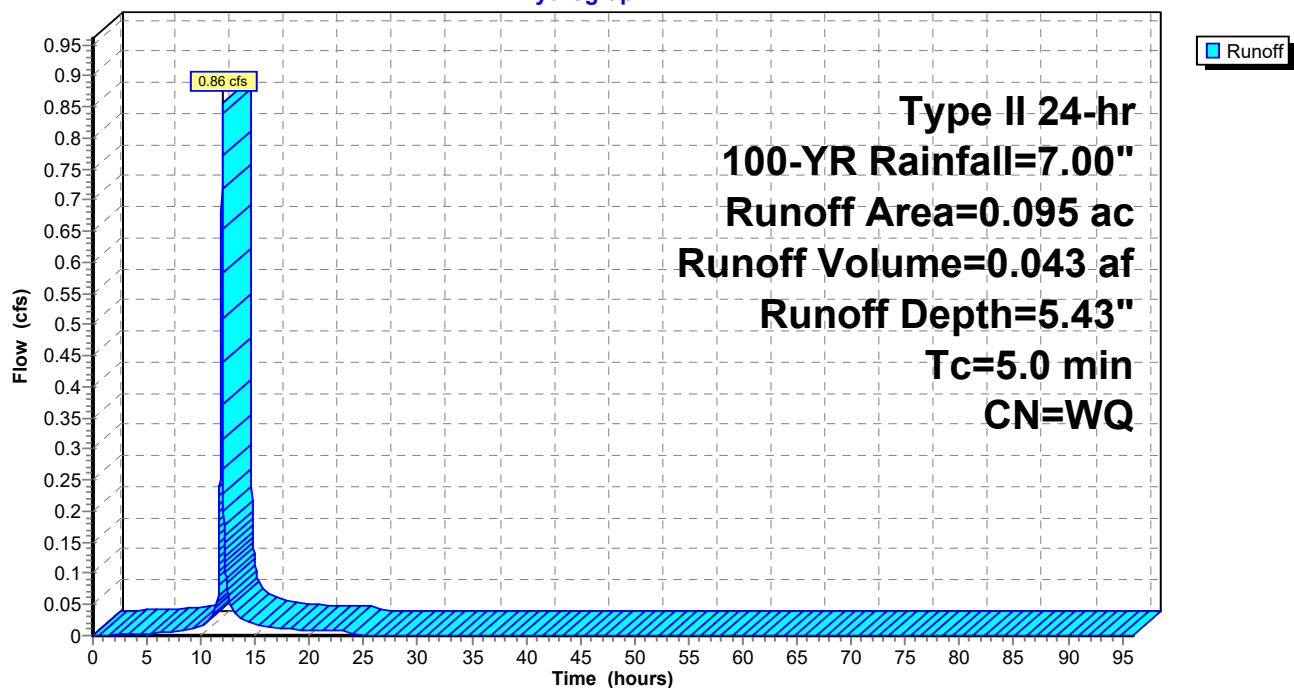
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.00"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.038 | 98 | Sidewalks/Driveway |
| 0.013 | 74 | >75% Grass cover, Good, HSG C |
| 0.044 | 80 | >75% Grass cover, Good, HSG D |
| 0.095 | | Weighted Average |
| 0.057 | | 60.00% Pervious Area |
| 0.038 | | 40.00% Impervious Area |

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

Subcatchment 4S: POST Bypass (ON-SITE)

Hydrograph



20483-hydro

Type II 24-hr 100-YR Rainfall=7.00"

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Summary for Subcatchment 6S: POST-DEV (OFFSITE)

Runoff = 1.98 cfs @ 11.96 hrs, Volume= 0.100 af, Depth= 5.57"

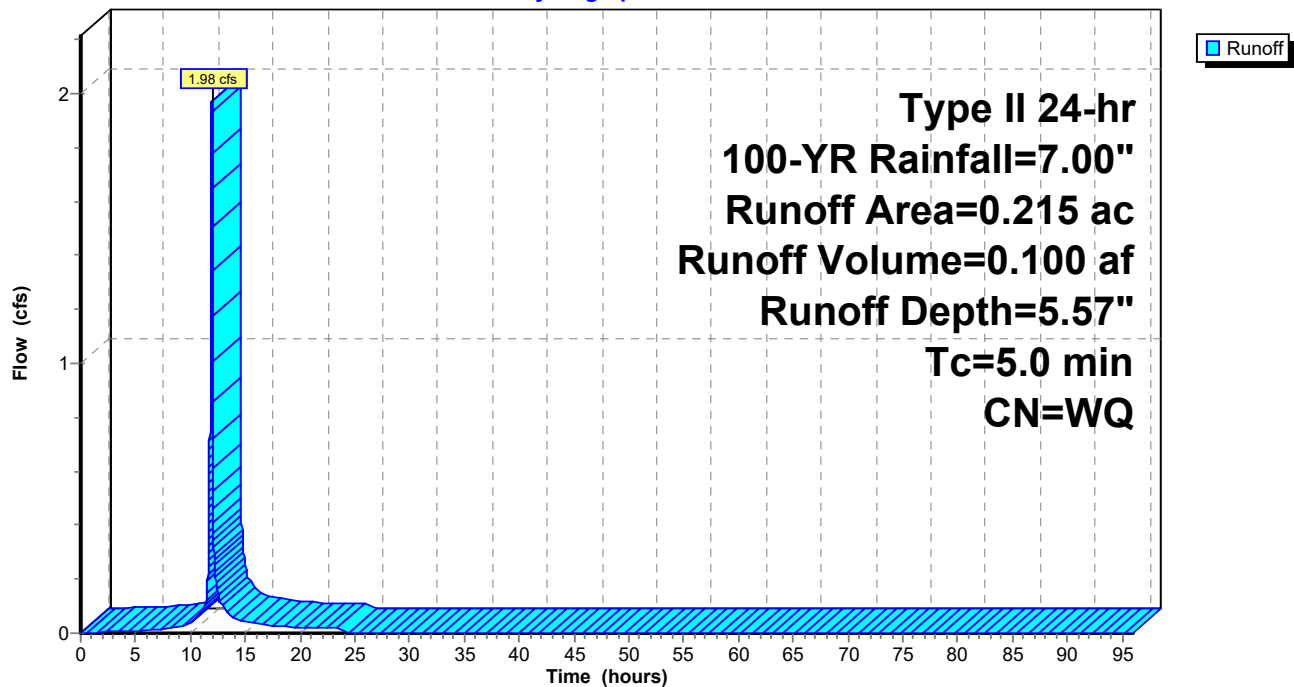
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.00"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.091 | 98 | Sidewalks/Driveways |
| 0.124 | 80 | >75% Grass cover, Good, HSG D |
| 0.215 | | Weighted Average |
| 0.124 | | 57.67% Pervious Area |
| 0.091 | | 42.33% Impervious Area |

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

Subcatchment 6S: POST-DEV (OFFSITE)

Hydrograph



Summary for Pond 1P: 45,000 GAL Tank

Inflow Area = 0.698 ac, 53.30% Impervious, Inflow Depth = 4.03" for 100-YR event
 Inflow = 5.73 cfs @ 11.98 hrs, Volume= 0.235 af
 Outflow = 0.56 cfs @ 12.45 hrs, Volume= 0.234 af, Atten= 90%, Lag= 28.2 min
 Primary = 0.56 cfs @ 12.45 hrs, Volume= 0.234 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 166.95' @ 12.45 hrs Surf.Area= 1,110 sf Storage= 5,500 cf

Plug-Flow detention time= 335.3 min calculated for 0.234 af (100% of inflow)
 Center-of-Mass det. time= 335.4 min (1,139.1 - 803.7)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|---------|---------------|---|
| #1 | 162.00' | 5,828 cf | 18.50'W x 60.00'L x 5.25'H Prismatic |

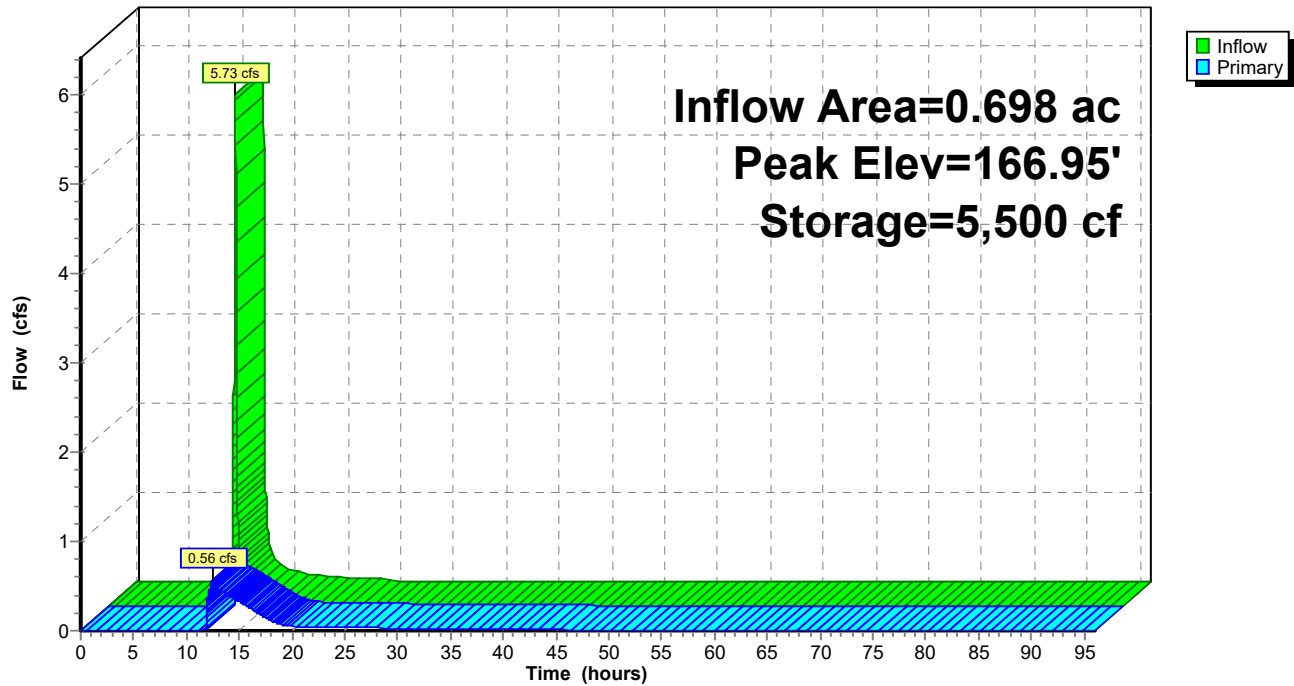
| Device | Routing | Invert | Outlet Devices |
|--------|----------|---------|--|
| #1 | Primary | 162.00' | 12.0" Round Culvert L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.90' S= 0.0167 ' S= 0.0167 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf |
| #2 | Device 1 | 162.00' | 1.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads |
| #3 | Device 1 | 163.75' | 3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads |
| #4 | Device 1 | 166.90' | 8.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads |

Primary OutFlow Max=0.56 cfs @ 12.45 hrs HW=166.95' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 0.56 cfs of 7.98 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.06 cfs @ 10.67 fps)
- 3=Orifice/Grate (Orifice Controls 0.41 cfs @ 8.45 fps)
- 4=Orifice/Grate (Weir Controls 0.09 cfs @ 0.76 fps)

Pond 1P: 45,000 GAL Tank

Hydrograph



Summary for Pond 10P: SW Planter #1

Inflow Area = 0.408 ac, 89.71% Impervious, Inflow Depth = 6.55" for 100-YR event
 Inflow = 4.13 cfs @ 11.96 hrs, Volume= 0.223 af
 Outflow = 3.85 cfs @ 11.99 hrs, Volume= 0.223 af, Atten= 7%, Lag= 1.9 min
 Discarded = 0.02 cfs @ 0.59 hrs, Volume= 0.080 af
 Primary = 3.83 cfs @ 11.99 hrs, Volume= 0.143 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 168.45' @ 11.99 hrs Surf.Area= 1,822 sf Storage= 2,635 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 311.0 min (1,053.7 - 742.7)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|---------|---------------|--|
| #1 | 167.00' | 2,733 cf | Custom Stage Data (Prismatic) Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 167.00 | 1,822 | 0 | 0 |
| 168.00 | 1,822 | 1,822 | 1,822 |
| 168.50 | 1,822 | 911 | 2,733 |

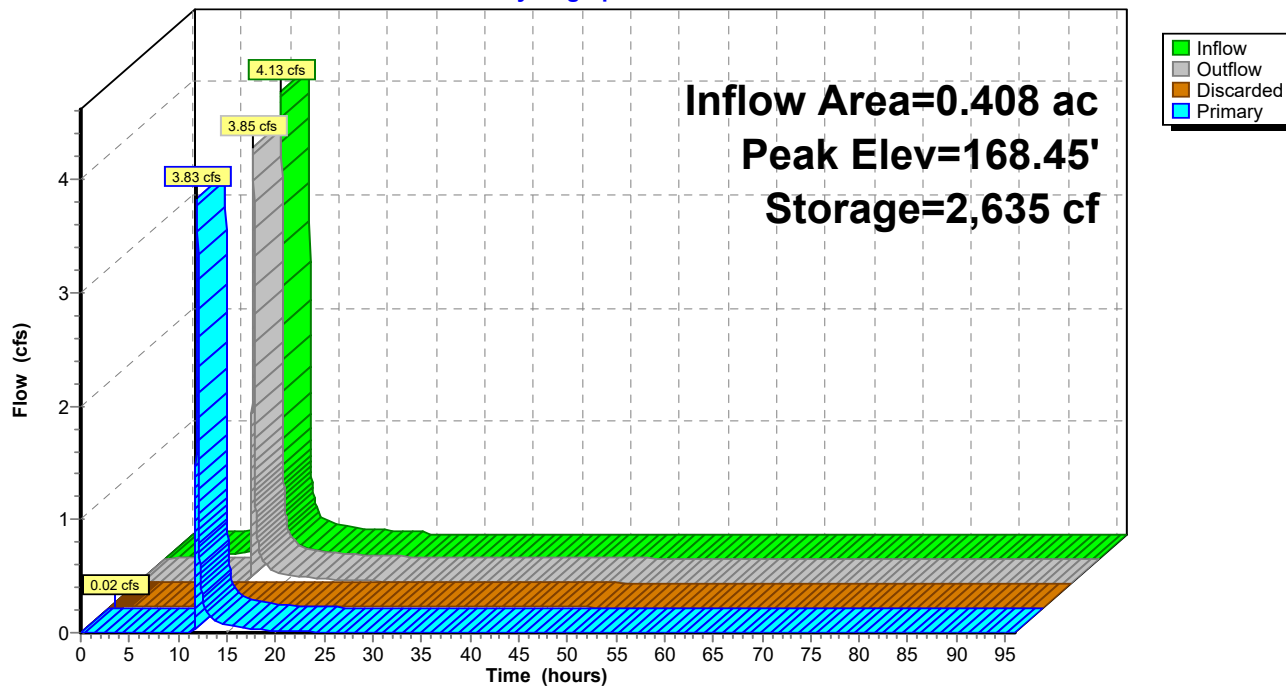
| Device | Routing | Invert | Outlet Devices |
|--------|-----------|---------|--|
| #1 | Discarded | 167.00' | 0.02 cfs Exfiltration at all elevations |
| #2 | Primary | 164.00' | 12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.00' / 162.00' S= 0.0667 ' S= 0.0667 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #3 | Device 2 | 168.00' | 15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads |

