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Genesee 5 & Genesee 6 Solar Project
Stormwater Pollution Prevention Plan
Town of Stafford, Genesee County, New York

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PROJECT NO. 2231877

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1.0 EXECUTIVE SUMMARY

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared for major activities associated with construction of two solar projects on adjacent parcels with shared access in the Town of Stafford, Genesee County, NY. This SWPPP includes the elements necessary to comply with the national baseline general permit for construction activities enacted by the U.S. Environmental Protection Agency (EPA) under the National Pollutant Discharge Elimination System (NPDES) program and all local governing agency requirements. This SWPPP must be executed, and permit coverage must be obtained prior to the commencement of construction activity.

This SWPPP has been developed in accordance with the "New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity," Permit No. GP-0-25-001, effective January 29, 2025 through January 28, 2030. The SWPPP and accompanying plans identify and detail stormwater management, pollution prevention, and erosion and sediment control measures necessary during and following completion of construction.

This SWPPP and the accompanying plans entitled "Genesee 5 Solar Array and Genesee 6 Solar Array" have been submitted as a set. These engineering drawings are considered an integral part of this SWPPP. Therefore, this SWPPP is not considered complete without them. References made herein to "the plans" or to a specific "sheet" refer to these drawings.

This report considers the impacts associated with the intended development with the purpose of:

1. Maintaining existing drainage patterns as much as possible while continuing the conveyance of upland watershed runoff;
2. Controlling increases in the rate of stormwater runoff resulting from the proposed development so as not to adversely alter downstream conditions; and
3. Mitigating potential stormwater quality impacts and preventing soil erosion and sedimentation resulting from stormwater runoff generated both during and after construction.

The analysis and design completed and documented in this report is intended to be part of the application made for an industrial development project completed on behalf of the Owner/Operator.

1.1 Project Description

NY CDG Genesee 5, LLC is proposing a development project on approximately 27 acres of land. The project is located on a 64.6-acre parcel at 8244 Batavia Stafford Townline Road, in the Town of Stafford, Genesee County, New York. Activities include the installation of a 5-MW ground mounted solar energy system, new electrical equipment, and a new gravel road. The total project area of disturbance proposed is 33 acres. The project will disturb one (1) or more acres and as such, preparation of this SWPPP is required under GP-0-25-001.

NY CDG Genesee 5, LLC is proposing a development project on approximately 27 acres of land. The project is located on a 127.5-acre parcel at 8244 Batavia Stafford Townline Road, in the Town of Stafford, Genesee County, New York. Activities include the installation of a 5-MW ground mounted solar energy system, new electrical equipment, and a new gravel road. The total project area of disturbance proposed is 32 acres. The project will disturb one (1) or more acres and as such, preparation of this SWPPP is required under GP-0-25-001.

A Site Location Map has been provided in Appendix A, as Figure A-1.

This type of project is included in Table 2 of Appendix B of GP-0-25-001; and the project site is not located in one of the watersheds listed in Appendix C of GP-0-25-001. Therefore, this SWPPP includes post-construction stormwater management practices, as well as erosion and sediment controls.

This project is not located within a regulated, traditional land use control Municipal Separate Stormwater Sewer System (MS4).

Runoff from the project site will discharge to the a tributary to Bigelow Creek, which is included in the list of Section 303(d) water bodies included in Appendix D of GP-0-25-001.

Project construction activities will consist primarily of site grading, and the installation of public utility infrastructure necessary to support the proposed development project. Construction phase pollutant sources anticipated at the site are disturbed (exposed) soil, vehicle fuels and lubricants, chemicals associated with building construction, and building materials. Without adequate control there is the potential for each type of pollutant to be transported by stormwater.

1.2 Stormwater Pollution Controls

The stormwater pollution controls outlined herein have been designed and evaluated in accordance with the following standards and guidelines:

- New York State Stormwater Management Design Manual, dated July 31, 2024 (Design Manual).
- New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016 (SSESC).

Stormwater quality will be enhanced through the implementation of temporary and permanent erosion and sediment control measures, the proposed stormwater management practice(s), and other construction-phase pollution controls outlined herein.

The proposed stormwater management approach consisting of on-site stormwater management practices will adequately collect, treat, and convey the stormwater runoff.

Grass filter strips, two Bioretention Facilities, and one Dry Swale Facility will be used to manage and treat stormwater runoff generated by the proposed development project.

Pre- and post-development surface runoff rates have been evaluated for the 1-, 10-, and 100-year 24-hour storm events. Comparison of pre- and post-development watershed conditions demonstrates that the peak rate of runoff from the project site will not be increased.

The post-construction stormwater management practice(s) will be owned by the applicant. Policy and procedures will be in place, which ensure operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

2.0 SITE CHARACTERISTICS

2.1 State Environmental Quality Review

The construction activity is not subject to State Environmental Quality Review (SEQR), but is subject to the equivalent review from another New York State or federal agency. A copy of the documentation that project review, pursuant to a process equivalent to SEQR from another New York State or federal agency, in accordance with Part I.A.5. of GP-0-25-001, will be provided in Appendix A, as Figure A-5 upon receipt.

2.2 Land Use and Topography

The project site is located within the "Industrial Park" zoning district. Ground Mounted Solar Energy Systems are a permitted use, subject to a special use permit, within this district.

The overall site is moderately sloping, with slopes ranging from 0 to 25 percent. Site elevations range from approximately 780 feet above mean sea level (MSL) to 830 feet MSL.

The existing site is two parcels, a total of 192.1-acre former agricultural lot located at 8244 Batavia Stafford Townline Road in the Town of Stafford, Genesee County, NY.

The parcel is bound by Batavia-Stafford Townline Road to the west, Prole Road Extension to the north, and a railroad to the southeast. Agricultural land and sparse residential lots are adjacent to the parcel to both the northeast and south.

Two watersheds encompass the parcel and project site. One flows from the west to the northeast and the other flows from the west southeast. Both drain to an unnamed tributary to Bigelow Creek, which comprises a portion of the Genesee River watershed.

2.3 Soils and Groundwater

The US Department of Agriculture (USDA) Web Soil Survey (http://websoilsurvey.nrcs.usda.gov/app/) was used to obtain surficial soil conditions for the study area, as follows:

Table 1: USDA Soil Data

Map Symbol & Description	Hydrologic Soil Group	Percent of Area
ApA – Appleton silt loam, 0 to 3 percent slopes	B/D	1.4
CeA – Cezenovia silt loam, 0 to 3 percent slopes	C/D	0.4
CeB – Cazenovia silt loam, 0 to 8 percent slopes	C/D	33.9
CeC – Cazenovia silt loam, 8 to 15 percent slopes	C/D	1.5
CgC3 – Cazenovia silty clay loam, 8 to 15 percent slopes, eroded	C/D	5.1
CgD3 – Cazenovia silty clay loam, 15 to 25 percent slopes, eroded	C/D	3.3
DuB – Dunkirk silt loam, 2 to 6 percent slopes	C	0.1
HIA – Hilton loam, 0 to 3 percent slopes	B/D	2.4

Map Symbol & Description	Hydrologic Soil Group	Percent of Area
LmA – Lima silt loam, 0 to 3 percent slopes	B/D	1.5
LmB – Lima silt loam, 3 to 8 percent slopes	B/D	1.0
OvA – Ovid silt loam, 0 to 3 percent slpoes	C/D	15.8
OvB – Ovid silt loam, 3 to 8 percent slopes	C/D	14.9
SeB – Schoharie silt loam, 1 to 6 percent slopes	D	8.9
ShC3 – Schoharie silty clay loam, 6 to 12 percent slopes	D	0.4
ShD3 – Schoharie silty clay loam, 12 to 20 percent slopes	D	2.0
Wy – Wayland soils complex, 0 to 3 percent slopes, frequently flooded	B/D	7.5

Upon review of the soil data presented in Table 1, the project site contains soils with a soil slope phase of D with a map unit name that inclusive of slopes greater than 25%, and does not contain soils with a soil slope phase of E or F.

The project site is composed of HSG B soils, HSG C soils, and HSG D soils, as shown in the table below. For the purposes of this report, HSG B/D and HSG C/D soils were modeled as HSG D soils to reflect the undrained condition.

Table 2: Project Site HSG Data

HSG A	HSG B	HSG C	HSG D
0%	0%	0.1%	99.9%

The Soil Conservation Service defines the hydrologic soil groups as follows:

- Type C Soils: Soils having a low infiltration rate when thoroughly wet and consisting chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine-to-fine texture. These soils have a low rate of water transmission.
- Type D Soils: Soils having a very low infiltration rate and high runoff potential when thoroughly wet. These soils consist chiefly of clays that have high shrink-swell potential, soils that have a permanent high water table, soils that have a clay pan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very low rate of water transmission.

The soils map for the study area is presented in Appendix A, as Figure A-2.

2.4 Watershed Designation

The project site is not located in a restricted watershed identified in Appendix C of GP-0-25-001.

2.5 Receiving Water Bodies

The nearest natural classified water course into which runoff from the project site will discharge is an unnamed tributary of Bigelow Creek. The unnamed tributary of Bigelow Creek on-site is classified by

NYSDEC as a Class C(T) stream. Bigelow Creek is classified by NYSDEC as a Class C stream, and is included in the Section 303(d) list of impaired waters found in Appendix D of GP-0-25-001.

2.6 Aquifer Designation

The project site is located over a Principal aquifer listed in the NYSDEC Technical and Operational Guidance Series (TOGS) 2.1.3 (1980).

2.7 Wetlands

The NYSDEC's Environmental Resource Mapper indicates no state-regulated wetlands or wetland buffers within the parcels that comprise the project area. The unnamed tributary of Bigelow Creek on-site is classified by NYSDEC as a Class C(T) stream. Refer to A-4 of Appendix A for the Environmental Resource map within the project area.

The U.S. Fish and Wildlife Service's National Wetlands Inventory indicates a federally-regulated stream running across the southern parcel from the southwest to the northeast. This mapping also shows a federally-regulated pond to the south and stream to the northeast of the project area. Refer to A-5 of Appendix A for the National Wetland Inventory map within the project area.

LaBella completed a Wetland and Stream Delineation, the results of which are documented in a set of Wetland Maps dated April 2023. One emergent wetland and one ephemeral ditch were identified on the northern parcel, both preliminarily identified as potentially non-jurisdictional. On the southern parcel, three streams, one pond, and one wetland were identified. One of these streams falls under NYSDEC and USACE jurisdiction along with the identified wetland. The other features are all identified as potentially non-jurisdictional. The proposed project layout avoids disturbing the jurisdictional features, save for a culvert in the jurisdictional stream to permit crossing.

2.8 Flood Plains

This project is not located in a FEMA floodzone.

2.9 Listed, Endangered, or Threatened Species

A search was performed on the NYSDEC Environmental Resource Mapper on April, 2023, which determined that the project site has no known occurrences of threatened or endangered species, or critical habitat. An Environmental Resource Map has been provided in Appendix A, as Figure A-4.

2.10 Historic Places

SHPO has issued a No-Adverse-Effect letter on historic or archeological resources for both the Genesee 5 and Genesee 6 Solar Projects, letter date March 31, 2025.

2.11 Rainfall Data

Rainfall data utilized in the modeling and analysis was obtained from the Cornell University online Extreme Precipitation in New York & New England website (http://precip.eas.cornell.edu/). The standard SCS/NRCS rainfall distributions were applied to evaluate the pre- and post-development

stormwater runoff characteristics. Rainfall data specific to the portion of Genesee County under consideration, for various 24-hour storm events, is presented in the following Table:

Table 3: Rainfall Data

Storm Event Return Period	24-Hour Rainfall (inches)
1-year	1.86
2-year	2.17
10-year	3.06
100-year	4.99

2.12 Pre-development Watershed Conditions

The pre-development project site contains two drainage areas that encompass the entire project site. The first drainage area flows from the west to the northeast and the other flows from the west southeast. Both drainage areas flow to an unnamed tributary to Bigelow Creek, which comprises a portion of the Genesee River watershed. Drainage area CM-E1 consists of the majority of the Genesee 5 project site. The site drains northeast to a roadside swale. This swale drains south to the unnamed tributary of Bigelow Creek. Drainage area CM-E2 comprises the remainder of the Genesee 5 project site and the Genesee 6 project set on the parcel to the south. Runoff in this drainage area flows to the unnamed tributary which flows through it.

The Pre-Development Watershed Delineation Map has been provided in Appendix A, as Figure A-5.

The results of the computer modeling used to analyze the overall watershed under pre-development conditions are presented in Appendix D. A summary of the pre-development watershed runoff rates at each Design Point is presented in Table 10.

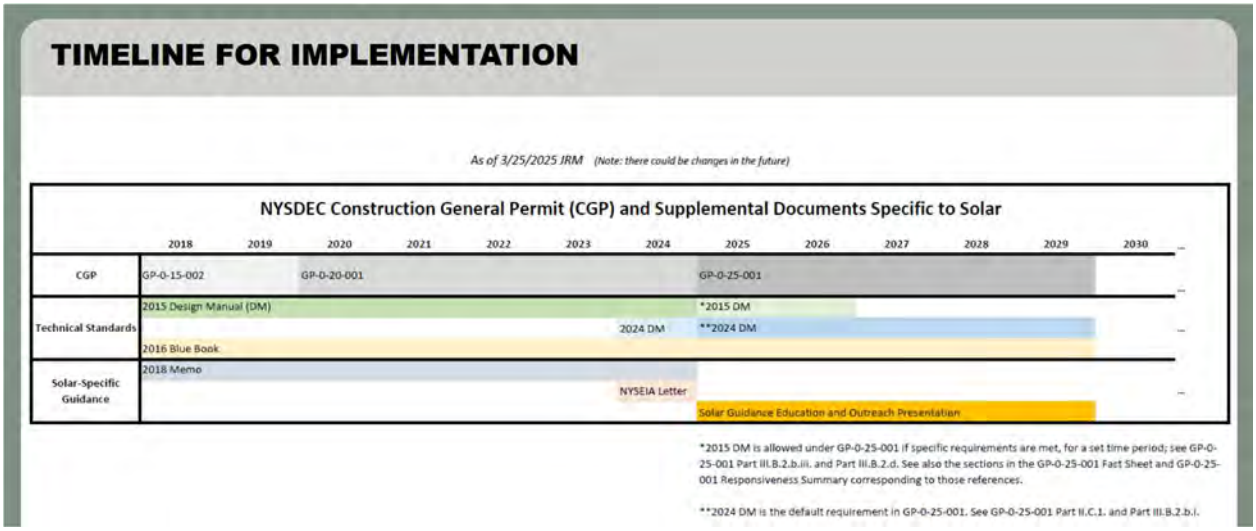
2.13 Post-development Watershed Conditions

The post-development project site has not been altered as compared to the pre-construction condition. The analysis of post-development conditions considered existing drainage patterns, soil types, ground cover to remain, planned site development, site grading, and stormwater management facilities proposed as part of site improvements. The Post-Development Watershed Delineation Map has been provided in Appendix A, as Figure A-6.

The results of the computer modeling used to analyze the overall watershed under post-development conditions are presented in Appendix D. A summary of the post-development watershed runoff rates at each Design Point is presented in Table 11.

The NYSDEC The Division of Water (DOW) issued “Solar Panel Construction Stormwater Permitting/SWPPP Guidance” on April 5, 2018. The 2018 Memo outlined two scenarios to comply with the SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-20-001, (CGP). However, the 2018 Memo did not adequately cover every solar installation scenario, and stormwater best practices and research relevant to the solar industry were evolving. Therefore, the Construction General Permit, GP-0-25-001 (CGP) was updated to replace the 2018 solar memo and provide clarification to achieve statewide consistency in the implementation of the CGP for solar energy construction sites.

Per the NYSDEC, please see the below timeline for implementation of solar sites per the Construction General Permit, GP-0-25-001 (CGP):



The NYSDEC offered the following guiding principles to be considered during the design of solar energy construction sites. Solar project sites are to be designed and constructed to promote sheet flow and infiltration underneath and between rows of solar panels. Compaction on solar sites is a critical factor to address; soil decompaction and restoration may be required after heavy equipment has been used to install solar panels. Solar project sites, like all other sites covered under the CGP, need to be stable, and discharges on solar project sites need to be non-erosive.

2.14 Description of Design Points

Design Point CM-E1 (92.8 acres) consists of the majority of the Genesee 5 project site. The site drains northeast to a roadside swale. Ultimately this swale drains south to the unnamed tributary of Bigelow Creek.

Design Point CM-E2 (118.9 acres) is comprised of the remainder of the Genesee 5 project site and the Genesee 6 project set on the parcel to the south. Runoff in this catchment drains to the unnamed tributary which flows through it.

3.0 STORMWATER MANAGEMENT PLANNING

Chapter 3 of the Design Manual outlines a six-step planning process for site planning and selection of stormwater management practices that must be implemented for both new development and redevelopment projects. This process is intended to develop a design that maintains pre-construction hydrologic conditions through the application of environmentally sound development principles, as well as treatment and control of runoff discharges from the site. The following sections outline the step-by-step process and how it has been applied to this project.

The goals of this Stormwater Management Plan are to analyze the peak rate of runoff under pre- and post-development conditions, to maintain the pre-development rate of runoff in order to minimize impacts to adjacent or downstream properties, and to minimize the impact to the quality of runoff exiting the site.

The Design Manual provides both water quality and water quantity objectives to be met by projects requiring a "Full SWPPP". These objectives will be met by applying stormwater control practices to limit peak runoff rates and improve the quality of runoff leaving the developed site.

3.1 STEP 1 – Site Planning

During the Site Planning process, the project site is evaluated for implementation of the green infrastructure planning measures identified in Table 3.1 of the Design Manual, in order to preserve natural resources and reduce impervious cover. Appendix C provides a description of each green infrastructure planning measure, along with a project specific evaluation.

3.2 STEP 2 – Calculate Water Quality Treatment Volume (WQv)

Stormwater runoff from impervious surfaces is recognized as a significant contributor of pollution that can adversely affect the quality of receiving water bodies. Therefore, treatment of stormwater runoff is important since most runoff related water quality contaminants are transported from land, particularly the impervious surfaces, during the initial stages of storm events.

3.2.1 NYSDEC Requirements for Water Quality Volume

The Design Manual requires that water quality treatment be provided for the initial flush of runoff from every storm. The NYSDEC refers to the amount of runoff to be treated as the "Water Quality Volume" (WQv). Section 4.2 of the Design Manual defines the Water Quality Volume as follows:

$$WQv = \frac{[(P)(R_v)(A)]}{12}$$

Where: P = 90% Rainfall Event Number
R_v = 0.05 + 0.009 (I)
I = Impervious Cover (Percent)
A = Contributing Area in Acres

This definition ensures that, all other things being equal, the Water Quality Volume will increase along with the impervious cover percentage.

3.2.2 Methodology for New Development

The Water Quality Volume equation has been applied to the drainage area tributary to each of the stormwater quality practices proposed for this project. The practices have been sized to accommodate the Water Quality Volume, as per the performance criteria presented in Chapter 5 and/or Chapter 6 of the Design Manual. Water quality volume calculations for each of the proposed practices are presented in Appendix C.

Table 4: Required WQv Summary

Required WQv	
5,545 cf	0.127 af

3.3 STEP 3 – Apply RR Techniques and Standard SMPs with RRv Capacity to Reduce Total WQv

Land use change and development in the watershed increases the volume of runoff. As such, reductions in the amount of runoff from new development, accomplished through the implementation of a stormwater management plan for the site, will play an important role in the success or failure of the watershed-wide stormwater management plan. Runoff reduction techniques can be applied to manage, reduce, and treat stormwater, while maintaining and restoring natural hydrology through infiltration, evapo-transpiration, and the capture and reuse of stormwater. Volume reduction techniques by themselves typically are not sufficient to provide adequate attenuation of stormwater runoff, but they can decrease the size of the peak runoff rate reduction facilities.

3.3.1 NYSDEC Requirements for New Development

The Design Manual states that runoff reduction shall be achieved through infiltration, groundwater recharge, reuse, recycle, and/or evaporation/evapotranspiration of 100-percent of the post-development water quality volume to replicate pre-development hydrology. Runoff control techniques provide treatment in a distributed manner before runoff reaches the collection system, by maintaining pre-construction infiltration, peak runoff flow, discharge volume, as well as minimizing concentrated flow. This can be accomplished by applying a combination of Runoff Reduction Techniques, standard Stormwater Management Practices (SMPs) with RRv capacity, and good operation and maintenance.

3.3.2 Methodology

In order to reduce the required WQv and meet the RRv criteria, a site specific evaluation must be performed to determine the most practical means of reducing runoff volume by application of a combination of RR techniques and standard SMPs with RRv capacity.

3.3.3 Application of RR Techniques

The following Table demonstrates a summary of the RR techniques being applied for this project, and both the water quality and runoff reduction volumes they provide. The RR Techniques have been designed in accordance with Chapter 5 of the Design Manual. Refer to the contract drawings for practice dimensions, material specifications, and installation details. Practice specific calculations are presented in Appendix C.

Table 5: Summary of RR Techniques being Applied

RR Technique	NYSDEC Design Variant	RRv Capacity	WQv Required (CF)	WQv Reduced/RRv Provided (CF)
Runoff Reduction Techniques (Area Reduction)				
Sheet flow to Riparian Buffers/Filter Strips	RR-2	100%	3,634	3,634
RR Technique Totals			**3,624**	**3,624**

3.3.4 Application of Standard Stormwater Management Practices (SMPs) with RRv Capacity

The following Table demonstrates a summary of the standard SMP(s) with RRv capacity that have been incorporated into the stormwater management plan for this project. The standard SMP(s) with RRv capacity have been designed in accordance with Chapter 6 of the Design Manual. Refer to the contract drawings for practice dimensions, material specifications, and installation details. Practice specific calculations are presented in Appendix C.

Table 6: Summary of Standard SMPs with RRv Capacity being Applied

Standard SMP with RRv Capacity	Design Variant	Pretreatment Volume Required (% of WQv)	Pretreatment Volume Provided (CF)	RRv Capacity	WQv Required (CF)	WQv Reduced /RRv Provided (CF)	WQv Treated[1] (CF)	Total WQv Provided[2] (CF)
Filtration Bioretention	F-5	25	124	40%	980	980	0	980
Filtration Bioretention	F-5	25	91	40%	717	717	0	717
Dry Swale (HSG C & D)	O-1	10	166	20%	214	43	171	214
Standard SMP with RRv Capacity Totals					**1,911**	**1,740**	**171**	**1,911**

Footnotes:
[1]*WQv Treated = WQV Required - RRv Provided*
[2]*Total WQv Provided = WQV Treated + RRv Provided*

3.3.5 RRv Performance Summary

A summary of the RRv provided is presented in the following table:

Table 7: RRv Summary

WQv Required (CF) (due to increase in impervious cover)	RRv Provided WQv Reduced (CF)	% RRv Provided/ WQv Reduced
5,545	5,374	96.91%

As indicated in the above table, the RRv provided is not greater than or equal to the RRv required for the project site. A good faith effort has been made to reduce runoff to the greatest extent practical. However, the project site has shallow depth to bedrock, shallow depth to groundwater, soils with an infiltration rate less than 0.5 in/hr, which prevents reduction of the total WQv. As such, Appendix C provides a project specific evaluation for each RR technique and standard SMP with RRv capacity, demonstrating why these practices are infeasible.

3.4 STEP 4 – Calculate the Minimum RRv Required

Projects that cannot achieve 100% of the runoff reduction requirement due to site limitations, shall provide a minimum runoff reduction volume as calculated by the following equation:

$$RRv_{min} = \frac{[(P)(R_v *)(Aic)(S)]}{12}$$

Where:

RRv_{min} = Runoff Reduction Volume (in acre-feet)
P = 90% Rainfall Event Number
Aic = Total area of new impervious cover (acres)
Rv* = 0.05+0.009(I), where I is 100% impervious
S = Hydrologic Soil Group (HSG) Specific Reduction Factor where:
HSG A = 0.55 HSG C = 0.30
HSG B = 0.40 HSG D = 0.20

Based upon the soil survey data, the site consists of soils having a hydrologic soil type of D. As such, a specific reduction factor of 0.20 has been applied. Calculation of the required minimum RRv is presented in Appendix C.

Table 8: Minimum RRv Summary

Minimum RRv Required (CF) (increase in impervious cover)	RRv Provided/ WQv Reduced (CF)	% of Minimum RRv Provided
1,002	5,545	100%

As indicated in the above table, the RRv provided is greater than the minimum RRv required for the project site. Therefore, the runoff reduction volume criteria has been met for the project and the design can proceed to Step 5.

3.5 STEP 5 – Apply Standard SMPs to Address Remaining Water Quality Volume

As previously discussed, 100% of the required WQv is being provided and reduced through RRv practices. As such, the water quality and runoff reduction volume criteria have been met and no other standard SMPs are required.

3.6 STEP 6 - Apply Volume and Peak Rate Control

This report presents the pre-development and post-development features and conditions associated with the rate of surface water runoff within the study area. For both cases, the drainage patterns, drainage structures, soil types, and ground cover types are considered in this study.

3.6.1 NYSDEC Requirements for New Development

Chapter 4 of the Design Manual requires that projects meet three separate stormwater quantity criteria:

1. The Channel Protection (CPv) requirement is designed to protect stream channels from erosion. This is accomplished by providing 24 hours of extended detention for the 1-year, 24-hour storm event. The Manual defines the CPv detention time as the center of mass detention time through each stormwater management practice.

2. The Overbank Flood Control (Qp) requirement is designed to prevent an increase in the frequency and magnitude of flow events that exceed the bank-full capacity of a channel, and

therefore must spill over into the floodplain. This is accomplished by providing detention storage to ensure that, at each Design Point, the post-development 10-year 24-hour peak discharge rate does not exceed the corresponding pre-development rate.

3. The Extreme Flood Control (Qf) requirement is designed to prevent the increased risk of flood damage from large storm events, to maintain the boundaries of the pre-development 100-year floodplain, and to protect the physical integrity of stormwater management practices. This is accomplished by providing detention storage to ensure that, at each Design Point, the post-development 100-year 24-hour peak discharge rate does not exceed the corresponding pre-development rate.

3.6.2 Methodology

In order to demonstrate that the NYSDEC detention requirements are being met, the Design Manual requires that a hydrologic and hydraulic analysis of the pre- and post-development conditions be performed using the Natural Resources Conservation Service Technical Release 20 (TR-20) and Technical Release 55 (TR-55) methodologies. HydroCAD, developed by HydroCAD Software Solutions LLC of Tamworth, New Hampshire, is a Computer-Aided-Design (CAD) program for analyzing the hydrologic and hydraulic characteristics of a given watershed and associated stormwater management facilities. HydroCAD uses the TR-20 algorithms and TR-55 methods to create and route runoff hydrographs.

HydroCAD has the capability of computing hydrographs (which represent discharge rates characteristic of specified watershed conditions, precipitation, and geologic factors) combining hydrographs and routing flows though pipes, streams and ponds. HydroCAD can also calculate the center of mass detention time for various hydraulic features. Documentation for HydroCAD can be found on their website: http://www.hydrocad.net/.

For this analysis, the watershed and drainage system was broken down into a network consisting of two types of components as described below:

1. Subcatchment: A relatively homogeneous area of land, which produces a volume and rate of runoff unique to that area.
2. Reach: Uniform streams, channels, or pipes that convey stormwater from one point to another.
3. Pond: Natural or man-made impoundment, which temporarily stores stormwater runoff and empties in a manner determined by its geometry and the hydraulic structure located at its outlets.
4. Link: A multi-purpose mechanism used to introduce a hydrograph from another file.

Subcatchments, reaches, and ponds and links are represented by hexagons, squares, and triangles, and broken boxes respectively, on the watershed routing diagrams provided with the computations included in Appendix D and Appendix E.

The analysis of hydrologic and hydraulic conditions and proposed stormwater management facilities, servicing the study area, was performed by dividing the tributary watershed into relatively homogeneous subcatchments. The separation of the watershed into subcatchments was dictated by watershed conditions, methods of collection, conveyance, and points of discharge. Watershed characteristics for each subcatchment were then assessed from United States Geological Service (USGS) 7.5-minute topographic maps, aerial photographs, a topographical survey, soil surveys, site investigations, and land use maps.

Proposed stormwater management practices were designed and evaluated in accordance with the Design Manual and local regulatory requirements. The hydrologic and hydraulic analysis considered the SCS Type II 24-hour storm events identified in the following Table.

Table 9: Design Events

Facility	24-hour Storm Event
Stormwater Management Practice(s)	1-year
	10-year
	100-year

3.6.3 Performance Summary

Per Section 4.6 of the Design Manual, the CPv requirement does not apply as the reduction of the entire CPv is achieved by application of runoff reduction techniques or infiltration systems.

A comparison of the pre- and post-development watershed conditions was performed for all Design Points and storm events evaluated herein. For all Design Points and design storms, this comparison demonstrates that the peak rate of runoff will not be increased. Therefore, the project will not have a significant adverse impact on the adjacent or downstream properties or receiving water courses.

The results of the computer modeling used to analyze the pre- and post-development watersheds are presented in Appendix D and Appendix E, respectively. The following Table summarizes the results of this analysis.

Table 10: Summary of Pre- and Post-Development Peak Discharge Rates

Pre- vs. Post-Development Discharge Rate (cfs)				
Design Point (DP)	10-year 24-hour storm event		100-year 24-hour storm event	
	Pre	Post	Pre	Post
1	77.98	77.98	182.90	182.90
2	158.40	158.40	374.10	374.10
Total	200.72	200.72	478.90	478.90

4.0 CONSTRUCTION SEQUENCE

This project has not received written approval from NYSDEC allowing the disturbance of more than five acres of land at any one time. Therefore, if the Contractor's construction sequence requires the disturbance of more than five acres at any one time, written approval must be obtained from written approval from NYSDEC prior to disturbing more than five acres at once.

- The SPDES permit identification number (Permit ID); and
- Full technical justification demonstrating why alternative methods of construction that would result in five acres of soil disturbance or less at any one time are not feasible; and
- The phasing plan for the project and sequencing plans for all phases from the SWPPP in accordance with Part III.B.1.d.; and
- Plans with locations and details of erosion and sediment control practices such that the heightened concern for erosion when disturbing greater than five acres at one time has been addressed; and
- Acknowledgement that the Owner/Operator will comply with the requirements in Part IV.C.2.b.; and
- Acknowledgement that the Owner/Operator will comply with the requirements in Part II.B.1.b.

The Owner/Operator must be in receipt of an Authorization Letter to Disturb Greater than Five Acres, which will include when the authorization begins and ends and indicate a maximum area (acres) of soil disturbance allowed at any one time from the NYSDEC. Should the request be denied, the contractor shall limit the area of disturbance to less than five acres of disturbance at any given time. The contractor shall prepare and submit to the Owner's/Operator's Engineer a sequencing plan that identifies the progression of construction through the site. This sequencing plan must be retained as part of the Site Log Book.

The "Erosion and Sediment Control Plan" and the "Erosion and Sediment Control Plan Prior to Construction" in the accompanying drawings and waiver request identifies the major construction activities that are the subject of this SWPPP. The order (or sequence) in which the major activities are expected to begin is presented on the accompanying drawings, though each activity will not necessarily be completed before the next begins. In addition, these activities could occur in a different order if necessary to maintain adequate erosion and sediment control. If this is the case, the contractor shall notify the Owner's/Operator's Engineer overseeing the implementation of the SWPPP.

The Contractor will be responsible for implementing the erosion and sediment control measures identified on the plans. The Contractor may designate these tasks to certain subcontractors as they see fit, but the ultimate responsibility for implementing these controls and ensuring their proper function remains with the Contractor.

In accordance with Part III.B.c.iv. a phasing plan for the project and sequencing plans for all phases have been provided. The plans address clearing and grubbing, excavation and grading, utility and infrastructure installation, final stabilization, and any other construction activity at the site that will result in soil disturbance. Refer to the plans for further information on the project phasing and sequencing.

5.0 CONSTRUCTION-PHASE POLLUTION CONTROL

The SWPPP and accompanying plans identify the temporary and permanent erosion and sediment control measures that have been incorporated into the design of this project. These measures will be implemented during construction, to minimize soil erosion and control sediment transport off-site, and after construction, to control the quality and quantity of stormwater runoff from the developed site.

Erosion control measures, designed to minimize soil loss, and sediment control measures, intended to retain eroded soil and prevent it from reaching water bodies or adjoining properties, have been developed in accordance with the following documents:

- NYSDEC SPDES General Permit for Stormwater Discharges From Construction Activity, Permit No. GP-0-25-001 (effective January 29, 2025 through January 28, 2030)
- New York State Standards and Specifications for Erosion and Sediment Control, NYSDEC (November 2016)
- Genesee County Stormwater and Erosion and Sediment Control Manual
- Town of Stafford Local Ordinance

The SWPPP and accompanying plans outline the construction scheduling for implementing the erosion and sediment control measures. These documents include limitations on the duration of soil exposure, criteria and specifications for placement and installation of the erosion and sediment control measures, a maintenance schedule, and specifications for the implementation of erosion and sediment control practices and procedures.

Temporary and permanent erosion and sediment control measures that shall be applied during construction generally include:

1. Minimizing soil erosion and sedimentation by stabilization of disturbed areas and by removing sediment from construction site discharges.
2. Preservation of existing vegetation to the greatest extent practical. Following the completion of construction activities in any portion of the site, permanent vegetation shall be established on all exposed soils.
3. Site preparation activities to minimize the area and duration of soil disruption.
4. Establishment of permanent traffic corridors to ensure that “routes of convenience” are avoided.

5.1 Temporary Erosion and Sediment Control Measures

The temporary erosion and sediment control measures described in the following sections are included as part of the construction documents.

5.1.1 Stabilized Construction Access

Prior to construction, stabilized construction access(es) will be installed, per accompanying plans, to reduce the tracking of sediment onto public roadways.

Construction traffic must enter and exit the site at the stabilized construction access(es). The intent is to trap dust and mud that would otherwise be carried off-site by construction traffic.

The access(es) shall be maintained in a condition, which will control tracking of sediment onto public rights-of-way or streets. When necessary, additional aggregate will be placed atop the filter fabric to assure the minimum thickness is maintained. All sediment and/or soil spilled, dropped, or washed onto public rights-of-way must be removed immediately. Periodic inspection and needed maintenance shall be provided after each substantial rainfall event.

5.1.2 Temporary Soil Stockpile

Materials, such as topsoil, will be temporarily stockpiled (if necessary) on the site during the construction process. Stockpiles shall be located in an area away from storm drainage, water bodies and/or courses, and will be properly protected from erosion by a surrounding silt fence barrier.

5.1.3 Silt Fencing

Prior to the initiation of and during construction activities, a geotextile filter fabric (or silt fence) will be established downgradient of all disturbed areas. These barriers may extend into non-impact areas to provide adequate protection of adjacent lands.

Clearing and grubbing will be performed only as necessary for the installation of the sediment control barrier. To facilitate effectiveness of the silt fencing, daily inspections and inspections immediately after significant storm events will be performed by the Contractor(s). Maintenance of the fence will be performed as needed.

5.1.4 Temporary Seeding

The project is authorized to disturb greater than five acres in accordance with Part I.E.5.a.viii. As such, temporary soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the soil disturbance activity has temporarily ceased.

5.1.5 Erosion Control Blanket

Erosion control blankets shall be installed in accordance with manufacturer's requirements on all slopes exceeding 3:1. Erosion control blankets provide temporary erosion protection, rapid vegetative establishment, and long-term erosion resistance to shear stresses generated by high runoff flow velocities associated with steep slopes.

5.1.6 Dewatering Operations

Dewatering will be used to intercept sediment-laden stormwater or pumped groundwater and allow it to settle out of the pumped discharge prior to being discharged from the site. Water from dewatering operations shall be treated to eliminate the discharge of sediment and other pollutants. Water resulting from dewatering operations shall be directed to temporary sediment traps or dewatering devices. Temporary sediment traps and dewatering bags will be provided, installed, and maintained at downgradient locations to control sediment deposits to downstream surfaces.

5.2 Permanent Erosion and Sediment Control Measures

The permanent erosion and sediment control measures described in the following sections are included as part of the construction documents.

5.2.1 Establishment of Permanent Vegetation

Disturbed areas that will be vegetated must be seeded in accordance with the contract documents. The type of seed, mulch, and maintenance measures as described in the contract documents shall also be followed.

The project is authorized to disturb greater than five acres in accordance with Part I.E.5.a.viii. As such, permanent soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the soil disturbance activity has permanently ceased.

Final site stabilization is achieved when all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of 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.

5.3 Other Pollutant Controls

Part I.C.1 of GP-0-25-001 prohibits discharges from construction material wastewater, pollutants used in vehicle and equipment operation and maintenance, vehicle and equipment washing and toxic or hazardous substances.

The following table identifies materials and/or chemicals commonly used and/or stored on construction sites and should be addressed in the site-specific spill prevention and response plan:

Table 11: Common Construction Pollutants

Material/Chemical	Physical Description	Stormwater Pollutants	Location*
Pesticides (insecticides, fungicides, herbicides, rodenticides)	Various colored to colorless liquid, powder, pellets, or grains	Chlorinated hydrocarbons, organophosphates, carbamates, arsenic	Herbicides used for noxious weed control
Fertilizer	Liquid or solid grains	Nitrogen, phosphorous	Newly seeded areas
Cleaning solvents	Colorless, blue, or yellow-green liquid	Perchloroethylene, methylene chloride, trichloroethylene, petroleum distillates	No equipment cleaning allowed in project limits
Asphalt	Black solid	Oil, petroleum distillates	Streets and roofing
Concrete	White solid/grey liquid	Limestone, sand, pH, chromium	Curb and gutter, building construction
Curing compounds	Creamy white liquid	Naphtha	Curb and gutter
Hydraulic oil/fluids	Brown oily petroleum hydrocarbon	Mineral oil	Leaks or broken hoses from equipment
Gasoline	Colorless, pale brown or pink petroleum hydrocarbon	Benzene, ethyl benzene, toluene, xylene, MTBE	Secondary containment / staging area
Diesel Fuel	Clear, blue-green to yellow liquid	Petroleum distillate, oil & grease, naphthalene, xylenes	Secondary containment / staging area
Kerosene	Pale yellow liquid petroleum hydrocarbon	Coal oil, petroleum distillates	Secondary containment / staging area
Antifreeze/coolant	Clear green/yellow liquid	Ethylene glycol, propylene glycol, heavy metals (copper, lead, zinc)	Leaks or broken hoses from equipment
Sanitary toilets	Various colored liquid	Bacteria, parasites, and viruses	Staging area
Construction materials			
Granular fill	Various colored solids	Sediment	Stockpile / fill areas
Subbase course	Gray/brown solid	Sediment, dust	Stockpile
Topsoil	Brown solid	Sediment	Stockpile
Mulch	Various colored solid	Sediment, debris	Staging area
Seed	Brown/yellow solid	Nutrients, debris	Staging area
HDPE Storm Pipe	Black solid		Staging area
SDR-35, SDR-21 PVC Pipe	Various colored solid		Staging area
Metals Frames and Grates	Gray solid		Staging area
Joint Sealant	Light gray viscous solid	Polyurethane	Staging area

*(Area where material/chemical is used on-site)

5.4 Construction Housekeeping Practices

During the construction phase, the Contractor(s) will implement the following measures:

5.4.1 Sediment Sweeping/Vacuuming

Any sediment that is tracked by construction vehicles or erosion onto adjacent public or private impervious surfaces must be swept or vacuumed, utilizing self-propelled and/or walk-behind equipment, and removed on a daily basis. Kick brooms and sweeper attachments are not an acceptable means of sweeping. Sweeping or vacuuming should not take place while tracked sediment is wet. If tracked sediment is compacted, the sediment must be scraped loose prior to sweeping or vacuuming.

5.4.2 Material Stockpiles

Material resulting from clearing and grubbing operations that will be stockpiled on-site, must be adequately protected with downgradient erosion and sediment controls.

5.4.3 Equipment Cleaning and Maintenance

The Contractor(s) will designate areas for equipment cleaning, maintenance, and repair. The Contractor(s) and subcontractor(s) will utilize those areas. The areas will be protected by a temporary perimeter berm.

5.4.4 Detergents

The use of detergents for large-scale washing is prohibited (i.e., vehicles, buildings, pavement surfaces, etc.)

5.4.5 Spill Prevention and Response

A Spill Prevention and Response Plan shall be developed, for the pollutants identified in Section 5.3, for the site by the Contractor(s) that addresses the following:

1. Reducing chance of spills
2. Stopping the source of spills
3. Containing and cleaning up spills
4. Disposing of materials contaminated by spills
5. Training personnel responsible for spill prevention/response
6. Material handling procedures
7. Material storage requirements

The plan shall detail the steps required in the event of an accidental spill and shall identify contact names and phone numbers of people and agencies that must be notified.

The plan shall include Safety Data Sheets (SDS) for all materials to be stored on-site. All workers on-site will be required to be trained on safe handling and spill prevention procedures for all materials used during construction. Regular tailgate safety meetings shall be held and all workers that are expected on the site during the week shall be required to attend.

5.4.6 Concrete Washout Areas

A temporary concrete washout area shall be provided for every project where concrete will be poured or otherwise formed on-site and shall consist of an excavated or above-ground lined construction pit

where concrete trucks or equipment can be washed out after their loads have been discharged. Waste generated from concrete wash water that shall not be allowed to flow into drainage ways, inlets, receiving waters, highway right-of-way, or any location other than the designated concrete washout area(s). Proper signage shall be placed adjacent to the facility to designate the "Concrete Washout Area". Locate the facility a minimum of 100-feet from drainage swales, storm drain inlets, wetlands, streams, and other surface waters. Prevent surface water from entering the washout area.

The hardened residue from the concrete wash areas will be disposed of in the same manner as other non-hazardous construction waste materials. Maintenance of the washout area shall include removal of hardened material when 75% of the storage capacity is filled, and a minimum freeboard of 12 inches shall be maintained. The Contractor will be responsible for seeing that these procedures are followed. The project may require the use of multiple concrete washout areas based on the frequency of concrete pours.

5.4.7 Material Storage

Construction materials shall be stored in a dedicated staging area. The staging area shall be located in an area that prevents negative impacts of construction materials on stormwater quality.

Chemicals, paints, solvents, fertilizers, and other toxic material must be stored in waterproof containers. Except during application, the contents must be kept in trucks or within storage facilities. Runoff containing such material must be collected, removed from the site, treated, and disposed of at an approved solid waste or chemical disposal facility.

6.0 INSPECTIONS, MAINTENANCE, AND REPORTING

6.1 Inspection and Maintenance Requirements

6.1.1 Pre-Construction Inspection and Certification

Prior to the commencement of construction, the Qualified Inspector/Qualified Professional shall conduct an assessment of the site and certify that the appropriate erosion and sediment control measures have been adequately installed and implemented. The Contractor shall contact the Qualified Inspector/Qualified Professional once the erosion and sediment control measures have been installed.

6.1.2 Construction Phase Inspections and Maintenance

A Qualified Inspector/Qualified Professional, as defined in Appendix A of the General Permit GP-0-25-001, shall conduct regular site inspections between the time this SWPPP is implemented and final site stabilization. Site inspections shall occur at an interval of at least once every seven (7) calendar days.

The purpose of site inspections is to assess performance of pollutant controls. Based on these inspections, the Qualified Inspector/Qualified Professional will decide whether it is necessary to modify this SWPPP, add or relocate sediment barriers, or whatever else may be needed in order to prevent pollutants from leaving the site via stormwater runoff. The general contractor has the duty to cause pollutant control measures to be repaired, modified, maintained, supplemented, or whatever else is necessary in order to achieve effective pollutant control.

Examples of particular items to evaluate during site inspections are listed below. This list is not intended to be comprehensive. During each inspection the inspector must evaluate overall pollutant

control system performance as well as particular details of individual system components. Additional factors should be considered as appropriate to the circumstances.

1. Locations where vehicles enter and exit the site must be inspected for evidence of off-site sediment tracking. A stabilized construction access will be constructed where vehicles enter and exit. This access will be maintained or supplemented as necessary to prevent sediment from leaving the site on vehicles.
2. Sediment barriers must be inspected and, if necessary, they must be enlarged or cleaned in order to provide additional capacity. All material from behind sediment barriers will be stockpiled on the up slope side. Additional sediment barriers must be constructed as needed.
3. Inspections will evaluate disturbed areas and areas used for storing materials that are exposed to rainfall for evidence of, or the potential for, pollutants entering the drainage system. If necessary, the materials must be covered or original covers must be repaired or supplemented. Also, protective berms must be constructed, if needed, in order to contain runoff from material storage areas.
4. Grassed areas will be inspected to confirm that a healthy stand of grass is maintained. The site has achieved final stabilization once all areas are covered with building foundation or pavement, or have a stand of grass with at least 80 percent density. The density of 80 percent or greater must be maintained to be considered as stabilized. Areas must be watered, fertilized, and reseeded as needed to achieve this goal.
5. All discharge points must be inspected to determine whether erosion control measures are effective in preventing significant impacts to receiving waters.

The inspection reports must be completed entirely and additional remarks should be included if needed to fully describe a situation. An important aspect of the inspection report is the description of additional measures that need to be taken to enhance plan effectiveness. The inspection report must identify whether the site was in compliance with the SWPPP at the time of inspection and specifically identify all incidents of non-compliance.

Within one (1) business day of the completion of an inspection, the *Qualified Inspector/Qualified Professional* shall notify the Owner/Operator and appropriate contractor or subcontractor of any corrective actions that need to be taken. For corrective actions not requiring engineering design, the contractor must begin implementing corrective actions within one business day and complete the corrective actions within five business days. For corrective actions requiring engineering design, the engineering design process must begin within five business days and the contractor must complete the corrective action in a reasonable time frame but no later than 60 calendar days.

In addition to the inspections performed by the *Qualified Inspector/Qualified Professional*, the Contractor shall perform routine inspections that include a visual check of all erosion and sediment control measures. All inspections and maintenance shall be performed in accordance with the inspection and maintenance schedule provided on the accompanying plans. Sediment removed from erosion and sediment control measures will be exported from the site, stockpiled for later use, or used immediately for general non-structural fill.

It is the responsibility of the general contractor to assure the adequacy of site pollutant discharge controls. Actual physical site conditions or contractor practices could make it necessary to install more structural controls than are shown on the accompanying plans. (For example, localized concentrations of runoff could make it necessary to install additional sediment barriers, sediment traps, etc.) Assessing the need for additional controls and implementing them or adjusting existing controls will be a continuing aspect of this SWPPP until the site achieves final stabilization.

6.1.3 Temporary Suspension of Construction Activities

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 frequency of Qualified Inspector/Qualified Professional inspections can be reduced to once every 30 calendar days. Prior to reducing the frequency of inspections, the Owner/Operator shall notify the NYSDEC Region 8 stormwater contact person and the Town of Stafford in writing.