Discarded OutFlow Max=0.02 cfs @ 0.59 hrs HW=167.00' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=3.82 cfs @ 11.99 hrs HW=168.45' TW=164.92' (Dynamic Tailwater)
 ↑ **2=Culvert** (Passes 3.82 cfs of 7.10 cfs potential flow)
 ↑ **3=Orifice/Grate** (Weir Controls 3.82 cfs @ 2.18 fps)

Pond 10P: SW Planter #1

Hydrograph

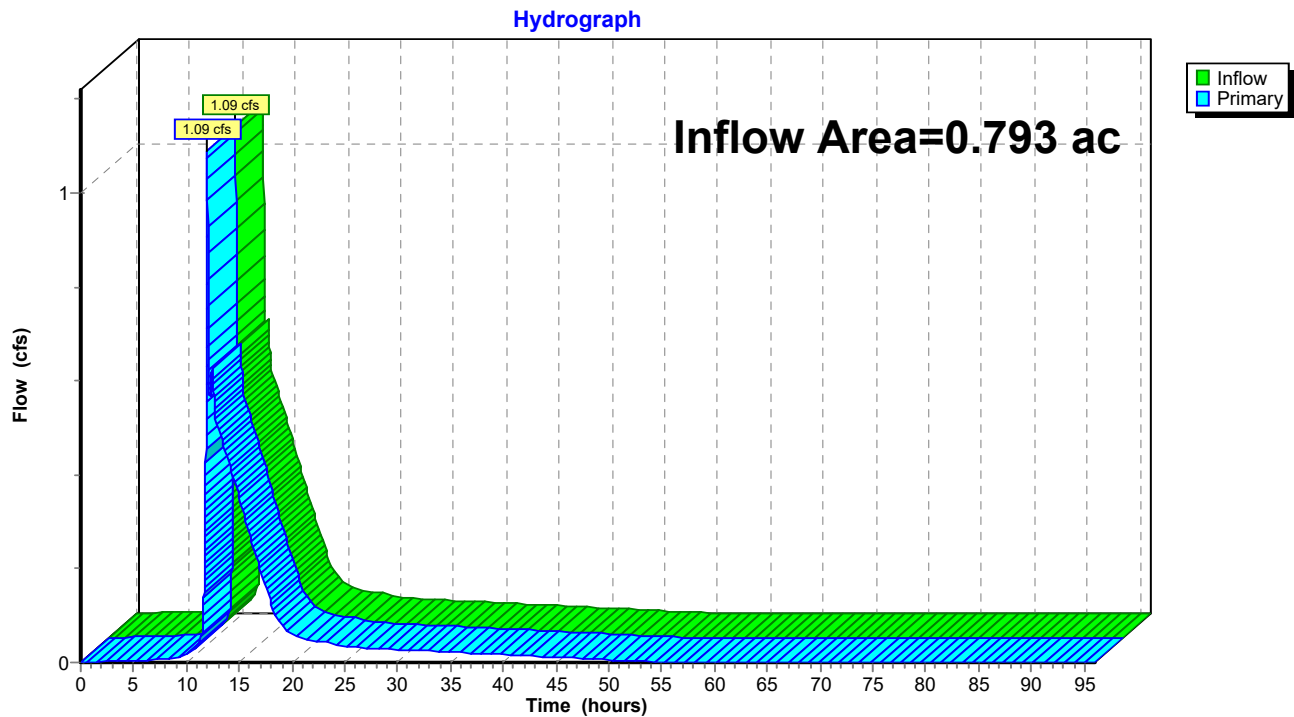


Summary for Link 2L: TOTAL POST (ON-SITE)

Inflow Area = 0.793 ac, 51.70% Impervious, Inflow Depth = 4.20" for 100-YR event
Inflow = 1.09 cfs @ 11.97 hrs, Volume= 0.277 af
Primary = 1.09 cfs @ 11.98 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 2L: TOTAL POST (ON-SITE)

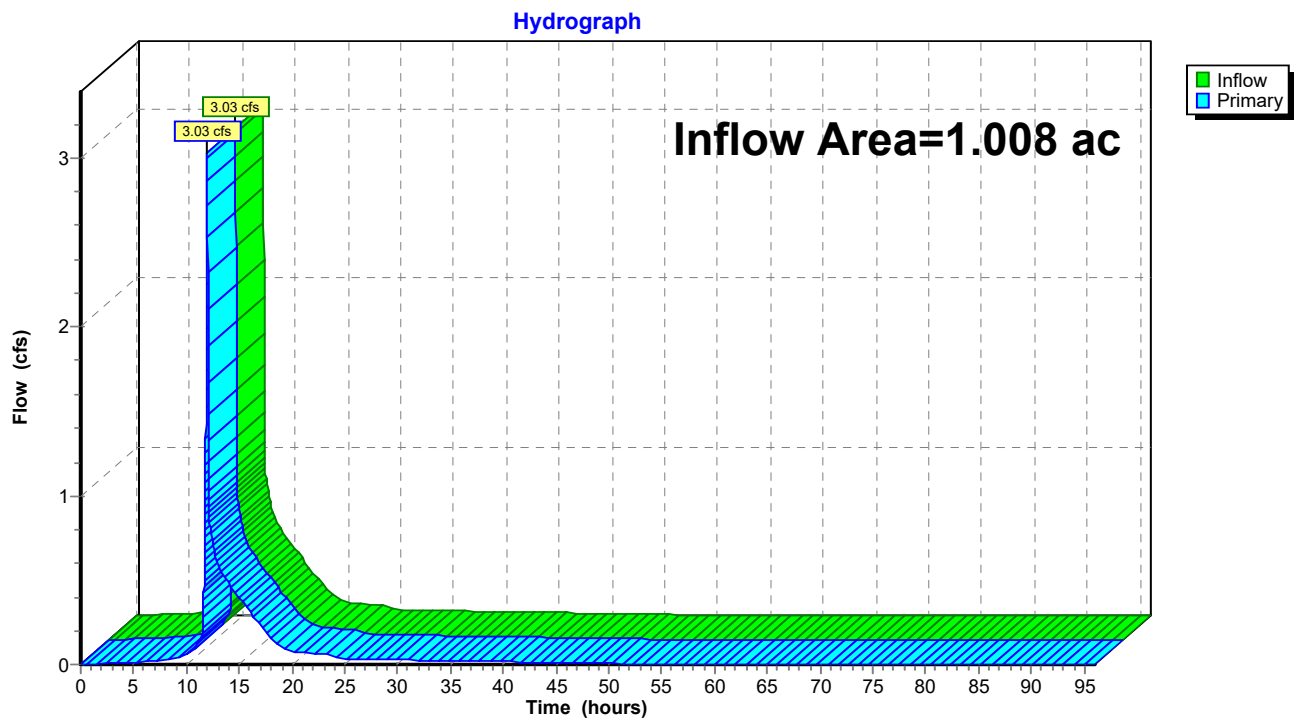


Summary for Link 4L: TOTAL POST

Inflow Area = 1.008 ac, 49.70% Impervious, Inflow Depth = 4.49" for 100-YR event
Inflow = 3.03 cfs @ 11.97 hrs, Volume= 0.377 af
Primary = 3.03 cfs @ 11.98 hrs, Volume= 0.377 af, Atten= 0%, Lag= 0.6 min

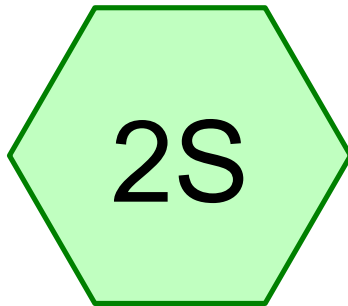
Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Link 4L: TOTAL POST

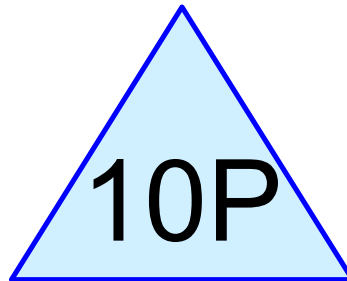


Part 6:

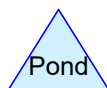
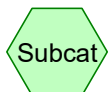
Water Quality (WQv) and Stormwater Treatment Practice Calculations



POST- SW Planter



SW Planter #1



Routing Diagram for 20483-hydro

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20483-hydro

Type II 24-hr WQv Rainfall=1.20"

Prepared by Engineering Ventures, PC

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Summary for Subcatchment 2S: POST- SW Planter

Runoff = 0.62 cfs @ 11.96 hrs, Volume= 0.031 af, Depth= 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr WQv Rainfall=1.20"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.362 | 98 | Building |
| * 0.004 | 98 | Planter Ret Wall |
| 0.042 | 80 | >75% Grass cover, Good, HSG D |
| 0.408 | | Weighted Average |
| 0.042 | | 10.29% Pervious Area |
| 0.366 | | 89.71% Impervious Area |

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

Summary for Pond 10P: SW Planter #1

Inflow Area = 0.408 ac, 89.71% Impervious, Inflow Depth = 0.90" for WQv event
 Inflow = 0.62 cfs @ 11.96 hrs, Volume= 0.031 af
 Outflow = 0.02 cfs @ 2.98 hrs, Volume= 0.034 af, Atten= 97%, Lag= 0.0 min
 Discarded = 0.02 cfs @ 2.98 hrs, Volume= 0.034 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 167.36' @ 13.68 hrs Surf.Area= 1,822 sf Storage= 659 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 215.3 min (995.5 - 780.2)

| Volume | Invert | Avail.Storage | Storage Description |
|------------------|-------------------|------------------------|--|
| #1 | 167.00' | 2,733 cf | Custom Stage Data (Prismatic) Listed below (Recalc) |
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
| 167.00 | 1,822 | 0 | 0 |
| 168.00 | 1,822 | 1,822 | 1,822 |
| 168.50 | 1,822 | 911 | 2,733 |

STORAGE VOLUME
BELOW OVERFLOW

| Device | Routing | Invert | Outlet Devices |
|--------|-----------|---------|--|
| #1 | Discarded | 167.00' | 0.02 cfs Exfiltration at all elevations |
| #2 | Primary | 164.00' | 12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.00' / 162.00' S= 0.0667 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #3 | Device 2 | 168.00' | 15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads |

Discarded OutFlow Max=0.02 cfs @ 2.98 hrs HW=167.00' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.00' TW=162.00' (Dynamic Tailwater)

↑**2=Culvert** (Passes 0.00 cfs of 5.98 cfs potential flow)

↑**3=Orifice/Grate** (Controls 0.00 cfs)

Design Infiltration Rate = 1 in/hr

Infiltration Area = 800 ft

Outflow (cfs) = (1 in/hr) x 800 sf x (1 ft/12 in) x (1 hr/ 3600 sec) = 0.0185 cfs => 0.02 cfs

Dewatering Time = WQv/Outflow = 1,524 cf / 0.0185 cfs = 82,378 sec = 22.9 hrs

Summary for Subcatchment 2S: POST- SW Planter

Runoff = 1.23 cfs @ 11.96 hrs, Volume= 0.064 af, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-YR Rainfall=2.23"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.362 | 98 | Building |
| * 0.004 | 98 | Planter Ret Wall |
| 0.042 | 80 | >75% Grass cover, Good, HSG D |
| 0.408 | | Weighted Average |
| 0.042 | | 10.29% Pervious Area |
| 0.366 | | 89.71% Impervious Area |

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

Summary for Pond 10P: SW Planter #1

Inflow Area = 0.408 ac, 89.71% Impervious, Inflow Depth = 1.87" for 1-YR event
 Inflow = 1.23 cfs @ 11.96 hrs, Volume= 0.064 af
 Outflow = 0.02 cfs @ 1.70 hrs, Volume= 0.066 af, Atten= 98%, Lag= 0.0 min
 Discarded = 0.02 cfs @ 1.70 hrs, Volume= 0.066 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 167.91' @ 16.12 hrs Surf.Area= 1,822 sf Storage= 1,664 cf

Entire Volume Infiltrated during 1-YR Storm Event

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 702.4 min (1,466.2 - 763.9)

| Volume | Invert | Avail.Storage | Storage Description |
|------------------|-------------------|------------------------|--|
| #1 | 167.00' | 2,733 cf | Custom Stage Data (Prismatic) Listed below (Recalc) |
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
| 167.00 | 1,822 | 0 | 0 |
| 168.00 | 1,822 | 1,822 | 1,822 |
| 168.50 | 1,822 | 911 | 2,733 |

| Device | Routing | Invert | Outlet Devices |
|--------|-----------|---------|--|
| #1 | Discarded | 167.00' | 0.02 cfs Exfiltration at all elevations |
| #2 | Primary | 164.00' | 12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.00' / 162.00' S= 0.0667 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #3 | Device 2 | 168.00' | 15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads |

Discarded OutFlow Max=0.02 cfs @ 1.70 hrs HW=167.00' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=167.00' TW=162.00' (Dynamic Tailwater)

↑**2=Culvert** (Passes 0.00 cfs of 5.98 cfs potential flow)

↑**3=Orifice/Grate** (Controls 0.00 cfs)

20483-hydro

Type II 24-hr 2-YR Rainfall=2.62"

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Printed 4/8/2021

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Summary for Subcatchment 2S: POST- SW Planter

Runoff = 1.47 cfs @ 11.96 hrs, Volume= 0.076 af, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-YR Rainfall=2.62"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.362 | 98 | Building |
| * 0.004 | 98 | Planter Ret Wall |
| 0.042 | 80 | >75% Grass cover, Good, HSG D |
| 0.408 | | Weighted Average |
| 0.042 | | 10.29% Pervious Area |
| 0.366 | | 89.71% Impervious Area |

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

Summary for Pond 10P: SW Planter #1

Inflow Area = 0.408 ac, 89.71% Impervious, Inflow Depth = 2.24" for 2-YR event
 Inflow = 1.47 cfs @ 11.96 hrs, Volume= 0.076 af
 Outflow = 0.06 cfs @ 13.07 hrs, Volume= 0.078 af, Atten= 96%, Lag= 66.7 min
 Discarded = 0.02 cfs @ 1.47 hrs, Volume= 0.072 af
 Primary = 0.04 cfs @ 13.07 hrs, Volume= 0.006 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 168.02' @ 13.07 hrs Surf.Area= 1,822 sf Storage= 1,863 cf

I/I Volume achieved
during 2-year storm event

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 725.9 min (1,486.1 - 760.2)

| Volume | Invert | Avail.Storage | Storage Description |
|------------------|-------------------|------------------------|--|
| #1 | 167.00' | 2,733 cf | Custom Stage Data (Prismatic) Listed below (Recalc) |
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
| 167.00 | 1,822 | 0 | 0 |
| 168.00 | 1,822 | 1,822 | 1,822 |
| 168.50 | 1,822 | 911 | 2,733 |

| Device | Routing | Invert | Outlet Devices |
|--------|-----------|---------|--|
| #1 | Discarded | 167.00' | 0.02 cfs Exfiltration at all elevations |
| #2 | Primary | 164.00' | 12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.00' / 162.00' S= 0.0667 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #3 | Device 2 | 168.00' | 15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads |

Discarded OutFlow Max=0.02 cfs @ 1.47 hrs HW=167.00' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.04 cfs @ 13.07 hrs HW=168.02' TW=162.29' (Dynamic Tailwater)

↑**2=Culvert** (Passes 0.04 cfs of 7.10 cfs potential flow)

↑**3=Orifice/Grate** (Weir Controls 0.04 cfs @ 0.49 fps)

20483-hydro

Type II 24-hr 100-YR Rainfall=7.00"

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Printed 4/8/2021

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Summary for Subcatchment 2S: POST- SW Planter

Runoff = 4.13 cfs @ 11.96 hrs, Volume= 0.223 af, Depth= 6.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.00"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.362 | 98 | Building |
| * 0.004 | 98 | Planter Ret Wall |
| 0.042 | 80 | >75% Grass cover, Good, HSG D |
| 0.408 | | Weighted Average |
| 0.042 | | 10.29% Pervious Area |
| 0.366 | | 89.71% Impervious Area |

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

Summary for Pond 10P: SW Planter #1

Inflow Area = 0.408 ac, 89.71% Impervious, Inflow Depth = 6.55" for 100-YR event
 Inflow = 4.13 cfs @ 11.96 hrs, Volume= 0.223 af
 Outflow = 3.85 cfs @ 11.99 hrs, Volume= 0.223 af, Atten= 7%, Lag= 1.9 min
 Discarded = 0.02 cfs @ 0.59 hrs, Volume= 0.080 af
 Primary = 3.83 cfs @ 11.99 hrs, Volume= 0.143 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 168.45' @ 11.99 hrs Surf.Area= 1,822 sf Storage= 2,635 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 311.0 min (1,053.7 - 742.7)

100-YR Storm does not
flow over the lowest wall
elevation of 168.5

| Volume | Invert | Avail.Storage | Storage Description |
|------------------|-------------------|------------------------|--|
| #1 | 167.00' | 2,733 cf | Custom Stage Data (Prismatic) Listed below (Recalc) |
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
| 167.00 | 1,822 | 0 | 0 |
| 168.00 | 1,822 | 1,822 | 1,822 |
| 168.50 | 1,822 | 911 | 2,733 |

| Device | Routing | Invert | Outlet Devices |
|--------|-----------|---------|--|
| #1 | Discarded | 167.00' | 0.02 cfs Exfiltration at all elevations |
| #2 | Primary | 164.00' | 12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.00' / 162.00' S= 0.0667 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #3 | Device 2 | 168.00' | 15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads |

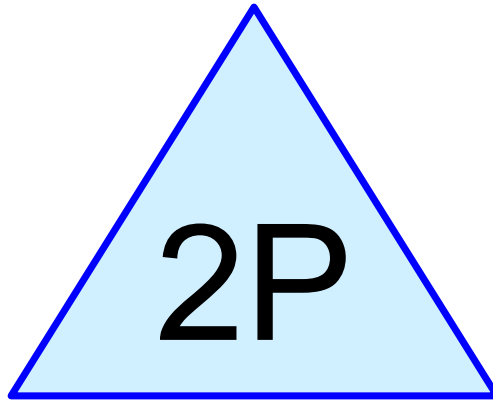
Discarded OutFlow Max=0.02 cfs @ 0.59 hrs HW=167.00' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

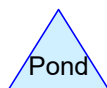
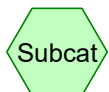
Primary OutFlow Max=3.82 cfs @ 11.99 hrs HW=168.45' TW=164.92' (Dynamic Tailwater)

↑**2=Culvert** (Passes 3.82 cfs of 7.10 cfs potential flow)

↑**3=Orifice/Grate** (Weir Controls 3.82 cfs @ 2.18 fps)



Subsurface Det Basin 1



Routing Diagram for 20483-hydro

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Summary for Pond 2P: Subsurface Det Basin 1

| Volume | Invert | Avail.Storage | Storage Description |
|--------|---------|---------------|--|
| #1 | 165.00' | 908 cf | 20.50'W x 47.00'L x 3.50'H Prismatic Impervious 3,372 cf Overall - 1,103 cf Embedded = 2,270 cf x 40.0% Voids |
| #2 | 165.50' | 1,103 cf | ADS_StormTech SC-740 +Cap x 24 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 24 Chambers in 4 Rows |
| | | 2,010 cf | Total Available Storage |

Stage-Area-Storage for Pond 2P: Subsurface Det Basin 1

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---------------------|-------------------------|---------------------|-------------------------|
| 165.00 | 0 | 167.55 | 1,611 |
| 165.05 | 19 | 167.60 | 1,638 |
| 165.10 | 39 | 167.65 | 1,664 |
| 165.15 | 58 | 167.70 | 1,690 |
| 165.20 | 77 | 167.75 | 1,713 |
| 165.25 | 96 | 167.80 | 1,736 |
| 165.30 | 116 | 167.85 | 1,757 |
| 165.35 | 135 | 167.90 | 1,778 |
| 165.40 | 154 | 167.95 | 1,798 |
| 165.45 | 173 | 168.00 | 1,818 |
| 165.50 | 193 | 168.05 | 1,837 |
| 165.55 | 231 | 168.10 | 1,856 |
| 165.60 | 269 | 168.15 | 1,876 |
| 165.65 | 308 | 168.20 | 1,895 |
| 165.70 | 346 | 168.25 | 1,914 |
| 165.75 | 384 | 168.30 | 1,933 |
| 165.80 | 422 | 168.35 | 1,953 |
| 165.85 | 460 | 168.40 | 1,972 |
| 165.90 | 497 | 168.45 | 1,991 |
| 165.95 | 535 | 168.50 | 2,010 |
| 166.00 | 572 | | |
| 166.05 | 609 | | |
| 166.10 | 646 | | |
| 166.15 | 683 | | |
| 166.20 | 720 | | |
| 166.25 | 757 | | |
| 166.30 | 793 | | |
| 166.35 | 829 | | |
| 166.40 | 865 | | |
| 166.45 | 901 | | |
| 166.50 | 937 | | |
| 166.55 | 972 | | |
| 166.60 | 1,007 | | |
| 166.65 | 1,042 | | |
| 166.70 | 1,077 | | |
| 166.75 | 1,111 | | |
| 166.80 | 1,145 | | |
| 166.85 | 1,179 | | |
| 166.90 | 1,212 | | |
| 166.95 | 1,245 | | |
| 167.00 | 1,278 | | |
| 167.05 | 1,311 | | |
| 167.10 | 1,343 | | |
| 167.15 | 1,375 | | |
| 167.20 | 1,406 | | |
| 167.25 | 1,437 | | |
| 167.30 | 1,467 | | |
| 167.35 | 1,497 | | |
| 167.40 | 1,526 | | |
| 167.45 | 1,555 | | |
| 167.50 | 1,584 | | |

Summary for Pond 3P: Subsurface Det Basin 2

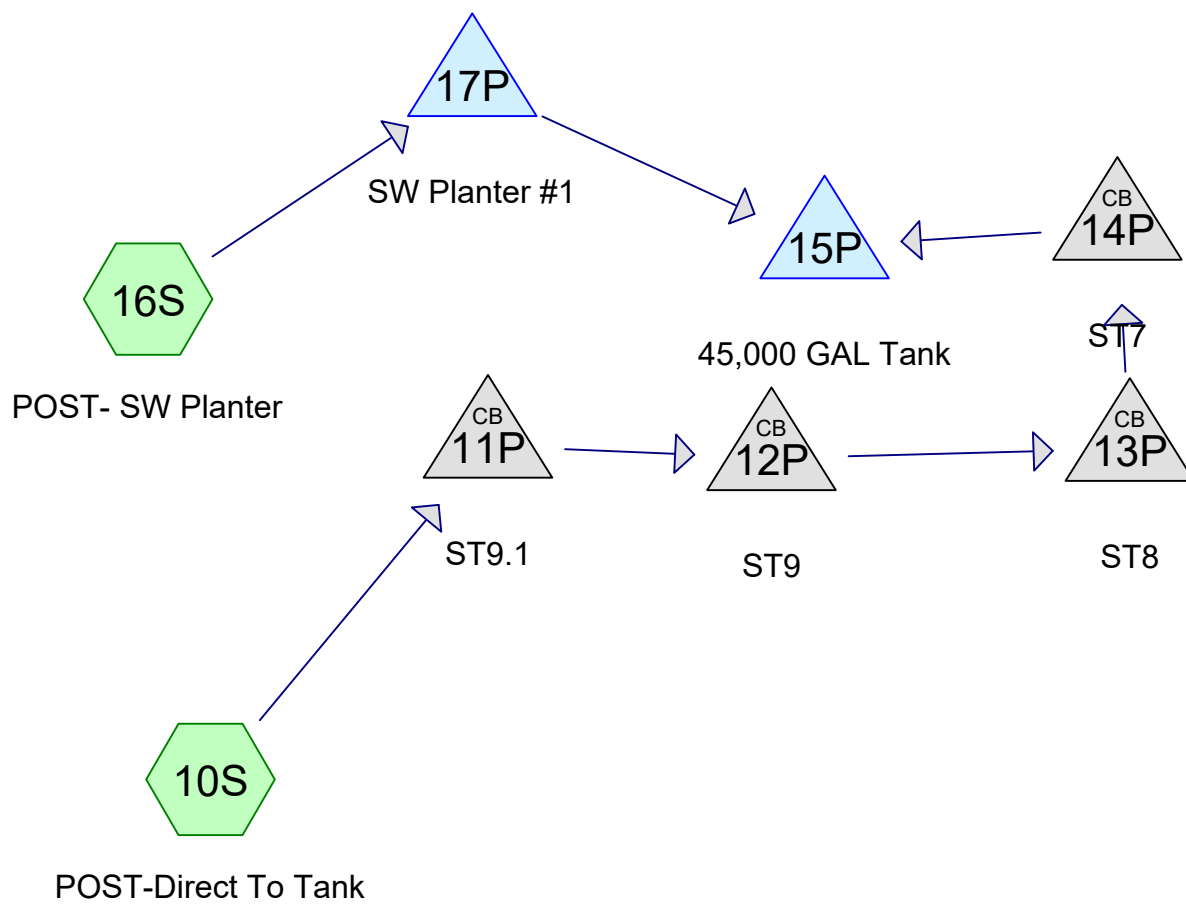
| Volume | Invert | Avail.Storage | Storage Description |
|--------|---------|---------------|--|
| #1 | 168.00' | 908 cf | 20.50'W x 47.00'L x 3.50'H Prismatic 3,372 cf Overall - 1,103 cf Embedded = 2,270 cf x 40.0% Voids |
| #2 | 168.50' | 1,103 cf | ADS_StormTech SC-740 +Cap x 24 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 24 Chambers in 4 Rows |
| | | 2,010 cf | Total Available Storage |

Stage-Area-Storage for Pond 3P: Subsurface Det Basin 2

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---------------------|-------------------------|---------------------|-------------------------|
| 168.00 | 0 | 170.55 | 1,611 |
| 168.05 | 19 | 170.60 | 1,638 |
| 168.10 | 39 | 170.65 | 1,664 |
| 168.15 | 58 | 170.70 | 1,690 |
| 168.20 | 77 | 170.75 | 1,713 |
| 168.25 | 96 | 170.80 | 1,736 |
| 168.30 | 116 | 170.85 | 1,757 |
| 168.35 | 135 | 170.90 | 1,778 |
| 168.40 | 154 | 170.95 | 1,798 |
| 168.45 | 173 | 171.00 | 1,818 |
| 168.50 | 193 | 171.05 | 1,837 |
| 168.55 | 231 | 171.10 | 1,856 |
| 168.60 | 269 | 171.15 | 1,876 |
| 168.65 | 308 | 171.20 | 1,895 |
| 168.70 | 346 | 171.25 | 1,914 |
| 168.75 | 384 | 171.30 | 1,933 |
| 168.80 | 422 | 171.35 | 1,953 |
| 168.85 | 460 | 171.40 | 1,972 |
| 168.90 | 497 | 171.45 | 1,991 |
| 168.95 | 535 | 171.50 | 2,010 |
| 169.00 | 572 | | |
| 169.05 | 609 | | |
| 169.10 | 646 | | |
| 169.15 | 683 | | |
| 169.20 | 720 | | |
| 169.25 | 757 | | |
| 169.30 | 793 | | |
| 169.35 | 829 | | |
| 169.40 | 865 | | |
| 169.45 | 901 | | |
| 169.50 | 937 | | |
| 169.55 | 972 | | |
| 169.60 | 1,007 | | |
| 169.65 | 1,042 | | |
| 169.70 | 1,077 | | |
| 169.75 | 1,111 | | |
| 169.80 | 1,145 | | |
| 169.85 | 1,179 | | |
| 169.90 | 1,212 | | |
| 169.95 | 1,245 | | |
| 170.00 | 1,278 | | |
| 170.05 | 1,311 | | |
| 170.10 | 1,343 | | |
| 170.15 | 1,375 | | |
| 170.20 | 1,406 | | |
| 170.25 | 1,437 | | |
| 170.30 | 1,467 | | |
| 170.35 | 1,497 | | |
| 170.40 | 1,526 | | |
| 170.45 | 1,555 | | |
| 170.50 | 1,584 | | |

Part 7:

Storm Sewer Calculations (100-YR)



Routing Diagram for 20483-hydro

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20483-hydro

Type II 24-hr 100-YR Rainfall=7.00"

Prepared by Engineering Ventures, PC

Printed 4/9/2021

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Page 2

Summary for Subcatchment 10S: POST-Direct To Tank

Runoff = 1.91 cfs @ 11.98 hrs, Volume= 0.092 af, Depth= 3.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.00"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.006 | 98 | Ret Wall |
| 0.211 | 70 | Woods, Good, HSG C |
| 0.073 | 74 | >75% Grass cover, Good, HSG C |
| 0.290 | | Weighted Average |
| 0.284 | | 97.93% Pervious Area |
| 0.006 | | 2.07% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|---|
| 5.7 | 60 | 0.2500 | 0.17 | | Sheet Flow, AB |
| | | | | | Woods: Light underbrush n= 0.400 P2= 2.62" |
| 0.2 | 25 | 0.0200 | 2.28 | | Shallow Concentrated Flow, BC |
| | | | | | Unpaved Kv= 16.1 fps |
| 0.5 | 213 | 0.0250 | 7.17 | 5.63 | Pipe Channel, CD |
| | | | | | 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' |
| | | | | | n= 0.013 Corrugated PE, smooth interior |
| 6.4 | 298 | Total | | | |