6.1.4 Partial Project Completion

For construction sites where soil disturbance activities have been shut down with partial project completion, 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 inspections by the Qualified Inspector/Qualified Professional can stop. Prior to the shutdown, the Owner/Operator shall notify the NYSDEC Region 8 stormwater contact person and the Town of Stafford in writing.

If soil disturbance activities have not resumed within two years from the date of shutdown, a Notice of Termination (NOT) shall be properly completed and submitted to the NYSDEC.

6.1.5 Post-Construction Inspections and Maintenance

Inspections and maintenance of final stabilization measures and post-construction stormwater management practices shall be performed in accordance with Appendix G, once all disturbed areas are stabilized and all stormwater management systems are in place and operable.

6.2 Reporting Requirements

6.2.1 Inspection Reports

Pursuant to Part IV.C of GP-0-25-001, inspection reports shall be prepared for the duration of construction, as outlined herein, and shall be signed by the *Qualified Inspector* or *Qualified Professional*. A sample inspection form is provided in Appendix F.

At a minimum, each inspection report shall record the following information:

1. Permit identification number; and
2. Date and time of inspection; and
3. Name and title of person(s) performing inspection; and
4. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection, including the temperature at the time of the inspection; and
5. A description of the condition of the runoff at all points of discharge from the construction site. This must 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; and
6. A description of the condition of all surface waters of the State located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This must include identification of any discharges of sediment to the surface waters of the State; and

7. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance; and
8. 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; and
9. Description and sketch (map) 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; and
10. Estimates, in square feet or acres, of the following areas:
    a. Total area with active soil disturbance (not requiring either temporary stabilization or final stabilization); and
    b. Total area with inactive soil disturbance (requiring either temporary stabilization or final stabilization); and
    c. Total area that has achieved temporary stabilization; and
    d. Total area that has achieved final stabilization; and
11. Current stage of construction of all SMPs and identification of all construction activity on site that is not in conformance with the SWPPP and technical standards; and
12. 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 SMP(s); and
13. Identification and status of all corrective actions that were required by previous inspection; and
14. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The qualified inspector must attach 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 must 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 must 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.

6.2.2 Site Log Book

Pursuant to Part I.E.3 of GP-0-25-001, the Owner/Operator shall retain a copy of the General Permit, NOI, NOI Acknowledgment Letter, MS4 SWPPP Acceptance Form (if applicable), inspection reports, contractor and subcontractor certification forms, and all documentation necessary to demonstrate eligibility under the permit, at the construction site from commencement of construction activity until the date that all areas of disturbance have achieved final stabilization and the Notice of Termination has been submitted to the NYSDEC.

The Site Log Book shall be maintained on-site in a secure location (i.e. job trailer, on-site construction office, or mailbox with lock) and must be accessible during normal business hours to an individual performing a compliance inspection.

6.2.3 Post Construction Records and Archiving

Following construction, the Owner/Operator shall retain copies of the SWPPP, the complete construction Site Log Book, and records of all data used to complete the NOI to be covered by this permit, for a period of at least five years from the date that the site is finally stabilized. This period may be extended by the NYSDEC, at its sole discretion, at any time upon written notification.

Records shall be maintained of all post construction inspections and maintenance work performed in accordance with the requirements outlined in Appendix G.

7.0 SWPPP IMPLEMENTATION RESPONSIBILITIES

A summary of the responsibilities and obligations of all parties involved with compliance with the NYSDEC SPDES General Permit GP-0-25-001 conditions is outlined in the subsequent sections. For a complete listing of the definitions, responsibilities, and obligations, refer to the SPDES General Permit GP-0-25-001 presented in Appendix J.

7.1 Owner's/Operator's Responsibilities

1. Ensure that control measures are selected, designed, installed, implemented and maintained to minimize the discharge of pollutants and prevent a violation of the water quality standards, meeting the non-numeric effluent limitations in Part II.B.1.(a)-(e) of the SPDES General Permit and in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

2. Ensure that practices are selected, designed, installed, and maintained to meet the performance criteria in the Design Manual. Practices must be designed to meet the applicable sizing criteria in Part II.C.2.a., b., c. or d. of GP-0-25-001.

3. Retain the services of a "Qualified Inspector" or "Qualified Professional" as defined under GP-0-25-001, to provide the services outlined in Section 7.5 "Qualified Inspector's/Qualified Professional's Responsibilities."

4. Retain the services of a "Qualified Professional," as defined under GP-0-25-001, to provide the services outlined in Section 2.3 "Owner's/Operator's Engineers Responsibilities."

5. Have an authorized corporate officer sign the Owner/Operator Certification Form to accompany the eNOI. A copy of the completed NOI is included in Appendix B.

6. Submit the electronic version of the NOI (eNOI) along with the MS4 No Jurisdiction Form using the NYSDEC's website (http://www.dec.ny.gov/chemical/43133.html).

7. Pay the required initial and annual fees upon receipt of invoices from NYSDEC. These invoices are generally issued in the fall of each year. The initial fee is calculated as $110.00 per acre disturbed plus $675.00 per acre of net increase in impervious cover, and the annual fee is $110.00.

8. Prior to the commencement of construction activity, identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting, and maintaining the erosion control practices included in the SWPPP and the

contractor(s) and subcontractor(s) that will be responsible for constructing the SMPs included in the SWPPP. Each of the contractors and subcontractors must identify at least one person from their company to be the trained contractor that will be responsible for implementation of the SWPPP. Ensure that at least one trained contractor is on site daily when soil disturbance activities are being performed.

9. Schedule a pre-construction meeting which shall include the Town of Stafford representative, Owner's/Operator's Engineer, Qualified Inspector, Contractor, and their sub-contractors to discuss responsibilities as they relate to the implementation of this SWPPP.

10. Require the Contractor to fully implement the SWPPP prepared for the site by the Owner/Operator's Engineer to 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 NYSDEC.

11. The Owner/Operator is authorized to commence construction activity as of the authorization date indicated in the Letter of Authorization (LOA), which is sent by NYSDEC after a complete eNOI is submitted.

12. Forward a copy of the LOA received from DEC to the Owner's/Operator's Engineer for project records, and to the Contractor for display at the construction site.

13. As of the date the LOA is received, the Owner/Operator must make the eNOI, SWPPP and LOA available for review and copying in accordance with the requirements in Part VII.H. of GP-0-25-001. When applicable, as of the date an updated LOA is received, the Owner/Operator must make the updated LOA available for review and copying in accordance with the requirements in Part VII.H.

14. The Owner/Operator must ensure compliance with all requirements of GP-0-25-001 and that the provisions of the SWPPP, including any changes made to the SWPPP in accordance with Part III.A.5., are properly implemented and maintained from the commencement of construction activity until all area of disturbance have achieved final stabilization; and the Owner/Operator's coverage under the permit is terminated in accordance with Part V.A.5.a.

15. As of the date of the commencement of construction activities until Part I.E.2.a. and b. have been met, the Owner/Operator must maintain at the construction site, a copy of all documentation necessary to demonstrate eligibility with GP-0-25-001, a copy of GP-0-25-001, the SWPPP, the signed SWPPP Preparer Certification Form, the signed MS4 SWPPP Acceptance Form, NYCDEP SWPPP Acceptance/Approval Form, MS4 No Jurisdiction Form, signed Owner/Operator Certification Form, eNOI, and LOA, and LOA transmittal to the MS4 Operator in accordance with Part I.D.3.c.

16. The Owner/Operator must maintain at the construction site, until Part I.E.2.a and b. have been met, as of the date the documents become final or are received, a copy of the responsible contractor's or subcontractor's certification statement(s) in accordance with Part III.A.7, and inspection reports in accordance with Part IV.C.4. and 6., and Request to Disturb Greater than Five Acres and the Authorization Letter to Disturb Greater than Five Acres in accordance with Part I.E.6, Request to Continue Coverage and the Letter of Continued Coverage (LOCC) in accordance with Part I.F.2. and 4., and the updated LOA(s) in accordance with Part I.E.9.

17. The Owner/Operator must maintain the documents 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. The documents must be paper documents unless electronic documents are accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be. If electronic documents are kept on site, the Owner/Operator must maintain functional equipment on site available to an inspector during normal hours of operation such that an inspector may view the electronic documents in a format that can be red in a similar manner as a paper record and in a legally dependable format with no less evidentiary value than their paper equivalent.

18. Upon finding a significant non-compliance with the practices described in the SWPPP or violation of GP-0-25-001, NYSDEC may order an immediate stop to all construction activity at the site until the non-compliance is remedied. The stop work order must be in writing, describe the non-compliance in detail, and be sent to the Owner/Operator. Forward a copy of any stop work order received immediately to the Owner's/Operator's Engineer and to the Contractor.

19. If any human remains or archaeological remains are encountered during excavation, the Owner/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.

20. To be authorized to implement modifications to the information previously submitted in the eNOI, the Owner/Operator must notify NYSDEC via email at Stormwater_info@dec.ny.gov requesting access to update the eNOI, update the eNOI to reflect the modifications and resubmit the eNOI in accordance with Part I.D., and receive an updated LOA.

21. The eNOI, SWPPP, LOA, updated LOAs, and inspection reports required by GP-0-25-001 are public documents that the Owner/Operator must make available for review and copying by any person within five (5) business days of the Owner/Operator receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

22. The Owner/Operator must terminate coverage when the project reaches total project completion, has a planned shutdown with partial project completion, is changing Owner/Operator or has obtained coverage under an alternative general SPDES permit or an individual SPDES permit.

23. Have a qualified inspector perform a final site inspection prior to submitting the eNOT.

24. Prior to submitting a Notice of Termination, ensure

    for SMP(s) that are privately owned, the Owner/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/Operator's deed of record.

25. Submit a complete Notice of Termination form electronically using the NYSDEC eNOT. Coverage is terminated as of the termination date indicated in the Letter of Termination (LOT), which is sent by NYSDEC after a complete eNOT is submitted.

26. Request and receive all SWPPP records from the Owner's/Operator's Engineer and archive those records, along with the LOT, for a period of at least five (5) years from the date that NYSDEC accepts a complete NOT submitted.

27. Implement the Post-Construction Inspections and Maintenance procedures outlined in Appendix G.

28. The Owner/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/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 project 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; and

    c) To address issues or deficiencies identified during an inspection by the "Qualified Inspector," the Department, or other Regulatory Authority.

    d) To document the final construction conditions.

29. 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, in conformance with Part I.G.. 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.

7.2 Owner's/Operator's Engineer's Responsibilities

1. Prepare the SWPPP using good engineering practices, best management practices, and in compliance with all federal, state, and local regulatory requirements.

2. Prepare the electronic Notice of Intent (eNOI) (see Appendix B) and sign the "SWPPP Preparer Certification Form." Forward the Owner/Operator Certification Form to the Owner/Operator for signature.

3. Provide copies of the SWPPP to the Town of Stafford once all signatures and attachments are complete.

4. Enter Contractor's information in Section 7.5 "SWPPP Participants" once a Contractor is selected by the Owner/Operator.

5. Participate in a pre-construction meeting which shall include the Choose an item. of MuniName representative, Owner/Operator, Qualified Inspector, Contractor, and all subcontractors to discuss responsibilities as they relate to the implementation of this SWPPP.

6. Update the SWPPP each time there is a significant modification to the pollution prevention measures or a change of the principal Contractor working on the project who may disturb site soil.

7.3 Contractor's Responsibilities

1. Sign the SWPPP Contractor's Certification Form contained within Appendix B and forward to the Owner's/Operator's Engineer for inclusion in the Site Log Book.

2. Identify at least one Trained Contractor that will be responsible for implementation of this SWPPP. Ensure that at least one Trained Contractor is on site on a daily basis when soil disturbance activities are being performed. The Trained Contractor shall 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 conditions at all times. For corrective actions not requiring engineering design, the contractor must begin implementing corrective actions within one business day and complete the corrective actions within five business days. For corrective actions requiring engineering design, the engineering design process must begin within five business days and the contractor must complete the corrective action in a reasonable time frame but no later than 60 calendar days.

3. Provide the names and addresses of all subcontractors working on the project site. Require all subcontractors who will be involved with construction activities that will result in soil disturbance to identify at least one Trained Contractor that will be on site on a daily basis when soil disturbance activities are being performed; and to sign a copy of the Subcontractor's Certification Form contained within Appendix B, then forward to the Owner's/Operator's Engineer for inclusion into the Site Log Book. This information must be retained as part of the Site Log Book.

4. Maintain a Spill Prevention and Response Plan in accordance with requirements outlined in Section 5 of this SWPPP. This plan shall be provided to the Owner's/Operator's Engineer for inclusion in the Site Log Book, prior to mobilization on-site.

5. Participate in a pre-construction meeting which shall include the Town of Stafford representative, Owner/Operator, Owner's/Operator's Engineer, Qualified Inspector, and all subcontractors to discuss responsibilities as they relate to the implementation of this SWPPP.

6. If Contractor plans on utilizing adjacent properties for material, waste, borrow, or equipment storage areas, or if Contractor plans to engage in industrial activity other than construction (such as operating asphalt and/or concrete plants) at the site, Contractor shall submit appropriate documentation to the Owner's/Operator's Engineer so that the SWPPP can be modified accordingly.

7. Implement site stabilization, erosion and sediment control measures, and other requirements of the SWPPP.

8. In accordance with the requirements in the most current version of the NYS Standards and Specifications for Erosion and Sediment Control, conduct inspections of erosion and sediment control measures installed at the site to ensure that they remain in effective operating condition at all times. Prepare and retain written documentation of inspections as well as of all repairs/maintenance activities performed. This information must be retained as part of the Site Log Book.

9. Begin implementing corrective actions within one (1) business day of receipt of notification by the Qualified Inspector/Qualified Professional of any corrective actions. For corrective actions not requiring engineering design, the contractor must begin implementing corrective actions

within one business day and complete the corrective actions within five business days. For corrective actions requiring engineering design, the engineering design process must begin within five business days and the contractor must complete the corrective action in a reasonable time frame but no later than 60 calendar days.

10. Maintain a record of the date(s) and location(s) that soil restoration is performed in accordance with the accompanying plans and NYSDEC Division of Water's publication "Deep-Ripping and Decompaction," dated April 2008. A copy of this publication is provided in Appendix H. The record that is to be maintained shall be a copy of the overall site grading plan delineating the area(s) and date(s) that the soil was restored.

11. Upon completion of all construction at the site, the contractor responsible for overall SWPPP Compliance shall sign the certification on their Contractor Certification Form indicating that: a.) all temporary erosion and sediment control measures have been removed from the site, b.) the on-site soils disturbed by construction activity have been restored in accordance with the SWPPP and the NYSDEC Division of Water's publication "Deep-Ripping and Decompaction," and c.) all permanent stormwater management practices required by the SWPPP have been installed in accordance with the contract documents.

7.4 Qualified Inspector's/Qualified Professional's Responsibilities

1. Participate in a pre-construction meeting with the Town of Stafford representative, Owner/Operator, Owner/Operator's Engineer, Contractor, and their subcontractors to discuss responsibilities as they relate to the implementation of this SWPPP.

2. Conduct an initial assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment control measures described within this SWPPP have been adequately installed and implemented to ensure overall preparedness of the site.

3. Provide on-site inspections to determine compliance with the SWPPP. Site inspections shall occur at an interval of at least once every seven calendar days. A written inspection report shall be provided to the Owner/Operator and general contractor within one business day of the completion of the inspection, with any deficiencies identified. A sample inspection form is provided in Appendix F.

4. Prepare an inspection report subsequent to each and every inspection that shall include/address the items listed in Part IV.C.4 of GP-0-25-001. Sign all inspection reports and maintain on site with the SWPPP.

5. Notify the owner/operator and appropriate contractor or subcontractor of any corrective actions that need to be taken.

6. Prepare a construction Site Log Book to be used as a record of all inspection reports generated throughout the duration of construction. Ensure that the construction Site Log Book is maintained and kept up-to-date throughout the duration of construction.

7. Review the Contractor's SWPPP records on a periodic basis to ensure compliance with the requirements for daily reports, soil restoration, inspections, and maintenance logs.

8. Prepare the Notice of Termination (NOT). The Qualified Professional shall sign the NOT Certifications VI (Final Stabilization) and VII (Post-construction Stormwater Management Practices) and forward the NOT to the Owner/Operator for signature on Certification VIII (Owner/Operator Certification).

9. The owner's or operator's coverage is terminated as of the termination date indicated in the Letter of Termination (LOT), which is sent by NYSDEC after a complete eNOT is submitted.

10. Transfer the SWPPP documents, along with all NOI's, LOA, permit certificates, NOT's, LOT, construction Site Log Book, and written records required by the General Permit to the Owner/Operator for archiving.

7.5 SWPPP Participants

1. Owner's/Operator's Engineer [2]: Bob Steehler, PE
   LaBella Associates, DPC
   300 State Street, Suite 201
   Rochester, NY 14614
   Phone: (585) 454-6110

2. Owner/Operator [3]: NY CDG Genesee 5, LLC
   NY CDG Genesee 6, LLC
   Janet Ward
   800 Gessner Rd, Suite 700
   Houston, TX 77024
   Phone: 303-991-5883

3. Contractor[4,6]:
   Name and Title: _____
   Company Name: _____
   Mailing Address: _____
   _____
   Phone: _____
   Fax: _____

[2] Refer to Appendix B for the SWPPP Preparer Certification Form.
[3] Refer to Appendix B for the Owner/Operator Certification Form.
[5] Refer to Appendix B for Contractor and Subcontractor Certification Form.
[6] Contractor's information to be entered once the Contractor has been selected.

APPENDIX A:
FIGURES

A-1: Site Location Map
A-2: Soils Map
A-3: Historic Places Screening Map
A-4: Environmental Resource Map
A-5: FEMA Firm Map

LaBella
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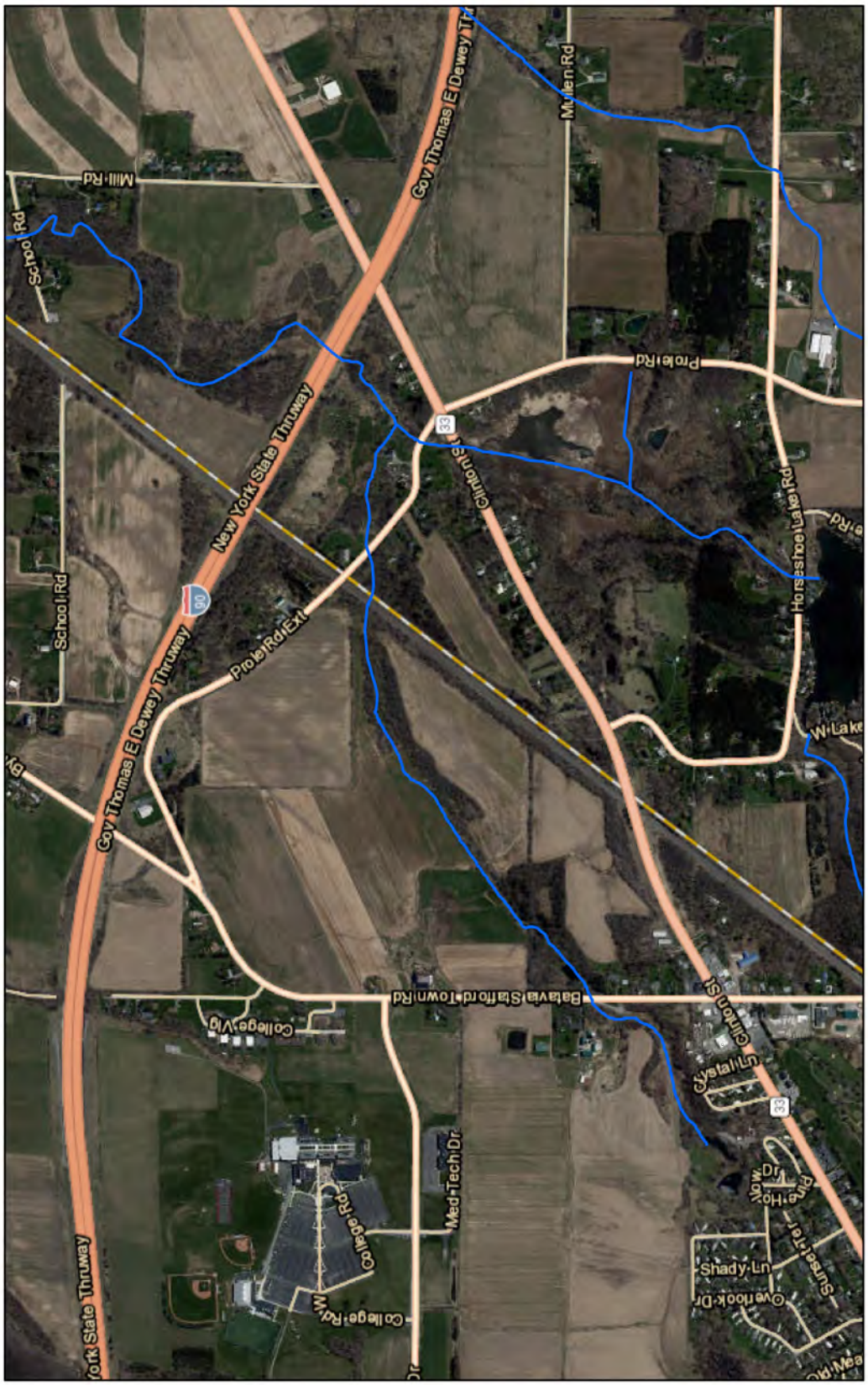
Genesee 5 & 6 Solar



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0 0.17 0.35 0.7 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, NYS ITS GIS

NYS Department of Environmental Conservation
Not a legal document

November 10, 2021

LaBella
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300 STATE STREET
ROCHESTER, NY 14614
P: (585) 454-6110
F: (585) 454-3066
www.labellapc.com

Engineering
Architecture
Environmental
Planning

DRAWING NAME:	DRAWN BY:	DATE:	PROJECT NO:
NYSDEC'S STORMWATER INTERACTIVE MAP	MSB	11/12/21	2210199.12-13

PROJECT NAME:	ISSUED FOR.	SHEET NO.
Genesee 5 and Genesee 6 Solar 8244 Batavia-Stafford Townline Road Batavia, NY	REPORT	APPENDIX A-1

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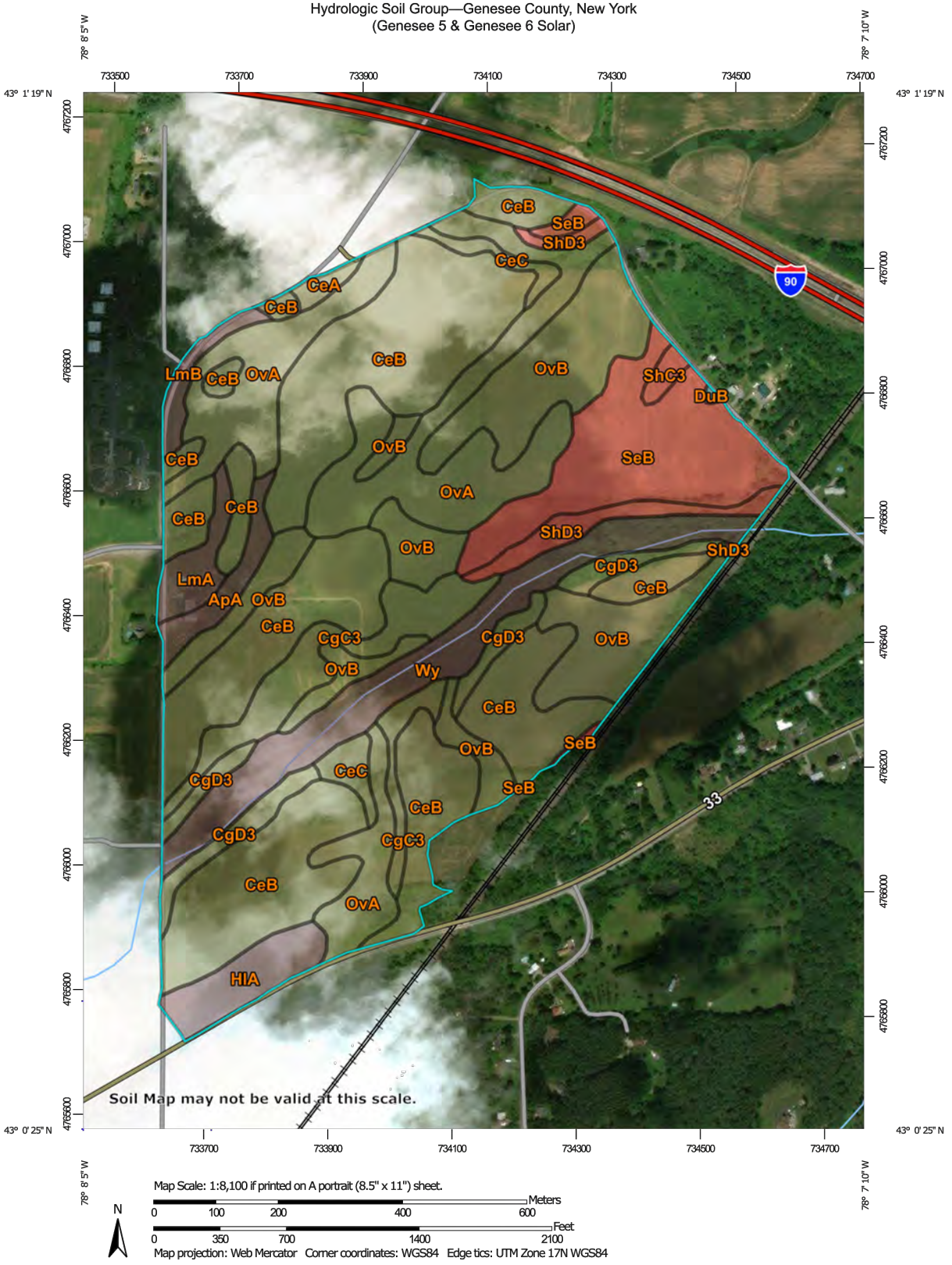
Planning

DRAWING NAME:	DRAWN BY:	DATE:	PROJECT NO:
WATERSHED MAP	MSB	11/12/21	2210199.12-13
PROJECT NAME: **Genesee 5 and Genesee 6 Solar** 8244 Batavia-Stafford Townline Road Batavia, NY	ISSUED FOR: REPORT	SHEET NO.: APPENDIX A-2	

Hydrologic Soil Group—Genesee County, New York
(Genesee 5 & Genesee 6 Solar)



USDA **Natural Resources Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

11/9/2021
Page 1 of 4

LaBella Powered by partnership 300 STATE STREET ROCHESTER, NY 14614 P: (585) 454-6110 F: (585) 454-3066 www.labellapc.com Engineering Architecture Environmental Planning	DRAWING NAME: **SOIL MAP**	DRAWN BY: MSB	DATE: 11/12/21	PROJECT NO: 2210199.12-13
	PROJECT NAME: **Genesee 5 and Genesee 6 Solar** 8244 Batavia-Stafford Townline Road Batavia, NY	ISSUED FOR: REPORT	SHEET NO.: APPENDIX A-3	

Genesee 5 & 6 Solar

1:18,056
0 0.1 0.2 0.4 mi
0 0.17 0.35 0.7 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, NYS Department of Environmental Conservation
Not a legal document

November 10, 2021

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Architecture
Environmental
Planning

DRAWING NAME:	DRAWN BY:	DATE:	PROJECT NO:
ENVIRONMENTAL RESOURCE MAPPER	MSB	11/12/21	2210199.12-13
PROJECT NAME: **Genesee 5 and Genesee 6 Solar** 8244 Batavia-Stafford Townline Road Batavia, NY	ISSUED FOR: REPORT	SHEET NO.: APPENDIX A-4	

U.S. Fish and Wildlife Service

National Wetlands Inventory

Genesee 5 & 6 Solar

November 11, 2021

Wetlands

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

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

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

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PROJECT NAME: **Genesee 5 and Genesee 6 Solar**
8244 Batavia-Stafford Townline Road
Batavia, NY

DRAWING NAME: **FEDERAL WETLANDS**

ISSUED FOR: REPORT

DRAWN BY: MSB

DATE: 11/12/21

SHEET NO.: APPENDIX A-5

PROJECT NO: 2210199.12-13

New York State
Parks, Recreation and
Historic Preservation

KATHY HOCHUL
Governor

RANDY SIMONS
Commissioner Pro Tempore

March 31, 2025

Kristina Garenani
300 State Street
Suite 201
Rochester, NY 14614

Re: USACE
Genesee 5 Solar and Genesee 6 Solar/5MW 62.3 Acres of a Combined 127 Acre Parcels
8244 Batavia Stafford Townline Rd (Parcels 01-02-117.1 and 01-02-115),
Stafford, Genesee County
21PR07343

Dear Kristina Garenani:

Thank you for your requesting the comments of the New York State Historic Preservation Office (SHPO). We have reviewed the provided documentation in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include other environmental impacts to New York State Parkland that may be involved in or near your project.

We note that 5549 Clinton Street Road is eligible for listing in the State and National Registers of Historic Places. We have reviewed the submission received on March 4, 2025, including the letter dated March 4, 2025. Based on that review, it is the SHPO's opinion that the project, as described, will have No Adverse Effect on historic or archaeological resources.

If you have any questions, you can call or e-mail me at the contact information below.

Sincerely,

Robyn Sedgwick
Historic Site Restoration Coordinator
e-mail: robyn.sedgwick@parks.ny.gov

APPENDIX B:
FORMS

Notice of Intent (NOI)
SWPPP Preparer Certification Form
Owner/Operator Certification Form
Contractor and Subcontractor Certification Forms
Notice of Termination (NOT)

LaBella
Powered by partnership.

Construction General Permit (CGP) Electronic Notice of Intent (eNOI) GP-0-25-001

version 1.11

(Submission #: HQF-1GEZ-1JY77, version 1)

Details

Originally Started By	Mark Potter
Alternate Identifier	Gensee 5 & 6 Solar Projects—Region 8
Submission ID	HQF-1GEZ-1JY77
Status	Draft

Form Input

Eligibility

Disturbance Threshold

1. Will the construction activity involve soil disturbances listed in Part I.A.1 of GP-0-25-001?
Yes

1.a. Will any runoff from the site enter a sewer system classified as a combined sewer?
No

1.b. Is this a remediation project being done under a Department approved work plan (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) with a SWPPP which meets the substantive requirements of GP-0-25-001?
Yes

1.b.i. Is this eNOI submission only for the remediation work?
No

1.c. Is the construction activity related to a stormwater discharge that does not require a permit as described in 40 CFR 122.3(e), e.g. non-point source agriculture or silviculture activities?
No

Other SPDES Permits

2. Will the discharge from the construction activity meet all conditions listed in Part I.A.2 of GP-0-25-001?
Yes

Threatened and Endangered Species

3. Will the construction activity potentially adversely affect a species that is endangered or threatened per Part I.A.3.?
No

State Historic Preservation Act (SHPA)

4. Is the construction activity designated by the Commissioner of the Office of Parks, Recreation and Historic Preservation (OPRHP), pursuant to 9 NYCRR §§428.12 or 428.13 as exempt from the SHPA review (see Attachment 2 of the Letter of Resolution between NYSDEC and OPRHP, dated January 9, 2015)?
Yes

State Environmental Quality Review (SEQR)

5. Is the construction activity subject to SEQR (Part I.A.5.), or the equivalent environmental review from another NYS or federal agency (Part I.A.6.)?
Yes

5.a. Has the owner/operator obtained documentation that the project review pursuant to SEQR, or the equivalent, has been satisfied per Part I.A.5. or I.A.6. of GP-0-25-001?
Yes

Uniform Procedures Act (UPA) Permits

6. Has the owner/operator obtained all necessary UPA permits from NYSDEC, or the equivalent from another NYS or federal agency per Part I.A.7.a. of GP-0-25-001?
Yes

Steep Slope

7. Is the construction activity within the watershed of surface waters of the State classified as AA or AA-S identified utilizing the Stormwater Interactive Map on NYSDEC's website?
No

Owner/Operator Information

8. Owner/Operator Name
NY CDG Genesee 5, LLC & NY CDG Genesee 6, LLC

9. Owner/Operator Contact Person Information

First and Last Name	Phone	E-mail
Janet Ward	303-991-5883	janet.ward@catalyze.com

10. Owner/Operator Mailing Address
800 Gessner Rd, Suite 700
Houston, TX 77024
USA

11. Is the billing contact different from the Owner/Operator Contact?
No

12. What type of organization is the owner/operator?
Private Owner

Site Information

13. Project/Site Name
Gensee 5 & 6 Solar Projects

14. Site Address
8244 Batavia Stafford Townline Rd
Batavia, NY 14020
Genesee

DEC Region
8

15. Site Latitude & Longitude
43.015803189220605,-78.12992296134644

Project Details

16. This eNOI submission is for:
A construction activity not part of a common plan of development or sale in accordance with Part I.D.1.a.

17. Does the project type fall under Table 1 or Table 2 of Appendix B of GP-0-25-001? If any portion of the construction activity falls under Table 2, regardless of the size of the disturbance, select "Table 2".
Table 2

18. Consistent with Part III.B.1.c.i. of GP-0-25-001, provide a concise overview of the project. Describe existing and proposed conditions, and include any other relevant information.
Installation of two 5MWAC ground mounted solar arrays. The Solar Projects are called Genesee 5 Solar Project and Genesee 6 Solar Project. The two solar projects share a property boundary and will be permitted and constructed simultaneously.

Enter the total project site acreage, the acreage to be disturbed, and the future impervious area (acreage) within the disturbed area, rounded to the nearest tenth of an acre.

19. Total Site Area (acres)
54.0

20. Total Area to be Disturbed (acres)
65.0

21. Existing Impervious Area to be Disturbed (acres)
0.6

22. Future Impervious Area Within Disturbed Area (acres)
1.4

> The total area to be disturbed is greater than the site area. Please review the responses to Questions 19 and 20 to ensure the correct values are provided.

Nature of the project:
Redevelopment with increase in impervious area

23. Do you plan to disturb more than 5 acres of soil at any one time?
No

---

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

A (%)
0

B (%)
0

C (%)
0

D (%)
100

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

Start Date
11/01/2025

End Date
07/01/2026

26. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
unnamed tributary to Bigelow Creek

27. Type of waterbody identified in question 26?
Stream/Creek On Site

28. Has the surface waterbody in question 26 been identified as a 303(d) segment in Appendix D of GP-0-25-001?
Yes

29. Is this project located in one of the Watersheds identified in Appendix C of GP-0-25-001?
No

30. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?
No

31. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?
No

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

33. Is this property owned by a state authority, state agency, federal government or local government?
No

Required SWPPP Components

General SWPPP Requirements

34. Has a SWPPP been developed in conformance with the requirements in Part III. of GP-0-25-001?
Yes

35. Does the SWPPP demonstrate consideration of the future physical risks due to climate change pursuant to the CRRA, 6 NYCRR Part 490, and associated guidance per Part III.A.2. of GP-0-25-001?
Yes

36. 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

37. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the NYS Stormwater Management Design Manual?
Yes

37.a. Which version of the NYS Stormwater Management Design Manual was used to develop the SWPPP?
2024

SWPPP Preparer

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

40. Name of the person who prepared the SWPPP
Bob Steehler, PE

41. SWPPP Preparer Organization Name
LaBella Associates

42. SWPPP Preparer Contact Information

First and Last Name	Phone	E-mail
Bob Steehler	(585) 298-9340	mtshimanga@labellapc.com

43. SWPPP Preparer Address

300 State Street

Rochester, NY 14614

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) Upload the completed form
Download SWPPP Preparer Certification Form

44. Please upload the SWPPP Preparer Certification

NONE PROVIDED

Comment

NONE PROVIDED

44.a. Has the SWPPP Preparer Certification Form been signed by the SWPPP preparer in accordance with Part VII.J of GP-0-25-001?

Yes

Erosion & Sediment Control Criteria

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

Yes

Post-Construction Criteria

Site Planning and Soil Restoration

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

Preservation of Undisturbed Area
Preservation of Buffers
Reduction of Clearing and Grading
Roadway Reduction
Locating Development in Less Sensitive Areas
Driveway Reduction
Building Footprint Reduction

47. 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.

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).

Water Quality Criteria

49. Water Quality Sizing Criteria

Total WQv required (acre-feet)	Total RRv provided (acre-feet)	Minimum RRv (acre-feet)	Total WQv provided (acre-feet)	Sum of RRv and WQv provided
.127	.123	.023	.004	0.127

Water Quantity Criteria

50. Per Section 9.2.1.C.VI and VII of the 2024 Design Manual, is there 0% change to hydrology that increases the discharge rate and volume from the project site?
Yes

Operation and Maintenance

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

53.a. Identify the entity responsible for the long-term Operation and Maintenance.
Owner

Post-Construction SMP Identification

54. Post-Construction RR Techniques and Standard SMPs

RR Techniques and SMPs	Contributing Impervious Area (acres)	Total Contributing Area (acres)
Sheet Flow to Riparian Buffers or Filter Strips (RR-2)	0.970	2.560
Filtration Bioretention (F-5)	0.430	
Dry Swale (O-1)	0.060	

55. Alternative SMPs

Type of Alternative SMP	Manufacturer of the Alternative SMP	Name of the Alternative SMP	Contributing Impervious Area (acres)
NONE PROVIDED	*NONE PROVIDED*	*NONE PROVIDED*	*NONE PROVIDED*

Other Permits

56. Identify other permits, existing and new, that are required for this project/facility.
USACE Wetland Permit

56.a. Indicate the Size of Impact from the USACE Wetland Permit, in acres, to the nearest tenth.
0.027

57. Is this NOI for a change in owner/operator per Part I.G.?
No

MS4 SWPPP Acceptance

59. Will the construction activities be within the municipal boundary(ies) of Traditional Land Use Control MS4 Operator(s) and discharge to the MS4(s)?
No

Owner/Operator Certification

Owner/Operator Certification Form Download

Download the Owner/Operator Certification Form by clicking the link below.
Owner/Operator Certification Form

61. Upload Owner/Operator Certification Form
NONE PROVIDED
Comment
NONE PROVIDED

61.a. Has the Owner/Operator Certification Form from Appendix J been signed by the owner/operator, or a representative of the owner/operator in accordance with Part VII.J of GP-0-25-001 and uploaded to the eNOI?
Yes

Additional Project Information

62. Enter any additional pertinent project information in the text box below.
NONE PROVIDED

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b., the completed form must be attached to the eNOI and submitted to NYSDEC electronically.)

Project/Site Name:	Genesee 5 & Genesee 6 Solar Projects
eNOI Submission ID:	HQF-1GEZ-1JY77
Owner/Operator Name:	NY CDG Genesee 5 & NY CDG Genesee 6

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) has been prepared in accordance with the requirements of GP-0-25-001. I certify under penalty of law that the SWPPP and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate 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 there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Bob		Steehler
SWPPP Preparer First Name	MI	SWPPP Preparer Last Name

Signature

8/22/2025

Date

Revised: January 2025

NEW YORK STATE | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b. or Part I.F.2. and 3., the completed form must be attached to the eNOI or the Request to Continue Coverage, and submitted to NYSDEC electronically.

Project/Site Name: Genesee 5 & Genesee 6 Solar Projects

eNOI Submission ID: HQF-1GEZ-1JY77

eNOI Submitted by: ☐ **Owner/Operator** ☑ **SWPPP Preparer** ☐ **Other**

Certification Statement - Owner/Operator

I hereby certify that I read, and will comply with, the GP-0-25-001 permit requirements. I understand that authorization to discharge under the permit for the project/site named above is dependent on receipt of a Letter of Authorization (LOA) or a Letter of Continued Coverage (LOCC) from the New York State Department of Environmental Conservation (NYSDEC) in accordance with CGP Part I.D.3.b. or Part I.F.4. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner/Operator First Name | MI | Owner/Operator Last Name

DocuSigned by:

E1B78A01E83842D...

NY CDG Genesee 5 LLC and NY CDG Genesee 6 LLC, by: LamPhung Ngo-Burns, Chief Financial Officer

Signature

8/22/2025

Date

Revised: January 2025

Stormwater Pollution Prevention Plan
Contractor Certification Statement
(Responsible for overall SWPPP Compliance)

Project Name
Project Address, Town of X, X County, New York

This is to certify that the following contracting firm will be responsible for installing, constructing, repairing, inspecting and/or maintaining the erosion and sediment control practices and post-construction stormwater management control practices required by the SWPPP.

Contracting Firm Information

Name: _____

Address: _____

Telephone & Fax: _____

Trained Contractor(s)[1] Responsible for SWPPP Implementation (Provide name, title, and date of last training)

_____

_____

Prior to commencement of construction activity, the following certification shall be issued:

I hereby certify under penalty of law that I understand and agree to comply with the requirements 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 requirements of the most current version of the New York State Pollutant Discharge Elimination System (SPDES) Construction General Permit (CGP) 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

Printed Name: _____

Title/Position: _____

Signature: _____ Date: _____

Upon completion of construction activities, the following certification shall be issued, prior to issuance of the NOT:

I hereby certify that that all permanent stormwater management practices required by the SWPPP have been installed in accordance with the contract documents. I further certify that all temporary erosion and sediment control measures have been removed from the site, and that the on-site soils disturbed by construction activity have been restored in accordance with the SWPPP and the NYSDEC Division of Water's publication "Deep-Ripping and Decompaction".

Printed Name: _____

Title/Position: _____

Signature: _____ Date: _____

[1] "Trained Contractor" means an employee from a contracting (construction) company 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 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" will be responsible for the day to day implementation of the SWPPP.

Stormwater Pollution Prevention Plan
Subcontractor Certification Statement
(whose work involves soil disturbance)

Project Name
Project Address, Town of X, X County, New York

Each Subcontractor whose work will involve soil disturbance of any kind is required to complete and sign this Certification Statement before commencing any construction activity at the site. This completed Certification Statement(s) shall be maintained at the construction site in the Site Log Book.

Subcontracting Firm Information

Name: _____

Address: _____

_____

Telephone & Fax: _____

Trained Contractor(s)[2] Responsible for SWPPP Implementation (Provide name, title, and date of last training)

_____

_____

Prior to commencement of construction activities, the following certification shall be issued:

I hereby certify under penalty of law that I understand and agree to comply with the requirements 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 requirements of the most current version of the New York State Pollutant Discharge Elimination System (SPDES) Construction General Permit (CGP) 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

Printed Name: _____

Title/Position: _____

Signature: _____ Date: _____

[2] "Trained Contractor" means an employee from a contracting (construction) company 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 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" will be responsible for the day to day implementation of the SWPPP.

eNOT Owner or Operator Certification

for construction activities seeking termination from the

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(The completed form must be attached to the eNOT, which must be submitted to NYSDEC electronically in accordance with CGP Part V.A.5.)

I. Project Owner/Operator Information

a. Owner/Operator Name:

b. Contact Person:

c. Street Address:

d. City/State/Zip:

II. Project Site Information

a. Project/Site Name:

b. Street Address:

c. City/State/Zip:

d. CGP SPDES Permit ID:

III. Certification Statement

I certify that I have met the requirements of CGP Part V.A.1., 2., 3., and 4. 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 gather and evaluate 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 there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

a. Printed name of the Owner or Operator:

b. Title/Position:

c. Signature:

d. Date:

eNOT Qualified Inspector Certification – Final Stabilization

for construction activities seeking termination from the

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(The completed form must be attached to the eNOT, which must be submitted to NYSDEC electronically in accordance with CGP Part V.A.5.)

I. Project Owner/Operator Information

a. Owner/Operator Name:

b. Contact Person:

c. Street Address:

d. City/State/Zip:

II. Project Site Information

a. Project/Site Name:

b. Street Address:

c. City/State/Zip:

d. CGP SPDES Permit ID:

III. Certification Statement

I hereby certify that all the requirements in CGP Part V.A.1.a.i., ii., and iii. or CGP Part V.A.1.b.i., ii., and iii. have been achieved. 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 gather and evaluate 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 there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

a. Printed name of the Qualified Inspector:

b. Title/Position:

c. Signature:

d. Date:

eNOT Qualified Inspector Certification – SMPs

for construction activities seeking termination from the

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(The completed form must be attached to the eNOT, which must be submitted to NYSDEC electronically in accordance with CGP Part V.A.5.)

I. Project Owner/Operator Information

a. Owner/Operator Name:

b. Contact Person:

c. Street Address:

d. City/State/Zip:

II. Project Site Information

a. Project/Site Name:

b. Street Address:

c. City/State/Zip:

d. CGP SPDES Permit ID:

III. Certification Statement

I hereby certify that all the requirements in CGP Part V.A.1.a.iv. or CGP Part V.A.1.b.iv. have been achieved. 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 gather and evaluate 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 there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

a. Printed name of the Qualified Inspector:

b. Title/Position:

c. Signature:

d. Date:

APPENDIX C:
PROJECT EVALUATION

LaBella
Powered by partnership.

NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	5545	0.127
30	Total RRV Provided	5374	0.123
31	Is RRv Provided ≥WQv Required?	No	
32	Minimum RRv	1002	0.023
32a	Is RRv Provided ≥ Minimum RRv Required?	Yes	
33a	Total WQv Treated	171	0.004
34	Sum of Volume Reduced & Treated	5545	0.127
35	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes	

NOI QUESTIONS

96.91%

Step 1 - Site Planning

	Practice	Description	Applicable	Project Specific Evaluation
Preservation of Natural Features and Conservation Design	**Preservation of Undisturbed Areas**	Delineate and protect undisturbed forests, native vegetated areas, riparian corridors, water bodies, wetlands, and natural terrain.	Yes	EXAMPLES - Approximately XX+/- Acres of land will remain undisturbed, in its natural state, which accounts for XX% of the total project parcel. **OR** The project does not propose permanent conservation of this area at this time.
	Preservation of Buffers	Delineate and protect naturally vegetated buffers along perennial streams, rivers, shorelines, and wetlands.	Yes	EXAMPLES - There is a stream/river/shorline/wetland located on the project site. For the area adjacent to this water body, a XX-ft naturally vegetated buffer will be applied. No disturbance will occur within this buffer. **OR** The only disturbance that will occur within this buffer will include XX. This disturbance is necessary because XX. **OR** There are no water bodies located on or adjacent to the project site.
	Reduction of Clearing and Grading	Limit clearing and grading to the minimum amount needed for roads, driveways, foundations, utilities and stormwater management facilities.	Yes	EXAMPLES - Clearing and grading will be limited to the area of disturbance and will be minimized to the greatest extent practical. The limits of all proposed clearing will be demarcated in the field with orange construction fencing, prior to construction, to prevent unnecessary removal of trees.
	Locating Development in Less Sensitive Areas	Avoid sensitive resource areas such as floodplains, steep slopes, erodible soils, wetlands, mature forests and critical habitats by locating development to fit the terrain in areas that will create the least impact.	Yes	EXAMPLES - The site has been designed to avoid sensitive resource areas to the greatest extent practical. Include project specific information for the various sensitive resources. **OR** There are no floodplains, steep slopes, erodible soils, wetlands, mature forests or critical habitats located on the project site.
	Open Space Design	Use clustering, conservation design or open space design to reduce impervious cover, preserve more open space and protect water resources.	N/A	EXAMPLES - The site layout has been designed to maximize open space. Impervious surfaces have been minimized to the greatest extent practical and approximately XX+/- Acres will be maintained as vegetated open space.
	Soil Restoration	Restore the original properties and porosity of the soil by deep till and amendment with compost to reduce the generation of runoff and enhance the runoff reduction performance of post construction practices.	Yes	EXAMPLES - All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual. **OR** Compacted areas were considered as impervious cover when calculating the WQv Required and the compacted areas were assigned a post-construction HSG designation that is one level less permeable than existing conditions for the hydrology analysis.