Summary for Subcatchment 16S: POST- SW Planter

Runoff = 4.13 cfs @ 11.96 hrs, Volume= 0.223 af, Depth= 6.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-YR Rainfall=7.00"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| * 0.362 | 98 | Building |
| * 0.004 | 98 | Planter Ret Wall |
| 0.042 | 80 | >75% Grass cover, Good, HSG D |
| 0.408 | | Weighted Average |
| 0.042 | | 10.29% Pervious Area |
| 0.366 | | 89.71% Impervious Area |

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

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Type II 24-hr 100-YR Rainfall=7.00"

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Summary for Pond 11P: ST9.1

Inflow Area = 0.290 ac, 2.07% Impervious, Inflow Depth = 3.79" for 100-YR event
 Inflow = 1.91 cfs @ 11.98 hrs, Volume= 0.092 af
 Outflow = 1.91 cfs @ 11.99 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.6 min
 Primary = 1.91 cfs @ 11.99 hrs, Volume= 0.092 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Peak Elev= 176.65' @ 11.99 hrs

Flood Elev= 180.75'

| Device | Routing | Invert | Outlet Devices |
|--------|---------|---------|--|
| #1 | Primary | 175.75' | 12.0" Round Culvert L= 99.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 175.75' / 175.25' S= 0.0051' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |

Primary OutFlow Max=1.91 cfs @ 11.99 hrs HW=176.65' TW=175.88' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 1.91 cfs @ 3.40 fps)**Summary for Pond 12P: ST9**

Inflow Area = 0.290 ac, 2.07% Impervious, Inflow Depth = 3.79" for 100-YR event
 Inflow = 1.91 cfs @ 11.99 hrs, Volume= 0.092 af
 Outflow = 1.91 cfs @ 12.00 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.6 min
 Primary = 1.91 cfs @ 12.00 hrs, Volume= 0.092 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Peak Elev= 175.89' @ 12.00 hrs

Flood Elev= 180.75'

| Device | Routing | Invert | Outlet Devices |
|--------|---------|---------|--|
| #1 | Primary | 175.00' | 12.0" Round Culvert L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 175.00' / 174.70' S= 0.0058' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |

Primary OutFlow Max=1.91 cfs @ 12.00 hrs HW=175.89' TW=174.26' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 1.91 cfs @ 3.44 fps)**Summary for Pond 13P: ST8**

Inflow Area = 0.290 ac, 2.07% Impervious, Inflow Depth = 3.79" for 100-YR event
 Inflow = 1.91 cfs @ 12.00 hrs, Volume= 0.092 af
 Outflow = 1.91 cfs @ 12.01 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.6 min
 Primary = 1.91 cfs @ 12.01 hrs, Volume= 0.092 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

20483-hydro

Type II 24-hr 100-YR Rainfall=7.00"

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Peak Elev= 174.26' @ 12.01 hrs

Flood Elev= 182.00'

| Device | Routing | Invert | Outlet Devices |
|--------|---------|---------|--|
| #1 | Primary | 173.50' | 12.0" Round Culvert L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 173.50' / 168.00' S= 0.1528 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |

Primary OutFlow Max=1.91 cfs @ 12.01 hrs HW=174.26' TW=167.26' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.91 cfs @ 2.97 fps)**Summary for Pond 14P: ST7**

Inflow Area = 0.290 ac, 2.07% Impervious, Inflow Depth = 3.79" for 100-YR event
Inflow = 1.91 cfs @ 12.01 hrs, Volume= 0.092 af
Outflow = 1.91 cfs @ 12.02 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.6 min
Primary = 1.91 cfs @ 12.02 hrs, Volume= 0.092 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Peak Elev= 167.26' @ 12.02 hrs

Flood Elev= 174.25'

| Device | Routing | Invert | Outlet Devices |
|--------|---------|---------|--|
| #1 | Primary | 166.50' | 12.0" Round Culvert L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 166.50' / 165.00' S= 0.0577 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |

Primary OutFlow Max=1.91 cfs @ 12.02 hrs HW=167.26' TW=165.21' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.91 cfs @ 2.97 fps)**Summary for Pond 15P: 45,000 GAL Tank**

Inflow Area = 0.698 ac, 53.30% Impervious, Inflow Depth = 4.03" for 100-YR event
Inflow = 5.65 cfs @ 12.00 hrs, Volume= 0.235 af
Outflow = 0.56 cfs @ 12.47 hrs, Volume= 0.234 af, Atten= 90%, Lag= 28.2 min
Primary = 0.56 cfs @ 12.47 hrs, Volume= 0.234 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Peak Elev= 166.95' @ 12.47 hrs Surf.Area= 1,110 sf Storage= 5,499 cf

Plug-Flow detention time= 335.4 min calculated for 0.234 af (100% of inflow)

Center-of-Mass det. time= 335.5 min (1,140.1 - 804.6)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|---------|---------------|---|
| #1 | 162.00' | 5,828 cf | 18.50'W x 60.00'L x 5.25'H Prismatic |

| Device | Routing | Invert | Outlet Devices |
|--------|----------|---------|--|
| #1 | Primary | 162.00' | 12.0" Round Culvert L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 162.00' / 161.90' S= 0.0167 ' S= 0.0167 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf |
| #2 | Device 1 | 162.00' | 1.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads |
| #3 | Device 1 | 163.75' | 3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads |
| #4 | Device 1 | 166.90' | 8.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads |

Primary OutFlow Max=0.56 cfs @ 12.47 hrs HW=166.95' (Free Discharge)

- 1=Culvert (Passes 0.56 cfs of 7.98 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.06 cfs @ 10.67 fps)
 3=Orifice/Grate (Orifice Controls 0.41 cfs @ 8.45 fps)
 4=Orifice/Grate (Weir Controls 0.09 cfs @ 0.76 fps)

Summary for Pond 17P: SW Planter #1

Inflow Area = 0.408 ac, 89.71% Impervious, Inflow Depth = 6.55" for 100-YR event
 Inflow = 4.13 cfs @ 11.96 hrs, Volume= 0.223 af
 Outflow = 3.85 cfs @ 11.99 hrs, Volume= 0.223 af, Atten= 7%, Lag= 1.9 min
 Discarded = 0.02 cfs @ 0.59 hrs, Volume= 0.080 af
 Primary = 3.83 cfs @ 11.99 hrs, Volume= 0.143 af

Routing by Sim-Route method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 168.45' @ 11.99 hrs Surf.Area= 1,822 sf Storage= 2,635 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 311.0 min (1,053.7 - 742.7)

| Volume | Invert | Avail.Storage | Storage Description |
|---------------------|----------------------|---------------------------|--|
| #1 | 167.00' | 2,733 cf | Custom Stage Data (Prismatic) Listed below (Recalc) |
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
| 167.00 | 1,822 | 0 | 0 |
| 168.00 | 1,822 | 1,822 | 1,822 |
| 168.50 | 1,822 | 911 | 2,733 |

| Device | Routing | Invert | Outlet Devices |
|--------|-----------|---------|--|
| #1 | Discarded | 167.00' | 0.02 cfs Exfiltration at all elevations |
| #2 | Primary | 164.00' | 12.0" Round Culvert L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 164.00' / 162.00' S= 0.0667 ' S= 0.0667 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #3 | Device 2 | 168.00' | 15.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads |

Discarded OutFlow Max=0.02 cfs @ 0.59 hrs HW=167.00' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=3.82 cfs @ 11.99 hrs HW=168.45' TW=164.69' (Dynamic Tailwater)

↑**2=Culvert** (Passes 3.82 cfs of 7.33 cfs potential flow)

↑**3=Orifice/Grate** (Weir Controls 3.82 cfs @ 2.18 fps)

Part 8:

Maintenance and Inspection

STORMWATER MANAGEMENT SYSTEM MAINTENANCE AGREEMENT
The Reserve at Hackett Boulevard

THIS AGREEMENT (“Agreement”) is made and entered into on the ____ day of _____, 201__, by and between

Ronald Stein, with an address at 204 Winding Brook Road, New Rochelle, New York 10804 (hereinafter referred to as the “Facility Owner”), and

CITY OF ALBANY, a municipal corporation with an address at 24 Eagle Street, Albany, New York 12207 (hereinafter referred to as the “City”).

WITNESSETH:

WHEREAS, the Facility Owner is the owner of the subject parcel of land in the City of Albany, County of Albany and State of New York as more particularly located at tax parcels 76.46-4-29 and 76.46-4-30.

WHEREAS, the City and Facility Owner desire that the stormwater management system be built in accordance with the approved project documents and thereafter be maintained, cleaned, repaired, replaced and continued in perpetuity in order to ensure optimum performance of the components; and

WHEREAS, the City has requested this legally binding and enforceable maintenance agreement from the Facility Owner; and

WHEREAS, the Facility Owner is representing the following design documents, with their City approved revisions, as containing all necessary information to construct, operate and maintain the stormwater management system for the lifetime of the facility:

- a. Plan set submitted to the City representing a stormwater management system including stormwater collection, conveyance and storage using structures designed and specified by Engineering Ventures, P.C., Consulting Engineers, sealed by Michael Henri Dussault, P.E., as the Engineer of Record. The plan sheets showing features associated with the stormwater management system are listed below.

| Sheet # | Date | Drawing Title |
|---------|------------------------------------|--|
| C0.0 | 2/12/2021, last revised 04/09/2021 | Cover Sheet |
| C0.1 | 2/12/2021, last revised 04/09/2021 | Site Legend and Notes |
| C1.0 | 2/12/2021, last revised 04/09/2021 | Existing Conditions and Demolition Plan |
| C2.0 | 2/12/2021, last revised 04/09/2021 | Site Layout Plan |
| C2.1 | 2/12/2021, last revised 04/09/2021 | Grading and Utility Plan |
| C2.2 | 2/12/2021, last revised 04/09/2021 | Profiles (1 of 2) |
| C2.3 | 2/12/2021, last revised 04/09/2021 | Profiles (2 of 2) |
| C2.4 | 2/12/2021, last revised 04/09/2021 | Erosion and Sediment Control Plan |
| C3.0 | 2/12/2021, last revised 04/09/2021 | Site and Water Details |
| C3.1 | 2/12/2021, last revised 04/09/2021 | Stormwater Details (1 of 2) & Sanitary Details |
| C3.2 | 2/12/2021, last revised 04/09/2021 | Stormwater Details (2 of 2) |
| C3.3 | 2/12/2021, last revised 04/09/2021 | Erosion & Sediment Control Details (1 of 2) |
| C3.4 | 2/12/2021, last revised 04/09/2021 | Erosion & Sediment Control Details (2 of 2) |
| C3.5 | 2/12/2021, last revised 04/09/2021 | City of Albany Standard Site Details |

- b. “Stormwater Pollution Prevention Plan for Hackett Boulevard Apartments”, prepared by Engineering Ventures, P.C., 208 Flynn Avenue, Suite 2A, Burlington, Vermont, 05401, dated February 12, 2021, and last revised April 9, 2021.

IN CONSIDERATION THEREOF, the parties agree as follow:

1. The Facility Owner shall be responsible for maintaining the storm facility in a manner to prevent silt from becoming tributary to City’s stormwater drainage system.
2. Operation and maintenance, including inspection and cleaning of the full stormwater drainage system, shall be the responsibility of the Facility Owner.

3. In the event the Facility Owner fails to maintain the system in a manner to control stormwater the City may order the system cleaned and bill the Facility Owner the full cost of this work at labor cost (direct labor plus 50% salary burden) and materials (at cost) if work is performed by the Department of Water and Water Supply; or the cost of a subcontractor plus 10% of the subcontractor's bill of the Department of Water and Water Supply obtains a subcontractor to perform the work. Invoices are payable to the Department of Water and Water Supply within ten (10) business days from the date of invoice. In the event payment for costs is not received within said ten (10) day period, the Department of Water and Water Supply shall have the right to file a lien in the amount of the invoice, together with reasonable costs of collection incurred in the connection therewith, against the property of the Facility Owner.
4. The City has the right to access the premises for periodic inspections and to perform any maintenance of the stormwater system.
5. The Facility Owner shall disclose this Agreement to any successor or assignees in interest.
6. This Agreement is binding on the Facility Owner and any successor or assignees in interest hereof.
7. Facility Owner agrees to defend, indemnify, and save harmless the CITY and its offices, employees and agents, from and against all claims, actions, causes of action, injuries, damages, losses, liabilities, and expenses (including, without limitation, reasonable attorney's fees and court costs) arising out of, or in consequence of, any negligent or intentional act or omission of Facility Owner to the extent of its or their responsibility for such claims, actions, causes of action, injuries, damages, losses, liabilities, and expenses. The provisions of this Article shall survive any termination or expiration of this Agreement.

[Signatures on next page]

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be signed by their duly authorized officers as of the day and year first above written.

CITY OF ALBANY, NEW YORK

BY: _____
KATHY M. SHEEHAN
MAYOR, CITY OF ALBANY

FACILITY OWNER

BY: _____
NAME:
TITLE:

STATE OF NEW YORK)
)
COUNTY OF ALBANY) ss.:

On the ____ day of _____, 201__, before me the undersigned, a Notary Public in and for said State, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or person upon behalf of which the individual acted, executed the instrument.

Notary Public

STATE OF NEW YORK)
)
COUNTY OF ALBANY) ss.:

On the ____ day of _____, 201__, before me the undersigned, a Notary Public in and for said State, personally appeared _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or person upon behalf of which the individual acted, executed the instrument.

Notary Public

CONTRACTOR, SUB-CONTRACTOR, AND TRAINED CONTRACTOR CERTIFICATION

Prior to the commencement of construction activities, the *Owner or Operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting, and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *Owner or Operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for the implementation of the SWPPP, known as the *Trained Contractor*. The *Owner or Operator* shall ensure that at least one (1) *Trained Contractor* is on site on a daily basis when soil disturbance activities are being performed.

To be completed by each Contractor and Sub-Contractor:

I hereby certify under penalty of law 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 am aware that there are significant penalties for submitting false information that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations.

Name & Title (PRINT) _____

Signature: _____ Date: _____

Specific Elements of SWPPP that Contractor/Subcontractor is Responsible for:

Name & Title of Trained Contractor (PRINT):

Signature: _____ Date: _____

Company Name: _____

Address: _____

Phone: _____

Project Site Location/Address: _____

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 professional¹ conduct an assessment of the site prior to the commencement of construction² 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 stabilization³ 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? _____

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

CONSTRUCTION DURATION INSPECTIONS
Runoff Control Practices (continued)

Page 3 of _____

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 1 acre 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.

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

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

a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or

3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

This image shows a full page of white paper with horizontal black lines, resembling notebook paper. The lines are evenly spaced and run across the entire width of the page. There are no margins, text, or other markings present.

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 |
|--------------------|-------------------------------------|-------------------|------------------|
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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.

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Part 9:

Forms Need for Compliance with GP-0-20-001

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.29

(Submission #: HP7-TQ6Y-CY0VR, version 1)

Details

Originally Started By Mark DeCrescente

Submission ID HP7-TQ6Y-CY0VR

Submission Reason New

Status Draft

Active Steps Form Submitted

Form Input

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)

Ronald Stein

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Stein

Owner/Operator Contact Person First Name

Ronald

Owner/Operator Mailing Address

204 Winding Brook Road

City

New Rochelle

State

NY

Zip

10804

Phone

917-885-7108

Email

ronald.stein@att.net

Federal Tax ID

NONE PROVIDED

Project Location**Project/Site Name**

Reserve at Hackett Boulevard

Street Address (Not P.O. Box)

42 Besch Avenue

Side of Street

South

City/Town/Village (THAT ISSUES BUILDING PERMIT)

Albany

State

NY

Zip

12209

County

ALBANY

DEC Region

4

Name of Nearest Cross Street

Crown Terrace

Distance to Nearest Cross Street (Feet)

100

Project In Relation to Cross Street

East

Tax Map Numbers Section-Block-Parcel

76.46-4-29 and 76.46-4-30

Tax Map Numbers

NONE PROVIDED

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are:

- Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates.
- The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates

42.64644761701491,-73.77420387320899

Project Details**2. What is the nature of this project?**

New Construction

3. Select the predominant land use for both pre and post development conditions.**Pre-Development Existing Landuse**

Pasture/Open Land

Post-Development Future Land Use

Multifamily Residential

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.

NONE PROVIDED

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area.

*** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres)

0.9

Total Area to be Disturbed (acres)

0.8

Existing Impervious Area to be Disturbed (acres)

0

Future Impervious Area Within Disturbed Area (acres)

.5

5. Do you plan to disturb more than 5 acres of soil at any one time?

No

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

A (%)

0

B (%)

0

C (%)

40

D (%)

60

7. Is this a phased project?

No

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

Start Date

9/1/2021

End Date

11/2/2022

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

Hudson

9a. Type of waterbody identified in question 9?

River Off Site

Other Waterbody Type Off Site Description

NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified?

NONE PROVIDED

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001?

No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001?

No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?

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?

No

If Yes, what is the acreage to be disturbed?

NONE PROVIDED

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?

No

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?

Yes

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

City of Albany

17. Does any runoff from the site enter a sewer classified as a Combined Sewer?

Yes

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?

No

19. Is this property owned by a state authority, state agency, federal government or local government?

No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.)

No

Required SWPPP Components

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

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

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

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

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:
Professional Engineer (P.E.)

SWPPP Preparer

Engineering Ventures, P.C.

Contact Name (Last, Space, First)

DeCrescente, Mark

Mailing Address

414 Union Street

City

Schenectady

State

NY

Zip

12305

Phone

518-205-9141

Email

markd@engineeringventures.com

Download SWPPP Preparer Certification Form

Please take the following steps to prepare and upload your preparer certification form:

- 1) Click on the link below to download a blank certification form
- 2) The certified SWPPP preparer should sign this form

3) Scan the signed form

4) Upload the scanned document

[Download SWPPP Preparer Certification Form](#)

Please upload the SWPPP Preparer Certification

09.2_SWPPP Preparer Certification Form (GP-0-20-001).pdf - 04/08/2021 03:57 PM

Comment

NONE PROVIDED

Erosion & Sediment Control Criteria

25. Has a construction sequence schedule for the planned management practices been prepared?

Yes

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

Temporary Structural

Dust Control

Silt Fence

Stabilized Construction Entrance

Storm Drain Inlet Protection

Biotechnical

None

Vegetative Measures

Protecting Vegetation

Mulching

Seeding

Topsoiling

Permanent Structural

Land Grading

Other

Concrete Truck Washout, Erosion Control Blanket

Post-Construction Criteria

*** 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 Area

Reduction of Clearing and Grading

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).

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

0.035

29. Post-construction SMP Identification

Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28).

Identify the SMPs to be used by providing 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 the Post-Construction SMP Identification section 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.

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

0.035

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

Yes

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)] (acre-feet)

NONE PROVIDED

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

NONE PROVIDED

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; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs

Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30).

Also, provide the total impervious area that contributes runoff to each practice selected.

NOTE: Use the Post-construction SMP Identification section 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. (acre-feet)

NONE PROVIDED

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 - 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).

NONE PROVIDED

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?

NONE PROVIDED

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, 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 (acre-feet)

0.083

CPv Provided (acre-feet)

0.083

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

NONE PROVIDED

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

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)

2.76

Post-Development (CFS)

1.51

Total Extreme Flood Control Criteria (Qf)**Pre-Development (CFS)**

6.52

Post-Development (CFS)

3.02

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

NONE PROVIDED

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?

Yes

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

Owner

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.

NONE PROVIDED

Post-Construction SMP Identification**Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs**

Identify the Post-construction SMPs to be used by providing 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.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)

0

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)

0

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)

0

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)

0

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)

0

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)

0

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)

0

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)

0

Total Contributing Impervious Acres for Vegetated Swale (RR-5)

0

Total Contributing Impervious Acres for Rain Garden (RR-6)

0

Total Contributing Impervious Acres for Stormwater Planter (RR-7)

0.408

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)

0

Total Contributing Impervious Acres for Porous Pavement (RR-9)

0

Total Contributing Impervious Acres for Green Roof (RR-10)

0

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)

0

Total Contributing Impervious Acres for Infiltration Basin (I-2)

0

Total Contributing Impervious Acres for Dry Well (I-3)

0

Total Contributing Impervious Acres for Underground Infiltration System (I-4)

0

Total Contributing Impervious Acres for Bioretention (F-5)

0

Total Contributing Impervious Acres for Dry Swale (O-1)

0

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)

0

Total Contributing Impervious Acres for Wet Pond (P-2)

0

Total Contributing Impervious Acres for Wet Extended Detention (P-3)

0

Total Contributing Impervious Acres for Multiple Pond System (P-4)

0

Total Contributing Impervious Acres for Pocket Pond (P-5)

0

Total Contributing Impervious Acres for Surface Sand Filter (F-1)

0

Total Contributing Impervious Acres for Underground Sand Filter (F-2)

0

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)

0

Total Contributing Impervious Acres for Organic Filter (F-4)

0

Total Contributing Impervious Acres for Shallow Wetland (W-1)

0

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)

0

Total Contributing Impervious Acres for Pond/Wetland System (W-3)

0

Total Contributing Impervious Acres for Pocket Wetland (W-4)

0

Total Contributing Impervious Acres for Wet Swale (O-2)

0

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

Total Contributing Impervious Area for Hydrodynamic

NONE PROVIDED

Total Contributing Impervious Area for Wet Vault

0

Total Contributing Impervious Area for Media Filter

0

"Other" Alternative SMP?

0

Total Contributing Impervious Area for "Other"

0

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

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.

Manufacturer of Alternative SMP

NONE PROVIDED

Name of Alternative SMP

NONE PROVIDED

Other Permits

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

None

If SPDES Multi-Sector GP, then give permit ID

NONE PROVIDED

If Other, then identify

NONE PROVIDED

41. Does this project require a US Army Corps of Engineers Wetland Permit?

No

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth

NONE PROVIDED

42. 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.

NONE PROVIDED

MS4 SWPPP Acceptance

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?

Yes - Please attach the MS4 Acceptance form below

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?

No

MS4 SWPPP Acceptance Form Download

Download form from the link below. Complete, sign, and upload.

[MS4 SWPPP Acceptance Form](#)

MS4 Acceptance Form Upload

09.2_MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form.pdf -

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Comment

NONE PROVIDED

Owner/Operator Certification

Owner/Operator Certification Form Download

Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.

[Owner/Operator Certification Form \(PDF, 45KB\)](#)

Upload Owner/Operator Certification Form

NONE PROVIDED

Comment

NONE PROVIDED

Attachments

| Date | Attachment Name | Context | User |
|---------------------|---|------------|------------------|
| 4/8/2021 4:09 PM | 09.2_MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form.pdf | Attachment | Mark DeCrescente |
| 4/8/2021 3:57 PM | 09.2_SWPPP Preparer Certification Form (GP-0-20-001).pdf | Attachment | Mark DeCrescente |

Status History

| | User | Processing Status |
|---------------------|------------------|-------------------|
| 4/8/2021 2:11:32 PM | Mark DeCrescente | Draft |

Processing Steps

| Step Name | Assigned To/Completed By | Date Completed |
|----------------|--------------------------|----------------|
| Form Submitted | | |
| Under Review | DAVID GASPER | |



SWPPP Preparer Certification Form

*SPDES General Permit for Stormwater
Discharges From Construction Activity
(GP-0-20-001)*

Project Site Information

Project/Site Name

Reserve at Hackett Boulevard

Owner/Operator Information

Owner/Operator (Company Name/Private Owner/Municipality Name)

Ronald Stein

Certification Statement – SWPPP Preparer

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-0-20-001. 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.

Mark

First name

J

DeCrescente

Last Name

Signature



4/8/2021

Date



Department of
Environmental
Conservation

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

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information

1. Owner/Operator Name: Ronald Stein
2. Contact Person: Ronald Stein
3. Street Address: 204 Winding Brook Road
4. City/State/Zip: New Rochelle, NY 10804

II. Project Site Information

5. Project/Site Name: Reserve at Hackett Boulevard
6. Street Address: 42 Besch Avenue
7. City/State/Zip: Albany, NY 12209

III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information

8. SWPPP Reviewed by:
9. Title/Position:
10. Date Final SWPPP Reviewed and Accepted:

IV. Regulated MS4 Information

11. Name of MS4:
12. MS4 SPDES Permit Identification Number: NYR20A
13. Contact Person:
14. Street Address:
15. City/State/Zip:
16. Telephone Number:

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information



Owner/Operator Certification Form

SPDES General Permit For Stormwater Discharges From Construction Activity (GP-0-20-001)

Project/Site Name: Reserve at Hackett Boulevard

eNOI Submission Number: HP7-TQ6Y-CY0VR

eNOI Submitted by: ☐ Owner/Operator ☒ SWPPP Preparer ☐ Other

Certification Statement - Owner/Operator

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.

Owner/Operator First Name
TR Hackett LLC Ron

M.I. Last Name
J Stein

Ron Stein

Signature

4/8/21

Date

**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)

Part 10:

Copy of GP-0-20-001



Department of
Environmental
Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70
of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

A handwritten signature in black ink, appearing to be "John J. Ferguson", written over a horizontal line. The signature is stylized and cursive.

Authorized Signature

1-23-20
Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act (“CWA”), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System (“NPDES”)* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of “*construction activity*”, as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM
CONSTRUCTION ACTIVITIES**

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit 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* 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;
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* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

Discharges authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge of pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* (“SWPPP”) the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

- a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:
- (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharges*;
 - (ii) Control stormwater *discharges*, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;
 - (iii) *Minimize* the amount of soil exposed during *construction activity*;
 - (iv) *Minimize* the disturbance of *steep slopes*;
 - (v) *Minimize* sediment *discharges* from the site;
 - (vi) Provide and maintain *natural buffers* around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharges*, unless *infeasible*;
 - (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;
 - (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and
 - (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.
- b. **Soil Stabilization.** In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, 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. See Appendix A for definition of *Temporarily Ceased*.

- c. **Dewatering.** *Discharges from dewatering activities, including discharges from dewatering of trenches and excavations, must be managed by appropriate control measures.*
- d. **Pollution Prevention Measures.** Design, install, implement, and maintain effective pollution prevention measures to *minimize the discharge of pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:
 - (i) *Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;*
 - (ii) *Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and*
 - (iii) *Prevent the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.*
- e. **Prohibited Discharges.** The following *discharges* are prohibited:
 - (i) *Wastewater from washout of concrete;*
 - (ii) *Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;*

- (iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;
 - (iv) Soaps or solvents used in vehicle and equipment washing; and
 - (v) Toxic or hazardous substances from a spill or other release.
- f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual (“Design Manual”), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices (“SMPs”) are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.
2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

- (i) Runoff Reduction Volume (“RRv”): Reduce the total Water Quality Volume (“WQv”) by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.
- (ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

- (iii) Channel Protection Volume (“Cpv”): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
 - (1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
 - (2) The site discharges directly to tidal waters, or fifth order or larger streams.
- (iv) *Overbank* Flood Control Criteria (“Qp”): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 - (1) the site discharges directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.
- (v) Extreme Flood Control Criteria (“Qf”): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 - (1) the site discharges directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.

b. Sizing Criteria for New Development in Enhanced Phosphorus Removal Watershed

- (i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

- (ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

- (iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
 - (1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
 - (2) The site *discharges* directly to tidal waters, or fifth order or larger streams.
- (iv) Overbank Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.
- (v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

- (i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.
 - (1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or
 - (2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or
 - (3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or
 - (4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

- (ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.
- (iii) Overbank Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.
- (iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharges* necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;
2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and
3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity to surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.
2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharges*; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.
3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharges* from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.
4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharges after construction activities* have been completed and the site has undergone *final stabilization*;
2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;
3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;
4. *Construction activities or discharges from construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;
6. *Construction activities* for residential, commercial and institutional projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which are undertaken on land with no existing *impervious cover*; and
 - c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture (“USDA”) Soil Survey as Soil Slope Phase “D”, (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase “E” or “F” (regardless of the map unit name), or a combination of the three designations.
7. *Construction activities* for linear transportation projects and linear utility projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which are undertaken on land with no existing *impervious cover*; and
 - c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase “D” (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase “E” or “F” (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:
- a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.
 - 1-5 acres of disturbance - 20 feet
 - 5-20 acres of disturbance - 50 feet
 - 20+ acres of disturbance - 100 feet, or
 - b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
 - (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
 - (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
 - (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
 - (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or
 - c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

- (i) No Affect
- (ii) No Adverse Affect
- (iii) Executed Memorandum of Agreement, or

d. Documentation that:

- (i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharges from construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.
2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the “MS4 SWPPP Acceptance” form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.
3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of Owner or Operator) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (<http://www.dec.ny.gov/>). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

**NOTICE OF INTENT
NYS DEC, Bureau of Water Permits
625 Broadway, 4th Floor
Albany, New York 12233-3505**

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.
3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.
4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.
2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:
 - a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (<http://www.dec.ny.gov/>) for more information,
 - b. where required, all necessary Department permits subject to the *Uniform Procedures Act* ("UPA") (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators of construction activities* that are required to obtain UPA permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

- c. the final SWPPP has been prepared, and
 - d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.
3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:
- a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:
 - (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or
 - (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;
 - (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