Step 1 - Site Planning

Reduction of Impervious Cover	**Roadway Reduction**	Minimize roadway widths and lengths, below local requirements, to reduce site impervious area	Yes	EXAMPLES - Proposed roadways will be constructed with a porous XX surface, in order to minimize the overall impervious surface. **OR** The project proposes to reduce the roadway width to XX-ft, from the required XX-ft. **OR** Reducing the roadway width is not feasible for the project's intended use. **OR** No new roadways are proposed as part of this project.
	Sidewalk Reduction	Minimize sidewalk lengths and widths, below local requirements, to reduce site impervious area	N/A	EXAMPLES - All pedestrian walkways will be constructed with a porous XX surface. **OR** Sidewalk widths have been minimized to X-ft and quantity of sidewalk has been reduced to that required to ensure safe pedestrian access throughout the site. **OR** Reducing the sidewalk width/length is not feasible for the project's intended use. **OR** No new sidewalks are proposed as part of this project.
	Driveway Reduction	Minimize driveway lengths and widths, below local requirements, to reduce site impervious area	Yes	EXAMPLES - All driveways on-site will be constructed with a permeable XX surface, where feasible, in order to minimize the overall impervious surface. **OR** The project proposes to reduce the driveway width to XX-ft, instead of the required XX-ft. **OR** Reducing the driveway width is not feasible for the intended use. **OR** No new driveways are proposed as part of this project.
	Cul-de-sac Reduction	Minimize the number of cul-de-sacs and incorporate landscaped areas to reduce their impervious cover.	N/A	EXAMPLES - Proposed cul-de-sacs will utilize a landscaped island to reduce impervious cover. **OR** No cul-de-sacs are proposed as part of this project.
	Building Footprint Reduction	Reduce the impervious footprint of residences and commercial buildings by using alternate or taller buildings while maintaining the same floor to area ratio.	Yes	EXAMPLES - All new building area has been allocated to efficiently implement the intended use. **OR** No new buildings are proposed as part of this project. **OR** The current proposal involves the renovation and reuse of XX existing buildings on-site.
	Parking Reduction	Reduce imperviousness on parking lots by eliminating unneeded spaces, providing compact car spaces and efficient parking lanes, reducing stall dimensions below local requirements, using porous pavement surfaces in overflow parking areas, and using multi-storied parking decks where appropriate.	N/A	EXAMPLES - All parking lots will be constructed of a porous XX surface, to reduce overall impervious surfaces. **OR** The project proposes to reduce the parking stall dimensions to X-ft wide by XX-ft long, instead of the required XX-ft by XX-ft stall. **OR** The project proposes to reduce the number of parking stalls proposed to XX, instead of the required XX, resulting in an approximate XX% reduction in impervious. **OR** Reducing the parking stall dimensions or number of stalls is not feasible for the intended use. **OR** No new parking stalls are proposed as part of this project.

Step 2 - Calculate Water Quality Volume

Is this project subject to Section 4.3 of the NYS Design Manual for Enhanced Phosphorus Removal?	No
What is the nature of this construction project?	New Construction

Design Point:	Gen 5&6		
P=	1.00	inches	*Enter 90% Rainfall Event as P*

Calculate Required WQv

Drainage Area Number	Contributing Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (cf)	SMP Description
1	0.90	0.25	28	0.30	980	Filtration Bioretention
2	2.56	0.97	38	0.39	3,634	Sheet Flow to Grass Filter Strip
3	0.10	0.06	60	0.59	214	Dry Swale
4	0.71	0.18	25	0.28	717	Filtration Bioretention
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
Total	4.27	1.46	34	0.36	**5545**	**Required WQv**

Step 2 - Calculate Water Quality Volume

0.13	**af**

Steps 3 and 5 - Apply RR Techniques and Standard SMPs

Runoff Reduction Volume and Treated Volumes						
	Runoff Reduction Techiques/Standard SMPs		**Total Contributing Area**	**Total Contributing Impervious Area**	**WQv Reduced (RRv)**	**WQv Treated**
			(acres)	**(acres)**	**(cf)**	**(cf)**
RR Techniques	Conservation of Natural Areas	RR-1	0.00		0	
	Sheet Flow to Riparian Buffer/Filter Strip	RR-2	2.56	0.97	3,634	
	Tree Planting/Tree Pit/Tree Trench	RR-3	0.00	0.00	0	
	Disconnection of Rooftop Runoff	RR-4		0.00	0	
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rainwater Harvesting Systems	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Extensive & Intensive)	RR-10	0.00	0.00	0	
	Stream Daylighting	RR-11				
Standard SMPs w/ RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4	0.00	0.00	0	0
	Infiltration Bioretention	F-4	0.00	0.00	0	0
	Filtration Bioretention	F-5	1.61	0.43	1,697	0
	Bioslope	F-6	0.00	0.00	0	0
	Dry swale	O-1	0.10	0.06	43	171
Standard SMPs	Micropool Extended Detention	P-1	0.00	0.00		0
	Wet Pond	P-2	0.00	0.00		0
	Wet Extended Detention	P-3	0.00	0.00		0
	Multiple Pond System	P-4	0.00	0.00		0
	Shallow Wetland	W-1	0.00	0.00		0
	Extended Detention Shallow Wetland	W-2	0.00	0.00		0
	Pond/Wetland System	W-3	0.00	0.00		0
	Pocket Wetland	W-4	0.00	0.00		0
	Gravel Wetland	W-5	0.00	0.00		0
	Surface Sand Filter	F-1	0.00	0.00		0
	Underground Sand Filter	F-2	0.00	0.00		0
	Perimeter Sand Filter	F-3	0.00	0.00		0
	Wet Swale	O-2	0.00	0.00		0
Alt. SMPs	Flow Based Alternative Practice	-	0.00	0.00		0
	Volume Based Alternative Practice	-				
	Totals by RR Technique →		2.56	0.97	3,634	
	Totals by Standard SMP w/RRV →		1.71	0.49	1,740	171
	Totals by Standard SMP →		0.00	0.00		0
	Totals by Alternative SMP →		0.00	0.00		0
	Totals (RR Techniques + all SMPs) →		4.27	1.46	5,374	171

Step 3 - Evaluation of RR Techniques and Standard SMPs with RRv Capacity

	Practice	Description	Applicable	Project Specific Evaluation
RR Techniques	**Conservation of Natural Areas (RR-1)**	Retain the pre-development hydrologic and water quality characteristics of undisturbed natural areas by permanently conserving these areas on a site. Undisturbed natural areas include: forest retention areas; reforestation areas; stream and river corridors; shorelines; wetlands, vernal pools, and associated vegetated buffers; and undisturbed open space.		EXAMPLES - The project site does not contain any significant natural resources. **OR** As a Redevelopment Project, the proposed site layout has been designed to limit land disturbance to the greatest extent practical. **OR** Approximately XX+/- Acres will be placed into permanent conservation, which accounts for XX% of the total property. **OR** The project does not propose permanent conservation of these areas at this time.
	Sheet Flow to Riparian Buffer/Filter Strip (RR-2)	Undisturbed natural areas such as forested conservation areas and stream buffers or vegetated filter strips and riparian buffers can be used to treat and control stormwater runoff from some areas of a development project.		EXAMPLES - The project site does not contain any riparian buffers. **OR** Sheet flow to riparian buffers or grass filter strips is not proposed at this time. The project proposes treatment by RR techniques, Standard SMPs with RRv capacity, or Standard SMPs without RRv capacity. **OR** The project proposes sheet flow to riparian buffers to reduce runoff from XX. Calculations have been provided in the SWPPP. **OR** The project proposes sheet flow to grass filter strips to reduce runoff from XX. Calculations have been provided in the SWPPP.
	Tree Planting/Tree Pit/Tree Trench (RR-3)	Plant or conserve trees to reduce stormwater runoff, increase nutrient uptake, and provide bank stabilization. Trees can be used for applications such as landscaping, stormwater management practice areas, conservation areas and erosion and sediment control.		EXAMPLES - The project proposes the preservation of existing mature trees, as well as the planting of numerous trees throughout the site, in order to reduce stormwater runoff, increase nutrient uptake, and provide bank stabilization. **OR** The project proposes new tree plantings/tree pits/tree trenches, adjacent to impervious surfaces, Calculations have been provided in the SWPPP. **OR** Tree plantings/tree pits/tree trenches are proposed on site. However, credit for these trees will not be taken toward area reduction/volume reduction in the RRv calculations.
	Disconnection of Rooftop Runoff (RR-4)	Direct runoff from rooftop areas and upland overland runoff flow to designated pervious areas to reduce runoff volumes and rates.		EXAMPLES - The building roof(s) will be directed to downspouts with splash blocks and discharge over a grassed filter. Calculations have been provided in the SWPPP. **OR** The building roof(s) will be directed to downspouts with splash blocks and vegetated areas, which will promote sheet flow and filtering. However, credit for rooftop disconnect will not be taken toward an impervious area reduction in the RRv calculations. **OR** Due to the size/use/layout of the proposed building(s), rooftop disconnect is not proposed at this time.

Step 3 - Evaluation of RR Techniques and Standard SMPs with RRv Capacity

RR Techniques

Vegetated Swale (RR-5)	The natural drainage paths, or properly designed vegetated channels, can be used instead of constructing underground storm sewers or concrete open channels to increase time of concentration, reduce the peak discharge, and provide infiltration.		EXAMPLES - Due to flat topography/steep topography/etc., vegetated swales are not feasible for use on the project site. **OR** Vegetated swale(s) will be used to treat XX. Calculations have been provided in the SWPPP.
Rain Garden (RR-6)	Manage and treat small volumes of stormwater runoff using a conditioned planting soil bed and planting materials to filter runoff stored within a shallow depression.		EXAMPLES - Due to the size of contributing area/tributary driveway/tributary roadway, a bioretention facility will be implemented instead of rain gardens. **OR** Due to XXX,rain gardens are not feasible for use on the project site. **OR** Rain gardens will be used to treat roof runoff at the source for the building(s). Calculations have been provided in the SWPPP.
Stormwater Planter (RR-7)	Small landscaped stormwater treatment devices that can be designed as infiltration or filtering practices. Stormwater planters use soil infiltration and biogeochemical processes to decrease stormwater quantity and improve water quality.		EXAMPLES - Due to XXX, a bioretention facility will be implemented instead of stormwater planter(s). **OR** Due to XXX,stormwater planters are not feasible for use on the project site. **OR** Stormwater planters will be used to treat roof runoff at the source for the building(s). Calculations have been provided in the SWPPP.
Rainwater Harvesting System (RR-8)	Capture and store stormwater runoff to be used for irrigation systems or filtered and reused for non-contact activities.		EXAMPLES - Rainwater harvesting is not proposed on-site due to XXX. **OR** A below-grade cistern will be implemented for reuse as XXX. The system has been sized to provide adequate storage capacity for the entire WQv & RRv calculated for the tributary area. Calculations have been provided in the SWPPP. An above-grade rain barrel/cistern will be implemented for reuse as XXX. The system has been sized to provide adequate storage capacity for the entire WQv & RRv calculated for the tributary area. Calculations have been provided in the SWPPP.
Porous Pavement (RR-9)	Pervious types of pavements that provide an alternative to conventional paved surfaces, designed to infiltrate rainfall through the surface, thereby reducing stormwater runoff from a site and providing some pollutant uptake in the underlying soils.		EXAMPLES - Due to XXX, porous pavement is not feasible for use on the project site. **OR** Porous asphalt will be used, in place of XX, for the proposed XX. Calculations have been provided in the SWPPP. **OR** Porous concrete will be used, in place of XX, for the proposed XX. Calculations have been provided in the SWPPP. **OR** Porous pavers will be used, in place of XX, for the proposed XX. Calculations have been provided in the SWPPP.

Step 3 - Evaluation of RR Techniques and Standard SMPs with RRv Capacity

	Green Roof (RR-10)	Capture runoff by a layer of vegetation and soil installed on top of a conventional flat or sloped roof. The rooftop vegetation allows evaporation and evapotranspiration processes to reduce volume and discharge rate of runoff entering conveyance system.		EXAMPLES - Due to XX, a green roof is not feasible for use on the project site. **OR** An extensive/intensive green roof is proposed on-site. Calculations have been provided in the SWPPP.
	Stream Daylighting (RR-11)	Stream Daylight previously-culverted/piped streams to restore natural habitats, better attenuate runoff by increasing the storage size, promoting infiltration, and help reduce pollutant loads.		EXAMPLES - No stream daylighting opportunities are present on the site. **OR** Although stream daylighting opportunities are present, due to XX, stream daylighting is not proposed on this site. **OR** The project proposes stream daylighting for an XX-ft length of stream.
Standard SMPs with RRv Capacity	**Infiltration Trench (I-1)**	An infiltration practice that stores the water quality volume in the void spaces of a gravel trench before it is infiltrated into the ground.		EXAMPLES - Due to XX, infiltration trenches are not feasible for use on the project site. **OR** Infiltration trench(es) are proposed on-site to treat XX. Calculations have been provided in the SWPPP.
	Infiltration Basin (I-2)	An infiltration practice that stores the water quality volume in a shallow depression, before it is infiltrated it into the ground.		EXAMPLES - Due to XX, infiltration basins are not feasible for use on the project site. **OR** An infiltration basin(s) is proposed on-site to treat XX. Calculations have been provided in the SWPPP.
	Dry Well (I-3)	An infiltration practice similar in design to the infiltration trench, and best suited for treatment of rooftop runoff.		EXAMPLES - Due to XX, dry wells are not feasible for use on the project site. **OR** Dry well(s) are proposed on-site to treat XX. Calculations have been provided in the SWPPP.
	Underground Infiltration System (I-4)	An infiltration practice below grade that stores the water quality volume in pre-manufactured pipes, vaults or other modular structures, before it is infiltrated into the ground.		EXAMPLES - Due to XX, underground infiltration systems are not feasible for use on the project site. **OR** An underground infiltration system(s) is proposed on-site to treat XX. Calculations have been provided in the SWPPP.
	Infiltration Bioretention (F-4)	A shallow depression that treats stormwater as it flows through a soil matrix, before it is infiltrated into the ground.		EXAMPLES - Due to XXX, a filtration bioretention will be implemented, instead of an infiltration bioretention. **OR** Due to XXX, bioretention is not feasible for use on the project site. **OR** Infiltration bioretention will be used to treat XX. Calculations have been provided in the SWPPP.
	Filtration Bioretention (F-5)	A shallow depression that treats stormwater as it flows through a soil matrix and is returned to the storm drain system.		EXAMPLES - Due to XXX, an infiltration bioretention will be implemented, instead of a filtration bioretention. **OR** Due to XXX, bioretention is not feasible for use on the project site. **OR** Filtration bioretention will be used to treat XX. Calculations have been provided in the SWPPP.

Step 3 - Evaluation of RR Techniques and Standard SMPs with RRv Capacity

	Bioslope (F-6)	Permeable engineered soil media that is installed along embankments or other slopes, designed to capture and treat stormwater runoff from adjacent paved areas.		EXAMPLES - Due to XXX, bioslopes are not feasible for use on the project site. **OR** Bioslope(s) will be used to treat XX. Calculations have been provided in the SWPPP.
	Dry Swale (O-1)	An open drainage channel or depression explicitly designed to detain and promote the filtration of stormwater runoff into the soil media.		EXAMPLES - Due to XXX, dry swales are not feasible for use on the project site. **OR** A dry swale(s) will be used to treat XX. Calculations have been provided in the SWPPP.

Step 4 - Calcuate Minimum RRv Required

Enter the Soils Data for the site		
Hydrologic Soil Group	Acres	S
A	0.00	55%
B	0.00	40%
C	0.00	30%
D	1.46	20%
Total Area	1.46	

Calculate the Minimum RRv		
S =	**0.20**	
Impervious =	1.46	*acres*
Precipitation	1.00	*inches*
Rv	0.95	
Minimum RRv	**0.023**	***af***
	1002	cf

Sheet Flow to Grass Filter Strip (RR-3)

Design Point:	Gen 5&6

Enter Site Data For Drainage Area to be Reduced							
Drainage Area Number	**Contributing Area** (Acres)	**Impervious Area** (Acres)	**Percent Impervious** %	**Rv**	**WQv** (cf)	**Precipitation** (in)	**Description**
2	2.56	0.97	38	0.39	3,634	1.00	Sheet Flow to Grass Filter Strip

Design Criteria		
Is the riparian buffer delineated and permanently protected through establishment of a legal conservation easement?	Yes	
Is the contributing area a designated hotspot?	No	
Is a pretreatment pea gravel diaphragm proposed along the upgradient edge of the buffer?	Yes	
Is runoff entering the buffer as overland sheet flow or a flow spreader proposed upgradient of the buffer?	Yes	
Enter the total length of contributing flow path (ft)	20	
Enter the length of contributing flow path from impervious surfaces (ft)	20	
Enter the slope of contributing flow path (%)	2	
Minimum buffer length based on contriuting flow path slope (ft)	35	
Enter the slope for the first 10 ft of the buffer (%)	2	

Sizing Criteria				
		Value	Units	Notes
Enter Travel Time through Buffer	*T*	6	min	
Enter 2-yr 24-hr Rainfall Depth	*P*	2.17	inch	
Enter Overall Buffer Slope	*S*	0.02	ft/ft	
Enter Manning's Coefficient for Buffer	*n*	0.24		
Calculated Minimum Length of Buffer	*L*	27	ft	
Minimum Length of Buffer	*L*	35	ft	
Is the buffer within HSG C or D soils?		Yes		
Required Length of Buffer	*L*	40	ft	
Enter Provided Length of Buffer	*L*	40	ft	

Calculate Runoff Reduction		
RRv Provided	**3,634**	**cf**

Sheet Flow to Grass Filter Strip (RR-3)

Total Area	2.56	acres
Total Impervious	1	acres
Total RRv Provided	3,634	cf

Filtration Bioretention (F-5)

Design Point:	Gen 5&6

Enter Site Data For Drainage Area to be Treated by Practice							
Drainage Area Number	**Contributing Area** (Acres)	**Impervious Area** (Acres)	**Percent Impervious** %	**Rv**	**WQv** (cf)	**Precipitation** (in)	**Description**
1	0.90	0.25	28	0.30	980	1.00	Filtration Bioretention

Design Criteria		
Enter underlying soil infiltration rate (based on geotechnical testing, refer to Appendix D)	0.2	Underdrains required
Is the contributing area to the practice a stormwater hotspot?	No	
Is the practice the first in series for treatment of a Level 1 (Infiltration Restricted) hotspot?	No	
Is contributing area greater than max. contributing area?	No	
Enter depth to seasonal high water table (ft)	5	
Enter depth to bedrock (ft)	10	
Is pretreatment provided, in conformance with Section 6.4.3.1	Yes	
Enter average height of ponding (ft)	0.5	
Enter depth of surface layer (inches)	6	
Enter depth of filter media (ft)	2.5	
Enter depth of drainage layer (inches)	12	
Enter slope of maintenance access (%)	10	
Enter width of maintenance access (ft)	20	

Sizing Criteria				
		Value	Units	Notes
Permeability Flow Rate	k	1	ft/day	
Filter Time	tf	2	days	
Required Filter Area	Af	408	sf	
Enter Provided Filter Area	Af	1844	sf	
Recalculated Water Quality Volume (based on provided filter area)	WQv calc	4425.6	cf	

Calculate Runoff Reduction			
RRv Provided	**980**	***cf***	
WQv Treated	0	cf	This is the portion of the WQv that is not reduced in the practice.

Filtration Bioretention (F-5)

Design Point:	Gen 5&6

Enter Site Data For Drainage Area to be Treated by Practice							
Drainage Area Number	**Contributing Area** (Acres)	**Impervious Area** (Acres)	**Percent Impervious** %	**Rv**	**WQv** (cf)	**Precipitation** (in)	**Description**
4	0.71	0.18	25	0.28	717	1.00	Filtration Bioretention

Design Criteria		
Enter underlying soil infiltration rate (based on geotechnical testing, refer to Appendix D)	0.2	Underdrains required
Is the contributing area to the practice a stormwater hotspot?	No	
Is the practice the first in series for treatment of a Level 1 (Infiltration Restricted) hotspot?	No	
Is contributing area greater than max. contributing area?	No	
Enter depth to seasonal high water table (ft)	5	
Enter depth to bedrock (ft)	10	
Is pretreatment provided, in conformance with Section 6.4.3.1	Yes	
Enter average height of ponding (ft)	0.5	
Enter depth of surface layer (inches)	6	
Enter depth of filter media (ft)	2.5	
Enter depth of drainage layer (inches)	12	
Enter slope of maintenance access (%)	10	
Enter width of maintenance access (ft)	20	

Sizing Criteria				
		Value	Units	Notes
Permeability Flow Rate	k	1	ft/day	
Filter Time	tf	2	days	
Required Filter Area	Af	299	sf	
Enter Provided Filter Area	Af	961	sf	
Recalculated Water Quality Volume (based on provided filter area)	WQv calc	2306.4	cf	

Calculate Runoff Reduction			
RRv Provided	**717**	***cf***	
WQv Treated	0	cf	This is the portion of the WQv that is not reduced in the practice.

Filtration Bioretention (F-5)

Total Area	1.61	acres
Total Impervious	0	acres
Total RRv Provided	1,697	cf
Total WQv Provided	0	cf

Dry Swale (O-1)

Design Point:	Gen 5&6

Enter Site Data For Drainage Area to be Treated by Practice							
Drainage Area Number	**Contributing Area** (Acres)	**Impervious Area** (Acres)	**Percent Impervious** %	**Rv**	**WQv** (ft^3)	**Precipitation** (in)	**Description**
3	0.10	0.06	60	0.59	214	1.00	Dry Swale

Design Criteria		
Select HSG	D	
Is the contributing area to the practice a designated hotspot?	No	
Is the practice the first in series for treatment of a Level 1 (Infiltration Restricted) hotspot?	No	
Is contributing area greater than 5 acres?	No	
Enter depth to seasonal high water table (ft)	5	
Enter depth to bedrock (ft)	10	
Enter pretreatment volume provided (cf)	200	
Enter depth of filter media (inches)	30	
Enter depth of drainage layer (inches)	12	
Is an underdrain proposed?	Yes	

Sizing Criteria				
		Value	Units	Notes
Enter Bottom Width	b	2.00	ft	
Enter Side Slopes	X:1	3.00	:1	
WQv Maximum Flow Depth	d	0.50	ft	
WQv Flow Top Width	Wwqv	5.00	ft	
Channel Area	Awqv	1.75	sf	
Required Channel Length	Lr	123.00	ft	
Enter Provided Channel Length	Lp	166.00	ft	
Channel Volume Provided	Vc	290.50	cf	
Enter Check Dam Height	Ch	0.50	ft	
Check Dam Spacing	Cs	13.00	ft	
Number of Check Dams Required	C	13.00		
2-yr 24-hr Flow Depth	d2	2.17	ft	
2-yr Storm Flow Top Width	W2	15.02	ft	
Area of 2-yr 24-hr Flow	A2	18.47	sf	
2-yr Wetted Perimeter	Pw2	24.44	ft	
Enter Mannings Coef.	n	0.20		
Enter Longitudinal Slope	S	0.04	ft/ft	
2-yr Velocity	V	1.24	fps	
Enter 10-yr Freeboard		0.50	ft	

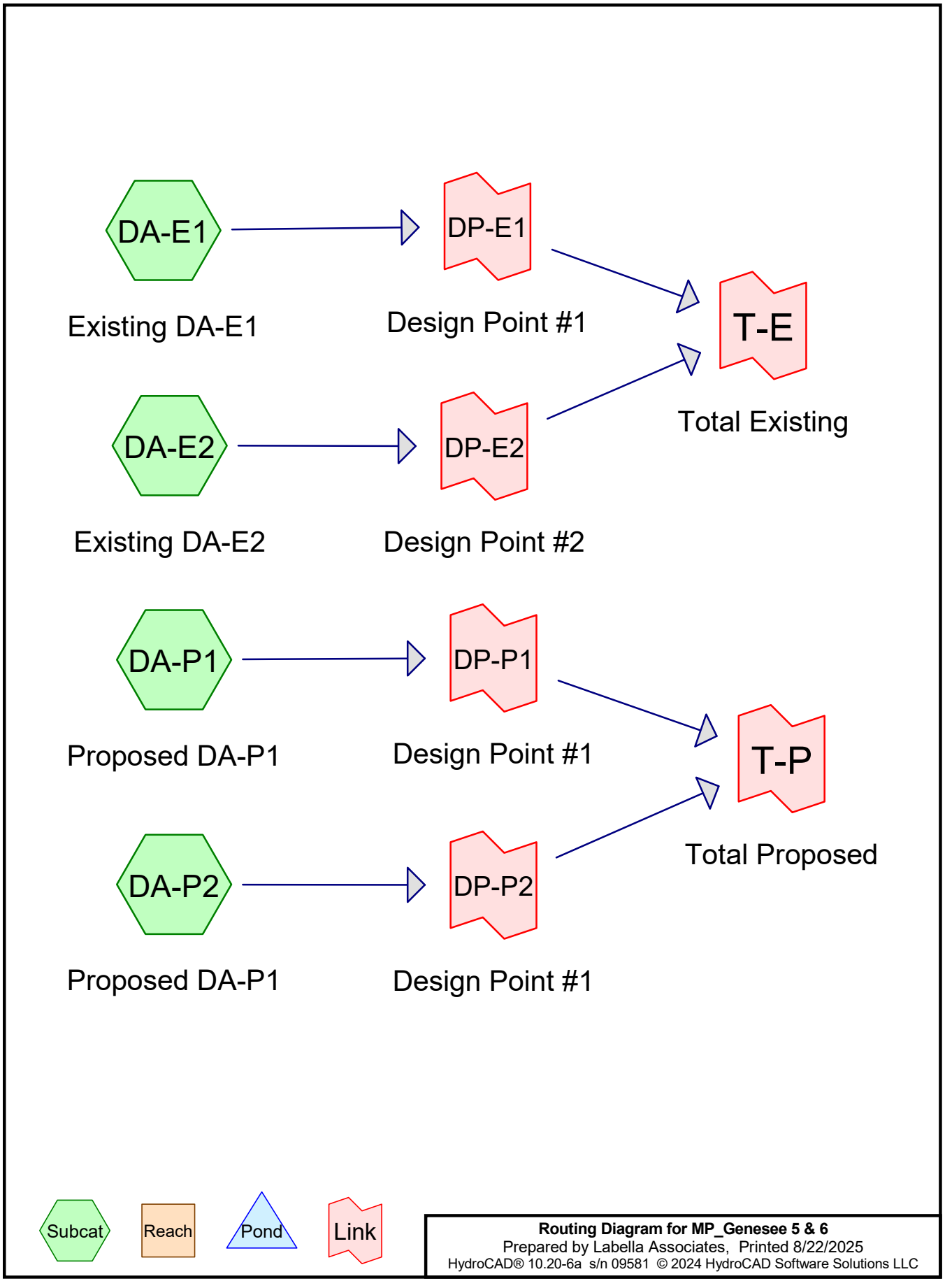
Determine Runoff Reduction			
RRv Provided	**43**	***cf***	
WQv Treated	***171***	***cf***	This is the portion of the WQv that is not reduced/infiltrated

Dry Swale (O-1)

Total Area	0.10	acres
Total Impervious	0	acres
Total RRv Provided	43	cf
Total WQv Provided	171	cf

APPENDIX D:
PRE- & POST-CONSTRUCTION STORMWATER MODELING

LaBella
Powered by partnership.



Routing Diagram for MP_Genesee 5 & 6
Prepared by Labella Associates, Printed 8/22/2025

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC	P2 (inches)
1	1-YR	Type II 24-hr		Default	24.00	1	1.86	2	2.17
2	10-YR	Type II 24-hr		Default	24.00	1	3.06	2	2.17
3	10-0YR	Type II 24-hr		Default	24.00	1	4.99	2	2.17

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
11.347	98	Existing Impervious (DA-E1, DA-E2, DA-P1, DA-P2)
0.200	58	Meadow, non-grazed, HSG B (DA-E1, DA-P1)
341.660	78	Meadow, non-grazed, HSG D (DA-E1, DA-E2, DA-P1, DA-P2)
1.040	98	Proposed Impverious (DA-P2)
0.420	98	Propsoed Impervious (DA-P1)
2.580	98	Water Surface, HSG D (DA-E1, DA-E2, DA-P1, DA-P2)
66.293	77	Woods, Good, HSG D (DA-E1, DA-E2, DA-P1, DA-P2)
423.540	**79**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.200	HSG B	DA-E1, DA-P1
0.000	HSG C	
410.533	HSG D	DA-E1, DA-E2, DA-P1, DA-P2
12.807	Other	DA-E1, DA-E2, DA-P1, DA-P2
423.540		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	11.347	11.347	Existing Impervious	DA-E1, DA-E2, DA-P1, DA-P2
0.000	0.200	0.000	341.660	0.000	341.860	Meadow, non-grazed	DA-E1, DA-E2, DA-P1, DA-P2
0.000	0.000	0.000	0.000	1.040	1.040	Proposed Impverious	DA-P2
0.000	0.000	0.000	0.000	0.420	0.420	Propsoed Impervious	DA-P1
0.000	0.000	0.000	2.580	0.000	2.580	Water Surface	DA-E1, DA-E2, DA-P1, DA-P2
0.000	0.000	0.000	66.293	0.000	66.293	Woods, Good	DA-E1, DA-E2, DA-P1, DA-P2
0.000	**0.200**	**0.000**	**410.533**	**12.807**	**423.540**	**TOTAL AREA**	

Time span=5.00-36.00 hrs, dt=0.05 hrs, 621 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-E1: Existing DA-E1 Runoff Area=92.840 ac 4.35% Impervious Runoff Depth=0.44"
Flow Length=3,681' Tc=40.6 min CN=79 Runoff=24.22 cfs 3.424 af

Subcatchment DA-E2: Existing DA-E2 Runoff Area=118.930 ac 2.71% Impervious Runoff Depth=0.41"
Flow Length=1,836' Tc=18.3 min CN=78 Runoff=48.02 cfs 4.043 af

Subcatchment DA-P1: Proposed DA-P1 Runoff Area=92.840 ac 4.36% Impervious Runoff Depth=0.44"
Flow Length=3,681' Tc=40.6 min CN=79 Runoff=24.22 cfs 3.424 af

Subcatchment DA-P2: Proposed DA-P1 Runoff Area=118.930 ac 3.43% Impervious Runoff Depth=0.41"
Flow Length=1,836' Tc=18.3 min CN=78 Runoff=48.02 cfs 4.043 af

Link DP-E1: Design Point #1 Inflow=24.22 cfs 3.424 af
Primary=24.22 cfs 3.424 af

Link DP-E2: Design Point #2 Inflow=48.02 cfs 4.043 af
Primary=48.02 cfs 4.043 af

Link DP-P1: Design Point #1 Inflow=24.22 cfs 3.424 af
Primary=24.22 cfs 3.424 af

Link DP-P2: Design Point #1 Inflow=48.02 cfs 4.043 af
Primary=48.02 cfs 4.043 af

Link T-E: Total Existing Inflow=59.66 cfs 7.468 af
Primary=59.66 cfs 7.468 af

Link T-P: Total Proposed Inflow=59.66 cfs 7.468 af
Primary=59.66 cfs 7.468 af

Total Runoff Area = 423.540 ac Runoff Volume = 14.935 af Average Runoff Depth = 0.42"
96.37% Pervious = 408.153 ac 3.63% Impervious = 15.387 ac

Summary for Subcatchment DA-E1: Existing DA-E1

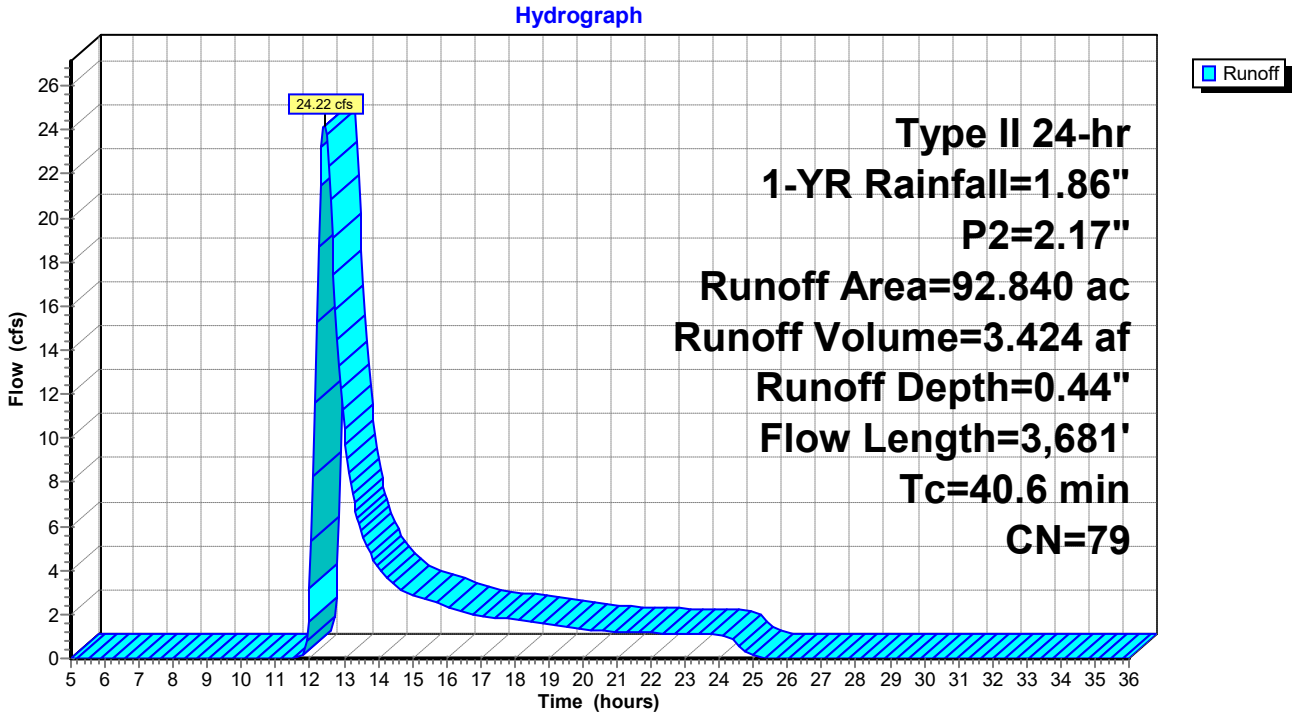
Runoff = 24.22 cfs @ 12.42 hrs, Volume= 3.424 af, Depth= 0.44"
Routed to Link DP-E1 : Design Point #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=1.86", P2=2.17"

	Area (ac)	CN	Description
	5.520	77	Woods, Good, HSG D
*	3.710	98	Existing Impervious
	0.330	98	Water Surface, HSG D
	83.180	78	Meadow, non-grazed, HSG D
	0.100	58	Meadow, non-grazed, HSG B
	92.840	79	Weighted Average
	88.800		95.65% Pervious Area
	4.040		4.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	33	0.1818	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
9.8	67	0.0373	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
23.6	2,596	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.2	985	0.0160	3.93	29.44	**Channel Flow,** Area= 7.5 sf Perim= 12.0' r= 0.63' n= 0.035 Earth, dense weeds
40.6	3,681	Total			

Subcatchment DA-E1: Existing DA-E1



Hydrograph for Subcatchment DA-E1: Existing DA-E1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.12	0.00	0.00
5.50	0.13	0.00	0.00
6.00	0.15	0.00	0.00
6.50	0.17	0.00	0.00
7.00	0.18	0.00	0.00
7.50	0.20	0.00	0.00
8.00	0.22	0.00	0.00
8.50	0.25	0.00	0.00
9.00	0.27	0.00	0.00
9.50	0.30	0.00	0.00
10.00	0.34	0.00	0.00
10.50	0.38	0.00	0.00
11.00	0.44	0.00	0.00
11.50	0.53	0.00	0.00
12.00	1.23	0.15	**3.19**
12.50	1.37	0.20	**23.53**
13.00	1.44	0.23	10.45
13.50	1.49	0.25	5.84
14.00	1.53	0.27	4.17
14.50	1.56	0.29	3.29
15.00	1.59	0.30	2.89
15.50	1.61	0.31	2.61
16.00	1.64	0.32	2.35
16.50	1.66	0.34	2.10
17.00	1.68	0.35	1.95
17.50	1.70	0.35	1.85
18.00	1.71	0.36	1.76
18.50	1.73	0.37	1.66
19.00	1.74	0.38	1.56
19.50	1.76	0.39	1.45
20.00	1.77	0.39	1.35
20.50	1.78	0.40	1.25
21.00	1.79	0.41	1.20
21.50	1.81	0.41	1.18
22.00	1.82	0.42	1.16
22.50	1.83	0.43	1.15
23.00	1.84	0.43	1.13
23.50	1.85	0.44	1.11
24.00	**1.86**	**0.44**	1.09
24.50	1.86	0.44	0.67
25.00	1.86	0.44	0.11
25.50	1.86	0.44	0.02
26.00	1.86	0.44	0.00
26.50	1.86	0.44	0.00
27.00	1.86	0.44	0.00
27.50	1.86	0.44	0.00
28.00	1.86	0.44	0.00
28.50	1.86	0.44	0.00
29.00	1.86	0.44	0.00
29.50	1.86	0.44	0.00
30.00	1.86	0.44	0.00
30.50	1.86	0.44	0.00
31.00	1.86	0.44	0.00
31.50	1.86	0.44	0.00
32.00	1.86	0.44	0.00
32.50	1.86	0.44	0.00
33.00	1.86	0.44	0.00
33.50	1.86	0.44	0.00
34.00	1.86	0.44	0.00
34.50	1.86	0.44	0.00
35.00	1.86	0.44	0.00
35.50	1.86	0.44	0.00
36.00	1.86	0.44	0.00

Summary for Subcatchment DA-E2: Existing DA-E2

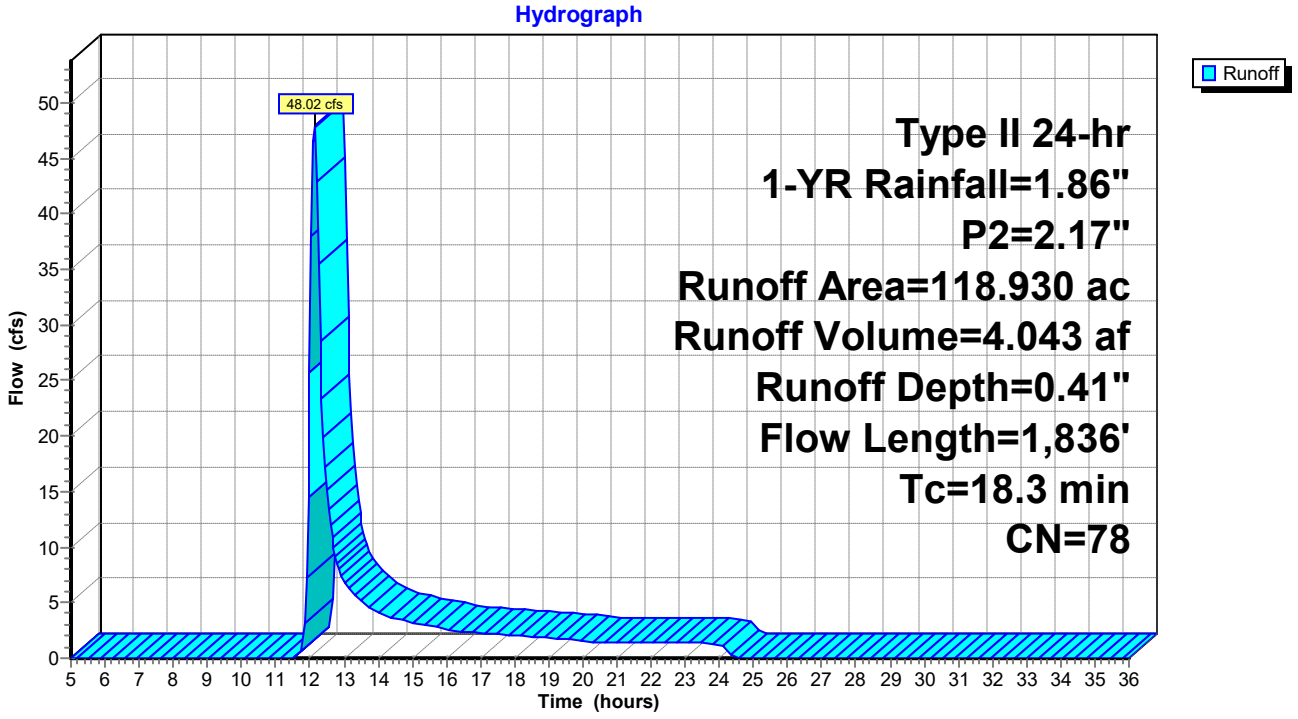
Runoff = 48.02 cfs @ 12.14 hrs, Volume= 4.043 af, Depth= 0.41"
Routed to Link DP-E2 : Design Point #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=1.86", P2=2.17"

	Area (ac)	CN	Description
	29.160	77	Woods, Good, HSG D
*	2.260	98	Existing Impervious
	86.550	78	Meadow, non-grazed, HSG D
*	0.960	98	Water Surface, HSG D
	118.930	78	Weighted Average
	115.710		97.29% Pervious Area
	3.220		2.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0550	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
6.7	1,736	0.0730	4.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.3	1,836	Total			

Subcatchment DA-E2: Existing DA-E2



Hydrograph for Subcatchment DA-E2: Existing DA-E2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.12	0.00	0.00
5.50	0.13	0.00	0.00
6.00	0.15	0.00	0.00
6.50	0.17	0.00	0.00
7.00	0.18	0.00	0.00
7.50	0.20	0.00	0.00
8.00	0.22	0.00	0.00
8.50	0.25	0.00	0.00
9.00	0.27	0.00	0.00
9.50	0.30	0.00	0.00
10.00	0.34	0.00	0.00
10.50	0.38	0.00	0.00
11.00	0.44	0.00	0.00
11.50	0.53	0.00	0.00
12.00	1.23	0.13	**25.67**
12.50	1.37	0.18	**15.12**
13.00	1.44	0.21	6.95
13.50	1.49	0.23	5.20
14.00	1.53	0.24	4.17
14.50	1.56	0.26	3.55
15.00	1.59	0.27	3.26
15.50	1.61	0.28	2.95
16.00	1.64	0.30	2.63
16.50	1.66	0.31	2.40
17.00	1.68	0.32	2.28
17.50	1.70	0.32	2.17
18.00	1.71	0.33	2.06
18.50	1.73	0.34	1.94
19.00	1.74	0.35	1.81
19.50	1.76	0.36	1.68
20.00	1.77	0.36	1.55
20.50	1.78	0.37	1.47
21.00	1.79	0.37	1.45
21.50	1.81	0.38	1.43
22.00	1.82	0.39	1.41
22.50	1.83	0.39	1.38
23.00	1.84	0.40	1.36
23.50	1.85	0.40	1.34
24.00	**1.86**	**0.41**	1.32
24.50	1.86	0.41	0.09
25.00	1.86	0.41	0.00
25.50	1.86	0.41	0.00
26.00	1.86	0.41	0.00
26.50	1.86	0.41	0.00
27.00	1.86	0.41	0.00
27.50	1.86	0.41	0.00
28.00	1.86	0.41	0.00
28.50	1.86	0.41	0.00
29.00	1.86	0.41	0.00
29.50	1.86	0.41	0.00
30.00	1.86	0.41	0.00
30.50	1.86	0.41	0.00
31.00	1.86	0.41	0.00
31.50	1.86	0.41	0.00
32.00	1.86	0.41	0.00
32.50	1.86	0.41	0.00
33.00	1.86	0.41	0.00
33.50	1.86	0.41	0.00
34.00	1.86	0.41	0.00
34.50	1.86	0.41	0.00
35.00	1.86	0.41	0.00
35.50	1.86	0.41	0.00
36.00	1.86	0.41	0.00

Summary for Subcatchment DA-P1: Proposed DA-P1

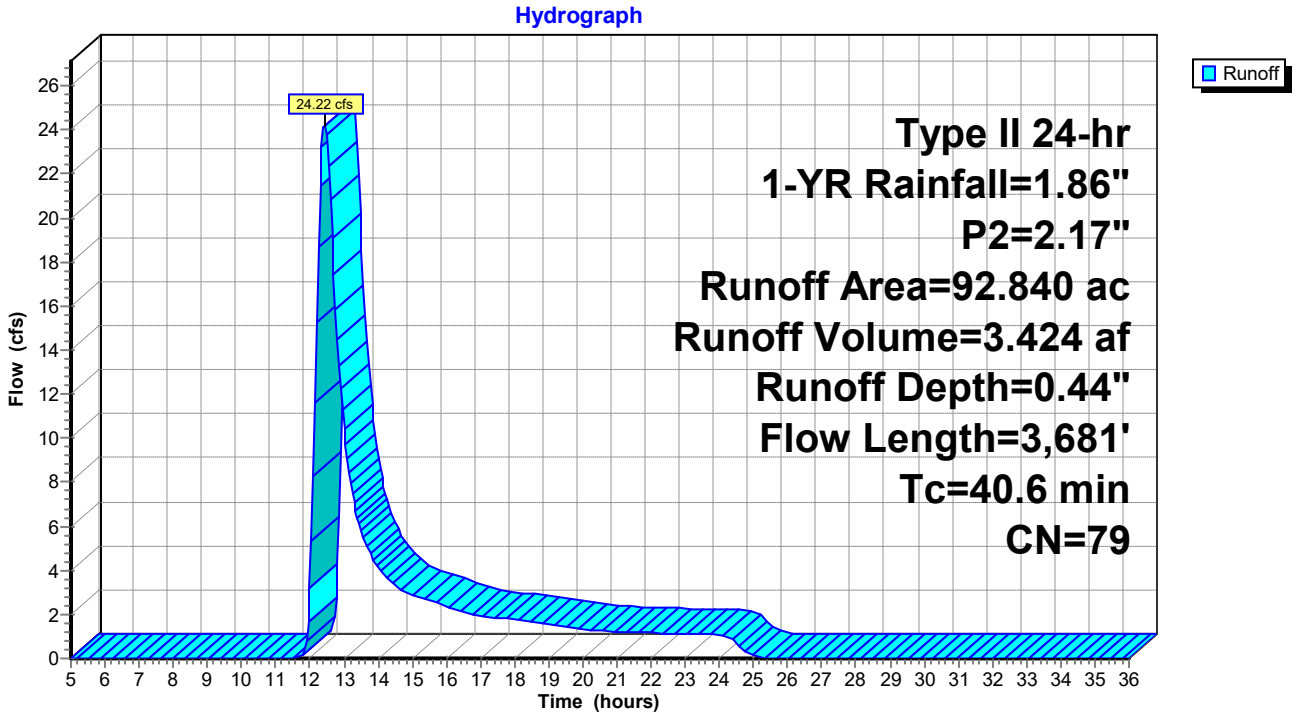
Runoff = 24.22 cfs @ 12.42 hrs, Volume= 3.424 af, Depth= 0.44"
Routed to Link DP-P1 : Design Point #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=1.86", P2=2.17"

	Area (ac)	CN	Description
	5.520	77	Woods, Good, HSG D
*	3.297	98	Existing Impervious
*	0.420	98	Propsoed Impervious
	0.330	98	Water Surface, HSG D
	83.173	78	Meadow, non-grazed, HSG D
	0.100	58	Meadow, non-grazed, HSG B
	92.840	79	Weighted Average
	88.793		95.64% Pervious Area
	4.047		4.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	33	0.1818	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
9.8	67	0.0373	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
23.6	2,596	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.2	985	0.0160	3.93	29.44	**Channel Flow,** Area= 7.5 sf Perim= 12.0' r= 0.63' n= 0.035
40.6	3,681	Total			

Subcatchment DA-P1: Proposed DA-P1



Hydrograph for Subcatchment DA-P1: Proposed DA-P1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.12	0.00	0.00
5.50	0.13	0.00	0.00
6.00	0.15	0.00	0.00
6.50	0.17	0.00	0.00
7.00	0.18	0.00	0.00
7.50	0.20	0.00	0.00
8.00	0.22	0.00	0.00
8.50	0.25	0.00	0.00
9.00	0.27	0.00	0.00
9.50	0.30	0.00	0.00
10.00	0.34	0.00	0.00
10.50	0.38	0.00	0.00
11.00	0.44	0.00	0.00
11.50	0.53	0.00	0.00
12.00	1.23	0.15	**3.19**
12.50	1.37	0.20	**23.53**
13.00	1.44	0.23	10.45
13.50	1.49	0.25	5.84
14.00	1.53	0.27	4.17
14.50	1.56	0.29	3.29
15.00	1.59	0.30	2.89
15.50	1.61	0.31	2.61
16.00	1.64	0.32	2.35
16.50	1.66	0.34	2.10
17.00	1.68	0.35	1.95
17.50	1.70	0.35	1.85
18.00	1.71	0.36	1.76
18.50	1.73	0.37	1.66
19.00	1.74	0.38	1.56
19.50	1.76	0.39	1.45
20.00	1.77	0.39	1.35
20.50	1.78	0.40	1.25
21.00	1.79	0.41	1.20
21.50	1.81	0.41	1.18
22.00	1.82	0.42	1.16
22.50	1.83	0.43	1.15
23.00	1.84	0.43	1.13
23.50	1.85	0.44	1.11
24.00	**1.86**	**0.44**	1.09
24.50	1.86	0.44	0.67
25.00	1.86	0.44	0.11
25.50	1.86	0.44	0.02
26.00	1.86	0.44	0.00
26.50	1.86	0.44	0.00
27.00	1.86	0.44	0.00
27.50	1.86	0.44	0.00
28.00	1.86	0.44	0.00
28.50	1.86	0.44	0.00
29.00	1.86	0.44	0.00
29.50	1.86	0.44	0.00
30.00	1.86	0.44	0.00
30.50	1.86	0.44	0.00
31.00	1.86	0.44	0.00
31.50	1.86	0.44	0.00
32.00	1.86	0.44	0.00
32.50	1.86	0.44	0.00
33.00	1.86	0.44	0.00
33.50	1.86	0.44	0.00
34.00	1.86	0.44	0.00
34.50	1.86	0.44	0.00
35.00	1.86	0.44	0.00
35.50	1.86	0.44	0.00
36.00	1.86	0.44	0.00

Summary for Subcatchment DA-P2: Proposed DA-P1

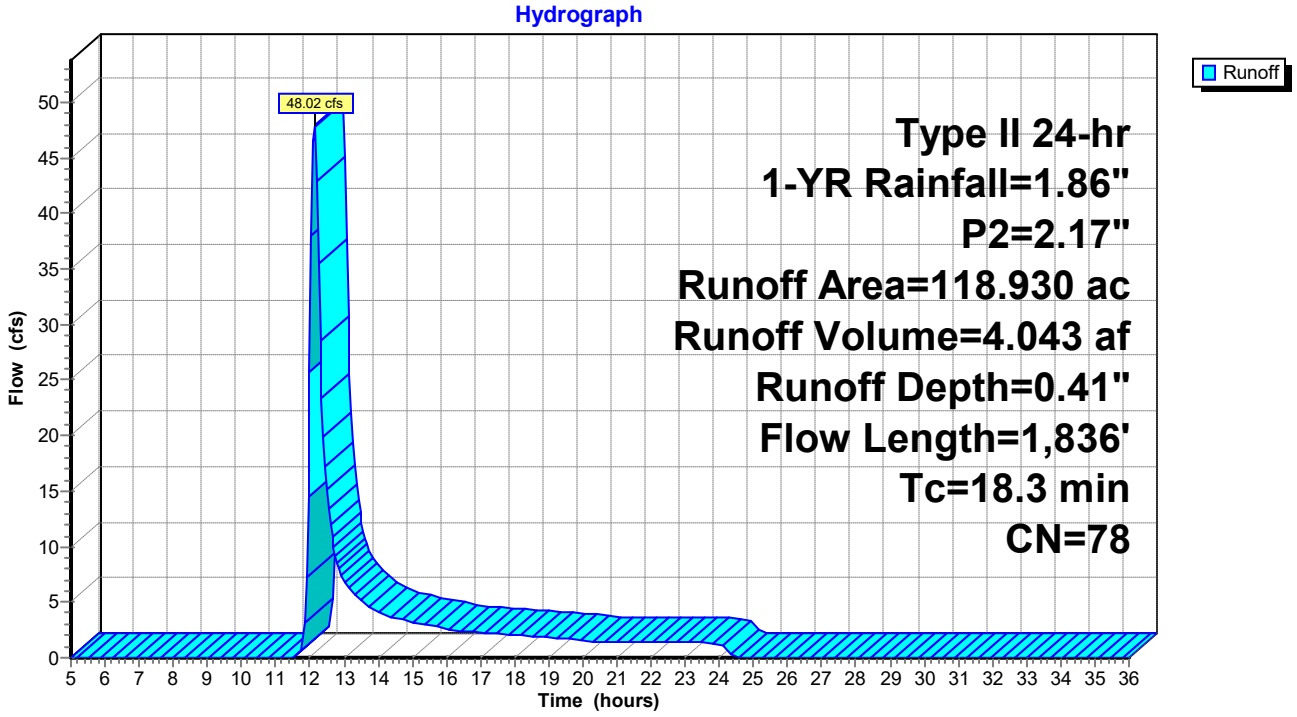
Runoff = 48.02 cfs @ 12.14 hrs, Volume= 4.043 af, Depth= 0.41"
Routed to Link DP-P2 : Design Point #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=1.86", P2=2.17"

	Area (ac)	CN	Description
	26.093	77	Woods, Good, HSG D
*	2.080	98	Existing Impervious
*	1.040	98	Proposed Impverious
*	0.960	98	Water Surface, HSG D
	88.757	78	Meadow, non-grazed, HSG D
	118.930	78	Weighted Average
	114.850		96.57% Pervious Area
	4.080		3.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0550	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
6.7	1,736	0.0730	4.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.3	1,836	Total			

Subcatchment DA-P2: Proposed DA-P1



Hydrograph for Subcatchment DA-P2: Proposed DA-P1

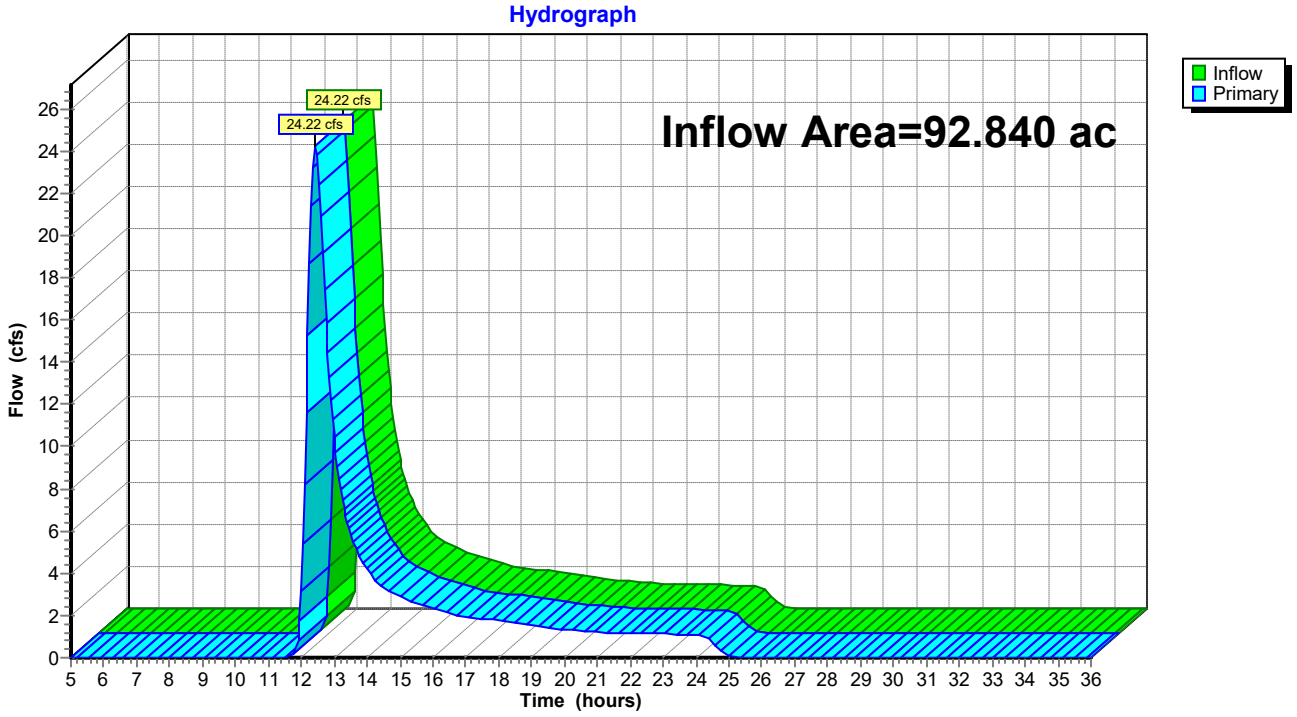
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.12	0.00	0.00
5.50	0.13	0.00	0.00
6.00	0.15	0.00	0.00
6.50	0.17	0.00	0.00
7.00	0.18	0.00	0.00
7.50	0.20	0.00	0.00
8.00	0.22	0.00	0.00
8.50	0.25	0.00	0.00
9.00	0.27	0.00	0.00
9.50	0.30	0.00	0.00
10.00	0.34	0.00	0.00
10.50	0.38	0.00	0.00
11.00	0.44	0.00	0.00
11.50	0.53	0.00	0.00
12.00	1.23	0.13	**25.67**
12.50	1.37	0.18	**15.12**
13.00	1.44	0.21	6.95
13.50	1.49	0.23	5.20
14.00	1.53	0.24	4.17
14.50	1.56	0.26	3.55
15.00	1.59	0.27	3.26
15.50	1.61	0.28	2.95
16.00	1.64	0.30	2.63
16.50	1.66	0.31	2.40
17.00	1.68	0.32	2.28
17.50	1.70	0.32	2.17
18.00	1.71	0.33	2.06
18.50	1.73	0.34	1.94
19.00	1.74	0.35	1.81
19.50	1.76	0.36	1.68
20.00	1.77	0.36	1.55
20.50	1.78	0.37	1.47
21.00	1.79	0.37	1.45
21.50	1.81	0.38	1.43
22.00	1.82	0.39	1.41
22.50	1.83	0.39	1.38
23.00	1.84	0.40	1.36
23.50	1.85	0.40	1.34
24.00	**1.86**	**0.41**	1.32
24.50	1.86	0.41	0.09
25.00	1.86	0.41	0.00
25.50	1.86	0.41	0.00
26.00	1.86	0.41	0.00
26.50	1.86	0.41	0.00
27.00	1.86	0.41	0.00
27.50	1.86	0.41	0.00
28.00	1.86	0.41	0.00
28.50	1.86	0.41	0.00
29.00	1.86	0.41	0.00
29.50	1.86	0.41	0.00
30.00	1.86	0.41	0.00
30.50	1.86	0.41	0.00
31.00	1.86	0.41	0.00
31.50	1.86	0.41	0.00
32.00	1.86	0.41	0.00
32.50	1.86	0.41	0.00
33.00	1.86	0.41	0.00
33.50	1.86	0.41	0.00
34.00	1.86	0.41	0.00
34.50	1.86	0.41	0.00
35.00	1.86	0.41	0.00
35.50	1.86	0.41	0.00
36.00	1.86	0.41	0.00

Summary for Link DP-E1: Design Point #1

Inflow Area = 92.840 ac, 4.35% Impervious, Inflow Depth = 0.44" for 1-YR event
Inflow = 24.22 cfs @ 12.42 hrs, Volume= 3.424 af
Primary = 24.22 cfs @ 12.42 hrs, Volume= 3.424 af, Atten= 0%, Lag= 0.0 min
Routed to Link T-E : Total Existing

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link DP-E1: Design Point #1



Hydrograph for Link DP-E1: Design Point #1

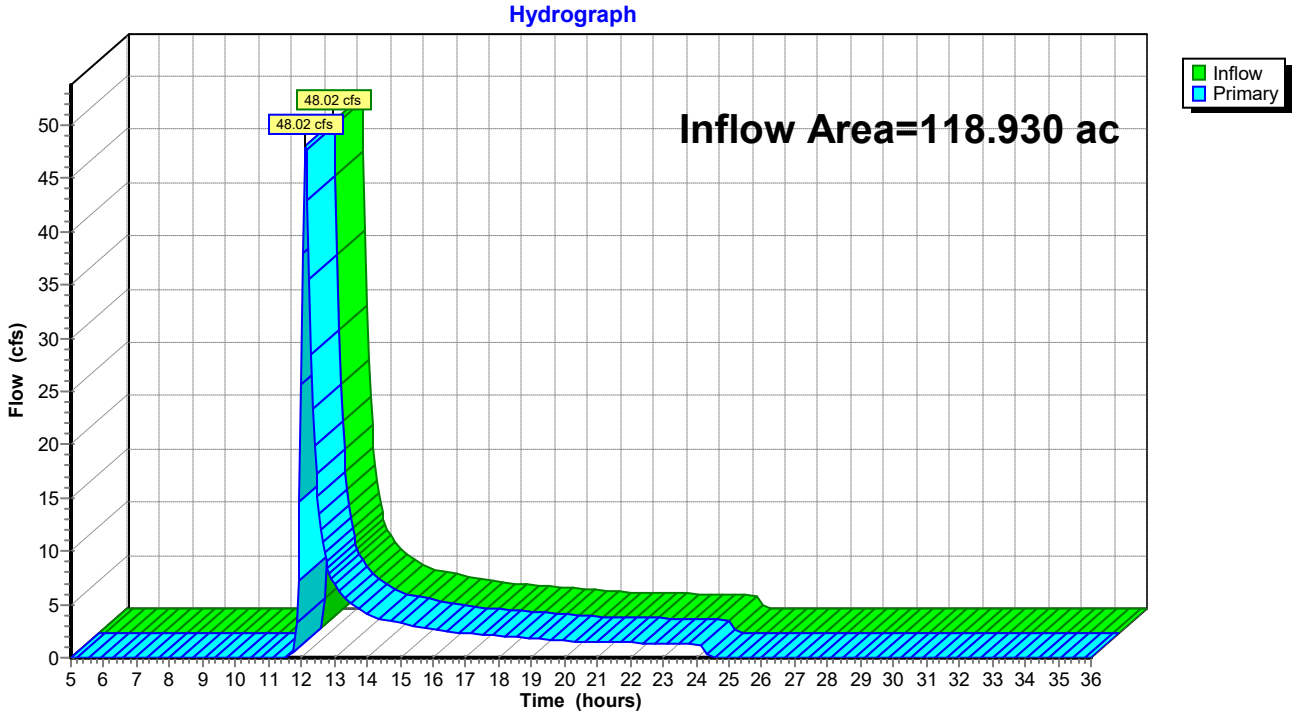
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00
10.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00
11.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00
12.00	**3.19**	0.00	**3.19**
12.50	**23.53**	0.00	**23.53**
13.00	10.45	0.00	10.45
13.50	5.84	0.00	5.84
14.00	4.17	0.00	4.17
14.50	3.29	0.00	3.29
15.00	2.89	0.00	2.89
15.50	2.61	0.00	2.61
16.00	2.35	0.00	2.35
16.50	2.10	0.00	2.10
17.00	1.95	0.00	1.95
17.50	1.85	0.00	1.85
18.00	1.76	0.00	1.76
18.50	1.66	0.00	1.66
19.00	1.56	0.00	1.56
19.50	1.45	0.00	1.45
20.00	1.35	0.00	1.35
20.50	1.25	0.00	1.25
21.00	1.20	0.00	1.20
21.50	1.18	0.00	1.18
22.00	1.16	0.00	1.16
22.50	1.15	0.00	1.15
23.00	1.13	0.00	1.13
23.50	1.11	0.00	1.11
24.00	1.09	0.00	1.09
24.50	0.67	0.00	0.67
25.00	0.11	0.00	0.11
25.50	0.02	0.00	0.02
26.00	0.00	0.00	0.00
26.50	0.00	0.00	0.00
27.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00
28.00	0.00	0.00	0.00
28.50	0.00	0.00	0.00
29.00	0.00	0.00	0.00
29.50	0.00	0.00	0.00
30.00	0.00	0.00	0.00
30.50	0.00	0.00	0.00
31.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00
32.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00
33.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00
34.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00
35.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00
36.00	0.00	0.00	0.00

Summary for Link DP-E2: Design Point #2

Inflow Area = 118.930 ac, 2.71% Impervious, Inflow Depth = 0.41" for 1-YR event
Inflow = 48.02 cfs @ 12.14 hrs, Volume= 4.043 af
Primary = 48.02 cfs @ 12.14 hrs, Volume= 4.043 af, Atten= 0%, Lag= 0.0 min
Routed to Link T-E : Total Existing

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link DP-E2: Design Point #2



Hydrograph for Link DP-E2: Design Point #2

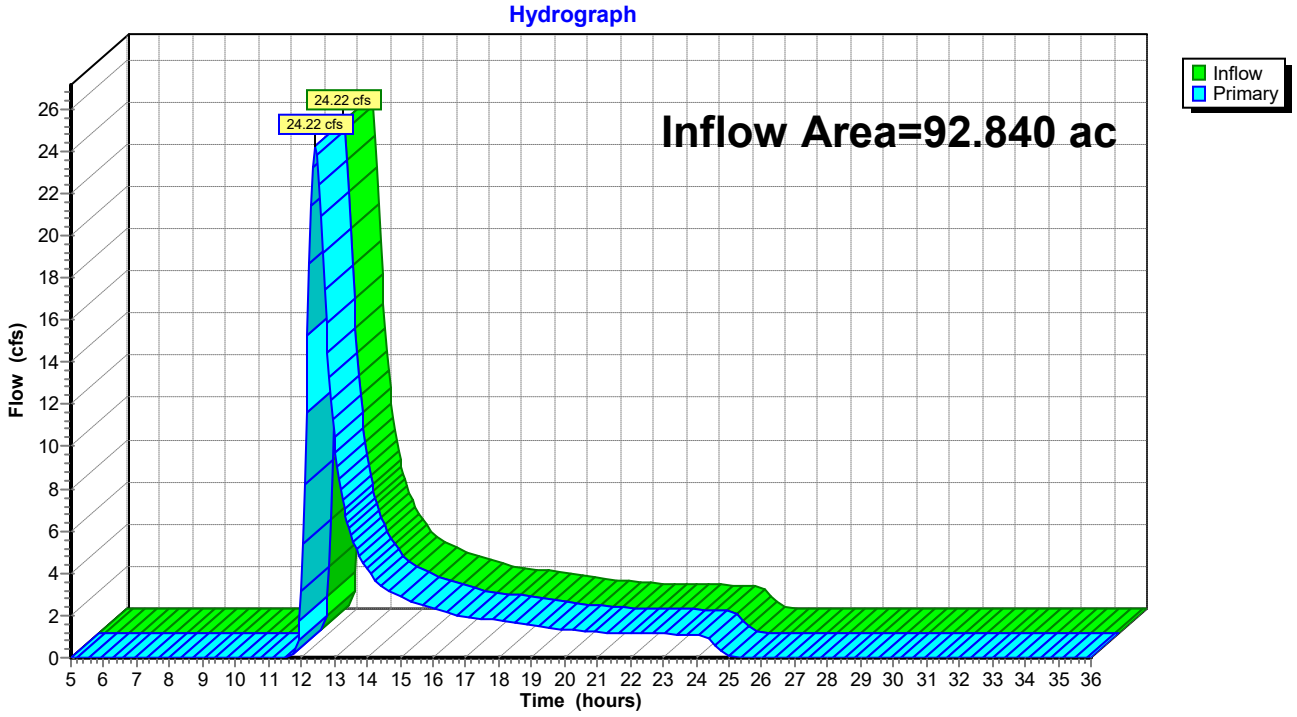
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00
10.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00
11.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00
12.00	**25.67**	0.00	**25.67**
12.50	**15.12**	0.00	**15.12**
13.00	6.95	0.00	6.95
13.50	5.20	0.00	5.20
14.00	4.17	0.00	4.17
14.50	3.55	0.00	3.55
15.00	3.26	0.00	3.26
15.50	2.95	0.00	2.95
16.00	2.63	0.00	2.63
16.50	2.40	0.00	2.40
17.00	2.28	0.00	2.28
17.50	2.17	0.00	2.17
18.00	2.06	0.00	2.06
18.50	1.94	0.00	1.94
19.00	1.81	0.00	1.81
19.50	1.68	0.00	1.68
20.00	1.55	0.00	1.55
20.50	1.47	0.00	1.47
21.00	1.45	0.00	1.45
21.50	1.43	0.00	1.43
22.00	1.41	0.00	1.41
22.50	1.38	0.00	1.38
23.00	1.36	0.00	1.36
23.50	1.34	0.00	1.34
24.00	1.32	0.00	1.32
24.50	0.09	0.00	0.09
25.00	0.00	0.00	0.00
25.50	0.00	0.00	0.00
26.00	0.00	0.00	0.00
26.50	0.00	0.00	0.00
27.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00
28.00	0.00	0.00	0.00
28.50	0.00	0.00	0.00
29.00	0.00	0.00	0.00
29.50	0.00	0.00	0.00
30.00	0.00	0.00	0.00
30.50	0.00	0.00	0.00
31.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00
32.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00
33.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00
34.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00
35.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00
36.00	0.00	0.00	0.00

Summary for Link DP-P1: Design Point #1

Inflow Area = 92.840 ac, 4.36% Impervious, Inflow Depth = 0.44" for 1-YR event
Inflow = 24.22 cfs @ 12.42 hrs, Volume= 3.424 af
Primary = 24.22 cfs @ 12.42 hrs, Volume= 3.424 af, Atten= 0%, Lag= 0.0 min
Routed to Link T-P : Total Proposed

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link DP-P1: Design Point #1



Hydrograph for Link DP-P1: Design Point #1

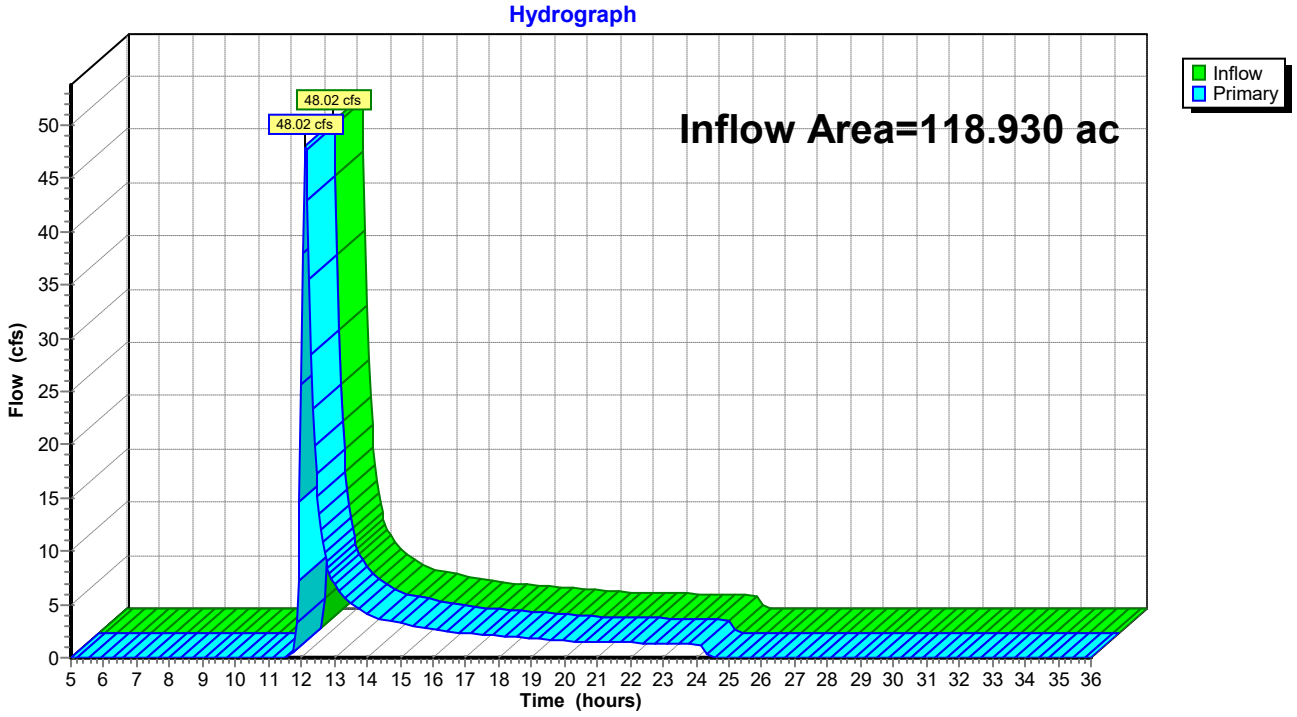
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00
10.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00
11.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00
12.00	**3.19**	0.00	**3.19**
12.50	**23.53**	0.00	**23.53**
13.00	10.45	0.00	10.45
13.50	5.84	0.00	5.84
14.00	4.17	0.00	4.17
14.50	3.29	0.00	3.29
15.00	2.89	0.00	2.89
15.50	2.61	0.00	2.61
16.00	2.35	0.00	2.35
16.50	2.10	0.00	2.10
17.00	1.95	0.00	1.95
17.50	1.85	0.00	1.85
18.00	1.76	0.00	1.76
18.50	1.66	0.00	1.66
19.00	1.56	0.00	1.56
19.50	1.45	0.00	1.45
20.00	1.35	0.00	1.35
20.50	1.25	0.00	1.25
21.00	1.20	0.00	1.20
21.50	1.18	0.00	1.18
22.00	1.16	0.00	1.16
22.50	1.15	0.00	1.15
23.00	1.13	0.00	1.13
23.50	1.11	0.00	1.11
24.00	1.09	0.00	1.09
24.50	0.67	0.00	0.67
25.00	0.11	0.00	0.11
25.50	0.02	0.00	0.02
26.00	0.00	0.00	0.00
26.50	0.00	0.00	0.00
27.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00
28.00	0.00	0.00	0.00
28.50	0.00	0.00	0.00
29.00	0.00	0.00	0.00
29.50	0.00	0.00	0.00
30.00	0.00	0.00	0.00
30.50	0.00	0.00	0.00
31.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00
32.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00
33.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00
34.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00
35.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00
36.00	0.00	0.00	0.00

Summary for Link DP-P2: Design Point #1

Inflow Area = 118.930 ac, 3.43% Impervious, Inflow Depth = 0.41" for 1-YR event
Inflow = 48.02 cfs @ 12.14 hrs, Volume= 4.043 af
Primary = 48.02 cfs @ 12.14 hrs, Volume= 4.043 af, Atten= 0%, Lag= 0.0 min
Routed to Link T-P : Total Proposed

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link DP-P2: Design Point #1



Hydrograph for Link DP-P2: Design Point #1

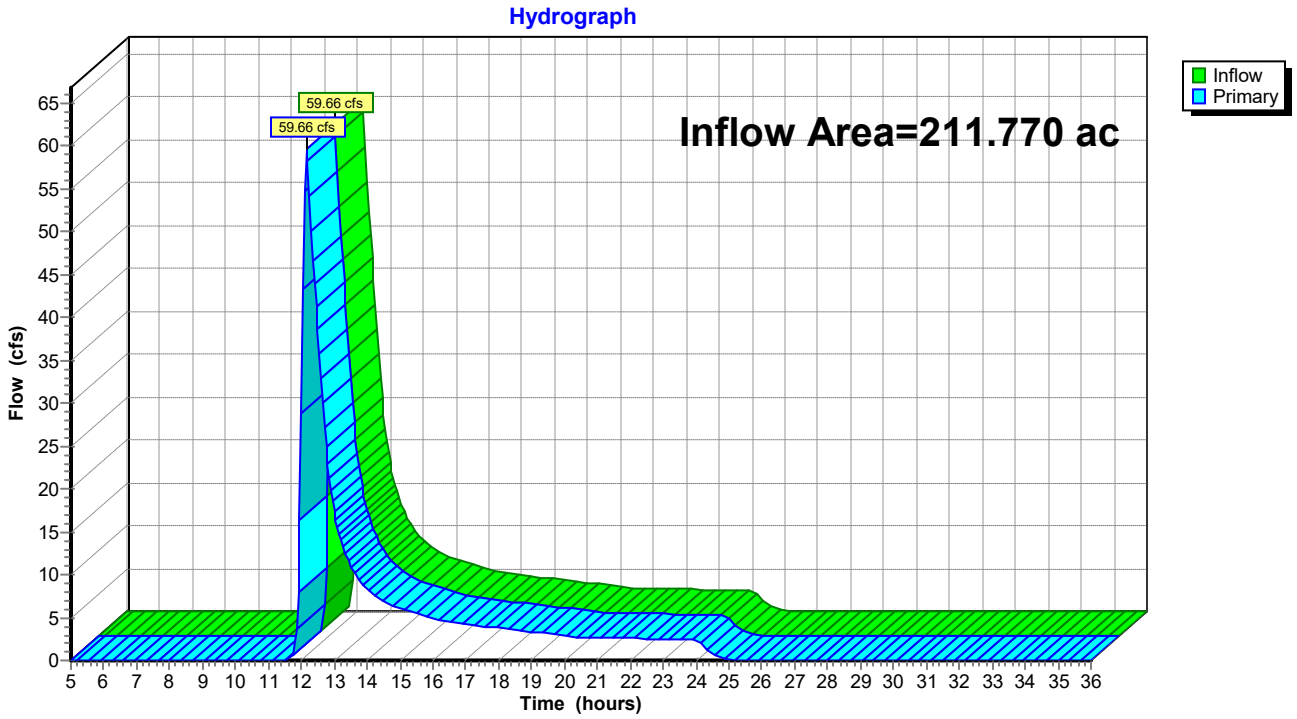
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00
10.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00
11.00	0.00	0.00	0.00
11.50	0.00	0.00	0.00
12.00	**25.67**	0.00	**25.67**
12.50	**15.12**	0.00	**15.12**
13.00	6.95	0.00	6.95
13.50	5.20	0.00	5.20
14.00	4.17	0.00	4.17
14.50	3.55	0.00	3.55
15.00	3.26	0.00	3.26
15.50	2.95	0.00	2.95
16.00	2.63	0.00	2.63
16.50	2.40	0.00	2.40
17.00	2.28	0.00	2.28
17.50	2.17	0.00	2.17
18.00	2.06	0.00	2.06
18.50	1.94	0.00	1.94
19.00	1.81	0.00	1.81
19.50	1.68	0.00	1.68
20.00	1.55	0.00	1.55
20.50	1.47	0.00	1.47
21.00	1.45	0.00	1.45
21.50	1.43	0.00	1.43
22.00	1.41	0.00	1.41
22.50	1.38	0.00	1.38
23.00	1.36	0.00	1.36
23.50	1.34	0.00	1.34
24.00	1.32	0.00	1.32
24.50	0.09	0.00	0.09
25.00	0.00	0.00	0.00
25.50	0.00	0.00	0.00
26.00	0.00	0.00	0.00
26.50	0.00	0.00	0.00
27.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00
28.00	0.00	0.00	0.00
28.50	0.00	0.00	0.00
29.00	0.00	0.00	0.00
29.50	0.00	0.00	0.00
30.00	0.00	0.00	0.00
30.50	0.00	0.00	0.00
31.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00
32.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00
33.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00
34.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00
35.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00
36.00	0.00	0.00	0.00

Summary for Link T-E: Total Existing

Inflow Area = 211.770 ac, 3.43% Impervious, Inflow Depth = 0.42" for 1-YR event
Inflow = 59.66 cfs @ 12.17 hrs, Volume= 7.468 af
Primary = 59.66 cfs @ 12.17 hrs, Volume= 7.468 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link T-E: Total Existing



Hydrograph for Link T-E: Total Existing

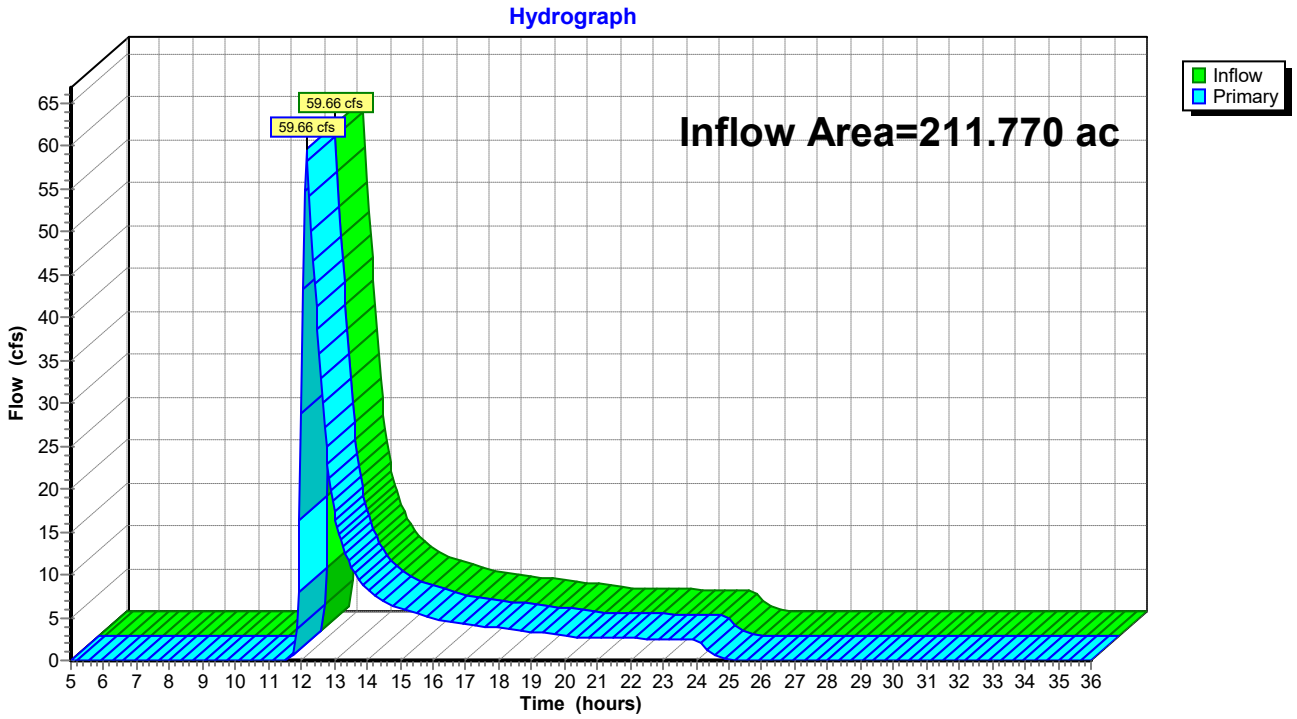
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00	31.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	31.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00	32.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	32.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00	33.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	33.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00	34.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	34.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	35.50	0.00	0.00	0.00
10.00	0.00	0.00	0.00	36.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00				
11.00	0.00	0.00	0.00				
11.50	0.00	0.00	0.00				
12.00	**28.87**	0.00	**28.87**				
12.50	**38.65**	0.00	**38.65**				
13.00	17.40	0.00	17.40				
13.50	11.04	0.00	11.04				
14.00	8.34	0.00	8.34				
14.50	6.84	0.00	6.84				
15.00	6.15	0.00	6.15				
15.50	5.57	0.00	5.57				
16.00	4.98	0.00	4.98				
16.50	4.49	0.00	4.49				
17.00	4.24	0.00	4.24				
17.50	4.02	0.00	4.02				
18.00	3.81	0.00	3.81				
18.50	3.59	0.00	3.59				
19.00	3.37	0.00	3.37				
19.50	3.13	0.00	3.13				
20.00	2.90	0.00	2.90				
20.50	2.72	0.00	2.72				
21.00	2.65	0.00	2.65				
21.50	2.61	0.00	2.61				
22.00	2.57	0.00	2.57				
22.50	2.53	0.00	2.53				
23.00	2.49	0.00	2.49				
23.50	2.45	0.00	2.45				
24.00	2.40	0.00	2.40				
24.50	0.76	0.00	0.76				
25.00	0.11	0.00	0.11				
25.50	0.02	0.00	0.02				
26.00	0.00	0.00	0.00				
26.50	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
27.50	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
28.50	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
29.50	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
30.50	0.00	0.00	0.00				

Summary for Link T-P: Total Proposed

Inflow Area = 211.770 ac, 3.84% Impervious, Inflow Depth = 0.42" for 1-YR event
Inflow = 59.66 cfs @ 12.17 hrs, Volume= 7.468 af
Primary = 59.66 cfs @ 12.17 hrs, Volume= 7.468 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link T-P: Total Proposed



Hydrograph for Link T-P: Total Proposed

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00	31.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	31.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00	32.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	32.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00	33.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	33.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00	34.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	34.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	35.50	0.00	0.00	0.00
10.00	0.00	0.00	0.00	36.00	0.00	0.00	0.00
10.50	0.00	0.00	0.00				
11.00	0.00	0.00	0.00				
11.50	0.00	0.00	0.00				
12.00	**28.87**	0.00	**28.87**				
12.50	**38.65**	0.00	**38.65**				
13.00	17.40	0.00	17.40				
13.50	11.04	0.00	11.04				
14.00	8.34	0.00	8.34				
14.50	6.84	0.00	6.84				
15.00	6.15	0.00	6.15				
15.50	5.57	0.00	5.57				
16.00	4.98	0.00	4.98				
16.50	4.49	0.00	4.49				
17.00	4.24	0.00	4.24				
17.50	4.02	0.00	4.02				
18.00	3.81	0.00	3.81				
18.50	3.59	0.00	3.59				
19.00	3.37	0.00	3.37				
19.50	3.13	0.00	3.13				
20.00	2.90	0.00	2.90				
20.50	2.72	0.00	2.72				
21.00	2.65	0.00	2.65				
21.50	2.61	0.00	2.61				
22.00	2.57	0.00	2.57				
22.50	2.53	0.00	2.53				
23.00	2.49	0.00	2.49				
23.50	2.45	0.00	2.45				
24.00	2.40	0.00	2.40				
24.50	0.76	0.00	0.76				
25.00	0.11	0.00	0.11				
25.50	0.02	0.00	0.02				
26.00	0.00	0.00	0.00				
26.50	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
27.50	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
28.50	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
29.50	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
30.50	0.00	0.00	0.00				

Time span=5.00-36.00 hrs, dt=0.05 hrs, 621 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-E1: Existing DA-E1 Runoff Area=92.840 ac 4.35% Impervious Runoff Depth=1.23"
Flow Length=3,681' Tc=40.6 min CN=79 Runoff=77.98 cfs 9.536 af

Subcatchment DA-E2: Existing DA-E2 Runoff Area=118.930 ac 2.71% Impervious Runoff Depth=1.17"
Flow Length=1,836' Tc=18.3 min CN=78 Runoff=158.40 cfs 11.613 af

Subcatchment DA-P1: Proposed DA-P1 Runoff Area=92.840 ac 4.36% Impervious Runoff Depth=1.23"
Flow Length=3,681' Tc=40.6 min CN=79 Runoff=77.98 cfs 9.536 af

Subcatchment DA-P2: Proposed DA-P1 Runoff Area=118.930 ac 3.43% Impervious Runoff Depth=1.17"
Flow Length=1,836' Tc=18.3 min CN=78 Runoff=158.40 cfs 11.613 af

Link DP-E1: Design Point #1 Inflow=77.98 cfs 9.536 af
Primary=77.98 cfs 9.536 af

Link DP-E2: Design Point #2 Inflow=158.40 cfs 11.613 af
Primary=158.40 cfs 11.613 af

Link DP-P1: Design Point #1 Inflow=77.98 cfs 9.536 af
Primary=77.98 cfs 9.536 af

Link DP-P2: Design Point #1 Inflow=158.40 cfs 11.613 af
Primary=158.40 cfs 11.613 af

Link T-E: Total Existing Inflow=200.72 cfs 21.149 af
Primary=200.72 cfs 21.149 af

Link T-P: Total Proposed Inflow=200.72 cfs 21.149 af
Primary=200.72 cfs 21.149 af

Total Runoff Area = 423.540 ac Runoff Volume = 42.297 af Average Runoff Depth = 1.20"
96.37% Pervious = 408.153 ac 3.63% Impervious = 15.387 ac

Summary for Subcatchment DA-E1: Existing DA-E1

[47] Hint: Peak is 265% of capacity of segment #4

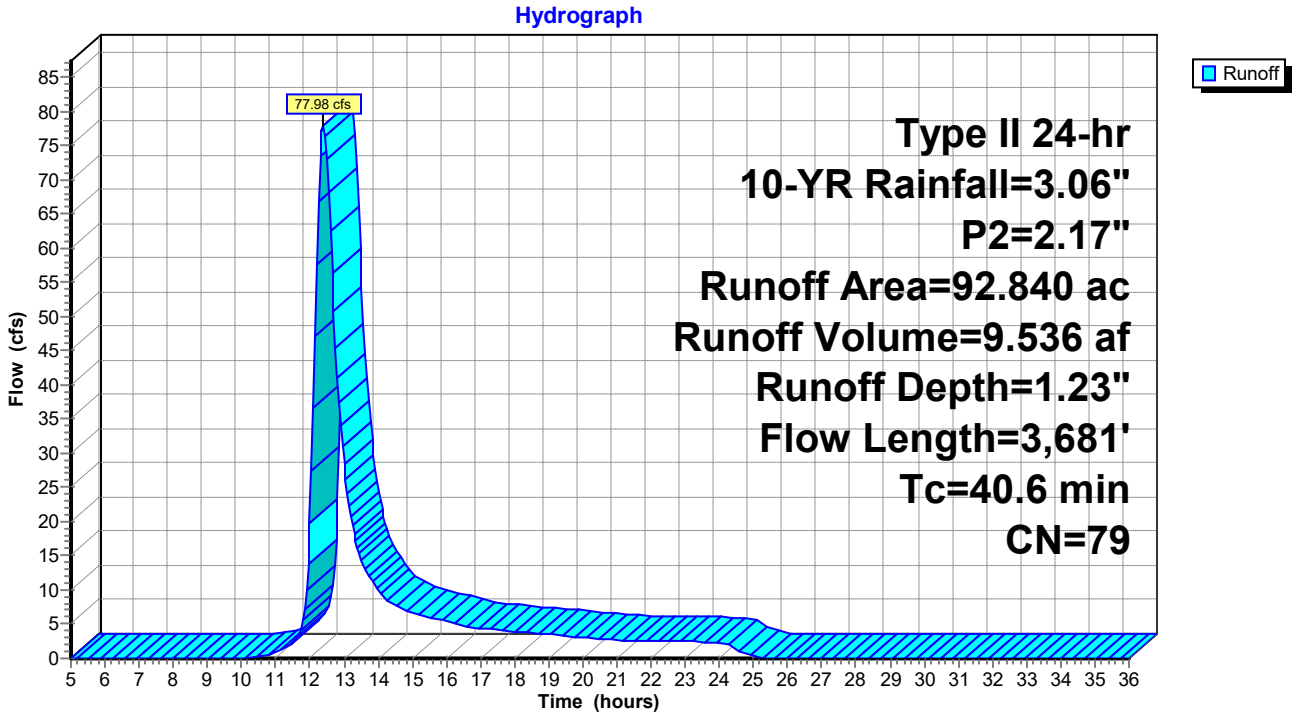
Runoff = 77.98 cfs @ 12.39 hrs, Volume= 9.536 af, Depth= 1.23"
Routed to Link DP-E1 : Design Point #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=3.06", P2=2.17"

	Area (ac)	CN	Description
	5.520	77	Woods, Good, HSG D
*	3.710	98	Existing Impervious
	0.330	98	Water Surface, HSG D
	83.180	78	Meadow, non-grazed, HSG D
	0.100	58	Meadow, non-grazed, HSG B
	92.840	79	Weighted Average
	88.800		95.65% Pervious Area
	4.040		4.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	33	0.1818	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
9.8	67	0.0373	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
23.6	2,596	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.2	985	0.0160	3.93	29.44	**Channel Flow,** Area= 7.5 sf Perim= 12.0' r= 0.63' n= 0.035 Earth, dense weeds
40.6	3,681	Total			