- b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:
 - (i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed “MS4 SWPPP Acceptance” form, or
 - (ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed “MS4 SWPPP Acceptance” form.
- 4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

- 1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination (“NOT”) has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.
- 2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor’s or subcontractor’s certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.
- 3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

- use control MS4, the regulated, traditional land use control MS4 (provided the regulated, traditional land use control MS4 is not the owner or operator of the construction activity). 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 in accordance with Part IV.C. of this permit 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 temporarily or permanently ceased, 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. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.
 - 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.
 - e. The *owner or operator* shall include the requirements above in their SWPPP.
4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..
 5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.
 6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of a *construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4*, the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.
2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.
3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.
2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.
3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.
4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:
 - a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

- b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;
 - c. to address issues or deficiencies identified during an inspection by the *qualified inspector*, the Department or other regulatory authority; and
 - d. to document the final construction conditions.
5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.
6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor*. The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

"I hereby certify under penalty of law 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 am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:
 - a. Background information about the scope of the project, including the location, type and size of project

- b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge(s)*;
- c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);
- d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;
- e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;
- f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;
- g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;
- h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;
- i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

- j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;
 - k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and
 - l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.
2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

The post-construction stormwater management practice component of the SWPPP shall include the following:

- a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

- b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;
- c. A Stormwater Modeling and Analysis Report that includes:
 - (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;
 - (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;
 - (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;
 - (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;
 - (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and
 - (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;
- d. Soil testing results and locations (test pits, borings);
- e. Infiltration test results, when required; and
- f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria*, Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators of construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators of the construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.
2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.
3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance 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.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
 - Certified Professional in Erosion and Sediment Control (CPESC),
 - New York State Erosion and Sediment Control Certificate Program holder
 - Registered Landscape Architect, or
 - someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].
1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:
 - a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

- b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;
 - c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and
 - d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.
2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:
- a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.
 - b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
 - c. For construction sites 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 DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

- d. For construction sites 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 DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization*, and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed 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 address in Part II.B.1 of this permit.
 - e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization*, all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.
 4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

- a. Date and time of inspection;
- b. Name and title of person(s) performing inspection;
- c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
- d. 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;
- e. 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;
- f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;
- g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
- h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;
- i. 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;
- j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);
- k. Identification and status of all corrective actions that were required by previous inspection; and

- I. 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.
5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit 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.
6. All inspection reports shall be signed by the *qualified inspector*. Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.
2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:
 - a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

- b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; 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;
 - c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.
 - d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.
3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the “*Final Stabilization*” and “Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.
4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the “MS4 Acceptance” statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector’s* final site inspection certification(s) required in Part V.A.3. of this permit.
5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:
- a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

- b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),
- c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism 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,
- d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator*, its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to \$37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit, or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:
 - a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

- (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
 - (ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
 - b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or
 - c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:
 - (i) the chief executive officer of the agency, or
 - (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).
2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:
- a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

- c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.
3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.
4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4*, or by a duly authorized representative of that person.

It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge(s)*, the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner's or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.
4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.
2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property – means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the “Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State” prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both “sewage” and “stormwater”.

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for “*Construction Activity(ies)*” also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for “*Commence (Commencement of) Construction Activities*” and “*Larger Common Plan of Development or Sale*” also.

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment – means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department’s rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

- (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State;
- (ii) Designed or used for collecting or conveying stormwater;
- (iii) Which is not a *combined sewer*; and
- (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer – means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the “Required Elements” sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank Flood* (Qp), and *Extreme Flood* (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture (“USDA”) Soil Survey as Soil Slope Phase “D”, (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint sources*. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint sources*, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

| |
|--|
| <p>The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:</p> <ul style="list-style-type: none">• Single family home <u>not</u> located in one of the watersheds listed in Appendix C or <u>not directly discharging</u> to one of the 303(d) segments listed in Appendix E• Single family residential subdivisions with 25% or less impervious cover at total site build-out and <u>not</u> located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E• Construction of a barn or other <i>agricultural building</i>, silo, stock yard or pen. |
| <p>The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:</p> <p>All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.</p> |
| <p>The following construction activities that involve soil disturbances of one (1) or more acres of land:</p> <ul style="list-style-type: none">• Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains• Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects• Pond construction• Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover• Cross-country ski trails and walking/hiking trails• Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;• Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.• Slope stabilization projects• Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics |

**Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP
THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS**

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the “Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State”, excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES
POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

**CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES
POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES**

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover*, and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual (“Design Manual”).

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

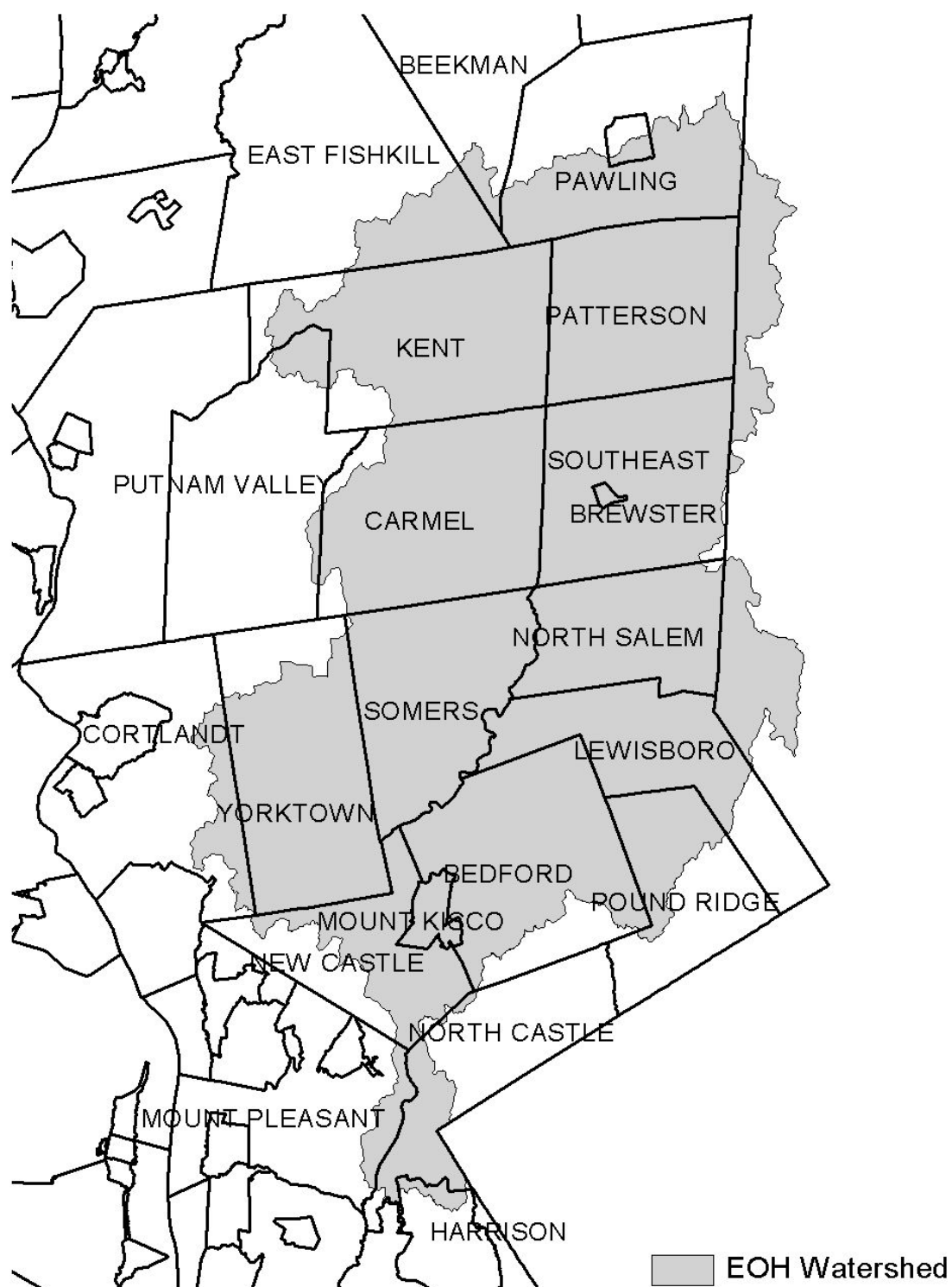
Figure 1 - New York City Watershed East of the Hudson

Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

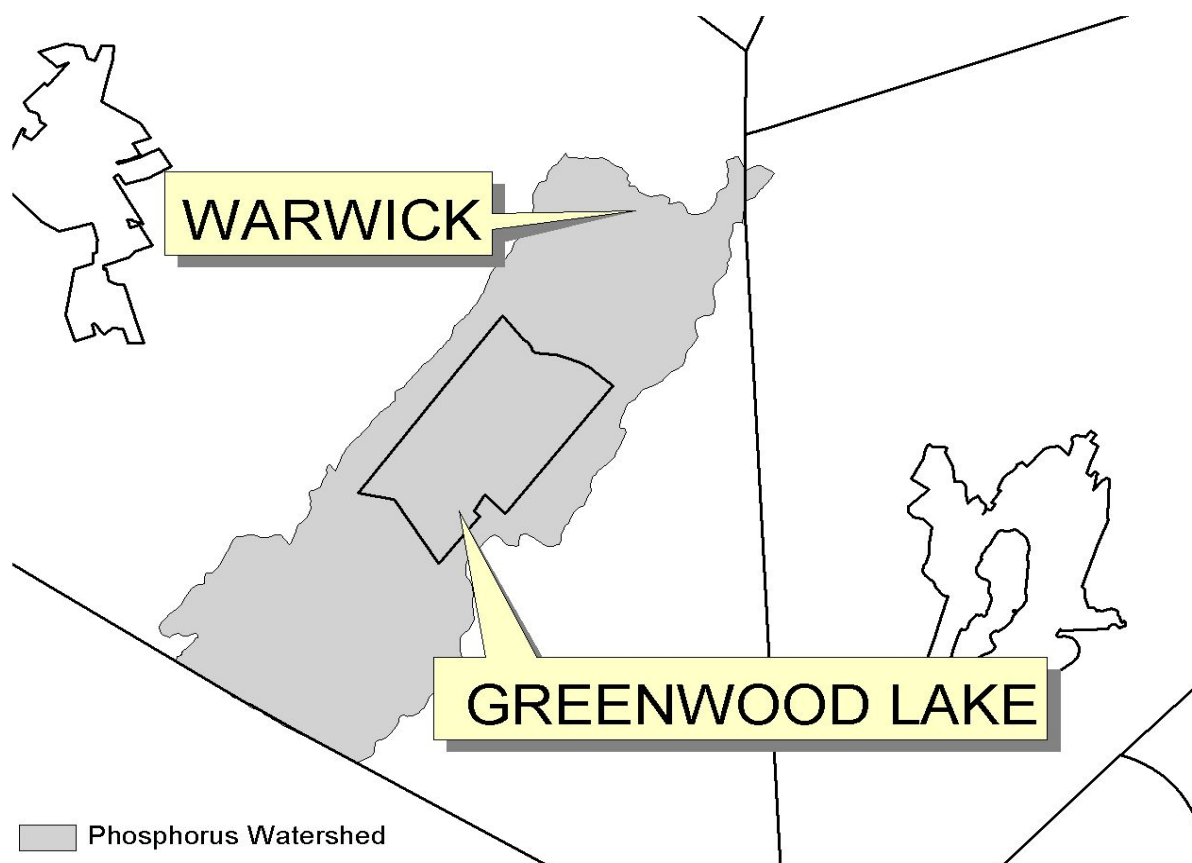


Figure 4 - Oscawana Lake Watershed

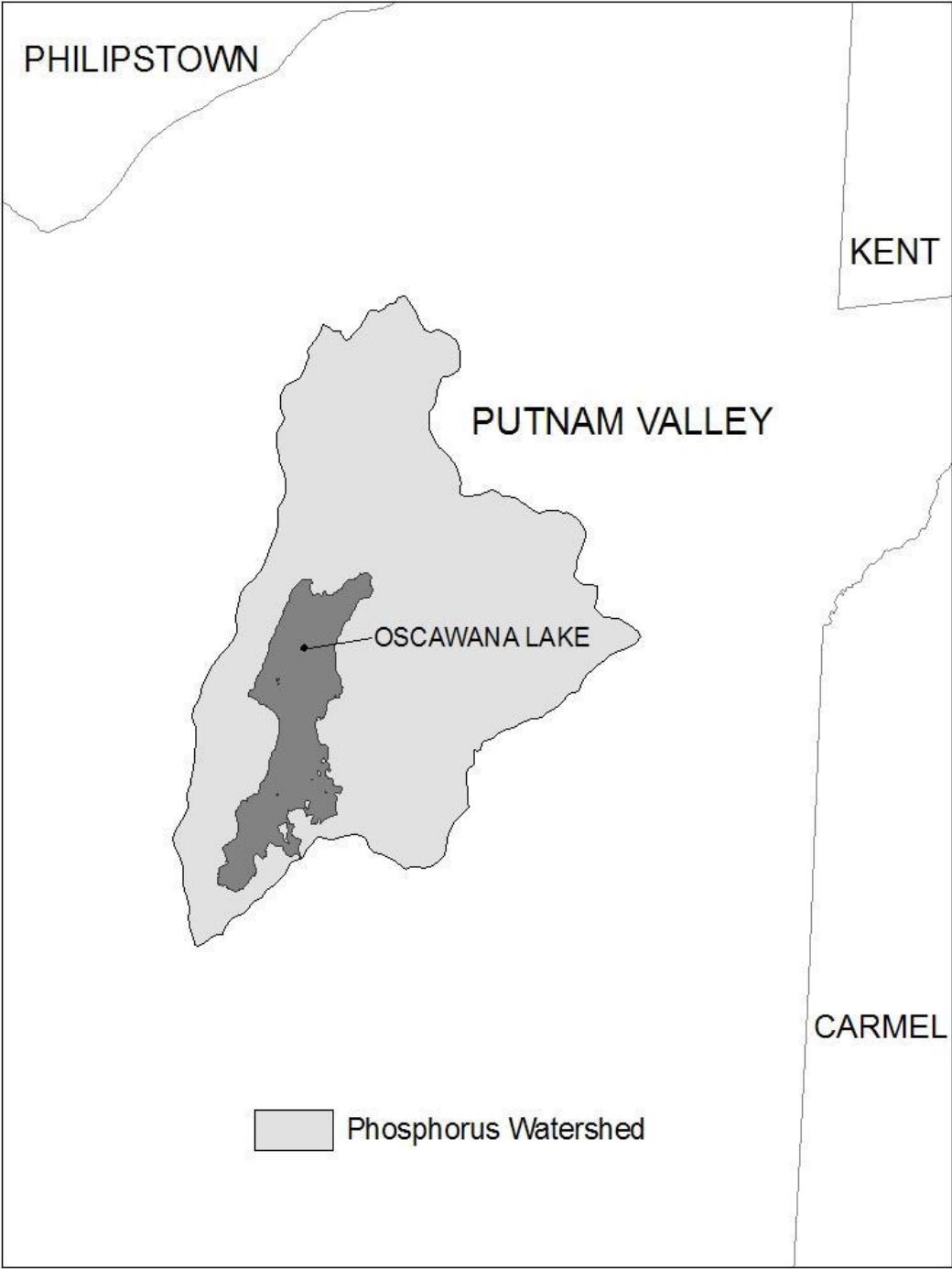
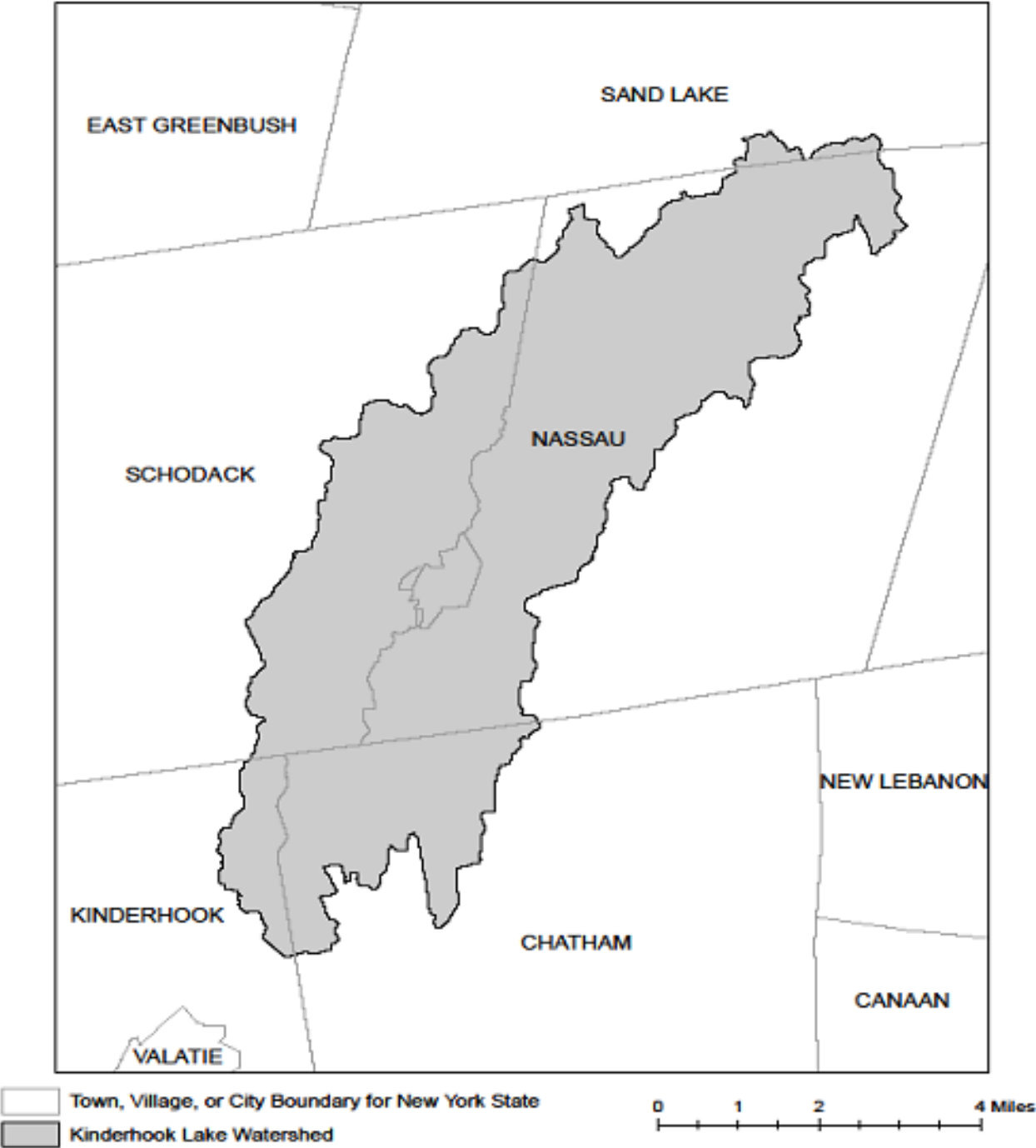


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

| |
|--|
| Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C |
|--|

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

| COUNTY | WATERBODY | POLLUTANT |
|-------------|--|---------------|
| Albany | Ann Lee (Shakers) Pond, Stump Pond | Nutrients |
| Albany | Basic Creek Reservoir | Nutrients |
| Allegany | Amity Lake, Saunders Pond | Nutrients |
| Bronx | Long Island Sound, Bronx | Nutrients |
| Bronx | Van Cortlandt Lake | Nutrients |
| Broome | Fly Pond, Deer Lake, Sky Lake | Nutrients |
| Broome | Minor Tribs to Lower Susquehanna (north) | Nutrients |
| Broome | Whitney Point Lake/Reservoir | Nutrients |
| Cattaraugus | Allegheny River/Reservoir | Nutrients |
| Cattaraugus | Beaver (Alma) Lake | Nutrients |
| Cattaraugus | Case Lake | Nutrients |
| Cattaraugus | Linlyco/Club Pond | Nutrients |
| Cayuga | Duck Lake | Nutrients |
| Cayuga | Little Sodus Bay | Nutrients |
| Chautauqua | Bear Lake | Nutrients |
| Chautauqua | Chadakoin River and tribs | Nutrients |
| Chautauqua | Chautauqua Lake, North | Nutrients |
| Chautauqua | Chautauqua Lake, South | Nutrients |
| Chautauqua | Findley Lake | Nutrients |
| Chautauqua | Hulburt/Clymer Pond | Nutrients |
| Clinton | Great Chazy River, Lower, Main Stem | Silt/Sediment |
| Clinton | Lake Champlain, Main Lake, Middle | Nutrients |
| Clinton | Lake Champlain, Main Lake, North | Nutrients |
| Columbia | Kinderhook Lake | Nutrients |
| Columbia | Robinson Pond | Nutrients |
| Cortland | Dean Pond | Nutrients |

303(d) Segments Impaired by Construction Related Pollutant(s)

| | | |
|------------|---|---------------|
| Dutchess | Fall Kill and tribs | Nutrients |
| Dutchess | Hillside Lake | Nutrients |
| Dutchess | Wappingers Lake | Nutrients |
| Dutchess | Wappingers Lake | Silt/Sediment |
| Erie | Beeman Creek and tribs | Nutrients |
| Erie | Ellicott Creek, Lower, and tribs | Silt/Sediment |
| Erie | Ellicott Creek, Lower, and tribs | Nutrients |
| Erie | Green Lake | Nutrients |
| Erie | Little Sister Creek, Lower, and tribs | Nutrients |
| Erie | Murder Creek, Lower, and tribs | Nutrients |
| Erie | Rush Creek and tribs | Nutrients |
| Erie | Scajaquada Creek, Lower, and tribs | Nutrients |
| Erie | Scajaquada Creek, Middle, and tribs | Nutrients |
| Erie | Scajaquada Creek, Upper, and tribs | Nutrients |
| Erie | South Branch Smoke Cr, Lower, and tribs | Silt/Sediment |
| Erie | South Branch Smoke Cr, Lower, and tribs | Nutrients |
| Essex | Lake Champlain, Main Lake, South | Nutrients |
| Essex | Lake Champlain, South Lake | Nutrients |
| Essex | Willsboro Bay | Nutrients |
| Genesee | Bigelow Creek and tribs | Nutrients |
| Genesee | Black Creek, Middle, and minor tribs | Nutrients |
| Genesee | Black Creek, Upper, and minor tribs | Nutrients |
| Genesee | Bowen Brook and tribs | Nutrients |
| Genesee | LeRoy Reservoir | Nutrients |
| Genesee | Oak Orchard Cr, Upper, and tribs | Nutrients |
| Genesee | Tonawanda Creek, Middle, Main Stem | Nutrients |
| Greene | Schoharie Reservoir | Silt/Sediment |
| Greene | Sleepy Hollow Lake | Silt/Sediment |
| Herkimer | Steele Creek tribs | Silt/Sediment |
| Herkimer | Steele Creek tribs | Nutrients |
| Jefferson | Moon Lake | Nutrients |
| Kings | Hendrix Creek | Nutrients |
| Kings | Prospect Park Lake | Nutrients |
| Lewis | Mill Creek/South Branch, and tribs | Nutrients |
| Livingston | Christie Creek and tribs | Nutrients |
| Livingston | Conesus Lake | Nutrients |
| Livingston | Mill Creek and minor tribs | Silt/Sediment |
| Monroe | Black Creek, Lower, and minor tribs | Nutrients |
| Monroe | Buck Pond | Nutrients |
| Monroe | Cranberry Pond | Nutrients |

303(d) Segments Impaired by Construction Related Pollutant(s)

| | | |
|----------|--|---------------|
| Monroe | Lake Ontario Shoreline, Western | Nutrients |
| Monroe | Long Pond | Nutrients |
| Monroe | Mill Creek and tribs | Nutrients |
| Monroe | Mill Creek/Blue Pond Outlet and tribs | Nutrients |
| Monroe | Minor Tribs to Irondequoit Bay | Nutrients |
| Monroe | Rochester Embayment - East | Nutrients |
| Monroe | Rochester Embayment - West | Nutrients |
| Monroe | Shipbuilders Creek and tribs | Nutrients |
| Monroe | Thomas Creek/White Brook and tribs | Nutrients |
| Nassau | Beaver Lake | Nutrients |
| Nassau | Camaans Pond | Nutrients |
| Nassau | East Meadow Brook, Upper, and tribs | Silt/Sediment |
| Nassau | East Rockaway Channel | Nutrients |
| Nassau | Grant Park Pond | Nutrients |
| Nassau | Hempstead Bay | Nutrients |
| Nassau | Hempstead Lake | Nutrients |
| Nassau | Hewlett Bay | Nutrients |
| Nassau | Hog Island Channel | Nutrients |
| Nassau | Long Island Sound, Nassau County Waters | Nutrients |
| Nassau | Massapequa Creek and tribs | Nutrients |
| Nassau | Milburn/Parsonage Creeks, Upp, and tribs | Nutrients |
| Nassau | Reynolds Channel, west | Nutrients |
| Nassau | Tidal Tribs to Hempstead Bay | Nutrients |
| Nassau | Tribs (fresh) to East Bay | Nutrients |
| Nassau | Tribs (fresh) to East Bay | Silt/Sediment |
| Nassau | Tribs to Smith/Halls Ponds | Nutrients |
| Nassau | Woodmere Channel | Nutrients |
| New York | Harlem Meer | Nutrients |
| New York | The Lake in Central Park | Nutrients |
| Niagara | Bergholtz Creek and tribs | Nutrients |
| Niagara | Hyde Park Lake | Nutrients |
| Niagara | Lake Ontario Shoreline, Western | Nutrients |
| Niagara | Lake Ontario Shoreline, Western | Nutrients |
| Oneida | Ballou, Nail Creeks and tribs | Nutrients |
| Onondaga | Harbor Brook, Lower, and tribs | Nutrients |
| Onondaga | Ley Creek and tribs | Nutrients |
| Onondaga | Minor Tribs to Onondaga Lake | Nutrients |
| Onondaga | Ninemile Creek, Lower, and tribs | Nutrients |
| Onondaga | Onondaga Creek, Lower, and tribs | Nutrients |
| Onondaga | Onondaga Creek, Middle, and tribs | Nutrients |

303(d) Segments Impaired by Construction Related Pollutant(s)

| | | |
|------------|--|---------------|
| Onondaga | Onondaga Lake, northern end | Nutrients |
| Onondaga | Onondaga Lake, southern end | Nutrients |
| Ontario | Great Brook and minor tribs | Silt/Sediment |
| Ontario | Great Brook and minor tribs | Nutrients |
| Ontario | Hemlock Lake Outlet and minor tribs | Nutrients |
| Ontario | Honeoye Lake | Nutrients |
| Orange | Greenwood Lake | Nutrients |
| Orange | Monhagen Brook and tribs | Nutrients |
| Orange | Orange Lake | Nutrients |
| Orleans | Lake Ontario Shoreline, Western | Nutrients |
| Orleans | Lake Ontario Shoreline, Western | Nutrients |
| Oswego | Lake Neatahwanta | Nutrients |
| Oswego | Pleasant Lake | Nutrients |
| Putnam | Bog Brook Reservoir | Nutrients |
| Putnam | Boyd Corners Reservoir | Nutrients |
| Putnam | Croton Falls Reservoir | Nutrients |
| Putnam | Diverting Reservoir | Nutrients |
| Putnam | East Branch Reservoir | Nutrients |
| Putnam | Lake Carmel | Nutrients |
| Putnam | Middle Branch Reservoir | Nutrients |
| Putnam | Oscawana Lake | Nutrients |
| Putnam | Palmer Lake | Nutrients |
| Putnam | West Branch Reservoir | Nutrients |
| Queens | Bergen Basin | Nutrients |
| Queens | Flushing Creek/Bay | Nutrients |
| Queens | Jamaica Bay, Eastern, and tribs (Queens) | Nutrients |
| Queens | Kissena Lake | Nutrients |
| Queens | Meadow Lake | Nutrients |
| Queens | Willow Lake | Nutrients |
| Rensselaer | Nassau Lake | Nutrients |
| Rensselaer | Snyders Lake | Nutrients |
| Richmond | Grasmere Lake/Bradys Pond | Nutrients |
| Rockland | Congers Lake, Swartout Lake | Nutrients |
| Rockland | Rockland Lake | Nutrients |
| Saratoga | Ballston Lake | Nutrients |
| Saratoga | Dwaas Kill and tribs | Silt/Sediment |
| Saratoga | Dwaas Kill and tribs | Nutrients |
| Saratoga | Lake Lonely | Nutrients |
| Saratoga | Round Lake | Nutrients |
| Saratoga | Tribs to Lake Lonely | Nutrients |