Subcatchment DA-E1: Existing DA-E1



Hydrograph for Subcatchment DA-E1: Existing DA-E1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.19	0.00	0.00
5.50	0.22	0.00	0.00
6.00	0.24	0.00	0.00
6.50	0.27	0.00	0.00
7.00	0.30	0.00	0.00
7.50	0.33	0.00	0.00
8.00	0.37	0.00	0.00
8.50	0.40	0.00	0.00
9.00	0.45	0.00	0.00
9.50	0.50	0.00	0.00
10.00	0.55	0.00	0.00
10.50	0.62	0.00	0.17
11.00	0.72	0.01	0.85
11.50	0.87	0.04	2.43
12.00	2.03	0.54	**19.71**
12.50	2.25	0.67	**72.92**
13.00	2.36	0.75	28.40
13.50	2.44	0.80	14.63
14.00	2.51	0.84	10.02
14.50	2.56	0.88	7.76
15.00	2.61	0.91	6.74
15.50	2.65	0.94	6.05
16.00	2.69	0.97	5.41
16.50	2.73	0.99	4.80
17.00	2.76	1.02	4.44
17.50	2.79	1.04	4.19
18.00	2.82	1.06	3.96
18.50	2.84	1.08	3.72
19.00	2.87	1.09	3.49
19.50	2.89	1.11	3.24
20.00	2.91	1.13	3.00
20.50	2.93	1.14	2.77
21.00	2.95	1.15	2.67
21.50	2.97	1.17	2.61
22.00	2.99	1.18	2.57
22.50	3.01	1.19	2.52
23.00	3.03	1.21	2.47
23.50	3.04	1.22	2.43
24.00	**3.06**	**1.23**	2.38
24.50	3.06	1.23	1.46
25.00	3.06	1.23	0.25
25.50	3.06	1.23	0.04
26.00	3.06	1.23	0.00
26.50	3.06	1.23	0.00
27.00	3.06	1.23	0.00
27.50	3.06	1.23	0.00
28.00	3.06	1.23	0.00
28.50	3.06	1.23	0.00
29.00	3.06	1.23	0.00
29.50	3.06	1.23	0.00
30.00	3.06	1.23	0.00
30.50	3.06	1.23	0.00
31.00	3.06	1.23	0.00
31.50	3.06	1.23	0.00
32.00	3.06	1.23	0.00
32.50	3.06	1.23	0.00
33.00	3.06	1.23	0.00
33.50	3.06	1.23	0.00
34.00	3.06	1.23	0.00
34.50	3.06	1.23	0.00
35.00	3.06	1.23	0.00
35.50	3.06	1.23	0.00
36.00	3.06	1.23	0.00

Summary for Subcatchment DA-E2: Existing DA-E2

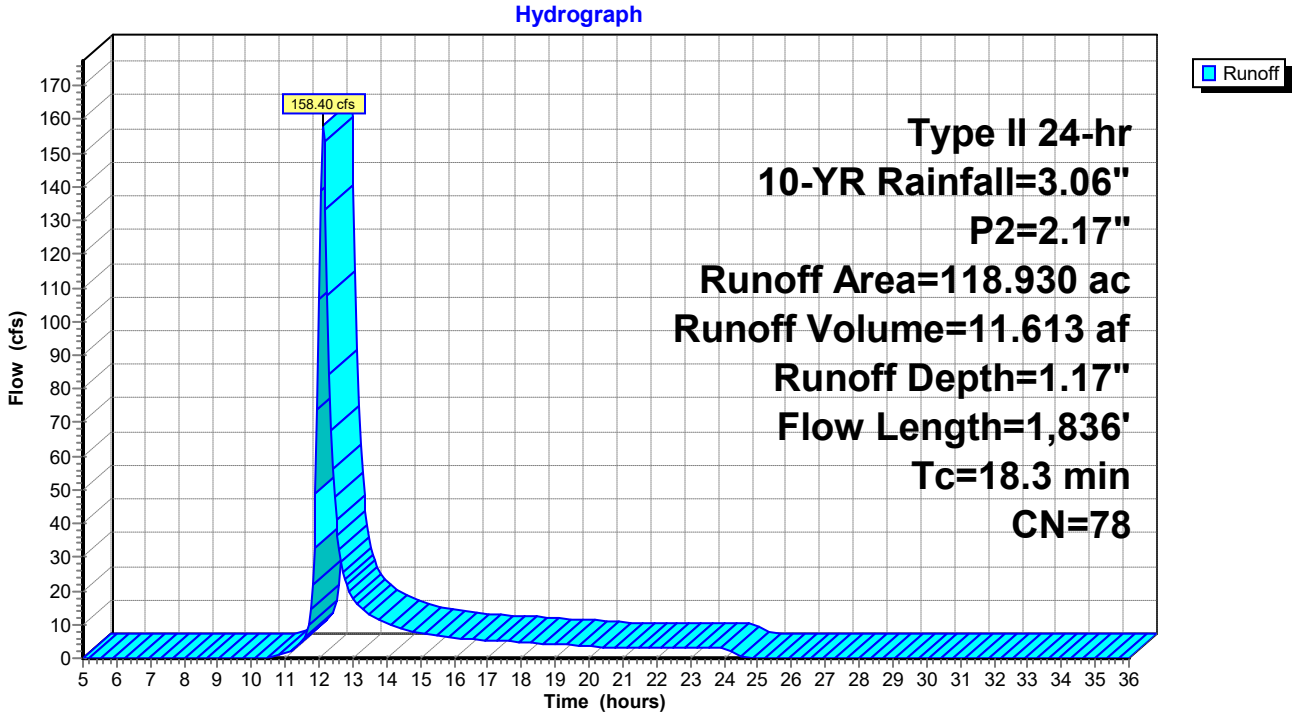
Runoff = 158.40 cfs @ 12.12 hrs, Volume= 11.613 af, Depth= 1.17"
Routed to Link DP-E2 : Design Point #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=3.06", P2=2.17"

	Area (ac)	CN	Description
	29.160	77	Woods, Good, HSG D
*	2.260	98	Existing Impervious
	86.550	78	Meadow, non-grazed, HSG D
*	0.960	98	Water Surface, HSG D
	118.930	78	Weighted Average
	115.710		97.29% Pervious Area
	3.220		2.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0550	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
6.7	1,736	0.0730	4.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.3	1,836	Total			

Subcatchment DA-E2: Existing DA-E2



Hydrograph for Subcatchment DA-E2: Existing DA-E2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.19	0.00	0.00
5.50	0.22	0.00	0.00
6.00	0.24	0.00	0.00
6.50	0.27	0.00	0.00
7.00	0.30	0.00	0.00
7.50	0.33	0.00	0.00
8.00	0.37	0.00	0.00
8.50	0.40	0.00	0.00
9.00	0.45	0.00	0.00
9.50	0.50	0.00	0.00
10.00	0.55	0.00	0.00
10.50	0.62	0.00	0.25
11.00	0.72	0.01	1.51
11.50	0.87	0.03	4.70
12.00	2.03	0.50	**106.42**
12.50	2.25	0.63	**41.32**
13.00	2.36	0.70	17.45
13.50	2.44	0.75	12.80
14.00	2.51	0.79	10.10
14.50	2.56	0.83	8.53
15.00	2.61	0.86	7.75
15.50	2.65	0.89	6.97
16.00	2.69	0.92	6.16
16.50	2.73	0.94	5.59
17.00	2.76	0.96	5.30
17.50	2.79	0.98	5.02
18.00	2.82	1.00	4.73
18.50	2.84	1.02	4.44
19.00	2.87	1.04	4.14
19.50	2.89	1.05	3.83
20.00	2.91	1.07	3.53
20.50	2.93	1.08	3.33
21.00	2.95	1.09	3.27
21.50	2.97	1.11	3.22
22.00	2.99	1.12	3.16
22.50	3.01	1.13	3.11
23.00	3.03	1.15	3.05
23.50	3.04	1.16	2.99
24.00	**3.06**	**1.17**	2.93
24.50	3.06	1.17	0.21
25.00	3.06	1.17	0.00
25.50	3.06	1.17	0.00
26.00	3.06	1.17	0.00
26.50	3.06	1.17	0.00
27.00	3.06	1.17	0.00
27.50	3.06	1.17	0.00
28.00	3.06	1.17	0.00
28.50	3.06	1.17	0.00
29.00	3.06	1.17	0.00
29.50	3.06	1.17	0.00
30.00	3.06	1.17	0.00
30.50	3.06	1.17	0.00
31.00	3.06	1.17	0.00
31.50	3.06	1.17	0.00
32.00	3.06	1.17	0.00
32.50	3.06	1.17	0.00
33.00	3.06	1.17	0.00
33.50	3.06	1.17	0.00
34.00	3.06	1.17	0.00
34.50	3.06	1.17	0.00
35.00	3.06	1.17	0.00
35.50	3.06	1.17	0.00
36.00	3.06	1.17	0.00

Summary for Subcatchment DA-P1: Proposed DA-P1

[47] Hint: Peak is 265% of capacity of segment #4

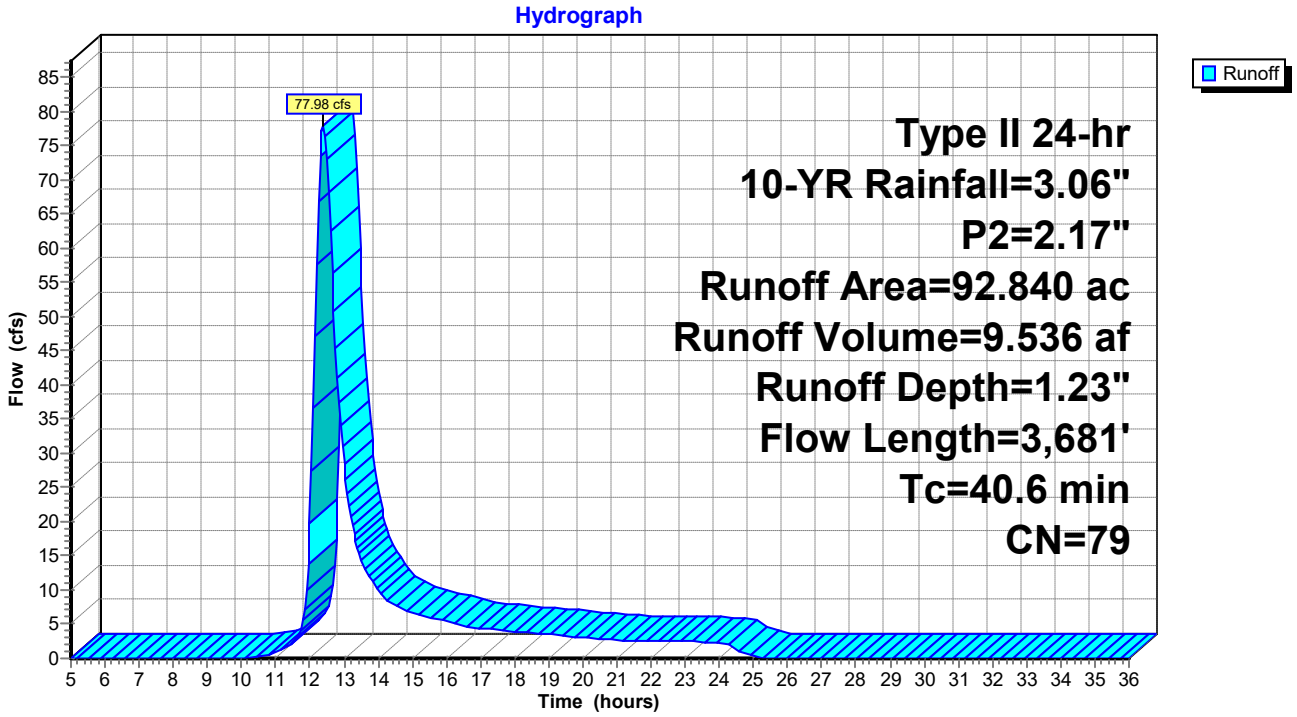
Runoff = 77.98 cfs @ 12.39 hrs, Volume= 9.536 af, Depth= 1.23"
Routed to Link DP-P1 : Design Point #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=3.06", P2=2.17"

	Area (ac)	CN	Description
	5.520	77	Woods, Good, HSG D
*	3.297	98	Existing Impervious
*	0.420	98	Propsoed Impervious
	0.330	98	Water Surface, HSG D
	83.173	78	Meadow, non-grazed, HSG D
	0.100	58	Meadow, non-grazed, HSG B
	92.840	79	Weighted Average
	88.793		95.64% Pervious Area
	4.047		4.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	33	0.1818	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
9.8	67	0.0373	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
23.6	2,596	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.2	985	0.0160	3.93	29.44	**Channel Flow,** Area= 7.5 sf Perim= 12.0' r= 0.63' n= 0.035
40.6	3,681	Total			

Subcatchment DA-P1: Proposed DA-P1



Hydrograph for Subcatchment DA-P1: Proposed DA-P1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.19	0.00	0.00
5.50	0.22	0.00	0.00
6.00	0.24	0.00	0.00
6.50	0.27	0.00	0.00
7.00	0.30	0.00	0.00
7.50	0.33	0.00	0.00
8.00	0.37	0.00	0.00
8.50	0.40	0.00	0.00
9.00	0.45	0.00	0.00
9.50	0.50	0.00	0.00
10.00	0.55	0.00	0.00
10.50	0.62	0.00	0.17
11.00	0.72	0.01	0.85
11.50	0.87	0.04	2.43
12.00	2.03	0.54	**19.71**
12.50	2.25	0.67	**72.92**
13.00	2.36	0.75	28.40
13.50	2.44	0.80	14.63
14.00	2.51	0.84	10.02
14.50	2.56	0.88	7.76
15.00	2.61	0.91	6.74
15.50	2.65	0.94	6.05
16.00	2.69	0.97	5.41
16.50	2.73	0.99	4.80
17.00	2.76	1.02	4.44
17.50	2.79	1.04	4.19
18.00	2.82	1.06	3.96
18.50	2.84	1.08	3.72
19.00	2.87	1.09	3.49
19.50	2.89	1.11	3.24
20.00	2.91	1.13	3.00
20.50	2.93	1.14	2.77
21.00	2.95	1.15	2.67
21.50	2.97	1.17	2.61
22.00	2.99	1.18	2.57
22.50	3.01	1.19	2.52
23.00	3.03	1.21	2.47
23.50	3.04	1.22	2.43
24.00	**3.06**	**1.23**	2.38
24.50	3.06	1.23	1.46
25.00	3.06	1.23	0.25
25.50	3.06	1.23	0.04
26.00	3.06	1.23	0.00
26.50	3.06	1.23	0.00
27.00	3.06	1.23	0.00
27.50	3.06	1.23	0.00
28.00	3.06	1.23	0.00
28.50	3.06	1.23	0.00
29.00	3.06	1.23	0.00
29.50	3.06	1.23	0.00
30.00	3.06	1.23	0.00
30.50	3.06	1.23	0.00
31.00	3.06	1.23	0.00
31.50	3.06	1.23	0.00
32.00	3.06	1.23	0.00
32.50	3.06	1.23	0.00
33.00	3.06	1.23	0.00
33.50	3.06	1.23	0.00
34.00	3.06	1.23	0.00
34.50	3.06	1.23	0.00
35.00	3.06	1.23	0.00
35.50	3.06	1.23	0.00
36.00	3.06	1.23	0.00

Summary for Subcatchment DA-P2: Proposed DA-P1

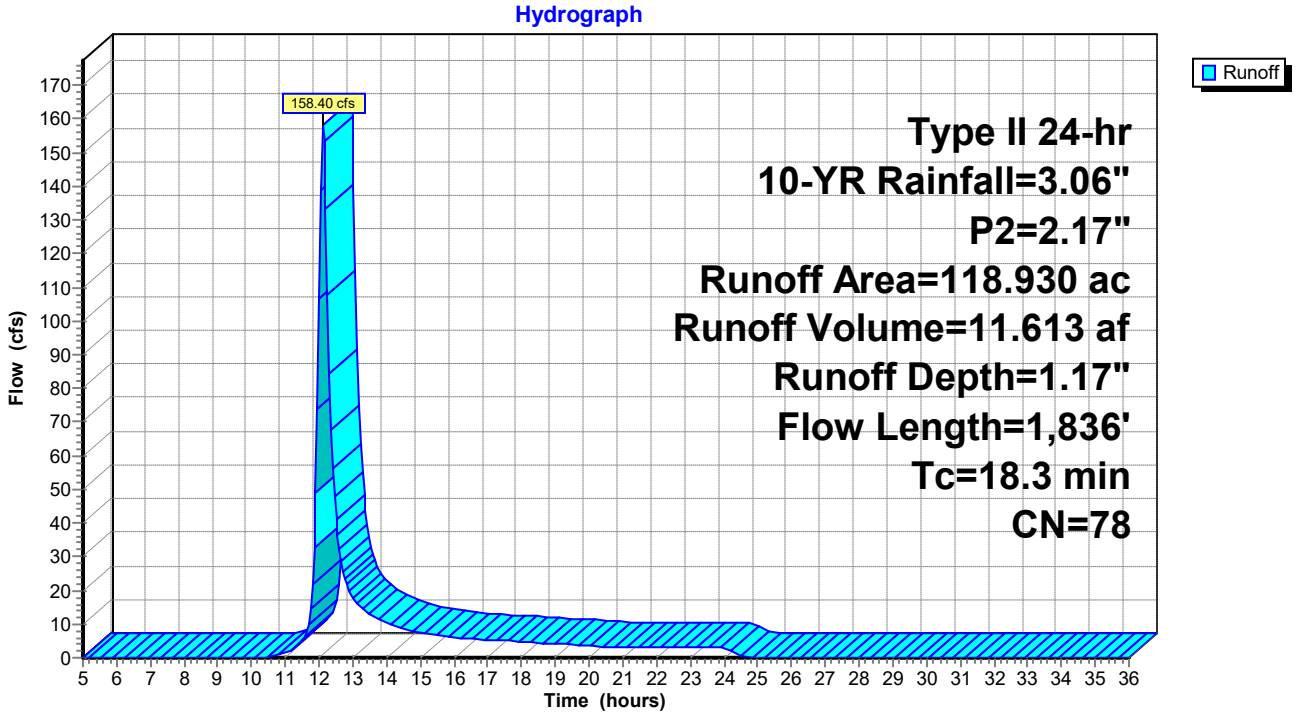
Runoff = 158.40 cfs @ 12.12 hrs, Volume= 11.613 af, Depth= 1.17"
Routed to Link DP-P2 : Design Point #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=3.06", P2=2.17"

	Area (ac)	CN	Description
	26.093	77	Woods, Good, HSG D
*	2.080	98	Existing Impervious
*	1.040	98	Proposed Impverious
*	0.960	98	Water Surface, HSG D
	88.757	78	Meadow, non-grazed, HSG D
	118.930	78	Weighted Average
	114.850		96.57% Pervious Area
	4.080		3.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0550	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
6.7	1,736	0.0730	4.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.3	1,836	Total			

Subcatchment DA-P2: Proposed DA-P1



Hydrograph for Subcatchment DA-P2: Proposed DA-P1

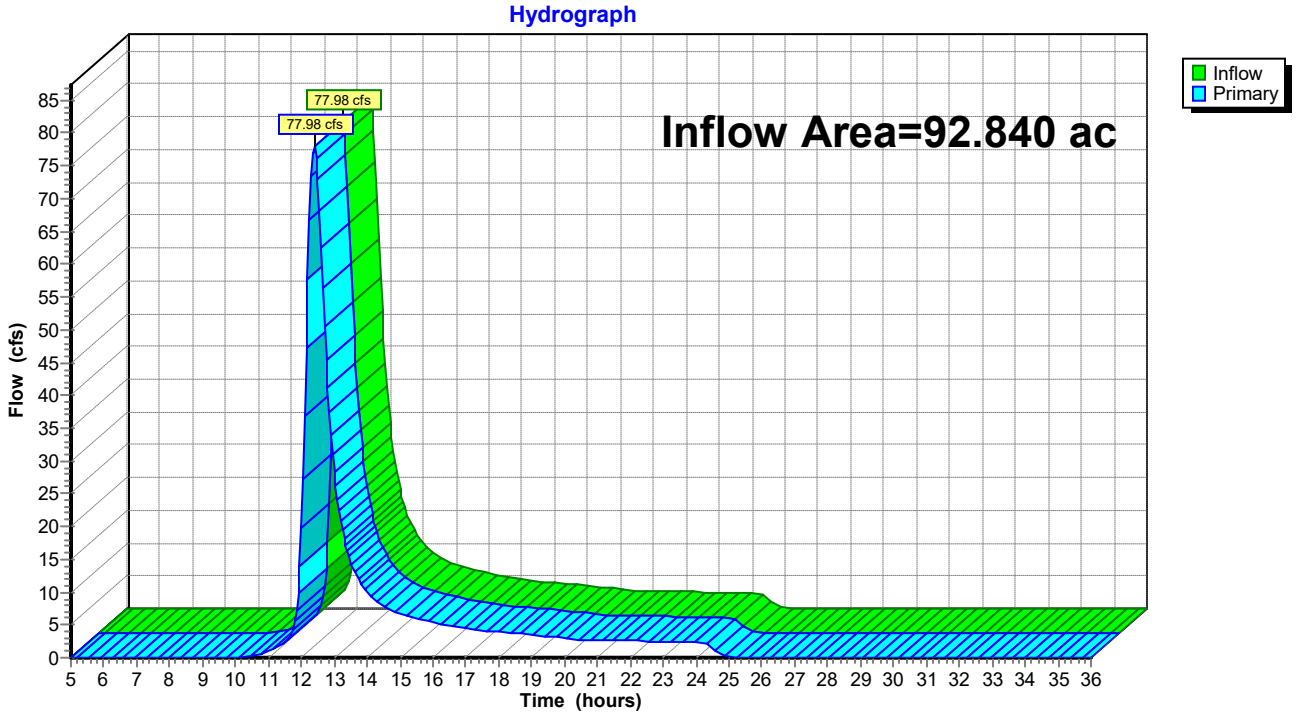
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.19	0.00	0.00
5.50	0.22	0.00	0.00
6.00	0.24	0.00	0.00
6.50	0.27	0.00	0.00
7.00	0.30	0.00	0.00
7.50	0.33	0.00	0.00
8.00	0.37	0.00	0.00
8.50	0.40	0.00	0.00
9.00	0.45	0.00	0.00
9.50	0.50	0.00	0.00
10.00	0.55	0.00	0.00
10.50	0.62	0.00	0.25
11.00	0.72	0.01	1.51
11.50	0.87	0.03	4.70
12.00	2.03	0.50	**106.42**
12.50	2.25	0.63	**41.32**
13.00	2.36	0.70	17.45
13.50	2.44	0.75	12.80
14.00	2.51	0.79	10.10
14.50	2.56	0.83	8.53
15.00	2.61	0.86	7.75
15.50	2.65	0.89	6.97
16.00	2.69	0.92	6.16
16.50	2.73	0.94	5.59
17.00	2.76	0.96	5.30
17.50	2.79	0.98	5.02
18.00	2.82	1.00	4.73
18.50	2.84	1.02	4.44
19.00	2.87	1.04	4.14
19.50	2.89	1.05	3.83
20.00	2.91	1.07	3.53
20.50	2.93	1.08	3.33
21.00	2.95	1.09	3.27
21.50	2.97	1.11	3.22
22.00	2.99	1.12	3.16
22.50	3.01	1.13	3.11
23.00	3.03	1.15	3.05
23.50	3.04	1.16	2.99
24.00	**3.06**	**1.17**	2.93
24.50	3.06	1.17	0.21
25.00	3.06	1.17	0.00
25.50	3.06	1.17	0.00
26.00	3.06	1.17	0.00
26.50	3.06	1.17	0.00
27.00	3.06	1.17	0.00
27.50	3.06	1.17	0.00
28.00	3.06	1.17	0.00
28.50	3.06	1.17	0.00
29.00	3.06	1.17	0.00
29.50	3.06	1.17	0.00
30.00	3.06	1.17	0.00
30.50	3.06	1.17	0.00
31.00	3.06	1.17	0.00
31.50	3.06	1.17	0.00
32.00	3.06	1.17	0.00
32.50	3.06	1.17	0.00
33.00	3.06	1.17	0.00
33.50	3.06	1.17	0.00
34.00	3.06	1.17	0.00
34.50	3.06	1.17	0.00
35.00	3.06	1.17	0.00
35.50	3.06	1.17	0.00
36.00	3.06	1.17	0.00

Summary for Link DP-E1: Design Point #1

Inflow Area = 92.840 ac, 4.35% Impervious, Inflow Depth = 1.23" for 10-YR event
Inflow = 77.98 cfs @ 12.39 hrs, Volume= 9.536 af
Primary = 77.98 cfs @ 12.39 hrs, Volume= 9.536 af, Atten= 0%, Lag= 0.0 min
Routed to Link T-E : Total Existing

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link DP-E1: Design Point #1



Hydrograph for Link DP-E1: Design Point #1

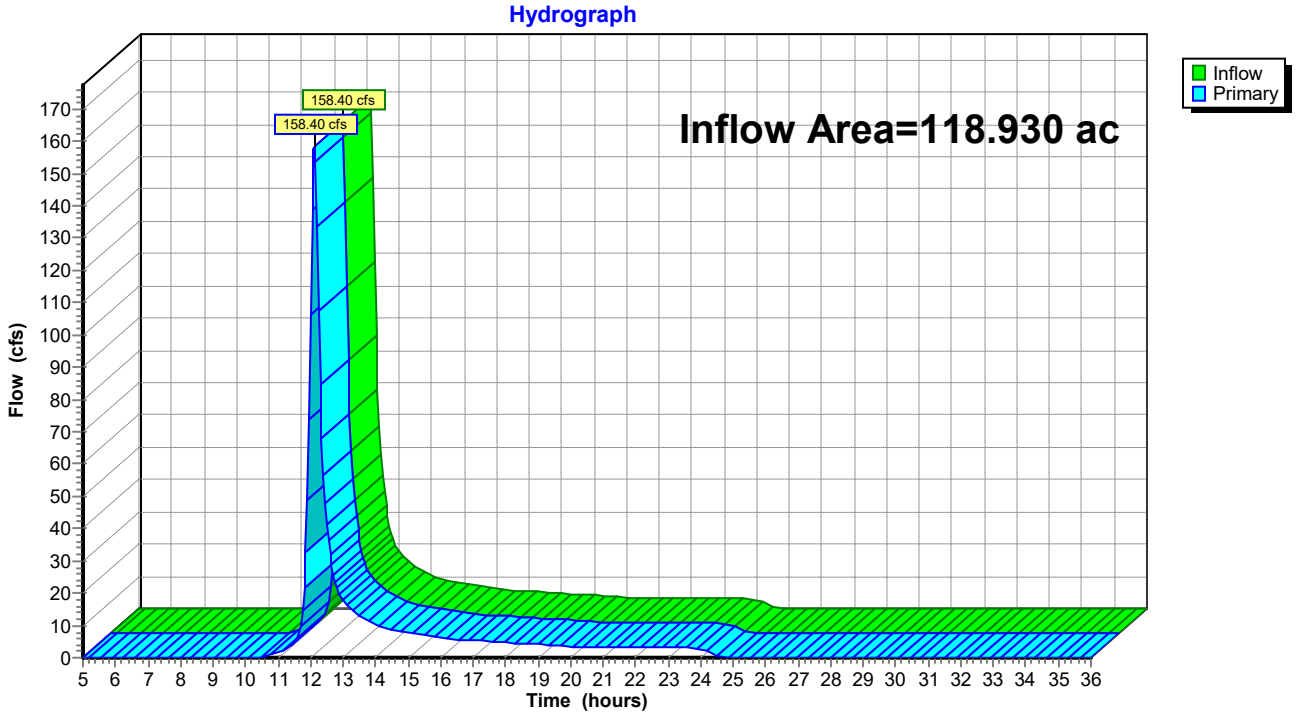
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00
10.00	0.00	0.00	0.00
10.50	0.17	0.00	0.17
11.00	0.85	0.00	0.85
11.50	2.43	0.00	2.43
12.00	**19.71**	0.00	**19.71**
12.50	**72.92**	0.00	**72.92**
13.00	28.40	0.00	28.40
13.50	14.63	0.00	14.63
14.00	10.02	0.00	10.02
14.50	7.76	0.00	7.76
15.00	6.74	0.00	6.74
15.50	6.05	0.00	6.05
16.00	5.41	0.00	5.41
16.50	4.80	0.00	4.80
17.00	4.44	0.00	4.44
17.50	4.19	0.00	4.19
18.00	3.96	0.00	3.96
18.50	3.72	0.00	3.72
19.00	3.49	0.00	3.49
19.50	3.24	0.00	3.24
20.00	3.00	0.00	3.00
20.50	2.77	0.00	2.77
21.00	2.67	0.00	2.67
21.50	2.61	0.00	2.61
22.00	2.57	0.00	2.57
22.50	2.52	0.00	2.52
23.00	2.47	0.00	2.47
23.50	2.43	0.00	2.43
24.00	2.38	0.00	2.38
24.50	1.46	0.00	1.46
25.00	0.25	0.00	0.25
25.50	0.04	0.00	0.04
26.00	0.00	0.00	0.00
26.50	0.00	0.00	0.00
27.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00
28.00	0.00	0.00	0.00
28.50	0.00	0.00	0.00
29.00	0.00	0.00	0.00
29.50	0.00	0.00	0.00
30.00	0.00	0.00	0.00
30.50	0.00	0.00	0.00
31.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00
32.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00
33.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00
34.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00
35.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00
36.00	0.00	0.00	0.00

Summary for Link DP-E2: Design Point #2

Inflow Area = 118.930 ac, 2.71% Impervious, Inflow Depth = 1.17" for 10-YR event
Inflow = 158.40 cfs @ 12.12 hrs, Volume= 11.613 af
Primary = 158.40 cfs @ 12.12 hrs, Volume= 11.613 af, Atten= 0%, Lag= 0.0 min
Routed to Link T-E : Total Existing

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link DP-E2: Design Point #2



Hydrograph for Link DP-E2: Design Point #2

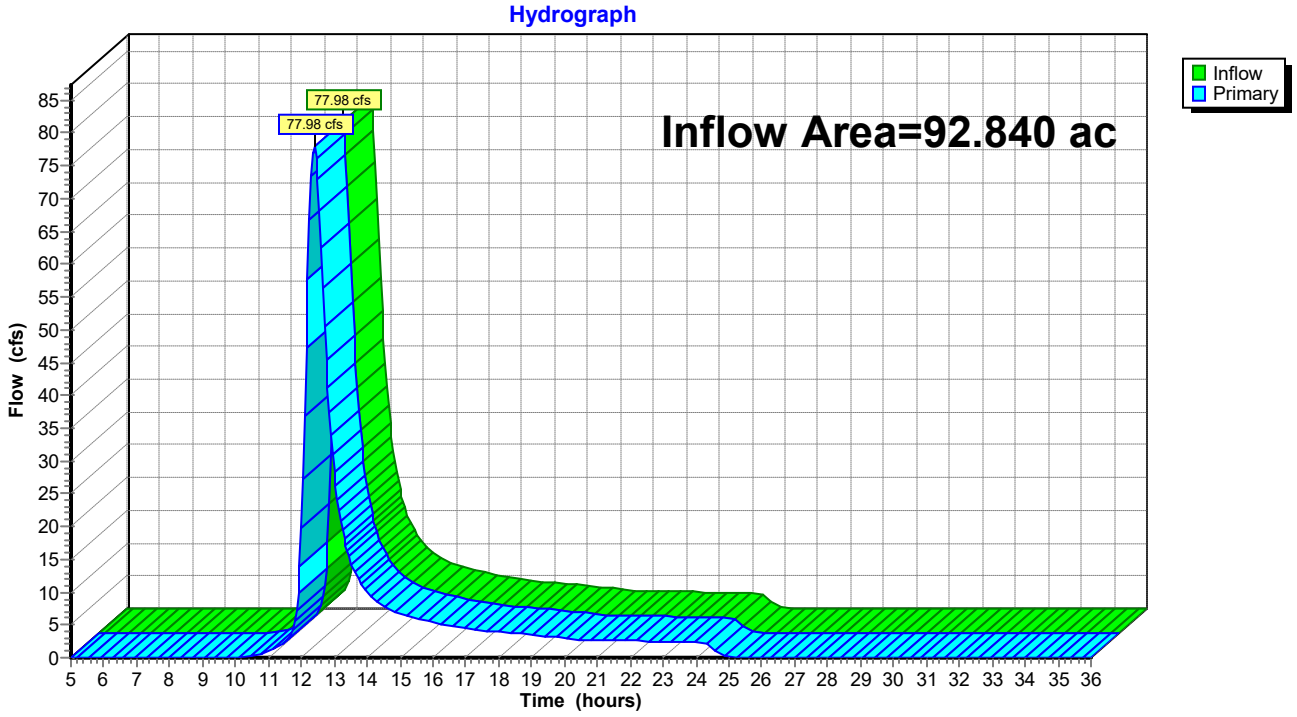
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00
10.00	0.00	0.00	0.00
10.50	0.25	0.00	0.25
11.00	1.51	0.00	1.51
11.50	4.70	0.00	4.70
12.00	**106.42**	0.00	**106.42**
12.50	**41.32**	0.00	**41.32**
13.00	17.45	0.00	17.45
13.50	12.80	0.00	12.80
14.00	10.10	0.00	10.10
14.50	8.53	0.00	8.53
15.00	7.75	0.00	7.75
15.50	6.97	0.00	6.97
16.00	6.16	0.00	6.16
16.50	5.59	0.00	5.59
17.00	5.30	0.00	5.30
17.50	5.02	0.00	5.02
18.00	4.73	0.00	4.73
18.50	4.44	0.00	4.44
19.00	4.14	0.00	4.14
19.50	3.83	0.00	3.83
20.00	3.53	0.00	3.53
20.50	3.33	0.00	3.33
21.00	3.27	0.00	3.27
21.50	3.22	0.00	3.22
22.00	3.16	0.00	3.16
22.50	3.11	0.00	3.11
23.00	3.05	0.00	3.05
23.50	2.99	0.00	2.99
24.00	2.93	0.00	2.93
24.50	0.21	0.00	0.21
25.00	0.00	0.00	0.00
25.50	0.00	0.00	0.00
26.00	0.00	0.00	0.00
26.50	0.00	0.00	0.00
27.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00
28.00	0.00	0.00	0.00
28.50	0.00	0.00	0.00
29.00	0.00	0.00	0.00
29.50	0.00	0.00	0.00
30.00	0.00	0.00	0.00
30.50	0.00	0.00	0.00
31.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00
32.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00
33.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00
34.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00
35.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00
36.00	0.00	0.00	0.00

Summary for Link DP-P1: Design Point #1

Inflow Area = 92.840 ac, 4.36% Impervious, Inflow Depth = 1.23" for 10-YR event
Inflow = 77.98 cfs @ 12.39 hrs, Volume= 9.536 af
Primary = 77.98 cfs @ 12.39 hrs, Volume= 9.536 af, Atten= 0%, Lag= 0.0 min
Routed to Link T-P : Total Proposed

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link DP-P1: Design Point #1



Hydrograph for Link DP-P1: Design Point #1

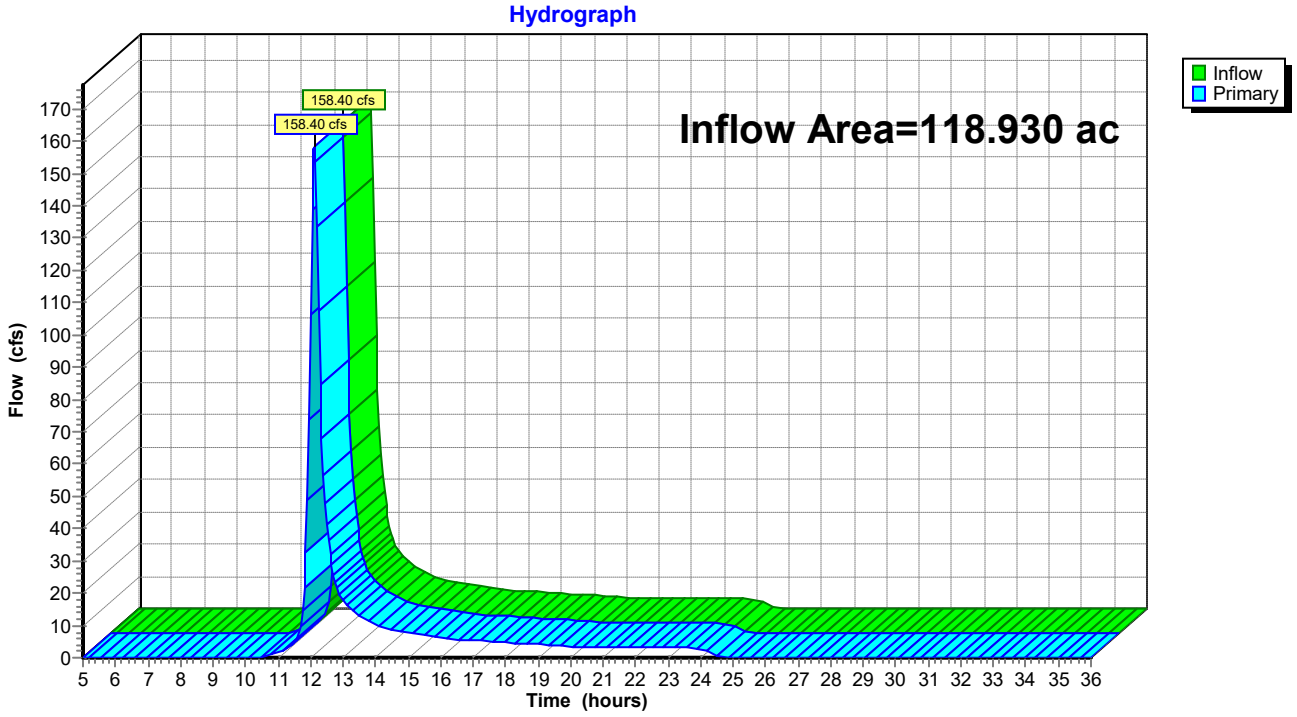
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00
10.00	0.00	0.00	0.00
10.50	0.17	0.00	0.17
11.00	0.85	0.00	0.85
11.50	2.43	0.00	2.43
12.00	**19.71**	0.00	**19.71**
12.50	**72.92**	0.00	**72.92**
13.00	28.40	0.00	28.40
13.50	14.63	0.00	14.63
14.00	10.02	0.00	10.02
14.50	7.76	0.00	7.76
15.00	6.74	0.00	6.74
15.50	6.05	0.00	6.05
16.00	5.41	0.00	5.41
16.50	4.80	0.00	4.80
17.00	4.44	0.00	4.44
17.50	4.19	0.00	4.19
18.00	3.96	0.00	3.96
18.50	3.72	0.00	3.72
19.00	3.49	0.00	3.49
19.50	3.24	0.00	3.24
20.00	3.00	0.00	3.00
20.50	2.77	0.00	2.77
21.00	2.67	0.00	2.67
21.50	2.61	0.00	2.61
22.00	2.57	0.00	2.57
22.50	2.52	0.00	2.52
23.00	2.47	0.00	2.47
23.50	2.43	0.00	2.43
24.00	2.38	0.00	2.38
24.50	1.46	0.00	1.46
25.00	0.25	0.00	0.25
25.50	0.04	0.00	0.04
26.00	0.00	0.00	0.00
26.50	0.00	0.00	0.00
27.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00
28.00	0.00	0.00	0.00
28.50	0.00	0.00	0.00
29.00	0.00	0.00	0.00
29.50	0.00	0.00	0.00
30.00	0.00	0.00	0.00
30.50	0.00	0.00	0.00
31.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00
32.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00
33.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00
34.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00
35.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00
36.00	0.00	0.00	0.00

Summary for Link DP-P2: Design Point #1

Inflow Area = 118.930 ac, 3.43% Impervious, Inflow Depth = 1.17" for 10-YR event
Inflow = 158.40 cfs @ 12.12 hrs, Volume= 11.613 af
Primary = 158.40 cfs @ 12.12 hrs, Volume= 11.613 af, Atten= 0%, Lag= 0.0 min
Routed to Link T-P : Total Proposed

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link DP-P2: Design Point #1



Hydrograph for Link DP-P2: Design Point #1

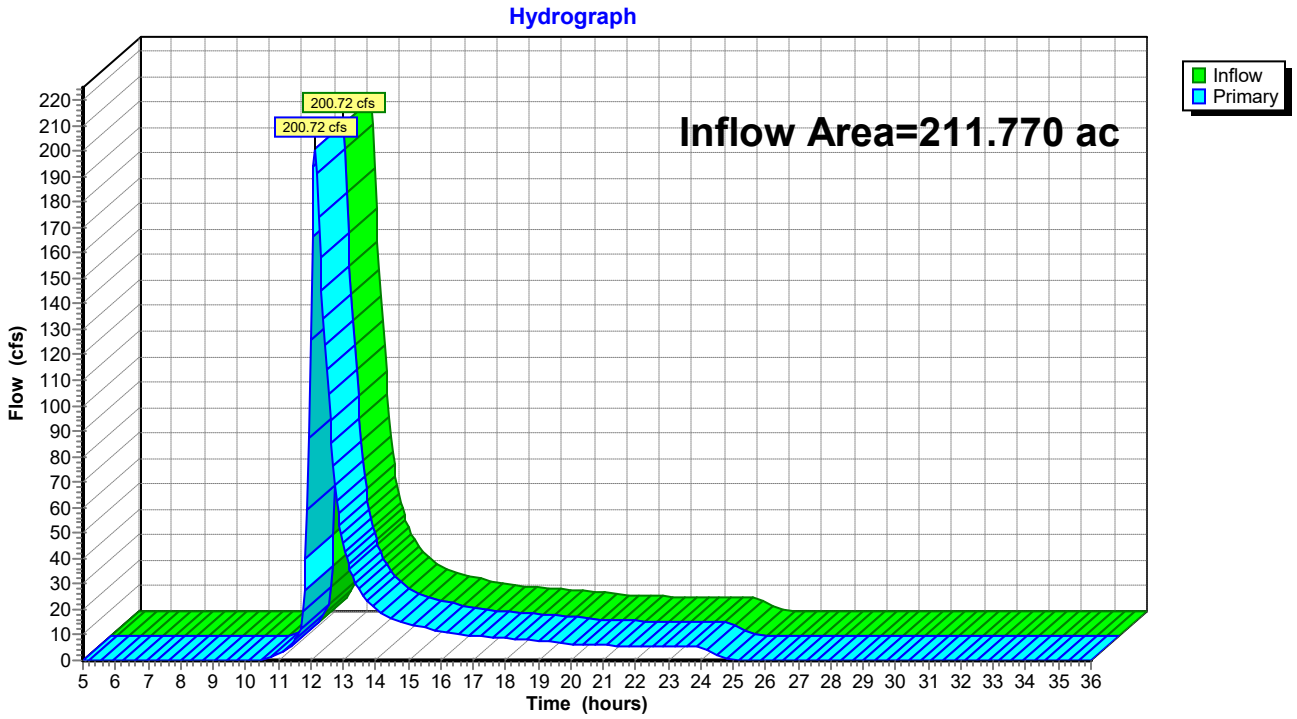
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00
10.00	0.00	0.00	0.00
10.50	0.25	0.00	0.25
11.00	1.51	0.00	1.51
11.50	4.70	0.00	4.70
12.00	**106.42**	0.00	**106.42**
12.50	**41.32**	0.00	**41.32**
13.00	17.45	0.00	17.45
13.50	12.80	0.00	12.80
14.00	10.10	0.00	10.10
14.50	8.53	0.00	8.53
15.00	7.75	0.00	7.75
15.50	6.97	0.00	6.97
16.00	6.16	0.00	6.16
16.50	5.59	0.00	5.59
17.00	5.30	0.00	5.30
17.50	5.02	0.00	5.02
18.00	4.73	0.00	4.73
18.50	4.44	0.00	4.44
19.00	4.14	0.00	4.14
19.50	3.83	0.00	3.83
20.00	3.53	0.00	3.53
20.50	3.33	0.00	3.33
21.00	3.27	0.00	3.27
21.50	3.22	0.00	3.22
22.00	3.16	0.00	3.16
22.50	3.11	0.00	3.11
23.00	3.05	0.00	3.05
23.50	2.99	0.00	2.99
24.00	2.93	0.00	2.93
24.50	0.21	0.00	0.21
25.00	0.00	0.00	0.00
25.50	0.00	0.00	0.00
26.00	0.00	0.00	0.00
26.50	0.00	0.00	0.00
27.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00
28.00	0.00	0.00	0.00
28.50	0.00	0.00	0.00
29.00	0.00	0.00	0.00
29.50	0.00	0.00	0.00
30.00	0.00	0.00	0.00
30.50	0.00	0.00	0.00
31.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00
32.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00
33.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00
34.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00
35.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00
36.00	0.00	0.00	0.00

Summary for Link T-E: Total Existing

Inflow Area = 211.770 ac, 3.43% Impervious, Inflow Depth = 1.20" for 10-YR event
Inflow = 200.72 cfs @ 12.15 hrs, Volume= 21.149 af
Primary = 200.72 cfs @ 12.15 hrs, Volume= 21.149 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link T-E: Total Existing



Hydrograph for Link T-E: Total Existing

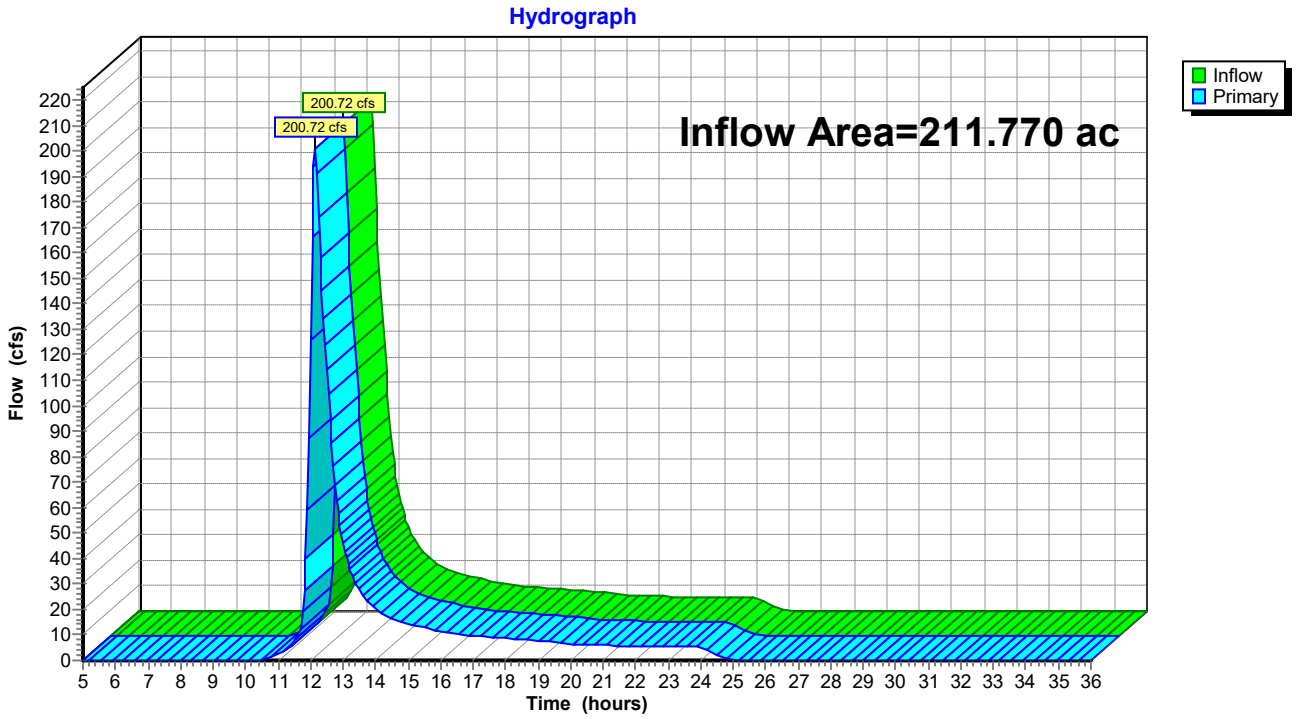
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00	31.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	31.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00	32.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	32.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00	33.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	33.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00	34.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	34.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	35.50	0.00	0.00	0.00
10.00	0.00	0.00	0.00	36.00	0.00	0.00	0.00
10.50	0.42	0.00	0.42				
11.00	2.36	0.00	2.36				
11.50	7.14	0.00	7.14				
12.00	**126.13**	0.00	**126.13**				
12.50	**114.24**	0.00	**114.24**				
13.00	45.85	0.00	45.85				
13.50	27.43	0.00	27.43				
14.00	20.12	0.00	20.12				
14.50	16.29	0.00	16.29				
15.00	14.49	0.00	14.49				
15.50	13.02	0.00	13.02				
16.00	11.57	0.00	11.57				
16.50	10.39	0.00	10.39				
17.00	9.75	0.00	9.75				
17.50	9.21	0.00	9.21				
18.00	8.69	0.00	8.69				
18.50	8.16	0.00	8.16				
19.00	7.63	0.00	7.63				
19.50	7.08	0.00	7.08				
20.00	6.53	0.00	6.53				
20.50	6.10	0.00	6.10				
21.00	5.94	0.00	5.94				
21.50	5.83	0.00	5.83				
22.00	5.73	0.00	5.73				
22.50	5.63	0.00	5.63				
23.00	5.52	0.00	5.52				
23.50	5.42	0.00	5.42				
24.00	5.32	0.00	5.32				
24.50	1.67	0.00	1.67				
25.00	0.25	0.00	0.25				
25.50	0.04	0.00	0.04				
26.00	0.00	0.00	0.00				
26.50	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
27.50	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
28.50	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
29.50	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
30.50	0.00	0.00	0.00				

Summary for Link T-P: Total Proposed

Inflow Area = 211.770 ac, 3.84% Impervious, Inflow Depth = 1.20" for 10-YR event
Inflow = 200.72 cfs @ 12.15 hrs, Volume= 21.149 af
Primary = 200.72 cfs @ 12.15 hrs, Volume= 21.149 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link T-P: Total Proposed



Hydrograph for Link T-P: Total Proposed

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00	31.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	31.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00	32.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	32.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00	33.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	33.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00	34.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00	34.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00	35.50	0.00	0.00	0.00
10.00	0.00	0.00	0.00	36.00	0.00	0.00	0.00
10.50	0.42	0.00	0.42				
11.00	2.36	0.00	2.36				
11.50	7.14	0.00	7.14				
12.00	**126.13**	0.00	**126.13**				
12.50	**114.24**	0.00	**114.24**				
13.00	45.85	0.00	45.85				
13.50	27.43	0.00	27.43				
14.00	20.12	0.00	20.12				
14.50	16.29	0.00	16.29				
15.00	14.49	0.00	14.49				
15.50	13.02	0.00	13.02				
16.00	11.57	0.00	11.57				
16.50	10.39	0.00	10.39				
17.00	9.75	0.00	9.75				
17.50	9.21	0.00	9.21				
18.00	8.69	0.00	8.69				
18.50	8.16	0.00	8.16				
19.00	7.63	0.00	7.63				
19.50	7.08	0.00	7.08				
20.00	6.53	0.00	6.53				
20.50	6.10	0.00	6.10				
21.00	5.94	0.00	5.94				
21.50	5.83	0.00	5.83				
22.00	5.73	0.00	5.73				
22.50	5.63	0.00	5.63				
23.00	5.52	0.00	5.52				
23.50	5.42	0.00	5.42				
24.00	5.32	0.00	5.32				
24.50	1.67	0.00	1.67				
25.00	0.25	0.00	0.25				
25.50	0.04	0.00	0.04				
26.00	0.00	0.00	0.00				
26.50	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
27.50	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
28.50	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
29.50	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
30.50	0.00	0.00	0.00				

Time span=5.00-36.00 hrs, dt=0.05 hrs, 621 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA-E1: Existing DA-E1 Runoff Area=92.840 ac 4.35% Impervious Runoff Depth=2.79"
Flow Length=3,681' Tc=40.6 min CN=79 Runoff=182.90 cfs 21.609 af

Subcatchment DA-E2: Existing DA-E2 Runoff Area=118.930 ac 2.71% Impervious Runoff Depth=2.70"
Flow Length=1,836' Tc=18.3 min CN=78 Runoff=374.10 cfs 26.791 af

Subcatchment DA-P1: Proposed DA-P1 Runoff Area=92.840 ac 4.36% Impervious Runoff Depth=2.79"
Flow Length=3,681' Tc=40.6 min CN=79 Runoff=182.90 cfs 21.609 af

Subcatchment DA-P2: Proposed DA-P1 Runoff Area=118.930 ac 3.43% Impervious Runoff Depth=2.70"
Flow Length=1,836' Tc=18.3 min CN=78 Runoff=374.10 cfs 26.791 af

Link DP-E1: Design Point #1 Inflow=182.90 cfs 21.609 af
Primary=182.90 cfs 21.609 af

Link DP-E2: Design Point #2 Inflow=374.10 cfs 26.791 af
Primary=374.10 cfs 26.791 af

Link DP-P1: Design Point #1 Inflow=182.90 cfs 21.609 af
Primary=182.90 cfs 21.609 af

Link DP-P2: Design Point #1 Inflow=374.10 cfs 26.791 af
Primary=374.10 cfs 26.791 af

Link T-E: Total Existing Inflow=478.90 cfs 48.400 af
Primary=478.90 cfs 48.400 af

Link T-P: Total Proposed Inflow=478.90 cfs 48.400 af
Primary=478.90 cfs 48.400 af

Total Runoff Area = 423.540 ac Runoff Volume = 96.800 af Average Runoff Depth = 2.74"
96.37% Pervious = 408.153 ac 3.63% Impervious = 15.387 ac

Summary for Subcatchment DA-E1: Existing DA-E1

[47] Hint: Peak is 621% of capacity of segment #4

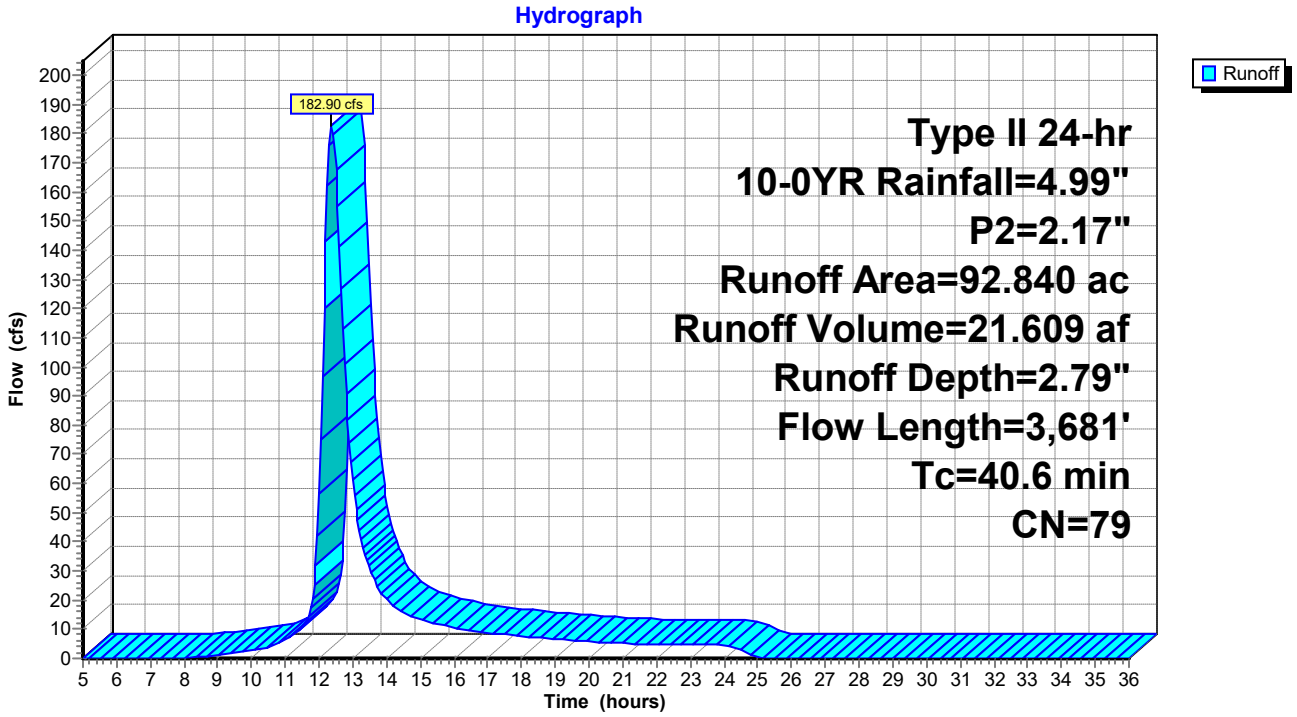
Runoff = 182.90 cfs @ 12.38 hrs, Volume= 21.609 af, Depth= 2.79"
Routed to Link DP-E1 : Design Point #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-0YR Rainfall=4.99", P2=2.17"

	Area (ac)	CN	Description
	5.520	77	Woods, Good, HSG D
*	3.710	98	Existing Impervious
	0.330	98	Water Surface, HSG D
	83.180	78	Meadow, non-grazed, HSG D
	0.100	58	Meadow, non-grazed, HSG B
	92.840	79	Weighted Average
	88.800		95.65% Pervious Area
	4.040		4.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	33	0.1818	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
9.8	67	0.0373	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
23.6	2,596	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.2	985	0.0160	3.93	29.44	**Channel Flow,** Area= 7.5 sf Perim= 12.0' r= 0.63' n= 0.035 Earth, dense weeds
40.6	3,681	Total			

Subcatchment DA-E1: Existing DA-E1



Hydrograph for Subcatchment DA-E1: Existing DA-E1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.31	0.00	0.00
5.50	0.36	0.00	0.00
6.00	0.40	0.00	0.00
6.50	0.45	0.00	0.00
7.00	0.49	0.00	0.00
7.50	0.55	0.00	0.00
8.00	0.60	0.00	0.09
8.50	0.66	0.01	0.43
9.00	0.73	0.01	1.00
9.50	0.81	0.03	1.79
10.00	0.90	0.05	2.62
10.50	1.02	0.08	4.02
11.00	1.17	0.12	6.47
11.50	1.41	0.22	11.28
12.00	3.31	1.42	**56.59**
12.50	3.67	1.70	**167.33**
13.00	3.85	1.84	61.20
13.50	3.99	1.95	30.15
14.00	4.09	2.04	20.15
14.50	4.18	2.11	15.44
15.00	4.26	2.18	13.34
15.50	4.33	2.23	11.93
16.00	4.39	2.29	10.61
16.50	4.45	2.33	9.38
17.00	4.50	2.38	8.67
17.50	4.55	2.42	8.16
18.00	4.60	2.46	7.69
18.50	4.64	2.49	7.21
19.00	4.68	2.53	6.74
19.50	4.72	2.56	6.26
20.00	4.75	2.59	5.78
20.50	4.78	2.62	5.33
21.00	4.81	2.64	5.12
21.50	4.84	2.67	5.01
22.00	4.88	2.69	4.91
22.50	4.90	2.72	4.82
23.00	4.93	2.74	4.73
23.50	4.96	2.77	4.64
24.00	**4.99**	**2.79**	4.54
24.50	4.99	2.79	2.77
25.00	4.99	2.79	0.48
25.50	4.99	2.79	0.07
26.00	4.99	2.79	0.01
26.50	4.99	2.79	0.00
27.00	4.99	2.79	0.00
27.50	4.99	2.79	0.00
28.00	4.99	2.79	0.00
28.50	4.99	2.79	0.00
29.00	4.99	2.79	0.00
29.50	4.99	2.79	0.00
30.00	4.99	2.79	0.00
30.50	4.99	2.79	0.00
31.00	4.99	2.79	0.00
31.50	4.99	2.79	0.00
32.00	4.99	2.79	0.00
32.50	4.99	2.79	0.00
33.00	4.99	2.79	0.00
33.50	4.99	2.79	0.00
34.00	4.99	2.79	0.00
34.50	4.99	2.79	0.00
35.00	4.99	2.79	0.00
35.50	4.99	2.79	0.00
36.00	4.99	2.79	0.00

Summary for Subcatchment DA-E2: Existing DA-E2

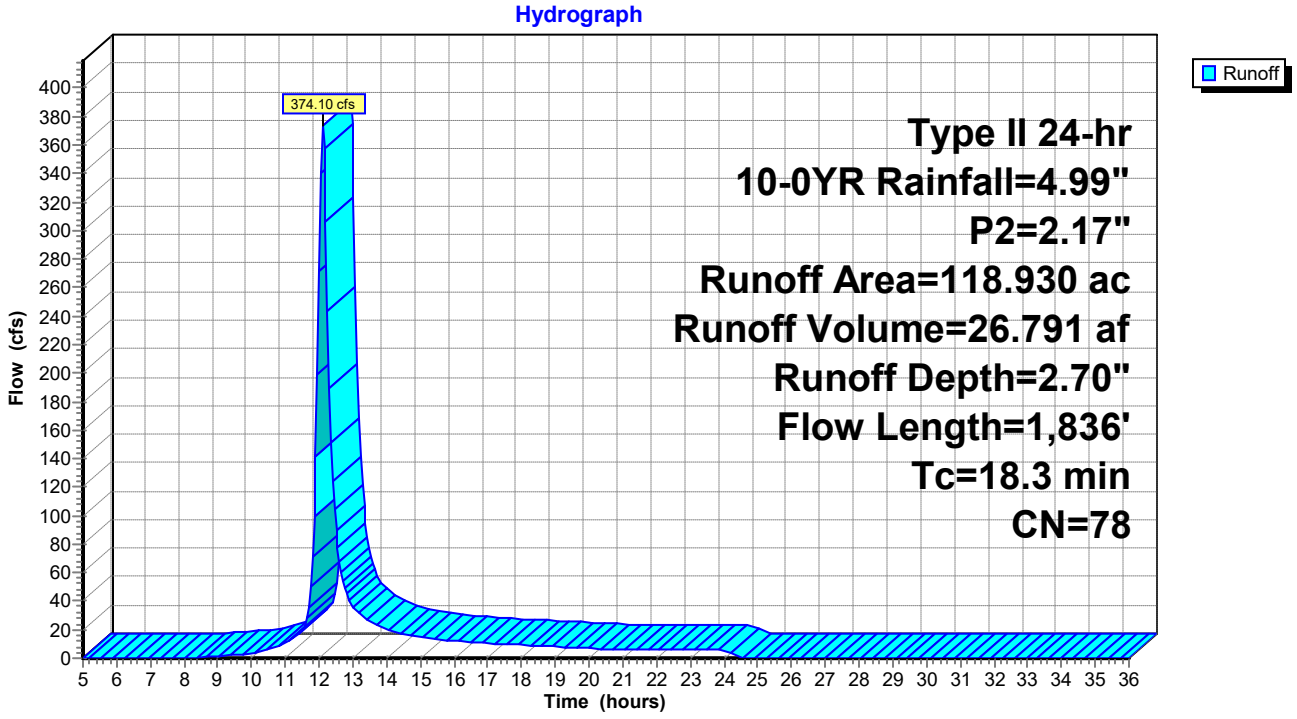
Runoff = 374.10 cfs @ 12.11 hrs, Volume= 26.791 af, Depth= 2.70"
Routed to Link DP-E2 : Design Point #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-0YR Rainfall=4.99", P2=2.17"

	Area (ac)	CN	Description
	29.160	77	Woods, Good, HSG D
*	2.260	98	Existing Impervious
	86.550	78	Meadow, non-grazed, HSG D
*	0.960	98	Water Surface, HSG D
	118.930	78	Weighted Average
	115.710		97.29% Pervious Area
	3.220		2.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0550	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
6.7	1,736	0.0730	4.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.3	1,836	Total			

Subcatchment DA-E2: Existing DA-E2



Hydrograph for Subcatchment DA-E2: Existing DA-E2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.31	0.00	0.00
5.50	0.36	0.00	0.00
6.00	0.40	0.00	0.00
6.50	0.45	0.00	0.00
7.00	0.49	0.00	0.00
7.50	0.55	0.00	0.00
8.00	0.60	0.00	0.07
8.50	0.66	0.00	0.61
9.00	0.73	0.01	1.48
9.50	0.81	0.02	2.49
10.00	0.90	0.04	3.76
10.50	1.02	0.06	6.16
11.00	1.17	0.11	10.44
11.50	1.41	0.20	20.16
12.00	3.31	1.35	**271.64**
12.50	3.67	1.63	**89.17**
13.00	3.85	1.77	35.99
13.50	3.99	1.88	26.09
14.00	4.09	1.96	20.42
14.50	4.18	2.03	17.14
15.00	4.26	2.10	15.50
15.50	4.33	2.15	13.88
16.00	4.39	2.20	12.23
16.50	4.45	2.25	11.06
17.00	4.50	2.29	10.46
17.50	4.55	2.33	9.87
18.00	4.60	2.37	9.28
18.50	4.64	2.41	8.69
19.00	4.68	2.44	8.08
19.50	4.72	2.47	7.48
20.00	4.75	2.50	6.87
20.50	4.78	2.53	6.48
21.00	4.81	2.55	6.35
21.50	4.84	2.58	6.24
22.00	4.88	2.61	6.12
22.50	4.90	2.63	6.01
23.00	4.93	2.66	5.89
23.50	4.96	2.68	5.77
24.00	**4.99**	**2.70**	5.65
24.50	4.99	2.70	0.41
25.00	4.99	2.70	0.00
25.50	4.99	2.70	0.00
26.00	4.99	2.70	0.00
26.50	4.99	2.70	0.00
27.00	4.99	2.70	0.00
27.50	4.99	2.70	0.00
28.00	4.99	2.70	0.00
28.50	4.99	2.70	0.00
29.00	4.99	2.70	0.00
29.50	4.99	2.70	0.00
30.00	4.99	2.70	0.00
30.50	4.99	2.70	0.00
31.00	4.99	2.70	0.00
31.50	4.99	2.70	0.00
32.00	4.99	2.70	0.00
32.50	4.99	2.70	0.00
33.00	4.99	2.70	0.00
33.50	4.99	2.70	0.00
34.00	4.99	2.70	0.00
34.50	4.99	2.70	0.00
35.00	4.99	2.70	0.00
35.50	4.99	2.70	0.00
36.00	4.99	2.70	0.00

Summary for Subcatchment DA-P1: Proposed DA-P1

[47] Hint: Peak is 621% of capacity of segment #4

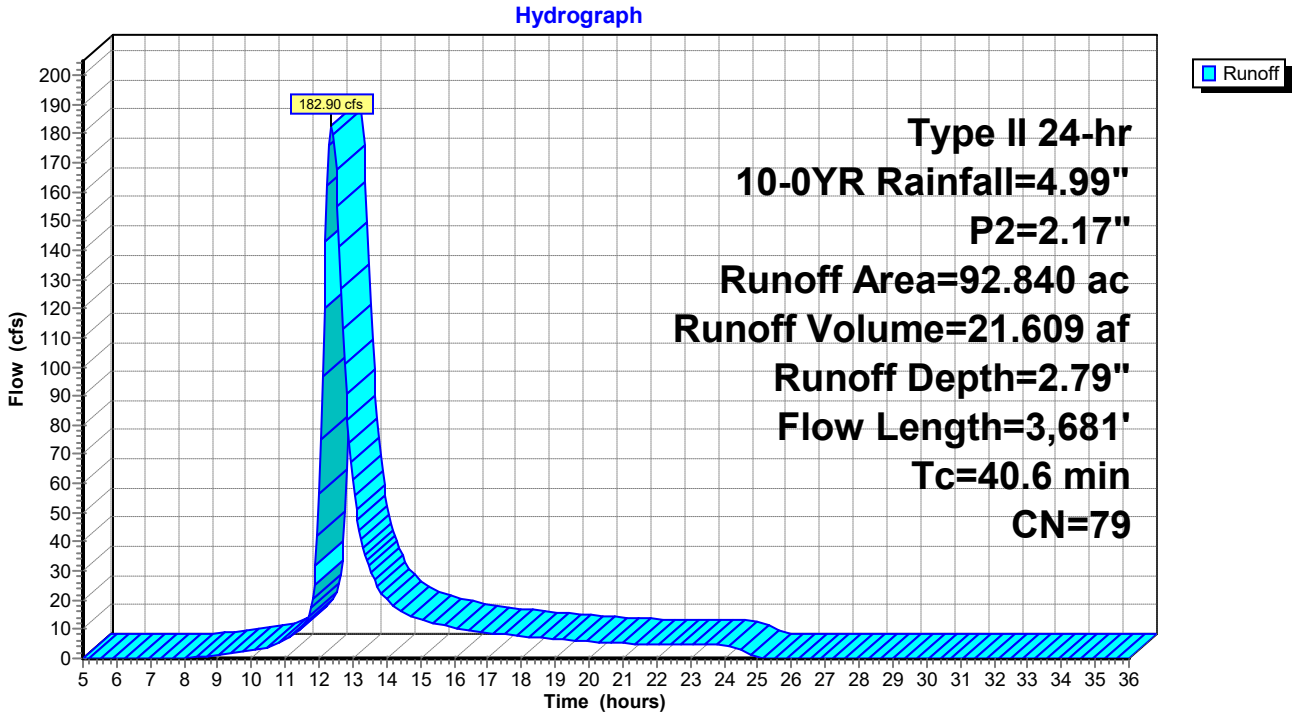
Runoff = 182.90 cfs @ 12.38 hrs, Volume= 21.609 af, Depth= 2.79"
Routed to Link DP-P1 : Design Point #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-0YR Rainfall=4.99", P2=2.17"

	Area (ac)	CN	Description
	5.520	77	Woods, Good, HSG D
*	3.297	98	Existing Impervious
*	0.420	98	Propsoed Impervious
	0.330	98	Water Surface, HSG D
	83.173	78	Meadow, non-grazed, HSG D
	0.100	58	Meadow, non-grazed, HSG B
	92.840	79	Weighted Average
	88.793		95.64% Pervious Area
	4.047		4.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	33	0.1818	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
9.8	67	0.0373	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
23.6	2,596	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.2	985	0.0160	3.93	29.44	**Channel Flow,** Area= 7.5 sf Perim= 12.0' r= 0.63' n= 0.035
40.6	3,681	Total			

Subcatchment DA-P1: Proposed DA-P1



Hydrograph for Subcatchment DA-P1: Proposed DA-P1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.31	0.00	0.00
5.50	0.36	0.00	0.00
6.00	0.40	0.00	0.00
6.50	0.45	0.00	0.00
7.00	0.49	0.00	0.00
7.50	0.55	0.00	0.00
8.00	0.60	0.00	0.09
8.50	0.66	0.01	0.43
9.00	0.73	0.01	1.00
9.50	0.81	0.03	1.79
10.00	0.90	0.05	2.62
10.50	1.02	0.08	4.02
11.00	1.17	0.12	6.47
11.50	1.41	0.22	11.28
12.00	3.31	1.42	**56.59**
12.50	3.67	1.70	**167.33**
13.00	3.85	1.84	61.20
13.50	3.99	1.95	30.15
14.00	4.09	2.04	20.15
14.50	4.18	2.11	15.44
15.00	4.26	2.18	13.34
15.50	4.33	2.23	11.93
16.00	4.39	2.29	10.61
16.50	4.45	2.33	9.38
17.00	4.50	2.38	8.67
17.50	4.55	2.42	8.16
18.00	4.60	2.46	7.69
18.50	4.64	2.49	7.21
19.00	4.68	2.53	6.74
19.50	4.72	2.56	6.26
20.00	4.75	2.59	5.78
20.50	4.78	2.62	5.33
21.00	4.81	2.64	5.12
21.50	4.84	2.67	5.01
22.00	4.88	2.69	4.91
22.50	4.90	2.72	4.82
23.00	4.93	2.74	4.73
23.50	4.96	2.77	4.64
24.00	**4.99**	**2.79**	4.54
24.50	4.99	2.79	2.77
25.00	4.99	2.79	0.48
25.50	4.99	2.79	0.07
26.00	4.99	2.79	0.01
26.50	4.99	2.79	0.00
27.00	4.99	2.79	0.00
27.50	4.99	2.79	0.00
28.00	4.99	2.79	0.00
28.50	4.99	2.79	0.00
29.00	4.99	2.79	0.00
29.50	4.99	2.79	0.00
30.00	4.99	2.79	0.00
30.50	4.99	2.79	0.00
31.00	4.99	2.79	0.00
31.50	4.99	2.79	0.00
32.00	4.99	2.79	0.00
32.50	4.99	2.79	0.00
33.00	4.99	2.79	0.00
33.50	4.99	2.79	0.00
34.00	4.99	2.79	0.00
34.50	4.99	2.79	0.00
35.00	4.99	2.79	0.00
35.50	4.99	2.79	0.00
36.00	4.99	2.79	0.00

Summary for Subcatchment DA-P2: Proposed DA-P1

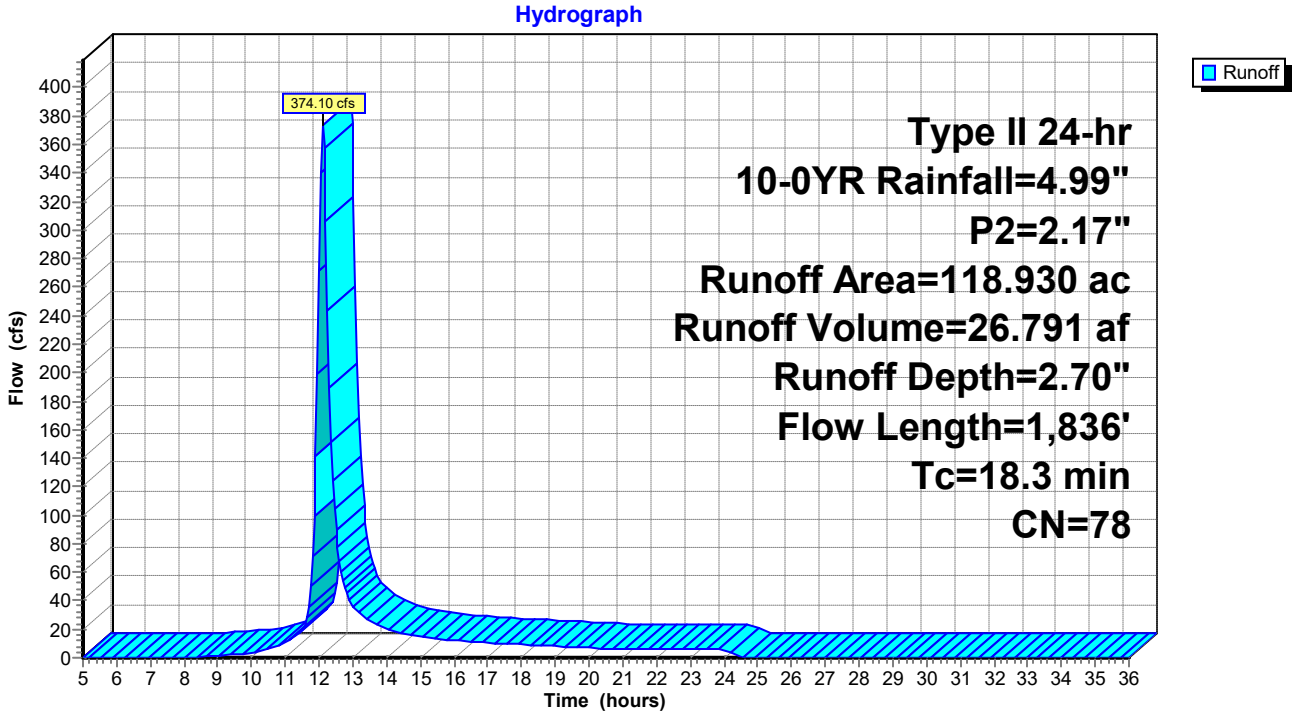
Runoff = 374.10 cfs @ 12.11 hrs, Volume= 26.791 af, Depth= 2.70"
Routed to Link DP-P2 : Design Point #1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-0YR Rainfall=4.99", P2=2.17"

	Area (ac)	CN	Description
	26.093	77	Woods, Good, HSG D
*	2.080	98	Existing Impervious
*	1.040	98	Proposed Impverious
*	0.960	98	Water Surface, HSG D
	88.757	78	Meadow, non-grazed, HSG D
	118.930	78	Weighted Average
	114.850		96.57% Pervious Area
	4.080		3.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0550	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.17"
6.7	1,736	0.0730	4.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.3	1,836	Total			

Subcatchment DA-P2: Proposed DA-P1



Hydrograph for Subcatchment DA-P2: Proposed DA-P1

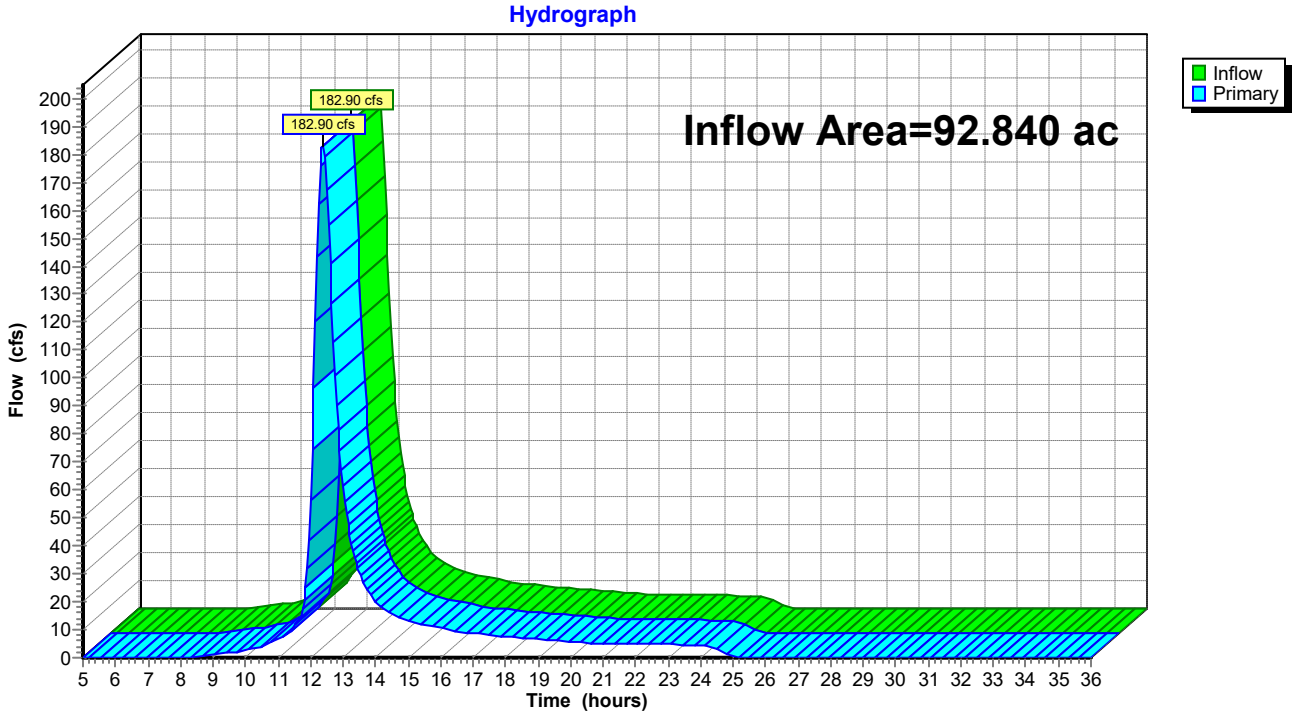
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.31	0.00	0.00
5.50	0.36	0.00	0.00
6.00	0.40	0.00	0.00
6.50	0.45	0.00	0.00
7.00	0.49	0.00	0.00
7.50	0.55	0.00	0.00
8.00	0.60	0.00	0.07
8.50	0.66	0.00	0.61
9.00	0.73	0.01	1.48
9.50	0.81	0.02	2.49
10.00	0.90	0.04	3.76
10.50	1.02	0.06	6.16
11.00	1.17	0.11	10.44
11.50	1.41	0.20	20.16
12.00	3.31	1.35	**271.64**
12.50	3.67	1.63	**89.17**
13.00	3.85	1.77	35.99
13.50	3.99	1.88	26.09
14.00	4.09	1.96	20.42
14.50	4.18	2.03	17.14
15.00	4.26	2.10	15.50
15.50	4.33	2.15	13.88
16.00	4.39	2.20	12.23
16.50	4.45	2.25	11.06
17.00	4.50	2.29	10.46
17.50	4.55	2.33	9.87
18.00	4.60	2.37	9.28
18.50	4.64	2.41	8.69
19.00	4.68	2.44	8.08
19.50	4.72	2.47	7.48
20.00	4.75	2.50	6.87
20.50	4.78	2.53	6.48
21.00	4.81	2.55	6.35
21.50	4.84	2.58	6.24
22.00	4.88	2.61	6.12
22.50	4.90	2.63	6.01
23.00	4.93	2.66	5.89
23.50	4.96	2.68	5.77
24.00	**4.99**	**2.70**	5.65
24.50	4.99	2.70	0.41
25.00	4.99	2.70	0.00
25.50	4.99	2.70	0.00
26.00	4.99	2.70	0.00
26.50	4.99	2.70	0.00
27.00	4.99	2.70	0.00
27.50	4.99	2.70	0.00
28.00	4.99	2.70	0.00
28.50	4.99	2.70	0.00
29.00	4.99	2.70	0.00
29.50	4.99	2.70	0.00
30.00	4.99	2.70	0.00
30.50	4.99	2.70	0.00
31.00	4.99	2.70	0.00
31.50	4.99	2.70	0.00
32.00	4.99	2.70	0.00
32.50	4.99	2.70	0.00
33.00	4.99	2.70	0.00
33.50	4.99	2.70	0.00
34.00	4.99	2.70	0.00
34.50	4.99	2.70	0.00
35.00	4.99	2.70	0.00
35.50	4.99	2.70	0.00
36.00	4.99	2.70	0.00

Summary for Link DP-E1: Design Point #1

Inflow Area = 92.840 ac, 4.35% Impervious, Inflow Depth = 2.79" for 10-0YR event
Inflow = 182.90 cfs @ 12.38 hrs, Volume= 21.609 af
Primary = 182.90 cfs @ 12.38 hrs, Volume= 21.609 af, Atten= 0%, Lag= 0.0 min
Routed to Link T-E : Total Existing

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link DP-E1: Design Point #1



Hydrograph for Link DP-E1: Design Point #1

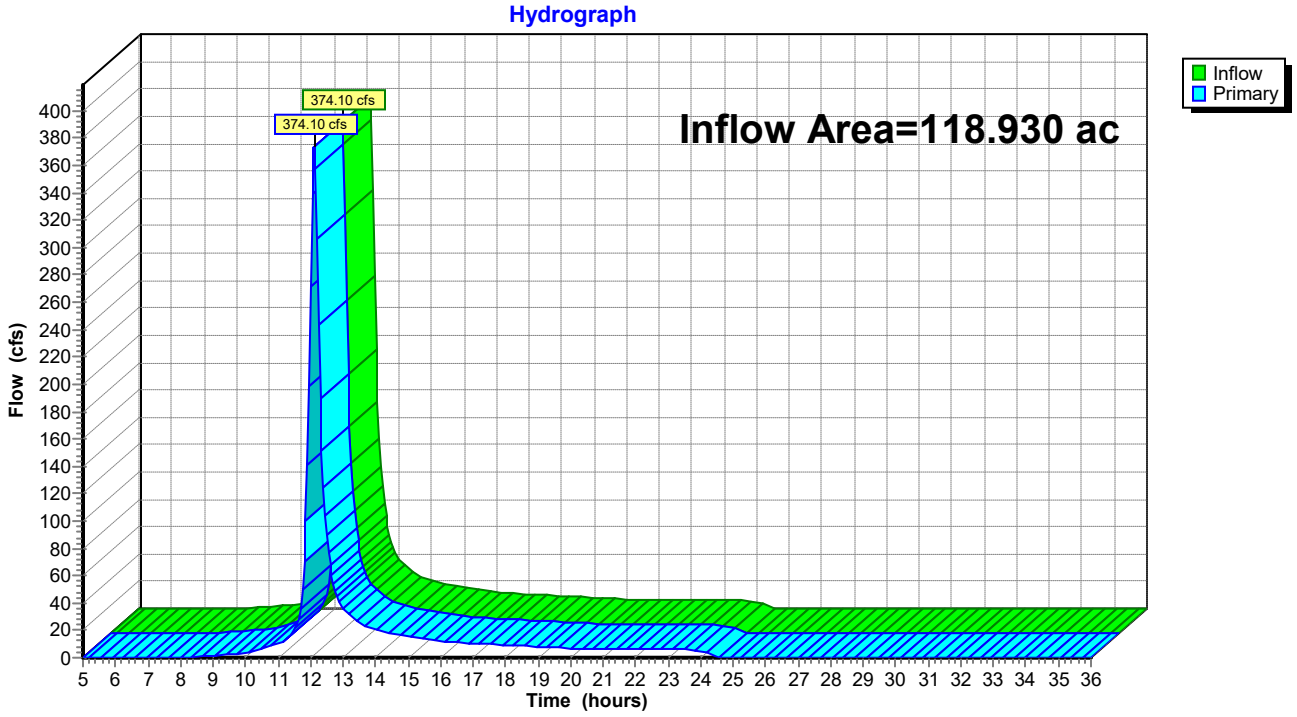
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00
8.00	0.09	0.00	0.09
8.50	0.43	0.00	0.43
9.00	1.00	0.00	1.00
9.50	1.79	0.00	1.79
10.00	2.62	0.00	2.62
10.50	4.02	0.00	4.02
11.00	6.47	0.00	6.47
11.50	11.28	0.00	11.28
12.00	**56.59**	0.00	**56.59**
12.50	**167.33**	0.00	**167.33**
13.00	61.20	0.00	61.20
13.50	30.15	0.00	30.15
14.00	20.15	0.00	20.15
14.50	15.44	0.00	15.44
15.00	13.34	0.00	13.34
15.50	11.93	0.00	11.93
16.00	10.61	0.00	10.61
16.50	9.38	0.00	9.38
17.00	8.67	0.00	8.67
17.50	8.16	0.00	8.16
18.00	7.69	0.00	7.69
18.50	7.21	0.00	7.21
19.00	6.74	0.00	6.74
19.50	6.26	0.00	6.26
20.00	5.78	0.00	5.78
20.50	5.33	0.00	5.33
21.00	5.12	0.00	5.12
21.50	5.01	0.00	5.01
22.00	4.91	0.00	4.91
22.50	4.82	0.00	4.82
23.00	4.73	0.00	4.73
23.50	4.64	0.00	4.64
24.00	4.54	0.00	4.54
24.50	2.77	0.00	2.77
25.00	0.48	0.00	0.48
25.50	0.07	0.00	0.07
26.00	0.01	0.00	0.01
26.50	0.00	0.00	0.00
27.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00
28.00	0.00	0.00	0.00
28.50	0.00	0.00	0.00
29.00	0.00	0.00	0.00
29.50	0.00	0.00	0.00
30.00	0.00	0.00	0.00
30.50	0.00	0.00	0.00
31.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00
32.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00
33.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00
34.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00
35.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00
36.00	0.00	0.00	0.00

Summary for Link DP-E2: Design Point #2

Inflow Area = 118.930 ac, 2.71% Impervious, Inflow Depth = 2.70" for 10-0YR event
Inflow = 374.10 cfs @ 12.11 hrs, Volume= 26.791 af
Primary = 374.10 cfs @ 12.11 hrs, Volume= 26.791 af, Atten= 0%, Lag= 0.0 min
Routed to Link T-E : Total Existing

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link DP-E2: Design Point #2



Hydrograph for Link DP-E2: Design Point #2

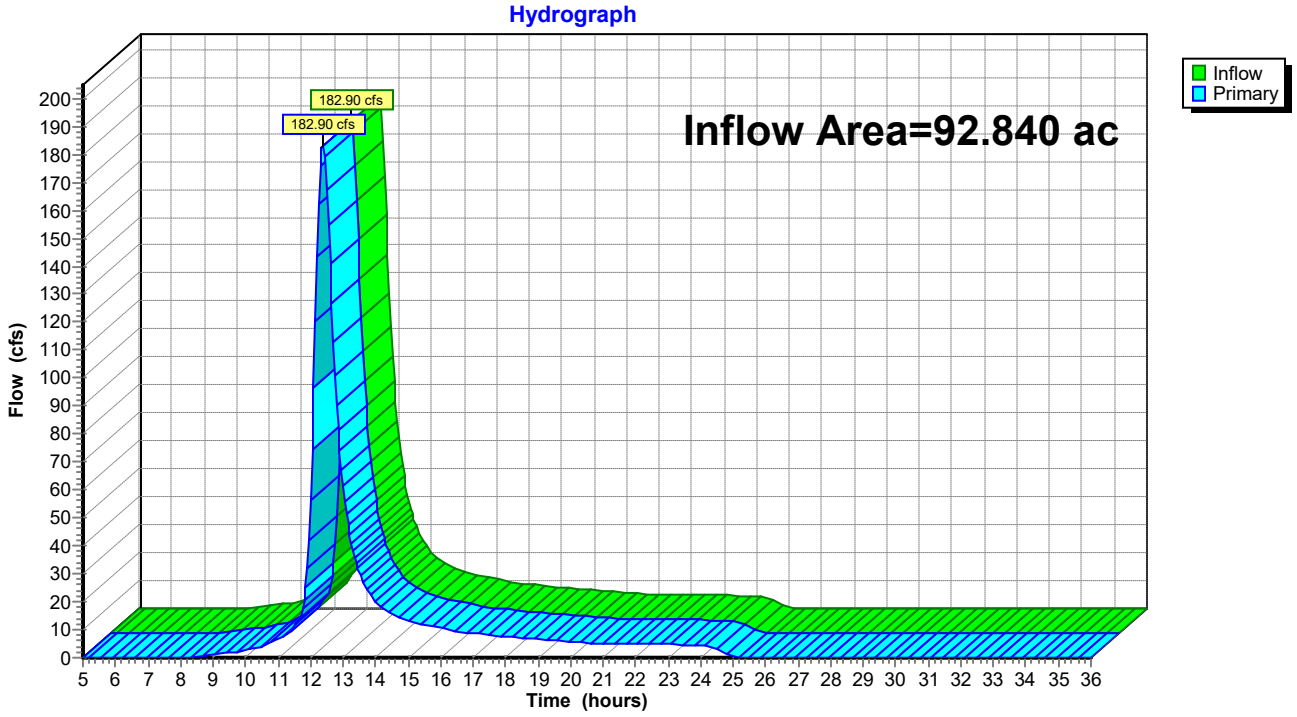
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00
8.00	0.07	0.00	0.07
8.50	0.61	0.00	0.61
9.00	1.48	0.00	1.48
9.50	2.49	0.00	2.49
10.00	3.76	0.00	3.76
10.50	6.16	0.00	6.16
11.00	10.44	0.00	10.44
11.50	20.16	0.00	20.16
12.00	**271.64**	0.00	**271.64**
12.50	**89.17**	0.00	**89.17**
13.00	35.99	0.00	35.99
13.50	26.09	0.00	26.09
14.00	20.42	0.00	20.42
14.50	17.14	0.00	17.14
15.00	15.50	0.00	15.50
15.50	13.88	0.00	13.88
16.00	12.23	0.00	12.23
16.50	11.06	0.00	11.06
17.00	10.46	0.00	10.46
17.50	9.87	0.00	9.87
18.00	9.28	0.00	9.28
18.50	8.69	0.00	8.69
19.00	8.08	0.00	8.08
19.50	7.48	0.00	7.48
20.00	6.87	0.00	6.87
20.50	6.48	0.00	6.48
21.00	6.35	0.00	6.35
21.50	6.24	0.00	6.24
22.00	6.12	0.00	6.12
22.50	6.01	0.00	6.01
23.00	5.89	0.00	5.89
23.50	5.77	0.00	5.77
24.00	5.65	0.00	5.65
24.50	0.41	0.00	0.41
25.00	0.00	0.00	0.00
25.50	0.00	0.00	0.00
26.00	0.00	0.00	0.00
26.50	0.00	0.00	0.00
27.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00
28.00	0.00	0.00	0.00
28.50	0.00	0.00	0.00
29.00	0.00	0.00	0.00
29.50	0.00	0.00	0.00
30.00	0.00	0.00	0.00
30.50	0.00	0.00	0.00
31.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00
32.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00
33.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00
34.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00
35.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00
36.00	0.00	0.00	0.00

Summary for Link DP-P1: Design Point #1

Inflow Area = 92.840 ac, 4.36% Impervious, Inflow Depth = 2.79" for 10-0YR event
Inflow = 182.90 cfs @ 12.38 hrs, Volume= 21.609 af
Primary = 182.90 cfs @ 12.38 hrs, Volume= 21.609 af, Atten= 0%, Lag= 0.0 min
Routed to Link T-P : Total Proposed