303(d) Segments Impaired by Construction Related Pollutant(s)

| | | |
|-------------|---|---------------|
| Schenectady | Collins Lake | Nutrients |
| Schenectady | Duane Lake | Nutrients |
| Schenectady | Mariaville Lake | Nutrients |
| Schoharie | Engleville Pond | Nutrients |
| Schoharie | Summit Lake | Nutrients |
| Seneca | Reeder Creek and tribs | Nutrients |
| St.Lawrence | Black Lake Outlet/Black Lake | Nutrients |
| St.Lawrence | Fish Creek and minor tribs | Nutrients |
| Steuben | Smith Pond | Nutrients |
| Suffolk | Agawam Lake | Nutrients |
| Suffolk | Big/Little Fresh Ponds | Nutrients |
| Suffolk | Canaan Lake | Silt/Sediment |
| Suffolk | Canaan Lake | Nutrients |
| Suffolk | Flanders Bay, West/Lower Sawmill Creek | Nutrients |
| Suffolk | Fresh Pond | Nutrients |
| Suffolk | Great South Bay, East | Nutrients |
| Suffolk | Great South Bay, Middle | Nutrients |
| Suffolk | Great South Bay, West | Nutrients |
| Suffolk | Lake Ronkonkoma | Nutrients |
| Suffolk | Long Island Sound, Suffolk County, West | Nutrients |
| Suffolk | Mattituck (Marratooka) Pond | Nutrients |
| Suffolk | Meetinghouse/Terrys Creeks and tribs | Nutrients |
| Suffolk | Mill and Seven Ponds | Nutrients |
| Suffolk | Millers Pond | Nutrients |
| Suffolk | Moriches Bay, East | Nutrients |
| Suffolk | Moriches Bay, West | Nutrients |
| Suffolk | Peconic River, Lower, and tidal tribs | Nutrients |
| Suffolk | Quantuck Bay | Nutrients |
| Suffolk | Shinnecock Bay and Inlet | Nutrients |
| Suffolk | Tidal tribs to West Moriches Bay | Nutrients |
| Sullivan | Bodine, Montgomery Lakes | Nutrients |
| Sullivan | Davies Lake | Nutrients |
| Sullivan | Evens Lake | Nutrients |
| Sullivan | Pleasure Lake | Nutrients |
| Tompkins | Cayuga Lake, Southern End | Nutrients |
| Tompkins | Cayuga Lake, Southern End | Silt/Sediment |
| Tompkins | Owasco Inlet, Upper, and tribs | Nutrients |
| Ulster | Ashokan Reservoir | Silt/Sediment |
| Ulster | Esopus Creek, Upper, and minor tribs | Silt/Sediment |
| Warren | Hague Brook and tribs | Silt/Sediment |

303(d) Segments Impaired by Construction Related Pollutant(s)

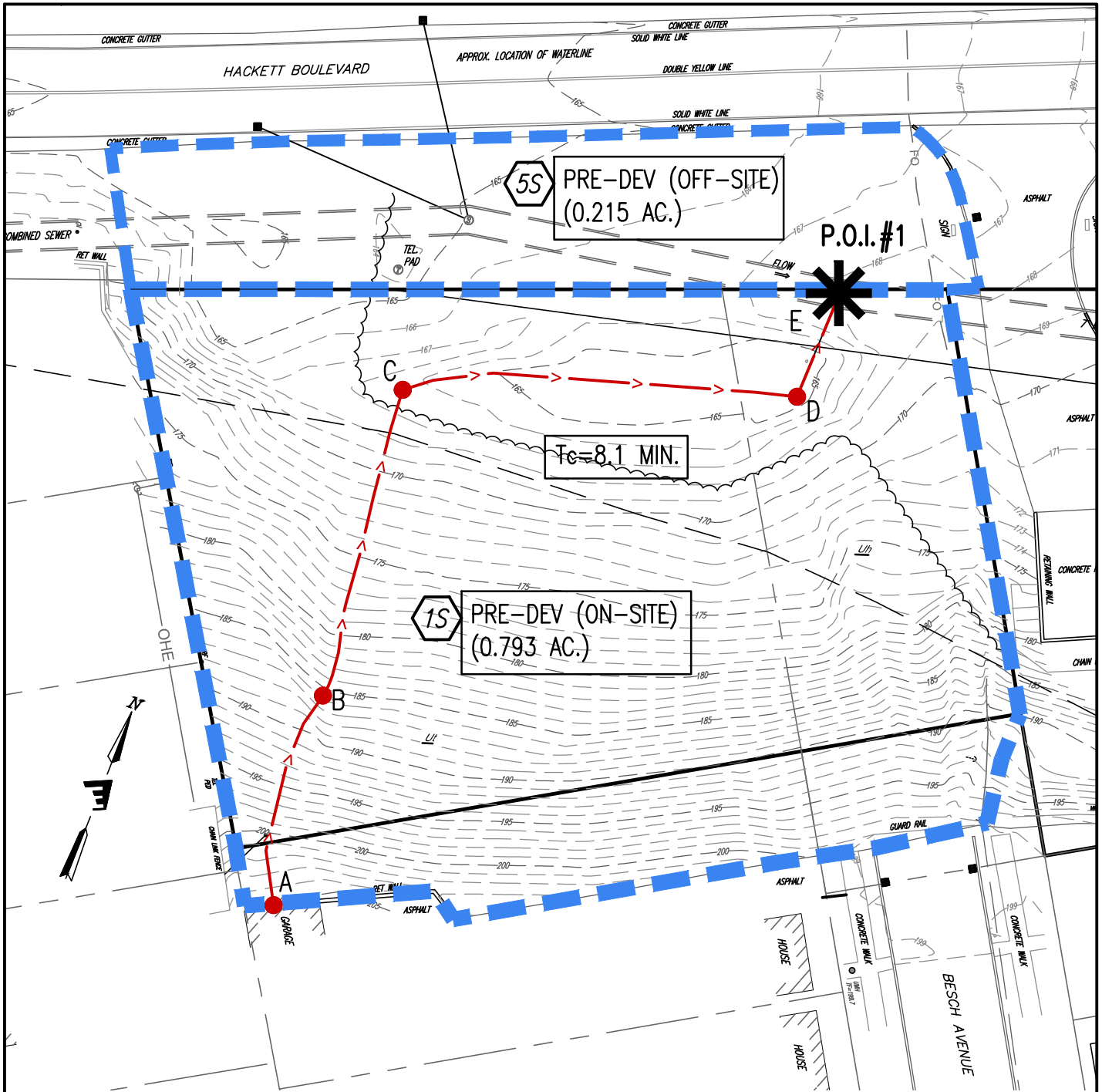
| | | |
|-------------|--|---------------|
| Warren | Huddle/Finkle Brooks and tribs | Silt/Sediment |
| Warren | Indian Brook and tribs | Silt/Sediment |
| Warren | Lake George | Silt/Sediment |
| Warren | Tribs to L.George, Village of L George | Silt/Sediment |
| Washington | Cossayuna Lake | Nutrients |
| Washington | Lake Champlain, South Bay | Nutrients |
| Washington | Tribs to L.George, East Shore | Silt/Sediment |
| Washington | Wood Cr/Champlain Canal and minor tribs | Nutrients |
| Wayne | Port Bay | Nutrients |
| Westchester | Amawalk Reservoir | Nutrients |
| Westchester | Blind Brook, Upper, and tribs | Silt/Sediment |
| Westchester | Cross River Reservoir | Nutrients |
| Westchester | Lake Katonah | Nutrients |
| Westchester | Lake Lincolndale | Nutrients |
| Westchester | Lake Meahagh | Nutrients |
| Westchester | Lake Mohegan | Nutrients |
| Westchester | Lake Shenorock | Nutrients |
| Westchester | Long Island Sound, Westchester (East) | Nutrients |
| Westchester | Mamaroneck River, Lower | Silt/Sediment |
| Westchester | Mamaroneck River, Upper, and minor tribs | Silt/Sediment |
| Westchester | Muscoot/Upper New Croton Reservoir | Nutrients |
| Westchester | New Croton Reservoir | Nutrients |
| Westchester | Peach Lake | Nutrients |
| Westchester | Reservoir No.1 (Lake Isle) | Nutrients |
| Westchester | Saw Mill River, Lower, and tribs | Nutrients |
| Westchester | Saw Mill River, Middle, and tribs | Nutrients |
| Westchester | Sheldrake River and tribs | Silt/Sediment |
| Westchester | Sheldrake River and tribs | Nutrients |
| Westchester | Silver Lake | Nutrients |
| Westchester | Teatown Lake | Nutrients |
| Westchester | Titicus Reservoir | Nutrients |
| Westchester | Truesdale Lake | Nutrients |
| Westchester | Wallace Pond | Nutrients |
| Wyoming | Java Lake | Nutrients |
| Wyoming | Silver Lake | Nutrients |

APPENDIX F – List of NYS DEC Regional Offices



| <u>Region</u> | <u>COVERING THE FOLLOWING COUNTIES:</u> | <u>DIVISION OF ENVIRONMENTAL PERMITS (DEP) PERMIT ADMINISTRATORS</u> | <u>DIVISION OF WATER (DOW) WATER (SPDES) PROGRAM</u> |
|---------------|---|--|--|
| 1 | NASSAU AND SUFFOLK | 50 CIRCLE ROAD STONY BROOK, NY 11790 TEL. (631) 444-0365 | 50 CIRCLE ROAD STONY BROOK, NY 11790-3409 TEL. (631) 444-0405 |
| 2 | BRONX, KINGS, NEW YORK, QUEENS AND RICHMOND | 1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4997 | 1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4933 |
| 3 | DUTCHESS, ORANGE, PUTNAM, ROCKLAND, SULLIVAN, ULSTER AND WESTCHESTER | 21 SOUTH PUTT CORNERS ROAD NEW PALTZ, NY 12561-1696 TEL. (845) 256-3059 | 100 HILLSIDE AVENUE, SUITE 1W WHITE PLAINS, NY 10603 TEL. (914) 428 - 2505 |
| 4 | ALBANY, COLUMBIA, DELAWARE, GREENE, MONTGOMERY, OTSEGO, RENSSELAER, SCHENECTADY AND SCHOHARIE | 1150 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2069 | 1130 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2045 |
| 5 | CLINTON, ESSEX, FRANKLIN, FULTON, HAMILTON, SARATOGA, WARREN AND WASHINGTON | 1115 STATE ROUTE 86, Po Box 296 RAY BROOK, NY 12977-0296 TEL. (518) 897-1234 | 232 GOLF COURSE ROAD WARRENSBURG, NY 12885-1172 TEL. (518) 623-1200 |
| 6 | HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE | STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245 | STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554 |
| 7 | BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS | 615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438 | 615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500 |
| 8 | CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES | 6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466 | 6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466 |
| 9 | ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING | 270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165 | 270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070 |

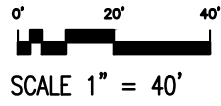
Part 11:

Plans




LEGEND

-  CATCHMENT BOUNDARY
-  TIME OF CONCENTRATION PATH



LAST REVISED 4/9/2021

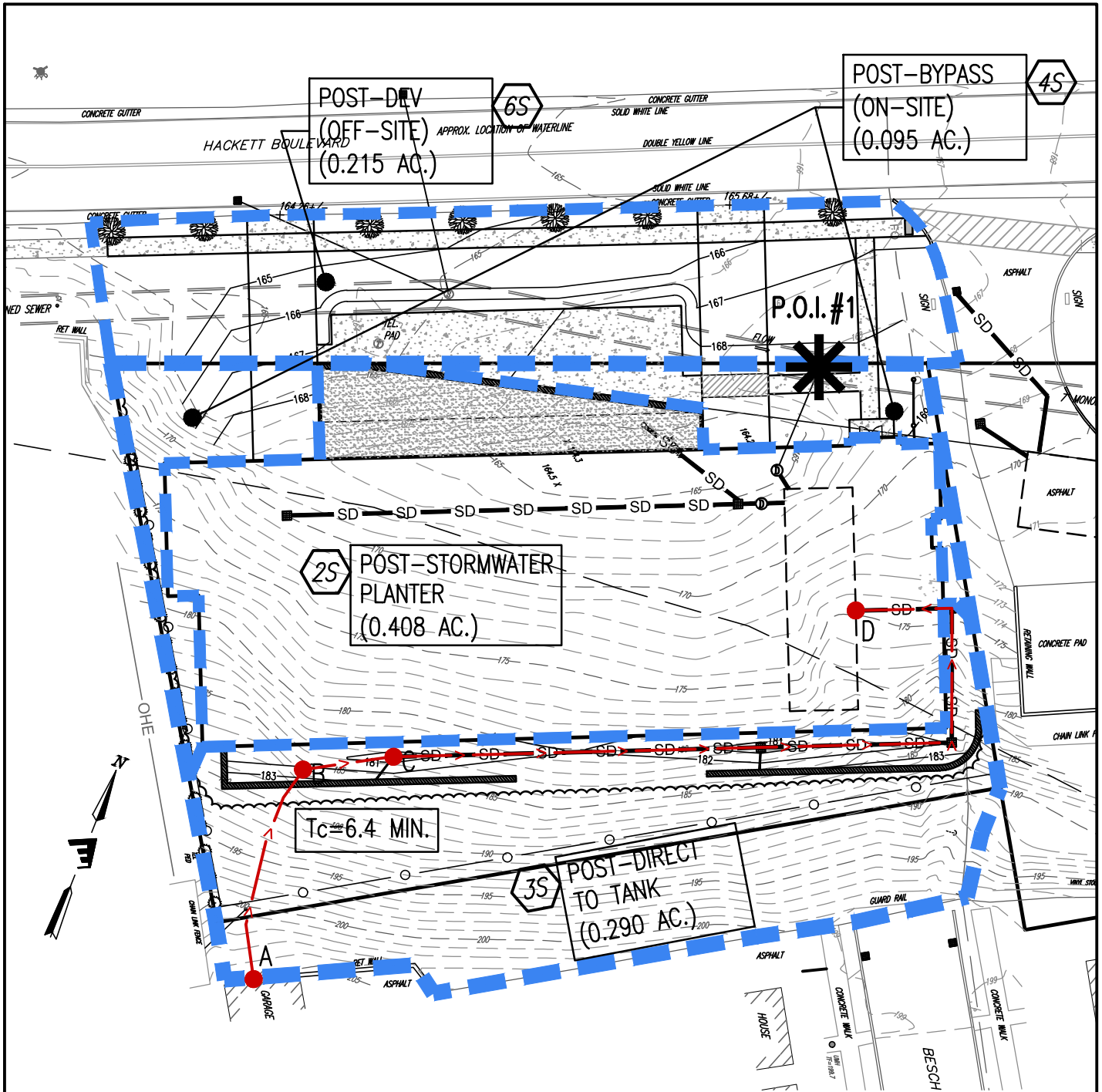


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| | |
|-----------------------------------|--|
| PRE-DEVELOPMENT DRAINAGE AREA MAP | |
| HACKETT BOULEVARD APARTMENTS | |

| | |
|--------------------|-----------------------|
| Checked By: MJD | Scale: 1" = 40' |
| Drawn By: MJD | Project No.: 20483 |
| Date: 2/11/2021 | Drawing No.: HYD1 |



LEGEND



CATCHMENT BOUNDARY



TIME OF CONCENTRATION PATH



SCALE 1" = 40'

LAST REVISED 4/9/2021



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tel. 603.442.9333
www.engineeringventures.com

POST-DEVELOPMENT DRAINAGE AREA MAP

HACKETT BOULEVARD APARTMENTS

| | |
|--------------------|-----------------------|
| Checked By: MJD | Scale: 1" = 40' |
| Drawn By: MJD | Project No.: 20483 |
| Date: 2/11/2021 | Drawing No.: HYD2 |