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link DP-P1: Design Point #1



Hydrograph for Link DP-P1: Design Point #1

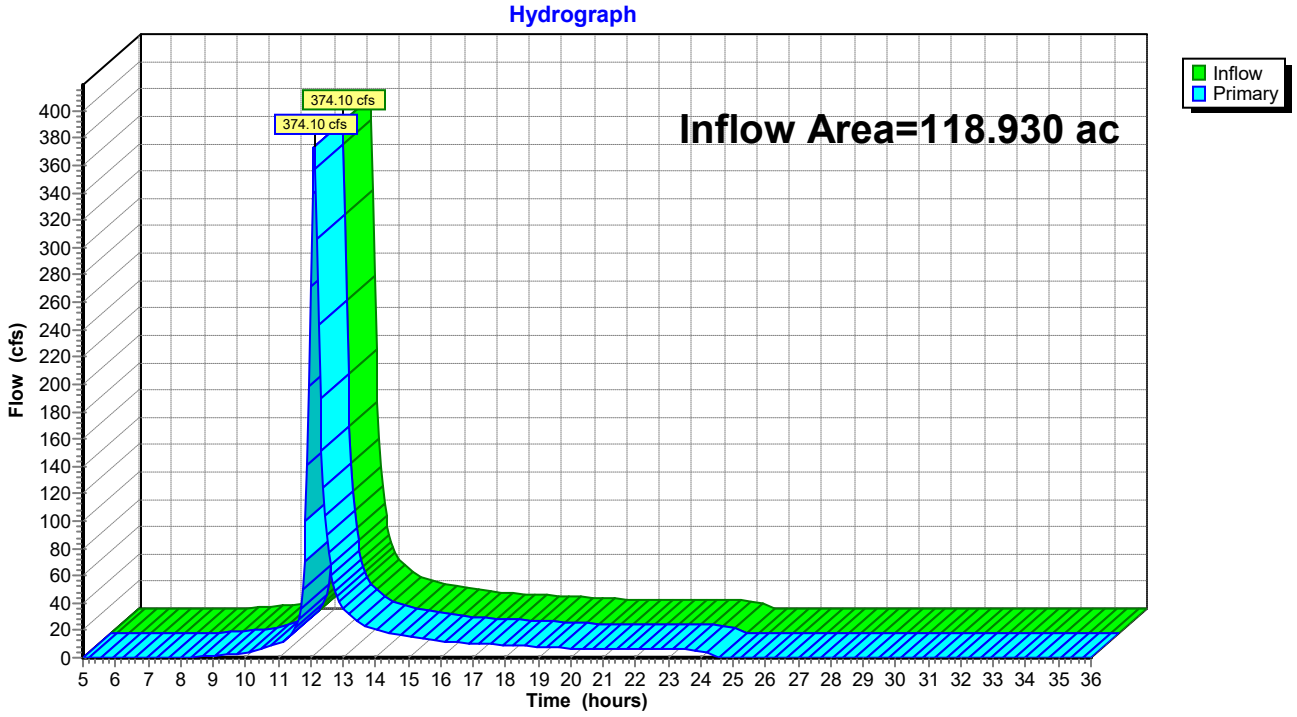
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00
8.00	0.09	0.00	0.09
8.50	0.43	0.00	0.43
9.00	1.00	0.00	1.00
9.50	1.79	0.00	1.79
10.00	2.62	0.00	2.62
10.50	4.02	0.00	4.02
11.00	6.47	0.00	6.47
11.50	11.28	0.00	11.28
12.00	**56.59**	0.00	**56.59**
12.50	**167.33**	0.00	**167.33**
13.00	61.20	0.00	61.20
13.50	30.15	0.00	30.15
14.00	20.15	0.00	20.15
14.50	15.44	0.00	15.44
15.00	13.34	0.00	13.34
15.50	11.93	0.00	11.93
16.00	10.61	0.00	10.61
16.50	9.38	0.00	9.38
17.00	8.67	0.00	8.67
17.50	8.16	0.00	8.16
18.00	7.69	0.00	7.69
18.50	7.21	0.00	7.21
19.00	6.74	0.00	6.74
19.50	6.26	0.00	6.26
20.00	5.78	0.00	5.78
20.50	5.33	0.00	5.33
21.00	5.12	0.00	5.12
21.50	5.01	0.00	5.01
22.00	4.91	0.00	4.91
22.50	4.82	0.00	4.82
23.00	4.73	0.00	4.73
23.50	4.64	0.00	4.64
24.00	4.54	0.00	4.54
24.50	2.77	0.00	2.77
25.00	0.48	0.00	0.48
25.50	0.07	0.00	0.07
26.00	0.01	0.00	0.01
26.50	0.00	0.00	0.00
27.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00
28.00	0.00	0.00	0.00
28.50	0.00	0.00	0.00
29.00	0.00	0.00	0.00
29.50	0.00	0.00	0.00
30.00	0.00	0.00	0.00
30.50	0.00	0.00	0.00
31.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00
32.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00
33.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00
34.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00
35.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00
36.00	0.00	0.00	0.00

Summary for Link DP-P2: Design Point #1

Inflow Area = 118.930 ac, 3.43% Impervious, Inflow Depth = 2.70" for 10-0YR event
Inflow = 374.10 cfs @ 12.11 hrs, Volume= 26.791 af
Primary = 374.10 cfs @ 12.11 hrs, Volume= 26.791 af, Atten= 0%, Lag= 0.0 min
Routed to Link T-P : Total Proposed

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link DP-P2: Design Point #1



Hydrograph for Link DP-P2: Design Point #1

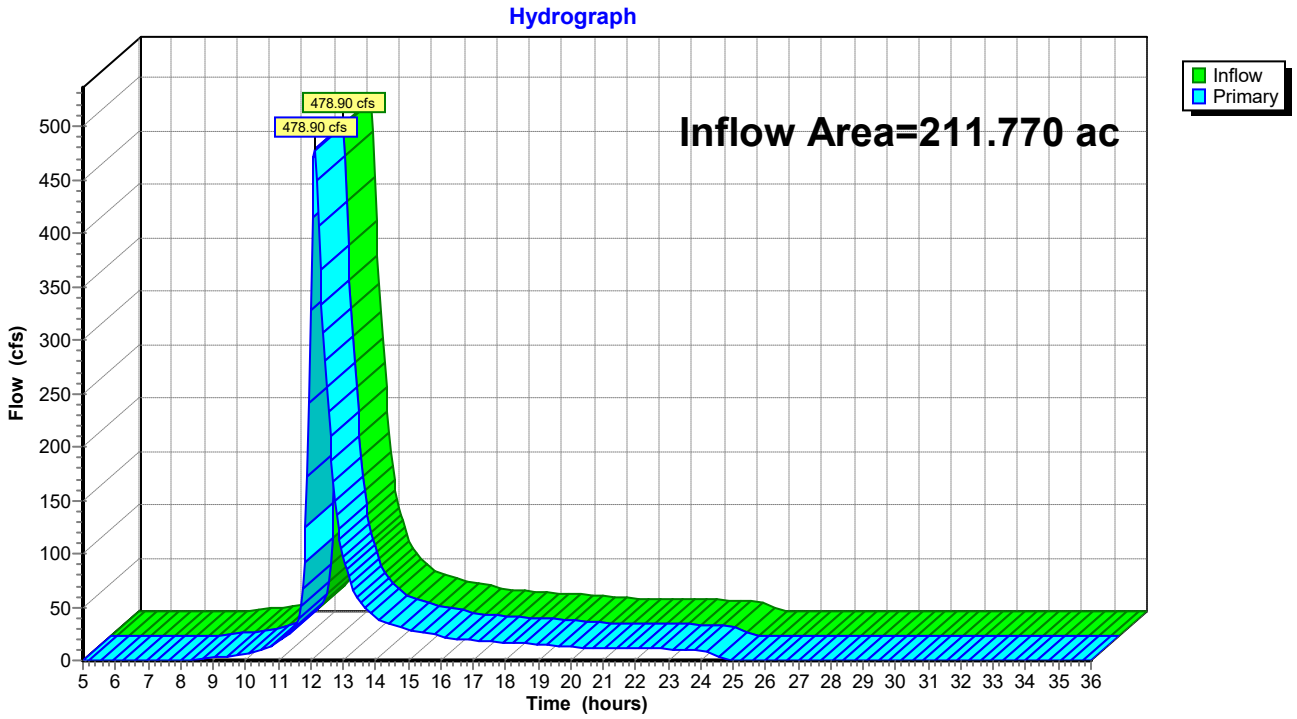
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00
8.00	0.07	0.00	0.07
8.50	0.61	0.00	0.61
9.00	1.48	0.00	1.48
9.50	2.49	0.00	2.49
10.00	3.76	0.00	3.76
10.50	6.16	0.00	6.16
11.00	10.44	0.00	10.44
11.50	20.16	0.00	20.16
12.00	**271.64**	0.00	**271.64**
12.50	**89.17**	0.00	**89.17**
13.00	35.99	0.00	35.99
13.50	26.09	0.00	26.09
14.00	20.42	0.00	20.42
14.50	17.14	0.00	17.14
15.00	15.50	0.00	15.50
15.50	13.88	0.00	13.88
16.00	12.23	0.00	12.23
16.50	11.06	0.00	11.06
17.00	10.46	0.00	10.46
17.50	9.87	0.00	9.87
18.00	9.28	0.00	9.28
18.50	8.69	0.00	8.69
19.00	8.08	0.00	8.08
19.50	7.48	0.00	7.48
20.00	6.87	0.00	6.87
20.50	6.48	0.00	6.48
21.00	6.35	0.00	6.35
21.50	6.24	0.00	6.24
22.00	6.12	0.00	6.12
22.50	6.01	0.00	6.01
23.00	5.89	0.00	5.89
23.50	5.77	0.00	5.77
24.00	5.65	0.00	5.65
24.50	0.41	0.00	0.41
25.00	0.00	0.00	0.00
25.50	0.00	0.00	0.00
26.00	0.00	0.00	0.00
26.50	0.00	0.00	0.00
27.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00
28.00	0.00	0.00	0.00
28.50	0.00	0.00	0.00
29.00	0.00	0.00	0.00
29.50	0.00	0.00	0.00
30.00	0.00	0.00	0.00
30.50	0.00	0.00	0.00
31.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00
32.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00
33.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00
34.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00
35.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00
36.00	0.00	0.00	0.00

Summary for Link T-E: Total Existing

Inflow Area = 211.770 ac, 3.43% Impervious, Inflow Depth = 2.74" for 10-0YR event
Inflow = 478.90 cfs @ 12.14 hrs, Volume= 48.400 af
Primary = 478.90 cfs @ 12.14 hrs, Volume= 48.400 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link T-E: Total Existing



Hydrograph for Link T-E: Total Existing

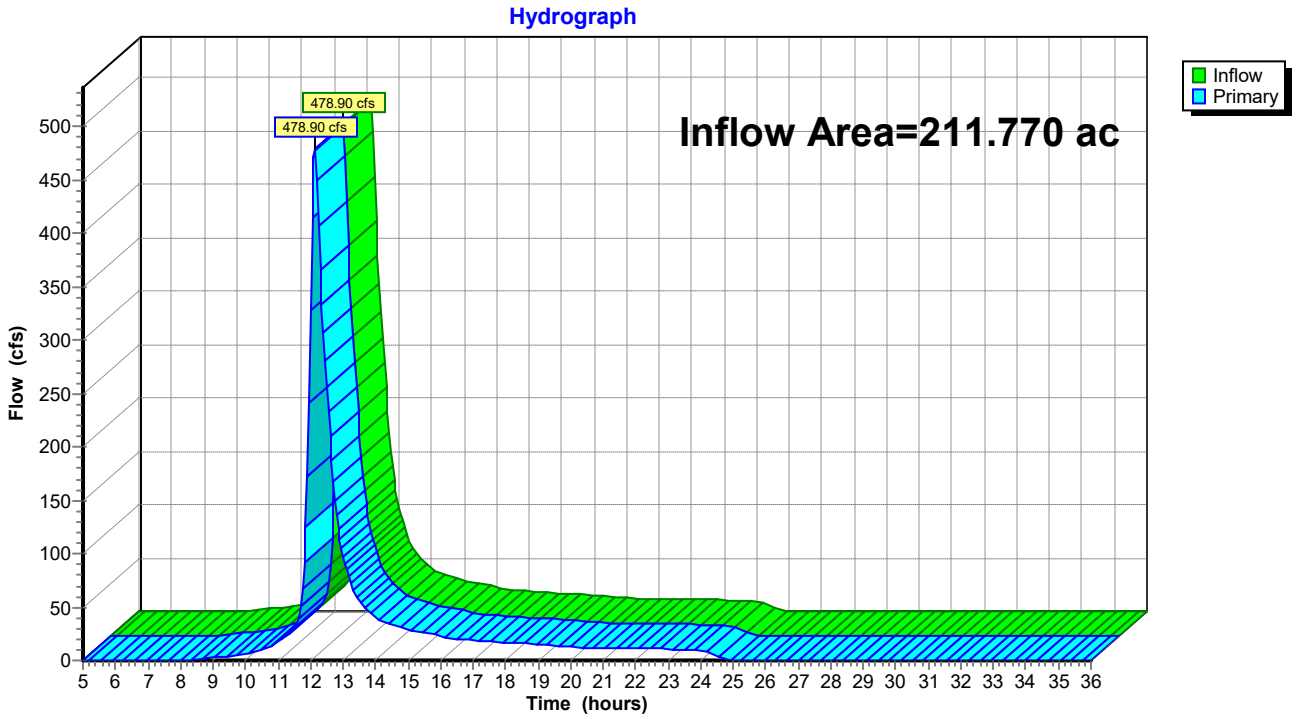
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00
8.00	0.16	0.00	0.16
8.50	1.03	0.00	1.03
9.00	2.47	0.00	2.47
9.50	4.28	0.00	4.28
10.00	6.38	0.00	6.38
10.50	10.17	0.00	10.17
11.00	16.91	0.00	16.91
11.50	31.44	0.00	31.44
12.00	**328.23**	0.00	**328.23**
12.50	**256.50**	0.00	**256.50**
13.00	97.19	0.00	97.19
13.50	56.24	0.00	56.24
14.00	40.58	0.00	40.58
14.50	32.58	0.00	32.58
15.00	28.84	0.00	28.84
15.50	25.81	0.00	25.81
16.00	22.84	0.00	22.84
16.50	20.44	0.00	20.44
17.00	19.13	0.00	19.13
17.50	18.03	0.00	18.03
18.00	16.97	0.00	16.97
18.50	15.90	0.00	15.90
19.00	14.82	0.00	14.82
19.50	13.73	0.00	13.73
20.00	12.64	0.00	12.64
20.50	11.81	0.00	11.81
21.00	11.47	0.00	11.47
21.50	11.25	0.00	11.25
22.00	11.04	0.00	11.04
22.50	10.83	0.00	10.83
23.00	10.62	0.00	10.62
23.50	10.41	0.00	10.41
24.00	10.19	0.00	10.19
24.50	3.18	0.00	3.18
25.00	0.48	0.00	0.48
25.50	0.07	0.00	0.07
26.00	0.01	0.00	0.01
26.50	0.00	0.00	0.00
27.00	0.00	0.00	0.00
27.50	0.00	0.00	0.00
28.00	0.00	0.00	0.00
28.50	0.00	0.00	0.00
29.00	0.00	0.00	0.00
29.50	0.00	0.00	0.00
30.00	0.00	0.00	0.00
30.50	0.00	0.00	0.00
31.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00
32.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00
33.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00
34.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00
35.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00
36.00	0.00	0.00	0.00

Summary for Link T-P: Total Proposed

Inflow Area = 211.770 ac, 3.84% Impervious, Inflow Depth = 2.74" for 10-0YR event
Inflow = 478.90 cfs @ 12.14 hrs, Volume= 48.400 af
Primary = 478.90 cfs @ 12.14 hrs, Volume= 48.400 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link T-P: Total Proposed



Hydrograph for Link T-P: Total Proposed

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
5.00	0.00	**0.00**	0.00	31.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00	31.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00	32.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00	32.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00	33.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00	33.50	0.00	0.00	0.00
8.00	0.16	0.00	0.16	34.00	0.00	0.00	0.00
8.50	1.03	0.00	1.03	34.50	0.00	0.00	0.00
9.00	2.47	0.00	2.47	35.00	0.00	0.00	0.00
9.50	4.28	0.00	4.28	35.50	0.00	0.00	0.00
10.00	6.38	0.00	6.38	36.00	0.00	0.00	0.00
10.50	10.17	0.00	10.17				
11.00	16.91	0.00	16.91				
11.50	31.44	0.00	31.44				
12.00	**328.23**	0.00	**328.23**				
12.50	**256.50**	0.00	**256.50**				
13.00	97.19	0.00	97.19				
13.50	56.24	0.00	56.24				
14.00	40.58	0.00	40.58				
14.50	32.58	0.00	32.58				
15.00	28.84	0.00	28.84				
15.50	25.81	0.00	25.81				
16.00	22.84	0.00	22.84				
16.50	20.44	0.00	20.44				
17.00	19.13	0.00	19.13				
17.50	18.03	0.00	18.03				
18.00	16.97	0.00	16.97				
18.50	15.90	0.00	15.90				
19.00	14.82	0.00	14.82				
19.50	13.73	0.00	13.73				
20.00	12.64	0.00	12.64				
20.50	11.81	0.00	11.81				
21.00	11.47	0.00	11.47				
21.50	11.25	0.00	11.25				
22.00	11.04	0.00	11.04				
22.50	10.83	0.00	10.83				
23.00	10.62	0.00	10.62				
23.50	10.41	0.00	10.41				
24.00	10.19	0.00	10.19				
24.50	3.18	0.00	3.18				
25.00	0.48	0.00	0.48				
25.50	0.07	0.00	0.07				
26.00	0.01	0.00	0.01				
26.50	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
27.50	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
28.50	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
29.50	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
30.50	0.00	0.00	0.00				

APPENDIX E:
SWPPP INSPECTION REPORT
(SAMPLE FORM)

LaBella
Powered by partnership.

Prepared by:
LaBella Associates
Choose an item.
Choose an item.
Choose an item.

SWPPP INSPECTION REPORT NUMBER XX
CLIENT NAME
PROJECT NAME
PROJECT ADDRESS, TOWN OF X, X COUNTY, NY
PERMIT NUMBER

Performed: 2/1/2025 @ 12:00 AM
Report Issued: 2/1/2025

Status: SATISFACTORY (All erosion control measures are installed and in working order)

Qualified Inspector (name and title)	Qualified Professional (name and title)
Date	Date
Signature	Signature

NYSDEC Documentation and SWPPP Forms

5-Acre Waiver: 5-acre waiver approved by NYSDEC and > 5 acres disturbed

303d Status: Project does not directly discharge to a 303d impaired waterbody

Number of Inspections required: 1 / week

Location of SWPPP and Site Log Book on-site:

YES	NO	N/A	CONTAINED IN SITE LOG BOOK?
☐	☐	☐	Preconstruction Assessment
☐	☐	☐	Copy of eNOI
☐	☐	☐	Letter of Authorization
☐	☐	☐	SWPPP Preparer Certification Form
☐	☐	☐	Owner/Operator Certification Form
☐	☐	☐	MS4 SWPPP Acceptance Form
☐	☐	☐	MS4 No Jurisdiction Form
☐	☐	☐	NYCDEP SWPPP Acceptance Form
☐	☐	☐	Contractor and Subcontractor Certifications
☐	☐	☐	SPDES General Permit
☐	☐	☐	5 Acre Waiver Authorization
☐	☐	☐	eNOT

Comments:

Site Conditions

Total area with active soil disturbance (not requiring either temporary or final stabilization): XX Acres
Total area with inactive soil disturbance (requiring either temporary or final stabilization): XX Acres
Total area that has achieved temporary stabilization: XX Acres
Total area that has achieved final stabilization: XX Acres

Allowable Disturbed Area Per NOI and/or 5-acre waiver: XX Acres

Current Status of Construction: Description

Weather Conditions: Conditions	**Temperature:** XX ºF	**Soil Conditions:** Choose an item.

Description of Discharge Point/Surface Waters of the State	Condition of Runoff	Sediment Discharge Noted Y / N	Corrective Action

Erosion and Sediment Control Deficiencies and Corrective Actions

SWPPP Component	Functional Y / N / NA	Deficiency (See Checklist and/or note)	Deficiency Location	Initial Date	Corrective Action	Corrected Y / N
General Site Conditions						
Silt Fence						
Stabilized Construction Access						
Compost Filter Sock						
Inlet Protection						
Soil Stockpiles						
Temporary Stabilization						
Permanent Stabilization						
Dewatering Operations						
Stone Check Dams						
Rock Outlet Protection						
Sediment Traps and Basins						
Temporary Stream Crossing						
Pavement Sweeping						
Concrete Washout						
Filter Strips						
Slope Protection Measures						
Temporary Swales and Berms						
Temporary Parking Areas						
Fiber Roll						
Permanent Turf Reinforcement						
Water Bars						
Flow Diffusers						
Other:						

SWPPP Inspection Checklist and Deficiency Numbers

1	General Site Conditions
1A	Adjoining properties are not protected from erosion and sediment deposition
1B	Downstream waterways are not protected from erosion and sediment deposition
1C	All E&SC measures have not been constructed as detailed in the SWPPP
1D	Dust is not adequately controlled
1E	Storage areas contain spills, leaks, or harmful materials
1F	Garbage and waste building materials are not being managed properly
1G	Temporary control measures that are no longer needed have not been removed
1H	Permanent SWM practices not constructed per plans

2	Silt Fence
2A	Silt fence not installed on contour
2B	Silt fence not across conveyance channels
2C	Silt fence not at least 10 feet from toe of slope
2D	Silt fence not at appropriate spacing intervals based on slope
2E	Silt fence ends are not wrapped for continuous support
2F	Silt fence fabric is loose or contains rips or frayed areas
2G	Silt fence posts are unstable
2H	Silt fence is not buried 6 inches minimum
2I	Silt fence contains bulges or material buildup

3	Stabilized Construction Access
3A	Temporary construction access not installed or not per NYS standards
3B	Other access areas have not been stabilized immediately as work takes place
3C	Sediment has tracked onto public streets and is not being cleaned daily
3D	Stone is not clean enough to effectively remove mud from vehicles
3E	Adequate drainage not provided to prevent ponding

4	Compost Filter Sock
4A	Filter sock not installed on contour
4B	Filter sock terminal ends do not extended 8' upslope at 45˚ angle
4C	Inappropriate diameter based on slope steepness and slope length
4D	Filter sock not anchored at 10' intervals
4E	More than 50% sediment has built up

5	Inlet Protection
5A	Inlet protection not installed or installation is not per SWPPP or Blue Book specifications
5B	Incorrect type(s) of inlet control installed or is inappropriate for location
5C	Drainage area for inlet protection is greater than 1 acre
5D	Sediment has not been removed when 50% of storage volume has been achieved
5E	A 2" x 4" wood frame and wood posts has not been installed
5F	Filter fabric is not buried a minimum of 1 foot below ground or secured to frame/posts
5G	Posts are unstable, fabric is loose, and contains rips or frayed areas
5H	Post spacing exceeds maximum 3' spacing

6	Soil Stockpiles
6A	No sediment controls at downhill slope

7	Temporary Stabilization
7A	Areas inactive for 14 days or more have not been stabilized (If <5 acres disturbed)
7B	Areas inactive for 7 days or more have not been stabilized (If >5 acres disturbed or 303d)
7C	Soil preparation has not been applied as specified in the SWPPP or the Blue Book
7D	Rolled EC products specified for steep slopes or channels have not been installed

8	Permanent Stabilization
8A	Lawn in disturbed areas has not been established to 80% germination
8B	Soil preparation has not been applied as specified in the SWPPP or the Blue Book
8C	Rolled EC products specified for steep slopes or channels have not been installed

9	Dewatering Operations
9A	Upstream and downstream berms are not installed or functioning poorly
9B	Clean water from upstream pool is not being pumped to the downstream pool
9C	Sediment laden water from work area is not being discharged to a silt-trapping device
9D	Groundwater from excavations managed improperly (No sumps/sediment control)

10	Stone Check Dam
10A	Not installed per standards
10B	Channel is unstable (flow is eroding soil underneath or around the structure)
10C	Check dam in poor condition (rocks not in place or lack of geotextile fabric)
10D	Sediment needs to be removed

11	Rock Outlet Protection
11A	Rock outlet protection not installed per plan or Blue Book
11B	Rock outlet protection not installed concurrently with pipe installation

12	Sediment Traps and Basins
12A	Outlet structure constructed improperly
12B	Geotextile fabric has not been placed beneath rock fill
12C	Depth of sediment in basin has exceeded allowable threshold
12D	Basin and outlet structure not constructed per the approved plan
12E	Basin side slopes are not stabilized with seed/mulch
12F	More than 50% capacity has built up

13	Temporary Stream Crossing
13A	Construction crossings at concentrated flow areas have not been culverted

14	Pavement Sweeping
14A	Pavement has not been swept daily and sediment has traveled into road

Stormwater Management Practice Deficiencies and Corrective Actions

Practice	Sign Y / N	Current Phase of Construction	Items Not in Conformance with SWPPP	Deficiency Location	Initial Date	Corrective Action	Corrected Y / N
Practice 1:							
Practice 2:							
Practice 3:							
Practice 4:							
Practice 5:							
Practice 6:							

Deficiencies and Corrective Action Photo Log

Photo 1 *Date – Deficiency in need of repair or maintenance:*	***Photo 1A*** *Date – Corrective Action:*
Photo 2 *Date – Deficiency in need of repair or maintenance:*	***Photo 2A*** *Date – Corrective Action:*
Photo 3 *Date – Deficiency in need of repair or maintenance:*	***Photo 3A*** *Date – Corrective Action:*

Deficiencies and Corrective Action Photo Log (continued)

Photo 4 *Date – Deficiency in need of repair or maintenance:*	***Photo 4A*** *Date – Corrective Action:*
Photo 5 *Date – Deficiency in need of repair or maintenance:*	***Photo 5A*** *Date – Corrective Action:*
Photo 6 *Date – Deficiency in need of repair or maintenance:*	***Photo 6A*** *Date – Corrective Action:*

Disturbance / Photo Location Map

Replace this page to include an 11x17 erosion control plan sketch to scale showing:

1. Areas with active soil disturbance activity
2. Areas that have been disturbed but are inactive at the time of the inspection
3. Areas that have been stabilized (temporary and/or final) since the last inspection
4. Limit of disturbance line per the SWPPP and the grading plan
5. Photo locations

Use Bluebeam template with standard colors to indicate limits

APPENDIX F:
POST-CONSTRUCTION INSPECTIONS AND MAINTENANCE

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Rainwater Harvesting (Rain Barrels or Cisterns)

Table 2.3.1 RWH Conveyance System and Filter	
Problem (Check if Present)	**Follow-Up Actions**
☐ Leaves, sticks, or other debris in gutters and downspouts	☐ Remove all debris by hand. ☐ Other:
☐ Leaves, sticks, or other debris in filter(s)	☐ Clean out all debris and organic matter buildup by hand or by spraying with a hose. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Filter (first-flush diverter or vortex filter outside the tank) does not seem to be operating, is completely clogged, or does not appear to be trapping any debris.
☐ Loose or disconnected junctions between gutters, pipes, or filters	☐ Secure any loose junctions or parts and make sure they are properly sealed to prevent leaks. ☐ Other:

Table 2.3.2 RWH Storage Tank	
Problem (Check if Present)	**Follow-Up Actions**
☐ Tank is above ground and not freeze proof.	**Winterize the tank by performing the following steps:** ☐ Drain down water level in the tank before winter to avoid damage from freezing temperatures. ☐ Drain water from pipes and pumps. ☐ Disconnect conveyance pipes from the tank to enable roof runoff to bypass the tank during winter.
☐ Tank is full between rain events (harvested water is not being used).	☐ Drain down any remaining water in the tank before predicted rain events.
☐ Mosquito larvae or other insects present in the water	☐ Add mosquito dunks to water. ☐ Ensure that insect screens are installed on all openings and are properly sealed (inlet and outlets). ☐ Other:
☐ Debris, algae, or organic matter accumulated in tank	☐ Remove as much as possible, by hand. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: For large tanks that cannot easily be accessed for inspection and/or cleaning, defer to Level 2 Inspection.
☐ Tank does not appear to fill fully even during large rains, or water level drops quickly after filling.	☐ Kick-Out to Level 2 Inspection: Water is bypassing the tank and/or there are leaks in the tank wall. This will likely require special expertise to diagnose and fix.
☐ Problems with pumps, filters, or other mechanical components	☐ Kick-Out to Level 2 Inspection: This will likely require special expertise to diagnose and fix.

Table 2.3.3 RWH Outlets	
Problem (Check if Present)	**Follow-Up Actions**
☐ Slow flow from outlet caused by faulty or clogged valve	☐ If clogging seems to be the problem, ream out sediment from valve if this can be done from exterior. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Valve needs to be replaced or cannot be cleaned out from outside of tank.
☐ Flow from outlet is backing up toward building foundation.	☐ Add flexible pipe to end of outlet pipe to divert flow further away and downhill from building.
☐ Erosion or drainage issues at outlet	☐ Add a gravel and/or stone pad to reduce the impact from the water flowing out of the outlet pipe during storms. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Rills have formed, erosion or drainage problems are more severe or cannot be resolved, or there is discoloration or other unusual conditions around the outlet.

Disconnection and Sheetflow (Rooftop Disconnection, Filter Strip, Riparian Buffer)

Table 2.4.1 D&S Drainage Area

Problem (Check if Present)		Follow-Up Actions
	☐ Changes in flow; more runoff; runoff bypassing the practice	☐ For rooftop areas, make sure downspouts are still disconnected and conveying water into the treatment area. ☐ Look for and remove any "dams" of sediment and grass clippings that prevent water from entering the treatment area as sheet flow. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Changes to drainage area size or amount of runoff due to construction, tillage, etc.
	☐ For parking lots in the drainage area—sediment, grass clippings, or other debris has accumulated at pavement edge.	☐ For small, isolated amounts of debris, sweep up by hand and dispose properly so that it will not be exposed to runoff. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sediment is widespread and cannot be removed by manual sweeping.
	☐ For parking lots in the drainage area—dips or damage at pavement edge caused flow to concentrate.	☐ Kick-Out to Level 2 Inspection: This will likely require special expertise to diagnose and fix pavement edge.

Table 2.4.2 D&S Level Spreader/Energy Dissipator		
Problem (Check if Present)		**Follow-Up Actions**
	☐ Debris and/or sediment accumulated behind or around the level spreader.	☐ Remove debris and sediment by hand and ensure that the area behind the level spreader is relatively flat. Too much debris and sediment can cause runoff to bypass the level spreader structure. ☐ Other:
	☐ Sinking, cracking, sloughing, or other structural problem makes the energy dissipator no longer level.	☐ For stone/gravel spreaders, add new material or rake out as needed to make it even. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Structural issues that cannot be easily fixed by hand

Table 2.4.3 D&S Treatment Area	
Problem (Check if Present)	**Follow-Up Actions**
☐ Trash and/or debris in the treatment area	☐ Collect trash/debris and dispose of properly.
 ☐ Grass filter strip has grown very tall, to the point that runoff cannot easily enter or is getting concentrated.	☐ Mow filter strip twice a year or more frequently in a residential yard.
☐ Sparse vegetation or bare spots	☐ For grassy areas, add topsoil (as needed), grass seed mulch, and water during the growing season to re-establish consistent vegetation cover. ☐ Other:
 ☐ Rills or gullies are forming in treatment area where flow has become concentrated	☐ For minor rills, fill in with soil, compact, and add seed and straw to establish vegetation. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Rills are more than 2" to 3" deep and require more than just hand raking and re-seeding.

Swales (Vegetated Swale, Wet Swale)

Table 2.5.1 SW Drainage Area

Problem (Check if Present)	Follow-Up Actions
 ☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and mulch or sod areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and add seed and straw to establish vegetation. ☐ If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Other:
☐ Open containers of oil, grease, paint, or other substances	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous.
	Kick-Out to Level 2 Inspection: Grass on edge of pavement continues to die off for unknown reasons. Swale edge may need to be replaced with other materials (e.g., stone diaphragm).
☐ Grass dying at edge of road	☐ Seed and mulch; add topsoil or compost if needed. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Grass on edge of pavement continues to die off for unknown reasons. Swale edge may need to be replaced with other materials (e.g., stone diaphragm).

Table 2.5.2 SW Inlets	
Problem (Check if Present)	**Follow-Up Actions**
☐ Inlets or the swale edge are collecting grit, grass clippings, or debris or have grass/weeds growing. Some water may not be getting into the swale. The objective is to have a clear pathway for water to flow into the swale.	☐ Use a flat shovel to remove grit and debris (especially at curb inlets or opening). Parking lots will generate fine grit that will accumulate at these spots. ☐ Pull out clumps of growing grass or weeds, and scoop out the soil or grit that the plants are growing in. ☐ Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets or along the edge of the swale where water is supposed to enter. ☐ For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the swale. ☐ Dispose of all material properly in an area where it will not re-enter the swale. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the swale.
 ☐ Some or all of the inlets are eroding so that rills, gullies, and other erosion are present, or there is bare dirt that is washing into the swale.	☐ For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone. ☐ In some cases, reseeding and applying an erosion control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor. ☐ Other: ☐ Level 2 Inspection: Erosion is occurring at most of the inlets or along much of the swale edge. The inlet design may have to be modified.

Table 2.5.3 SW Surface Area	
Problem (Check if Present)	**Follow-Up Actions**
☐ Minor areas of sediment, grit, trash, or other debris are accumulating in the swale.	☐ Use a shovel to scoop out minor areas of sediment or grit, especially in the spring after winter sanding materials may wash in and accumulate. Dispose of the material where it cannot re-enter the swale. ☐ If removing the material creates a hole or low area, fill with good topsoil and add seed and straw to re-vegetate. ☐ Remove trash, vegetative debris, and other undesirable materials. ☐ If the swale is densely vegetated, it may be difficult to do the maintenance; check for excessive ponding or other issues described in this section to see if the accumulated material is causing a problem. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sediment has accumulated more than 3 inches deep and covers 25% or more of the swale surface. ☐ The source of sediment is unknown or cannot be controlled with simple measures.
 ☐ There is erosion in the bottom or on the side slopes. Water seems to be carving out rills as it flows through the swale or on the slopes.	☐ Try filling the eroded areas with clean topsoil, and then seed and mulch to establish vegetation. ☐ If the problem recurs, you may have to use some type of matting, stone (e.g., river cobble), or other material to fill in eroded areas. ☐ If the erosion is on a side slope, fill with soil and cover with erosion-control matting or at least straw mulch after re-seeding. ☐ Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3 inches deep and seems to be an issue with how water enters and moves through the swale. ☐ Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water, but a collapse or sinking of the surface (e.g., "sinkhole") due to some underground problem.
☐ Water does not flow evenly down the length of the swale, but ponds in certain areas for long periods of time (e.g., 72 hours after a storm). The swale does not seem to have "positive drainage." Check during or immediately after a rain storm.	☐ If the problem is minor (just small, isolated areas), try using a metal rake or other tools to create a more even flow path; remove excessive vegetative growth, sediment, or other debris that may be blocking the flow. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Water ponds in more than 25% of the swale for three days or more after a storm. The issue may be with the underlying soil or the grade of the swale. ☐ Water ponds behind check dams for three days or more after a storm. Check dams may be clogged or not functioning properly.

☐ Check dams (if present): water is flowing around the edges of check dams, creating erosion or sinkholes on the uphill or downhill side, or the check dams are breaking apart or breaching.

☐ If the problem is isolated to just a few check dams, try simple repairs.

☐ It is very important for the center of each check dam (where most of the water flows) to be lower (by at least several inches) than the edges of the check dams where they meet the side slopes. Also, the check dams should be keyed into side slopes so water does not flow between the check dam and side slope.

☐ Use a level to check the right check-dam configuration, as noted above. Repair by moving around stone, filling and compacting soil, or adding new material so that water will be directed to the center of the check dam instead of the edges.

☐ Other:

☐ Kick-Out to Level 2 Inspection: Many check dams are impacted and/or the problem seems to be a design issue with height, spacing, shape, or materials used to construct them.

Table 2.5.4 SW Vegetation	
Problem (Check if Present)	**Follow-Up Actions**
 ☐ Vegetation is too overgrown to access swale for maintenance activities	☐ Mow or bush-hog the path. ☐ Other:
 ☐ Vegetation requires regular maintenance: pulling weeds, removing dead and diseased plants, adding plants to fill in areas that are not well vegetated, etc.	☐ If you can identify which plants are weeds or not intended to be part of the planting plan, eliminate these, preferably by hand pulling. ☐ If weeds are widespread, check with the local stormwater authority and/or Extension Office about proper use of herbicides for areas connected with the flow of water. ☐ Even vegetation that is intended to be present can become large, overgrown, block flow, and/or crowd out surrounding plants. Prune and thin accordingly. ☐ If weeds or invasive plants have overtaken the whole swale, bush-hog the entire area before seed heads form in the spring. It will be necessary to remove the root mat manually or with appropriate herbicides, as noted above. ☐ Replant with species that are aesthetically pleasing and seem to be doing well in the swale. ☐ Other: ☐ Kick-Out to Level 2 Inspection: You are unsure of the original planting design or the vegetation maintenance task is beyond your capabilities of time, expertise, or resources. If you are unsure of the health of the vegetation (e.g. salt damage, invasives, which plants are undesirable) or the appropriate season to conduct vegetation management, consult a landscape professional before undertaking any cutting, pruning, mowing, or brush hogging.
☐ Vegetation is too thin, is not healthy, and there are many spots that are not well vegetated.	☐ The original plants are likely not suited for the actual conditions within the swale. If you are knowledgeable about plants, select and plant more appropriate vegetation (preferably native plants) so that almost the entire surface area will be covered by the end of the second growing season. ☐ Other: ☐ Kick-Out to Level 2 Inspection: For all but small practices (e.g., in residential yards), this task will likely require a landscape design professional or horticulturalist.

Table 2.5.5 SW Outlets	
Problem (Check if Present)	**Follow-Up Actions**
☐ Outlet is obstructed with mulch, sediment, debris, trash, etc.	☐ Remove the debris and dispose of it where it cannot re-enter the swale. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Outlet is completely clogged or obstructed; there is too much material to remove by hand or with simple hand tools.

Tree Planting

Table 2.6.1 TP Watering

Problem (Check if Present)	Follow-Up Actions
☐ Soil is not moist to the touch and/or it has not rained in a week, and leaves/needles are starting to appear wilted/dry.	☐ Water trees deeply and slowly near the base. Soaker hoses and drip irrigation work best for deep watering of trees and shrubs. ☐ Other:

Table 2.6.2 TP Mulch

Problem (Check if Present)	Follow-Up Actions
☐ Mulch is too thin or thick (should be approximately 3" deep) or does not extend to tree canopy (or 5' radius if tree has a larger than 10' canopy reach).	☐ Add or remove mulch around tree canopy to maximum 5' radius but not within 3" of the bark. ☐ If mulch is against the stems or tree trunks, pull it back several inches to expose the base of the trunk and root crown. ☐ Other:

Table 2.6.3 TP Pruning

Problem (Check if Present)	Follow-Up Actions
☐ Presence of suckers, dead or diseased branches, branches that interfere with pedestrian traffic	☐ Selective cutting ☐ Prune to make the tree more aesthetically pleasing and remove disease. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Use an arborist or landscaper for more extensive pruning jobs.

Bioretention (Bioretention Cell, Dry Swale, Rain Garden, Stormwater Planters, Tree Pits)

Table 2.7.1 BR Drainage Area

Problem (Check if Present)	Follow-Up Actions
 ☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and mulch areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and seed and straw to establish vegetation. ☐ If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths.
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. ☐ Other:

Table 2.7.2 BR Inlets	
Problem (Check if Present)	**Follow-Up Actions**
 ☐ Inlets collect grit and debris or grass/weeds. Some water may not be getting into the Bioretention cell. The objective is to have a clear pathway for water to flow into the cell.	☐ Use a flat shovel to remove grit and debris (especially at curb inlets or openings). Parking lots generate fine grit that will accumulate at these spots. ☐ Pull out clumps of growing grass or weeds and scoop out the soil or grit that the plants are growing in. ☐ Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets. ☐ For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the Bioretention cell. ☐ Dispose of all material properly where it will not re-enter the Bioretention cell. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the Bioretention cell.
 ☐ Some or all of the inlets are eroding so that rills, gullies, and other erosion is present, or there is bare dirt that is washing into the Bioretention cell.	☐ For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone. ☐ In some cases, reseeding and applying erosion-control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Erosion is occurring at most of the inlets, and it looks like there is too much water that is concentrating at these points. The inlet design may have to be modified.

Table 2.7.3 BR Ponding Area	
Problem (Check if Present)	**Follow-Up Actions**
 ☐ Mulch (if used) needs to be replaced or replenished. The mulch layer had decomposed or is less than 1-inch thick.	☐ Add new mulch to a total depth (including any existing mulch that is left) of 2 to 3 inches. The mulch should be shredded hardwood mulch that is less likely to float away during rainstorms. ☐ Avoid adding too much mulch so that inlets are obstructed or certain areas become higher than the rest of the Bioretention surface. ☐ Other:
 ☐ Minor areas of sediment, grit, trash, or other debris are accumulating on the bottom.	☐ Use a shovel to scoop out minor areas of sediment or grit, especially in the spring after winter sanding materials may wash in and accumulate. Dispose of the material where it cannot re-enter the Bioretention cell. ☐ If removing the material creates a hole or low area, fill with soil mix that matches original mix and cover with mulch so that the Bioretention surface area is as flat as possible. ☐ Remove trash, vegetative debris, and other undesirable materials. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sediment has accumulated more than 2-inches deep and covers 25% or more of the Bioretention surface. ☐ Kick-Out to Level 2 Inspection: The Bioretention cell is too densely vegetated to assess sediment accumulation or ponding; see BR-4, Vegetation.
 ☐ There is erosion in the bottom or on the side slopes. Water seems to be carving out rills as it flows across the Bioretention surface or on the slopes, or sinkholes are forming in certain areas. ☐ Source: Stormwater Maintenance, LLC.	☐ Try filling the eroded areas with clean topsoil or sand, and cover with mulch. ☐ If the problem recurs, you may have to use stone (e.g., river cobble) to fill in problem areas. ☐ If the erosion is on a side slope, fill with clay that can be compacted and seed and mulch the area. ☐ Other: ☐ Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3-inches deep and seems to be an issue with how water enters and moves through the Bioretention cell. ☐ Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water, but a collapse or sinking of the surface (e.g., "sinkhole") due to some underground problem.

 ☐ The bottom of the Bioretention cell is not flat, and the water pools at one end, along an edge, or in certain pockets. The whole bottom is not uniformly covered with water. See design plan to verify that Bioretention surface is intended to be flat. Check during or immediately after a rainstorm.	☐ If the problem is minor (just small, isolated areas are not covered with water), try raking the surface OR adding mulch to low spots to create a more level surface. You may need to remove and replace plantings in order to properly even off the surface. ☐ Check the surface with a string and bubble level to get the surface as flat as possible. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Ponding water is isolated to less than half of the Bioretention surface area, and there seem to be elevation differences of more than a couple of inches across the surface.
 ☐ Water stands on the surface more than 72 hours after a rainstorm and /or wetland-type vegetation is present. The Bioretention cell does not appear to be draining properly.	☐ Kick-Out to Level 2 Inspection: This is generally a serious problem, and it will be necessary to activate a Level 2 Inspection.

Table 2.7.4 BR Vegetation	
Problem (Check if Present)	**Follow-Up Actions**
 ☐ Vegetation requires regular maintenance—pulling weeds, removing dead and diseased plants, replacing mulch around plants, adding plants to fill in areas that are not well vegetated, etc.	☐ If you can identify which plants are weeds or not intended to be part of the planting plan, eliminate these, preferably by hand pulling. ☐ If weeds are widespread, check with the local stormwater authority and/or Extension Office about proper use of herbicides for areas connected with the flow of water. ☐ Even vegetation that is intended to be present can become large, overgrown, and/or crowd out surrounding plants. Prune and thin accordingly. ☐ If weeds or invasive plants have overtaken the whole Bioretention cell, bush-hog the entire area before seedheads form in the spring. It will be necessary to remove the root mat manually or with appropriate herbicides, as noted above. ☐ Re-plant with species that are aesthetically pleasing and seem to be doing well in the Bioretention cell. ☐ Other: ☐ Kick-Out to Level 2 Inspection: You are unsure of the original planting design, or the vegetation maintenance task is beyond your capabilities of time, expertise, or resources. If you are unsure of the health of the vegetation (e.g. salt damage, invasives, which plants are undesirable) or the appropriate season to conduct vegetation management, consult a landscape professional before undertaking any cutting, pruning, mowing, or brush hogging.
 ☐ Vegetation is too thin, is not healthy, and there are many spots that are not well vegetated.	☐ The original plants are likely not suited for the actual conditions within the Bioretention cell. If you are knowledgeable about plants, select and plant more appropriate vegetation (preferably native plants) so that almost the entire surface area will be covered by the end of the second growing season. ☐ Other: ☐ Kick-Out to Level 2 Inspection: For all but small practices (e.g., rain gardens), this task will likely require a landscape design professional or horticulturalist.

Table 2.7.5 BR Outlets	
Problem (Check if Present)	**Follow-Up Actions**
☐ Erosion at outlet	☐ Add stone to reduce the impact from the water flowing out of the outlet pipe or weir during storms. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Rills have formed and erosion problem becomes more severe.
 ☐ Outlet obstructed with mulch, sediment, debris, trash, etc.	☐ Remove the debris and dispose of it where it cannot re-enter the Bioretention cell. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Outlet is completely clogged or obstructed; there is too much material to remove by hand or with simple hand tools.

Green Roofs

Table 2.8.1 GR Vegetation and Surface	
Problem (Check if Present)	**Follow-Up Actions**
	☐ Water or irrigate. ☐ Prune or remove dead or dying vegetation. ☐ Other:
☐ Wilting or nutrient-deprived vegetation; bare areas developing on the roof	☐ Kick-Out to Level 2 Inspection: Greater than 20% plant dieoff or wilting, even after rainy periods. May require new vegetation or indicate a problem with the soil medium. ☐ Kick-Out to Level 2 Inspection: Yellowing vegetation may indicate a need for fertilizer, but do not fertilize unless explicitly included in the management plan or with a Level 2 Inspection. ☐ Kick-Out to Level 2 Inspection: Bare areas with no vegetation growing. These may become weed problems in the future.
 ☐ Weeds or moss	☐ Remove weeds by hand. ☐ Apply lime to kill moss. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Weeds cover more than 25% of the surface, or the original planting plan has been compromised.
☐ Ponding between storm events	☐ Kick-Out to Level 2 Inspection: Surface ponding more than 24 hours after a storm event presents a hazard and needs to be addressed immediately.

Table 2.8.2 GR Overflows and Drains	
Problem (Check if Present)	**Follow-Up Actions**
☐ Inspection port for roof drainage (can be clogged with debris)	☐ Remove debris by hand or flush through with a hose. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Debris cannot be removed, or it appears that debris has accumulated in the underdrains.
☐ Damage to other roof drainage structures (e.g., roof scuppers)	☐ Call contractor or individual in charge of regular building maintenance. This is a building maintenance issue. ☐ Other:

Permeable Pavement (Permeable Pavers, Porous Asphalt/Concrete)

Table 2.9.1 PP Drainage Area

Problem (Check if Present)		Follow-Up Actions
	☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and straw areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and seed and straw to establish vegetation. ☐ If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths.
	☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Other:
	☐ Open containers of oil, grease, paint, or other substances	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. ☐ Other:

Table 2.9.2 PP Surface	
Problem (Check if Present)	**Follow-Up Actions**
 ☐ Dirt and grit accumulating on pavement surface	☐ For small areas (e.g., driveways, patios), try a leaf blower or sweep the area to remove the dirt/grit from the Permeable pavement and properly dispose of the material. ☐ If dirt/grit remain in the joint areas between paver blocks, agitate with a rough brush and vacuum the surface with a wet/dry vac. ☐ Remove and replace clogged blocks in segmented pavers. ☐ For larger areas (e.g., parking lots, courtyards), hire a vacuum sweeper to restore the surface to a cleaner condition. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Grit is widespread and cannot be removed by manual sweeping.
 ☐ Grass and weeds are growing on the permeable pavement surface (applies only to pavement types that are not intended to be covered in vegetation).	☐ If paver type is not intended to be covered in vegetation, remove the grass/weeds either mechanically (pulling, by hand or with a flame weeder) or with a herbicide approved for use in or near water (consult your local Extension Office for suggestions). ☐ Follow the actions listed above for removing dirt/grit from the pavement surface. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Grass/weeds cover more than 25% of surface area.
 ☐ Slumping, sinking, cracking, or breaking of the pavement surface *(Source: CSN, 2013)*	☐ For small areas (e.g., patios, small driveway), it may be possible to remove the damaged pavers, check and fill in the underlying gravel, and replace with new materials. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Problem affects more than a small, isolated area. Will typically require a qualified contractor to fix it. ☐ Problem recurs or occurs in multiple small locations.
 ☐ Water stands on Permeable pavement for days after a rainstorm; the Permeable pavement is clogged and doesn't let water through. *(Source: CSN, 2013)*	☐ Kick-Out to Level 2 Inspection: This is generally a serious problem, and it will be necessary to activate a Level 2 Inspection.

Ponds and Wetlands (Wet Ponds, Stormwater Wetlands)

Table 2.10.1 PW Drainage Area	
Problem (Check if Present)	**Follow-Up Actions**
	☐ Seed and straw areas of bare soil to establish vegetation. ☐ Fill in eroded areas with soil, compact, seed and mulch with straw to establish vegetation. ☐ Other:
☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Kick-Out to Level 2 Inspection: If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ If large areas of soil have been eroded or larger channels are forming, this may require rerouting of flow paths or use of an erosion-control seed mat or blanket to reestablish acceptable ground cover or anchor sod where it is practical.
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Remove excessive vegetation or woody debris that can block drainage systems. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances exposed to rain in the drainage area	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. ☐ Other:

Table 2.10.2 Pond Inlets

Problem (Check if Present)		Follow-Up Actions
 	☐ Inlets are buried, covered or filled with silt, debris, or trash, or blocked by excessive vegetation.	☐ If the problem can be remedied with hand tools and done in a safe manner, remove vegetation, trash, woody debris, etc. from blocking inlet structures. ☐ Other: ☐ Kick-Out to Level 2 or 3 Inspection: If the amount of material is too large to handle OR there are ANY safety concerns about working in standing water, soft sediment, etc., the work will likely have to be performed by a qualified contractor.
	☐ Inlets are broken, and, with pieces of pipe or concrete falling into the pond, there is erosion around the inlet, there is open space under the pipe, or there is erosion where the inlet meets the pond	☐ Kick-Out to Level 2 Inspection: These types of structural or erosion problems are more serious and will require a qualified contractor to repair.

Table 2.10.3 PW Pond Area and Embankments

Problem (Check if Present)		Follow-Up Actions
	☐ The pretreatment area(s) or forebay(s) are filled with sediment, trash, vegetation, or other debris.	☐ If the problem can be remedied with hand tools and done in a safe manner, use a flat shovel or other equipment to remove small amounts of sediment. ☐ Remove trash and excessive vegetation from forebays if this can be done in a safe manner. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Large amounts of sediment or debris will have to be removed by a qualified contractor. ANY condition that poses a safety concern for working in standing water or soft sediments should be referred to a Level 2 Inspection or qualified contractor.

Table 2.10.3 PW Pond Area and Embankments		
Problem (Check if Present)		**Follow-Up Actions**
	☐ The pond area itself has accumulated sediment, trash, debris, or excessive vegetation that is choking the flow of the water, OR the pond area is covered with algae or aquatic plants.	☐ Level 1 includes handling only small amounts of material that can be removed by hand, or with rakes or other hand tools. Do not attempt any repair that poses a safety issue. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Most cases will call for a Level 2 Inspection and/or a qualified contractor. ☐ You are not sure what type and amount of vegetation is supposed to be in the pond. ☐ The algae or aquatic plants should be identified so that proper control techniques can be applied.
	☐ The side slopes of the pond are unstable, eroding, and have areas of bare dirt.	☐ If there are only minor areas, try filling in small rills or gullies with topsoil, compacting, and seeding and mulching all bare dirt areas with an appropriate seed. Alternatively, try using herbaceous plugs to get vegetation established in tricky areas, such as steep slopes. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Erosion and many bare dirt areas on steep side slopes will require a Level 2 Inspection and repair by a qualified contractor.
 	☐ The riser structure is clogged with trash, debris, sediment, vegetation, etc., OR is open, unlocked, or has a steep drop and poses a safety concern. The pond level may have dropped below its "normal" level.	☐ If you can safely access the riser on foot or with a small boat, clear minor amounts of debris and remove it from the pond area for safe disposal. ☐ Other: ☐ Kick-Out to Level 2 Inspection: The riser cannot be accessed safely, the amount of debris is substantial, or the riser seems to be completely clogged and the water level has risen too high. ☐ There are safety issues with the riser and concern about access to pipes, drops, or any other life safety concern. ☐ The riser is leaning, broken, settling or slumping, corroded, eroded or any other structural problem.

Table 2.10.3 PW Pond Area and Embankments

Problem (Check if Present)		Follow-Up Actions
	☐ The dam/embankment is slumping, sinking, settling, eroding, or has medium or large trees growing on it.	☐ If there are small isolated areas, try to fix them by adding clean material (clay and topsoil) and seeding and mulching. ☐ Periodically mow embankments to enable inspection of the banks and to minimize establishment of woody vegetation. ☐ Remove any woody vegetation that has already established on embankments. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Most of these situations will require a Level 2 Inspection or evaluation and repair by a qualified contractor. Seepage through the dam or problems with the pipe through the dam can be a serious issue that should be addressed to avoid possible dam failure.
	☐ The emergency spillway or outfall (if it exists) has ☐ erosion, settlement, or loss of material. Rock-lined spillways have excessive debris or vegetation.	☐ Clear light debris and vegetation. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Displacement of rock lining, excessive vegetation and erosion/settlement may warrant review and decision by Level 2 Inspector to check against original plan. ☐ Any uncertainty about the integrity of the emergency spillway should be referred to a Level 2 Inspector. ☐ Erosion or settlement such that design has been compromised should be reviewed by an engineer.

Table 2.10.4 PW Pond Outlet

Problem (Check if Present)	Follow-Up Actions
 ☐ The pond outlet is clogged with sediment, trash, debris, vegetation, or is eroding, caving in, slumping, or falling apart.	☐ If there is a minor blockage, remove the debris or vegetation to allow free flow of water. ☐ Remove any accumulated trash at the outlet. ☐ Outlet: ☐ Kick-Out to Level 2 Inspection: ☐ If the area at the outlet cannot be easily accessed or if the blockage is substantial, a Level 2 Inspection is warranted. ☐ Erosion at and downstream of the outfall should be evaluated by a qualified professional. ☐ Any structural problems, such as broken pipes, structures falling into the stream, or holes or tunnels around the outfall pipe, should be evaluated by a Level 2 Inspector and will require repair by a qualified contractor. ☐ The pool of water at the outlet pipe is discolored, has an odor, or has excessive algae or vegetative growth.

Infiltration (Infiltration Trench, Infiltration Basin, Dry Well)

Table 11.1.1 IN Drainage Area

Problem (Check if Present)		Follow-Up Actions
	☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and straw areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and seed and straw to get vegetation established. ☐ If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths.
☐ For Dry Wells: Leaves, sticks, or other debris in gutters and downspouts		☐ Remove all debris by hand. ☐ Other:
	☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Other:
	☐ Open containers of oil, grease, paint, or other substances	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. ☐ Other:

Table 11.1.2 IN Inlets	
Problem (Check if Present)	**Follow-Up Actions**
 ☐ Inlets are collecting grit and debris or grass/weeds are growing. Some water may not be getting into the Infiltration practice.	☐ Use a flat shovel to remove grit and debris (especially at curb inlets or openings). Parking lots generate fine grit that will accumulate at these spots. ☐ Pull out clumps of growing grass or weeds and scoop out the soil or grit that the plants are growing in. ☐ Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets. ☐ For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the Infiltration practice. ☐ Dispose of all material properly in an area where it will not re-enter the practice. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the Infiltration practice.
☐ Some or all of the inlets are eroding so that rills, gullies, and other erosion is present, or there is bare dirt that is washing into the Infiltration practice.	☐ For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone. ☐ In some cases, reseeding and applying erosion-control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Erosion is occurring at most of the inlets and it looks like there is too much water that is concentrating at these points. The inlet design may have to be modified.

Table 11.1.3 IN Infiltration Area	
Problem (Check if Present)	**Follow-Up Actions**
 ☐ For grass-covered Infiltration practices: grass has grown very tall, *(Photo credit: Stormwater Maintenance, LLC)*	☐ Mow infiltration area at least twice per year. ☐ Other:
 ☐ For grass-covered Infiltration practices: sparse vegetation cover or bare spots	☐ Add topsoil (as needed), grass seed, straw, and water during the growing season to re-establish consistent grass coverage. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sparse vegetation cover can be a sign that the infiltration area is not infiltrating at the proper rate and water is standing too long after a storm. The surface may be saturated or squishy, and the conditions do not enable grass to grow. This situation should be evaluated by a Level 2 Inspection and likely corrected by a qualified contractor.
☐ Minor areas of sediment, grit, trash, or other debris are accumulating on the surface.	☐ Use a shovel to scoop out minor areas of sediment or grit, especially in the spring after winter sanding materials may wash in and accumulate. Dispose of the material where it cannot re-enter the Infiltration practice. ☐ If removing the material creates a hole or low area, rake the surface smooth and level. ☐ Remove trash, debris, and other undesirable materials. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sediment has accumulated more than 2-inches deep and covers 25% or more of the surface of the Infiltration area.

Table 11.1.3 IN Infiltration Area	
Problem (Check if Present)	**Follow-Up Actions**
 ☐ There is erosion on the surface; water seems to be carving out rills as it flows across the surface of the Infiltration area or sinkholes are forming in certain areas.	☐ For minor areas of erosion, try filling the eroded areas with clean topsoil, sand, or stone (whatever the existing cover is). ☐ If the problem recurs, you may have to use larger stone (e.g., river cobble) to fill in problem areas. ☐ Other: ☐ Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3-inches deep and seems to be an issue with how water enters and moves through the infiltration area. ☐ Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water but a collapse or sinking of the surface (e.g., "sinkhole") due to some underground problem.
 ☐ Observation well is damaged or cap is missing	☐ Kick-Out to Level 2 Inspection: Requires replacing pipes or caps.
 ☐ Water still visible in the observation well more than 72 hours after a rain storm. The Infiltration practice does not appear to be draining properly.	☐ Kick-Out to Level 2 Inspection: This is generally a serious problem, and it will be necessary to activate a Level 2 Inspection.

Table 2.11.4 IN Outlets	
Problem (Check if Present)	**Follow-Up Actions**
 ☐ Outlet obstructed with sediment, debris, trash, etc.	☐ Remove the debris and dispose of it where it cannot re-enter the infiltration area. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Outlet is completely obstructed; there is too much material to remove by hand or with simple hand tools.
☐ Rills or gullies are forming at outlet.	☐ For minor rills, fill in with soil, compact, and seed and straw to establish vegetation. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Rills are more than 2" to 3" deep and require more than just hand raking and re-seeding.

Sand and Organic Filters (Surface Sand Filters, Underground Sand Filters, Underground Organic Filters)

Table 2.12.1 SF Drainage Area

Problem (Check if Present)	Follow-Up Actions
 ☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and straw areas of bare soil to get vegetation established. ☐ Fill in erosion areas with soil, compact, and seed and straw to establish vegetation. ☐ If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths.
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. ☐ Other:

Table 2.12.2 SF Inlets		
Problem (Check if Present)		**Follow-Up Actions**
	☐ Inlets are collecting grit and debris or grass/weeds growing. Some water may not be getting into the filter practice.	☐ Use a flat shovel to remove grit and debris (especially at curb inlets or openings). Parking lots generate fine grit that accumulates at these spots. ☐ Pull out clumps of growing grass or weeds and scoop out the soil or grit that the plants are growing in. ☐ Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets. ☐ For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the Filter practice. ☐ Dispose of all material properly in an area where it will not re-enter the practice. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the filter practice.
	☐ Some or all of the inlets are eroding so that rills, gullies, and other erosion are present, or there is dirt washing into the filter practice.	☐ For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone. ☐ In some cases, reseeding and applying erosion-control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Erosion is occurring at most of the inlets and it looks like there is too much water concentrating at these points. The inlet design may have to be modified.

Table 2.12.2 SF Inlets		
Problem (Check if Present)		**Follow-Up Actions**
	☐ For an underground filter, water is ponding and doesn't seem to be getting through the filter.	☐ Kick-Out to Level 2 Inspection: This is generally a more serious problem and should be referred for a Level 2 Inspection because it will require opening up the filter vault to check for clogging.

Table 2.12.3 SF Filter Area (for Surface Sand Filters)	
Problem (Check if Present)	**Follow-Up Actions**
 ☐ Filter has grass and vegetation growing on more than 25% of the filter bed, threatening to clog the filter.	☐ Vegetation growing in the filter bed should be removed either manually or with a water-safe herbicide (e.g., glysophate without surfactants). ☐ Other: ☐ Kick-Out to Level 2 Inspection: The filter seems clogged, or vegetation and weeds have proliferated past the point where the Level 1 person can manage it.
☐ Minor amounts of sediment, grit, trash, or other debris are accumulating on the surface.	☐ Use a shovel to scoop out minor amounts of sediment or grit, especially in the spring after winter sanding materials wash in and accumulate. Dispose of the material where it cannot re-enter the filter. ☐ If removing the material creates a hole or low area, rake the surface smooth and level. ☐ Remove trash, debris, and other undesirable materials. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sediment (other than sand) has accumulated more than 2-inches deep and covers 25% or more of the surface of the filter area.

Table 2.12.3 SF Filter Area (for Surface Sand Filters)	
Problem (Check if Present)	**Follow-Up Actions**
 ☐ There is erosion on the surface; water seems to be carving out rills as it flows across the filter surface, or sinkholes are forming in certain areas.	☐ For minor areas of erosion, try filling the eroded areas with clean, coarse construction sand. ☐ Other: ☐ Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3-inches deep and seems to be an issue with how water enters and moves through the filter area. ☐ Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water but by a collapse or sinking of the surface (e.g., "sinkhole") due to some underground problem.
 ☐ Water is still visible on the surface and/or the standpipe (if present) more than 72 hours after a rainstorm. The filter practice drains very slowly or is completely clogged.	☐ Kick-Out to Level 2 Inspection: This is generally a serious problem, and it will be necessary to activate a Level 2 Inspection.

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Tree Planting Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

TP Watering

Inspect the trees to determine whether they need watering.

Problem (Check if Present)	**Follow-Up Actions**
☐ Soil is not moist to the touch and/or it has not rained in a week, and leaves/needles are starting to appear wilted/dry.	☐ Water trees deeply and slowly near the base. Soaker hoses and drip irrigation work best for deep watering of trees and shrubs. ☐ Other:

TP Mulch

Mulch should be applied in the late spring and during leaf fall. Check the depth of mulch regularly. Rake the old mulch to break up any matted layers and to refresh the appearance.

Problem (Check if Present)	Follow-Up Actions
☐ Mulch is too thin or thick (should be approximately 3" deep) or does not extend to tree canopy (or 5' radius if tree has a larger than 10' canopy reach).	☐ Add or remove mulch around tree canopy to maximum 5' radius but not within 3" of the bark. ☐ If mulch is against the stems or tree trunks, pull it back several inches to expose the base of the trunk and root crown. ☐ Other:

TP Pruning

Examine the branches and tree shape.

Problem (Check if Present)	Follow-Up Actions
☐ Presence of suckers, dead or diseased branches, branches that interfere with pedestrian traffic	☐ Selective cutting ☐ Prune to make the tree more aesthetically pleasing and remove disease. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Use an arborist or landscaper for more extensive pruning jobs.

Additional Notes:

Inspector:_____ Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

> "I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____ Date: _____

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Tree Planting Stormwater Management Practices
Level 2 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

Level 2 Inspection: TREE PLANTING	
Recommended Repairs	**Triggers for Level 3 Inspection**
Observed Condition: Appearance of fungus or pest damage	
☐ Condition 1: Fungus, discoloration, browning leaves or holes in leaves Check with arborist or other tree professional about the best way to proceed. This requires a Level 3 inspection. ☐ Condition 2: Burrowing insects, holes Check with arborist or other tree professional about the best way to proceed. This requires a Level 3 inspection.	• Any concerns about how to address infestation or disease ☐ Level 3 inspection necessary

Notes:

Inspector:_____ Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____ Date: _____

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Bioretention Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

BR Drainage Area

Look for areas that are uphill from the Bioretention cell.

Problem (Check if Present)	**Follow-Up Actions**
 ☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and mulch areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and seed and straw to establish vegetation. ☐ If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ Other:

BR Drainage Area

Look for areas that are uphill from the Bioretention cell.

Problem (Check if Present)	Follow-Up Actions
	☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths.
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. ☐ Other:

BR Inlets

Stand in the Bioretention cell itself and look for all the places where water flows in. Often there will be multiple points of inflow to the practice.

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets collect grit and debris or grass/weeds. Some water may not be getting into the Bioretention cell. The objective is to have a clear pathway for water to flow into the cell.	☐ Use a flat shovel to remove grit and debris (especially at curb inlets or openings). Parking lots generate fine grit that will accumulate at these spots. ☐ Pull out clumps of growing grass or weeds and scoop out the soil or grit that the plants are growing in. ☐ Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets. ☐ For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the Bioretention cell. ☐ Dispose of all material properly where it will not re-enter the Bioretention cell. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the Bioretention cell.
 ☐ Some or all of the inlets are eroding so that rills, gullies, and other erosion is present, or there is bare dirt that is washing into the Bioretention cell.	☐ For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone. ☐ In some cases, reseeding and applying erosion-control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Erosion is occurring at most of the inlets, and it looks like there is too much water that is concentrating at these points. The inlet design may have to be modified.

BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)	Follow-Up Actions
 ☐ Mulch (if used) needs to be replaced or replenished. The mulch layer had decomposed or is less than 1-inch thick.	☐ Add new mulch to a total depth (including any existing mulch that is left) of 2 to 3 inches. The mulch should be shredded hardwood mulch that is less likely to float away during rainstorms. ☐ Avoid adding too much mulch so that inlets are obstructed or certain areas become higher than the rest of the Bioretention surface. ☐ Other:
 ☐ Minor areas of sediment, grit, trash, or other debris are accumulating on the bottom.	☐ Use a shovel to scoop out minor areas of sediment or grit, especially in the spring after winter sanding materials may wash in and accumulate. Dispose of the material where it cannot re-enter the Bioretention cell . ☐ If removing the material creates a hole or low area, fill with soil mix that matches original mix and cover with mulch so that the Bioretention surface area is as flat as possible. ☐ Remove trash, vegetative debris, and other undesirable materials. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Sediment has accumulated more than 2-inches deep and covers 25% or more of the Bioretention surface. ☐ Kick-Out to Level 2 Inspection: The Bioretention cell is too densely vegetated to assess sediment accumulation or ponding; see BR-4, Vegetation.

BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)	Follow-Up Actions
 ☐ There is erosion in the bottom or on the side slopes. Water seems to be carving out rills as it flows across the Bioretention surface or on the slopes, or sinkholes are forming in certain areas. ☐ Source: Stormwater Maintenance, LLC.	☐ Try filling the eroded areas with clean topsoil or sand, and cover with mulch. ☐ If the problem recurs, you may have to use stone (e.g., river cobble) to fill in problem areas. ☐ If the erosion is on a side slope, fill with clay that can be compacted and seed and mulch the area. ☐ Other: ☐ Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3-inches deep and seems to be an issue with how water enters and moves through the Bioretention cell. ☐ Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water, but a collapse or sinking of the surface (e.g., “sinkhole”) due to some underground problem.
 ☐ The bottom of the Bioretention cell is not flat, and the water pools at one end, along an edge, or in certain pockets. The whole bottom is not uniformly covered with water. See design plan to verify that bioretention surface is intended to be flat. Check during or immediately after a rainstorm.	☐ If the problem is minor (just small, isolated areas are not covered with water), try raking the surface OR adding mulch to low spots to create a more level surface. You may need to remove and replace plantings in order to properly even off the surface. ☐ Check the surface with a string and bubble level to get the surface as flat as possible. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Ponding water is isolated to less than half of the Bioretention surface area, and there seem to be elevation differences of more than a couple of inches across the surface.

BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)	Follow-Up Actions
 ☐ Water stands on the surface more than 72 hours after a rainstorm and /or wetland-type vegetation is present. The Bioretention cell does not appear to be draining properly.	☐ Kick-Out to Level 2 Inspection: This is generally a serious problem, and it will be necessary to activate a Level 2 Inspection.

BR Vegetation

Examine all Bioretention cell vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation requires regular maintenance—pulling weeds, removing dead and diseased plants, replacing mulch around plants, adding plants to fill in areas that are not well vegetated, etc.	☐ If you can identify which plants are weeds or not intended to be part of the planting plan, eliminate these, preferably by hand pulling. ☐ If weeds are widespread, check with the local stormwater authority and/or Extension Office about proper use of herbicides for areas connected with the flow of water. ☐ Even vegetation that is intended to be present can become large, overgrown, and/or crowd out surrounding plants. Prune and thin accordingly. ☐ If weeds or invasive plants have overtaken the whole Bioretention cell , bush-hog the entire area before seedheads form in the spring. It will be necessary to remove the root mat manually or with appropriate herbicides, as noted above. ☐ Re-plant with species that are aesthetically pleasing and seem to be doing well in the Bioretention cell. ☐ Other: ☐ Kick-Out to Level 2 Inspection: You are unsure of the original planting design, or the vegetation maintenance task is beyond your capabilities of time, expertise, or resources. If you are unsure of the health of the vegetation (e.g. salt damage, invasives, which plants are undesirable) or the appropriate season to conduct vegetation management, consult a landscape professional before undertaking any cutting, pruning, mowing, or brush hogging.

BR Vegetation

Examine all Bioretention cell vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation is too thin, is not healthy, and there are many spots that are not well vegetated.	☐ The original plants are likely not suited for the actual conditions within the Bioretention cell . If you are knowledgeable about plants, select and plant more appropriate vegetation (preferably native plants) so that almost the entire surface area will be covered by the end of the second growing season. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: For all but small practices (e.g., rain gardens), this task will likely require a landscape design professional or horticulturalist.

BR Outlets

Examine outlets that release water out of the Bioretention cell.

Problem (Check if Present)	Follow-Up Actions
☐ Erosion at outlet	☐ Add stone to reduce the impact from the water flowing out of the outlet pipe or weir during storms. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Rills have formed and erosion problem becomes more severe.
 ☐ Outlet obstructed with mulch, sediment, debris, trash, etc.	☐ Remove the debris and dispose of it where it cannot re-enter the Bioretention cell . ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Outlet is completely clogged or obstructed; there is too much material to remove by hand or with simple hand tools.

Additional Notes:

Inspector:_____ Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

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Inspector/Operator: _____ Date: _____

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Bioretention Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

Level 2 Inspection: BIORETENTION NOTE: Key Source for this Information *(CSN, 2013)*	
Recommended Repairs	**Triggers for Level 3 Inspection**
Observed Condition: Water Stands on Surface for More than 72 Hours after Storm	
☐ Condition 1: Small pockets of standing water Use a soil probe or auger to examine the soil profile. If isolated areas have accumulated grit, fines, or vegetative debris or have bad soil media, try scraping off top 3 inches of media and replacing with clean material. Also check to see that surface is level and water is not ponding selectively in certain areas. ☐ Condition 2: Standing water is widespread or covers entire surface Requires diagnosis and resolution of problem: • Clogged underdrain? • Filter fabric between soil media and underdrain stone? • Need to install underdrain if not present? • Too much sediment/grit washing in from drainage area? • Too much ponding depth? • Improper soil media?	• Soil media is clogged and problem is not evident from Level 2 inspection. • Level 2 inspection identifies problem, but it cannot be resolved easily or is associated with the original design of the practice. ☐ Level 3 inspection necessary
Observed Condition: Vegetation is sparse or out of control	
☐ Condition 1: Original design planting plan seems good but has not been maintained, so there are many invasives and/or dead plants Will require some horticultural experience to restore vegetation to intended condition by weeding, pruning, removing plants, and adding new plants. ☐ Condition 2: Original design planting plan is unknown or cannot be actualized A landscape architect or horticulturalist will be needed to redo the planting plan. Will likely require analysis of soil pH, moisture, organic content, sun/shade, and other conditions to make sure plants match conditions. Plan should include invasive plant management and maintenance plan to include mulching, watering, disease intervention, periodic thinning/pruning, etc.	• Vegetation deviates significantly from original planting plan; Bioretention has been neglected and suffered from deferred maintenance. • Owner/responsible party does not know how to maintain the practice. ☐ Level 3 inspection necessary
Observed Condition: Bioretention does not conform to original design plan in surface area or storage	
☐ Condition 1: Level 2 Inspection reveals that practice is too small based on design dimension, does not have adequate storage (e.g., ponding depth) based on the plan, and/or does not treat the drainage area runoff as indicated on the plan Small areas of deviation can be corrected by the property owner or responsible party, but it is likely that a Qualified Professional will have to revisit the design and attempt a redesign that meets original objectives or that can be resubmitted to the municipality for approval.	• More than a 25% departure from the approved plan in surface area, storage, or drainage area; sometimes less than this threshold at the discretion of the Level 2 inspector. ☐ Level 3 inspection necessary

Level 2 Inspection: BIORETENTION NOTE: Key Source for this Information *(CSN, 2013)*	
Recommended Repairs	**Triggers for Level 3 Inspection**
Observed Condition: Severe erosion of filter bed, inlets, or around outlets	
☐ Condition 1: Erosion at inlets The lining (e.g., grass, matting, stone, rock) may not be adequate for the actual flow velocities coming through the inlets. First line of defense is to try a more non-erosive lining and/or to extend the lining further down to where inlet slopes meet the Bioretention surface. If problem persists, analysis by a Qualified Professional is warranted. ☐ Condition 2: Erosion of Bioretention filter bed This is often caused by "preferential flow paths" through and along the Bioretention surface. The source of flow should be analyzed and methods employed to dissipate energy and disperse the flow (e.g., check dams, rock splash pads). ☐ Condition 3: Erosion on side slopes Again, the issue is likely linked with unanticipated flow paths down the side slopes (probably overland flow that concentrates as it hits the edge of the slope). For small or isolated areas, try filling, compacting, and re-establishing healthy ground cover vegetation. If the problem is more widespread, further analysis is required to determine how to redirect the flow.	• Erosion (rills, gullies) is more than 12 inches deep at inlets or the filter bed or more than 3 inches deep on side slopes. • If the issue is not caused by moving water but some sort of subsurface defect. This may manifest as a sinkhole or linear depression and be associated with problems with the underdrain stone or pipe or underlying soil. ☐ Level 3 inspection necessary
Observed Condition: Significant sediment accumulation, indicating an uncontrolled source of sediment	
☐ Condition 1: Isolated areas of sediment accumulation, generally less than 3-inches deep Sediment source may be from a one-time or isolated event. Remove accumulated sediment and top 2 to 3 inches of Bioretention soil media; replace with clean material. Check drainage area for any ongoing sources of sediment. ☐ Condition 2: Majority of the surface is caked with "hard pan" (thin layer of clogging material) or accumulated sediment that is 3-inches deep or more This can be caused by an improper construction sequence (drainage area not fully stabilized prior to installation of Bioretention soil media) or another chronic source of sediment in the drainage area. Augering several holes down through the media can indicate how severe the problem is; often the damage is confined to the first several inches of soil media. Removing and replacing this top layer (or to the depth where sediment incursion is seen in auger holes) can be adequate, as long as the problem does not recur.	• More than 2 inches of accumulated sediment cover 25% or more of the Bioretention surface area. • "Hard pan" of thin, crusty layer covers majority of Bioretention surface area and seems to be impeding flow of water down through the soil media. • New sources of sediment seem to be accumulating with each significant rainfall event. ☐ Level 3 inspection necessary

Notes:

Inspector:_____ Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____ Date: _____

APPENDIX G:
NYSDEC "DEEP-RIPPING AND DECOMPACTION," APRIL 2008

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New York State
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water

Deep-Ripping and Decompaction

April 2008

Document Prepared by:

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New York State
Department of Environmental Conservation

Alternative Stormwater Management
Deep-Ripping and Decompaction

Description

The two-phase practice of 1) "Deep Ripping;" and 2) "Decompaction" (deep subsoiling), of the soil material as a step in the cleanup and restoration/landscaping of a construction site, helps mitigate the physically induced impacts of soil compression; i.e.: soil compaction or the substantial increase in the bulk density of the soil material.

Deep Ripping and Decompaction are key factors which help in restoring soil pore space and permeability for water infiltration. Conversely, the physical actions of cut-and-fill work, land grading, the ongoing movement of construction equipment and the transport of building materials throughout a site alter the architecture and structure of the soil, resulting in: the mixing of layers (horizons) of soil materials, compression of those materials and diminished soil porosity which, if left unchecked, severely impairs the soil's water holding capacity and vertical drainage (rainfall infiltration), from the surface downward.

In a humid climate region, compaction damage on a site is virtually guaranteed over the duration of a project. Soil in very moist to wet condition when compacted, will have severely reduced permeability. Figure 1 displays the early stage of the deep-ripping phase (Note that all topsoil was stripped prior to construction access, and it remains stockpiled until the next phase – decompaction – is complete). A heavy-duty tractor is pulling a three-shank ripper on the first of several series of incrementally deepening passes through the construction access corridor's densely compressed subsoil material. Figure 2 illustrates the approximate volumetric composition of a loam surface soil when conditions are good for plant growth, with adequate natural pore space for fluctuating moisture conditions.

Fig. 1. A typical deep ripping phase of this practice, during the first in a series of progressively deeper "rips" through severely compressed subsoil.

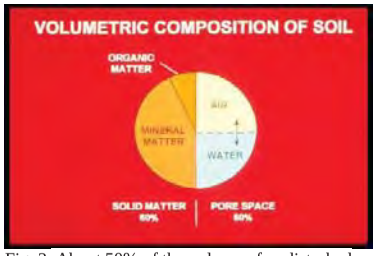

Fig. 2. About 50% of the volume of undisturbed loam surface soil is pore space, when soil is in good condition for plant growth. Brady, 2002.

Recommended Application of Practice

The objective of Deep Ripping and Decompaction is to effectively fracture (vertically and laterallly) through the thickness of the physically compressed subsoil material (see Figure 3), restoring soil porosity and permeability and aiding infiltration to help reduce runoff. Together with topsoil stripping, the "two-phase" practice of Deep Ripping and Decompaction first became established as a "best management practice" through ongoing success on commercial farmlands affected by heavy utility construction right-of-way projects (transmission pipelines and large power lines).

Fig. 3. Construction site with significant compaction of the deep basal till subsoil extends 24 inches below this exposed cut-and-fill work surface.

Soil permeability, soil drainage and cropland productivity were restored. For broader construction application, the two-phase practice of Deep Ripping and Decompaction is best adapted to areas impacted with significant soil compaction, on contiguous open portions of large construction sites and inside long, open construction corridors used as temporary access over the duration of construction. Each mitigation area should have minimal above-and-below-ground obstructions for the easy avoidance and maneuvering of a large tractor and ripping/decompacting implements. Conversely, the complete two-phase practice is not recommended in congested or obstructed areas due to the limitations on tractor and implement movement.

Benefits

Aggressive "deep ripping" through the compressed thickness of exposed subsoil before the replacement/respreading of the topsoil layer, followed by "decompaction," i.e.: "sub-soiling," through the restored topsoil layer down into the subsoil, offers the following benefits:

- Increases the project (larger size) area's direct surface infiltration of rainfall by providing the open site's mitigated soil condition and lowers the demand on concentrated runoff control structures
- Enhances direct groundwater recharge through greater dispersion across and through a broader surface than afforded by some runoff-control structural measures
- Decreases runoff volume generated and provides hydrologic source control
- May be planned for application in feasible open locations either alone or in

conjunction with plans for structural practices (e.g., subsurface drain line or infiltration basin) serving the same or contiguous areas

- Promotes successful long-term revegetation by restoring soil permeability, drainage and water holding capacity for healthy (rather than restricted) root-system development of trees, shrubs and deep rooted ground cover, minimizing plant drowning during wet periods and burnout during dry periods.

Feasibility/Limitations

The effectiveness of Deep Ripping and Decompaction is governed mostly by site factors such as: the original (undisturbed) soil's hydrologic characteristics; the general slope; local weather/timing (soil moisture) for implementation; the space-related freedom of equipment/implement maneuverability (noted above in **Recommended Application of Practice**), and by the proper selection and operation of tractor and implements (explained below in **Design Guidance**). The more notable site-related factors include:

Soil
In the undisturbed condition, each identified soil type comprising a site is grouped into one of four categories of soil hydrology, Hydrologic Soil Group A, B, C or D, determined primarily by a range of characteristics including soil texture, drainage capability when thoroughly wet, and depth to water table. The natural rates of infiltration and transmission of soil-water through the undisturbed soil layers for Group A is "high" with a low runoff potential while soils in Group B are moderate in infiltration and the transmission of soil-water with a moderate runoff potential, depending somewhat on slope. Soils in Group C have slow rates of infiltration and transmission of soil-water and a moderately high runoff potential influenced by soil texture and slope; while soils in Group D have exceptionally slow rates of infiltration and transmission of soil-water, and high runoff potential.

In Figure 4, the profile displays the undisturbed horizons of a soil in Hydrologic Soil Group C and the naturally slow rate of infiltration through the subsoil. The slow rate of infiltration begins immediately below the topsoil horizon (30 cm), due to the limited amount of macro pores, e.g.: natural subsoil fractures, worm holes and root channels. Infiltration after the construction-induced mixing and compression of such subsoil material is virtually absent; but can be restored back to this natural level with the two-phase practice of deep ripping and decompaction, followed by the permanent establishment of an appropriate, deep taproot

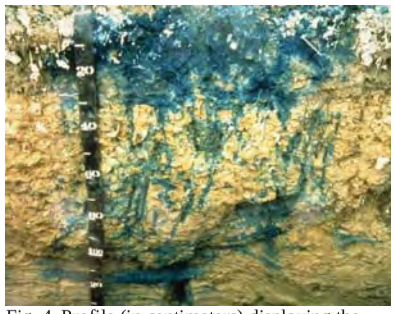

Fig. 4. Profile (in centimeters) displaying the infiltration test result of the natural undisturbed horizons of a soil in Hydrologic Soil Group C.

lawn/ground cover to help maintain the restored subsoil structure. Infiltration after construction-induced mixing and compression of such subsoil material can be notably rehabilitated with the Deep Ripping and Decompaction practice, which prepares the site for the appropriate long-term lawn/ground cover mix including deep taproot plants such as clover, fescue or trefoil, etc. needed for all rehabilitated soils.

Generally, soils in Hydrologic Soil Groups A and B, which respectively may include deep, well-drained, sandy-gravelly materials or deep, moderately well-drained basal till materials, are among the easier ones to restore permeability and infiltration, by deep ripping and decompaction. Among the many different soils in Hydrologic Soil Group C are those unique glacial tills having a natural fragipan zone, beginning about 12 to 18 inches (30 – 45cm), below surface. Although soils in Hydrologic Soil Group C do require a somewhat more carefully applied level of the Deep Ripping and Decompaction practice, it can greatly benefit such affected areas by reducing the runoff and fostering infiltration to a level equal to that of pre-disturbance.

Soils in Hydrologic Soil Group D typically have a permanent high water table close to the surface, influenced by a clay or other highly impervious layer of material. In many locations with clay subsoil material, the bulk density is so naturally high that heavy trafficking has little or no added impact on infiltration; and structural runoff control practices rather than Deep Ripping and Decompaction should be considered.

The information about Hydrologic Soil Groups is merely a general guideline. Site-specific data such as limited depths of cut-and-fill grading with minimal removal or translocation of the inherent subsoil materials (as analyzed in the county soil survey) or, conversely, the excavation and translocation of deeper, unconsolidated substratum or consolidated bedrock materials (unlike the analyzed subsoil horizons' materials referred to in the county soil survey) should always be taken into account.

Sites made up with significant quantities of large rocks, or having a very shallow depth to bedrock, are not conducive to deep ripping and decompation (subsoiling); and other measures may be more practical.

Slope
The two-phase application of 1) deep ripping and 2) decompaction (deep subsoiling), is most practical on flat, gentle and moderate slopes. In some situations, such as but not limited to temporary construction access corridors, inclusion areas that are moderately steep along a project's otherwise gentle or moderate slope may also be deep ripped and decompacted. For limited instances of moderate steepness on other projects, however, the post-construction land use and the relative alignment of the potential ripping and decompaction work in relation to the lay of the slope should be reviewed for safety and practicality. In broad construction areas predominated by moderately steep or steep slopes, the practice is generally not used.

Local Weather/Timing/Soil Moisture
Effective fracturing of compressed subsoil material from the exposed work surface, laterally and vertically down through the affected zone is achieved only when the soil material is moderately dry to moderately moist. Neither one of the two-phases, deep ripping nor decompaction (deep

subsoiling), can be effectively conducted when the soil material (subsoil or replaced topsoil) is in either a “plastic” or “liquid” state of soil consistency. Pulling the respective implements legs through the soil when it is overly moist only results in the “slicing and smearing” of the material or added “squeezing and compression” instead of the necessary fracturing. Ample drying time is needed for a “rippable” soil condition not merely in the material close to the surface, but throughout the material located down to the bottom of the physically compressed zone of the subsoil.

The “poor man’s Atterberg field test” for soil plasticity is a simple “hand-roll” method used for quick, on-site determination of whether or not the moisture level of the affected soil material is low enough for: effective deep ripping of subsoil; respreading of topsoil in a friable state; and final decompaction (deep subsoiling). Using a sample of soil material obtained from the planned bottom depth of ripping, e.g.: 20 - 24 inches below exposed subsoil surface, the sample is hand rolled between the palms down to a 1/8-inch diameter thread. (Use the same test for stored topsoil material before respreading on the site.) If the respective soil sample crumbles apart in segments no greater than 3/8 of an inch long, by the time it is rolled down to 1/8 inch diameter, it is low enough in moisture for deep ripping (or topsoil replacement), and decompaction. Conversely, as shown in Figure 5, if the rolled sample stretches out in increments greater than 3/8 of an inch long before crumbling, it is in a “plastic” state of soil consistency and is too wet for subsoil ripping (as well as topsoil replacement) and final decompaction.

Fig. 5. Augered from a depth of 19 inches below the surface of the replaced topsoil, this subsoil sample was hand rolled to a 1/8-inch diameter. The test shows the soil at this site stretches out too far without crumbling; it indicates the material is in a plastic state of consistence, too wet for final decompaction (deep subsoiling) at this time.

Design Guidance

Beyond the above-noted site factors, a vital requirement for the effective Deep Ripping and Decompaction (deep subsoiling), is implementing the practice in its distinct, two-phase process:

1) Deep rip the affected thickness of exposed subsoil material (see Figure 10 and 11), aggressively fracturing it before the protected topsoil is reapplied on the site (see Figure 12); and

2) Decompact (deep subsoil), simultaneously through the restored topsoil layer and the upper half of the affected subsoil (Figure 13). The second phase, “decompaction,” mitigates the partial recompaction which occurs during the heavy process of topsoil spreading/grading. Prior to deep ripping and decompacting the site, all construction activity, including construction equipment and material storage, site cleanup and trafficking (Figure 14), should be finished; and the site closed off to further disturbance. Likewise, once the practice is underway and the area’s soil permeability and

rainfall infiltration are being restored, a policy limiting all further traffic to permanent travel lanes is maintained.

The other critical elements, outlined below, are: using the proper implements (deep, heavy-duty rippers and subsoilers), and ample pulling-power equipment (tractors); and conducting the practice at the appropriate speed, depth and pattern(s) of movement.

Note that an appropriate plan for the separate practice of establishing a healthy perennial ground cover, with deep rooting to help maintain the restored soil structure, should be developed in advance. This may require the assistance of an agronomist or landscape horticulturist.

Implements

Avoid the use of all undersize implements. The small-to-medium, light-duty tool will, at best, only “scarify” the uppermost surface portion of the mass of compacted subsoil material. The term “chisel plow” is commonly but incorrectly applied to a broad range of implements. While a few may be adapted for the moderate subsoiling of non-impacted soils, the majority are less durable and used for only lighter land-fitting (see Figure 6).

Fig. 6. A light duty chisel implement, not adequate for either the deep ripping or decompaction (deep subsoiling) phase.

Fig. 7. One of several variations of an agricultural ripper. This unit has long, rugged shanks mounted on a steel V-frame for deep, aggressive fracturing through Phase 1.

Use a “heavy duty” agricultural-grade, deep ripper (see Figures 7,9,10 and 11) for the first phase: the lateral and vertical fracturing of the mass of exposed and compressed subsoil, down and through, to the bottom of impact, prior to the replacement of the topsoil layer. (Any oversize rocks which are uplifted to the subsoil surface during the deep ripping phase are picked and removed.) Like the heavy-duty class of implement for the first phase, the decompaction (deep subsoiling) of Phase 2 is conducted with the heavy-duty version of the deep subsoiler. More preferable is the angled-leg variety of deep subsoiler (shown in Figures 8 and 13). It minimizes the inversion of the subsoil and topsoil layers while laterally and vertically fracturing the upper half of the previously ripped subsoil layer and all of the topsoil layer by delivering a momentary, wave-like “lifting and shattering” action up through the soil layers as it is pulled.

Pulling-Power of Equipment
Use the following rule of thumb for tractor horsepower (hp) whenever deep ripping and decompacting a significantly impacted site: For both types of implement, have at least 40 hp of tractor pull available for each mounted shank/ leg.

Using the examples of a 3-shank and a 5-shank implement, the respective tractors should have 120 and 200 hp available for fracturing down to the final depth of 20-to-24 inches per phase. Final depth for the deep ripping in Phase 1 is achieved incrementally by a progressive series of passes (see Depth and Patterns of Movement, below); while for Phase 2, the full operating depth of the deep subsoiler is applied from the beginning.

The operating speed for pulling both types of implement should not exceed 2 to 3 mph. At this slow and managed rate of operating speed, maximum functional performance is sustained by the tractor and the implement performing the soil fracturing. Referring to Figure 8, the implement is the 6-leg version of the deep angled-leg subsoiler. Its two outside legs are "chained up" so that only four legs will be engaged (at the maximum depth), requiring no less than 160 hp, (rather than 240 hp) of pull. The 4-wheel drive, articulated-frame tractor in Figure 8 is 174 hp. It will be decompacting this unobstructed, former construction access area simultaneously through 11 inches of replaced topsoil and the upper 12 inches of the previously deep-ripped subsoil. In constricted areas of Phase 1) Deep Ripping, a medium-size tractor with adequate hp, such as the one in Figure 9 pulling a 3-shank deep ripper, may be more maneuverable.


Fig. 8. A deep, angled-leg subsoiler, ideal for Phase 2 decompaction of after the topsoil layer is graded on top of the ripped subsoil.


Fig. 9. This medium tractor is pulling a 3-shank deep ripper. The severely compacted construction access corridor is narrow, and the 120 hp tractor is more maneuverable for Phase 1 deep ripping (subsoil fracturing), here.

Some industrial-grade variations of ripping implements are attached to power graders and bulldozers. Although highly durable, they are generally not recommended. Typically, the shanks or "teeth" of these rippers are too short and stout; and they are mounted too far apart to achieve the well-distributed type of lateral and vertical fracturing of the soil materials necessary to restore soil permeability and infiltration. In addition, the power graders and bulldozers, as pullers, are far less maneuverable for turns and patterns than the tractor.

Depth and Patterns of Movement
As previously noted both Phase 1 Deep Ripping through significantly compressed, exposed subsoil and Phase 2 Decompaction (deep subsoiling) through the replaced topsoil and upper subsoil need to be performed at maximum capable depth of each implement. With an implement's guide wheels attached, some have a "normal" maximum operating depth of 18 inches, while others may go deeper. In many situations, however, the tractor/implement operator must first remove the guide wheels and other non essential elements from the implement. This adapts the ripper or the deep subsoiler for skillful pulling with its frame only a few inches above surface, while the shanks or legs, fracture the soil material 20-to-24 inches deep.

There may be construction sites where the depth of the exposed subsoil's compression is moderate, e.g.: 12 inches, rather than deep. This can be verified by using a ¾ inch cone penetrometer and a shovel to test the subsoil for its level of compaction, incrementally, every three inches of increasing depth. Once the full thickness of the subsoil's compacted zone is finally "pieced" and there is a significant drop in the psi measurements of the soil penetrometer, the depth/thickness of compaction is determined. This is repeated at several representative locations of the construction site. If the thickness of the site's subsoil compaction is verified as, for example, ten inches, then the Phase 1 Deep Ripping can be correspondingly reduced to the implement's minimum operable depth of 12 inches. However, the Phase 2 simultaneous Decompation (subsoiling) of an 11 inch thick layer of replaced topsoil and the upper subsoil should run at the subsoiling implements full operating depth.


Fig. 10. An early pass with a 3-shank deep ripper penetrating only 8 inches into this worksite's severely compressed subsoil.


Fig. 11. A repeat run of the 3-shank ripper along the same patterned pass area as Fig. 9; here, incrementally reaching 18 of the needed 22 inches of subsoil fracture.

Typically, three separate series (patterns) are used for both the Phase 1 Deep Ripping and the Phase 2 Decompaction on significantly compacted sites. For Phase 1, each series begins with a moderate depth of rip and, by repeat-pass, continues until full depth is reached. Phase 2 applies the full depth of Decompation (subsoiling), from the beginning.

Every separate series (pattern) consists of parallel, forward-and-return runs, with each progressive

pass of the implement's legs or shanks evenly staggered between those from the previous pass. This compensates for the shank or leg-spacing on the implement, e.g., with 24-to-30 inches between each shank or leg. The staggered return pass ensures lateral and vertical fracturing actuated every 12 to 15 inches across the densely compressed soil mass.

Large, Unobstructed Areas
For larger easy areas, use the standard patterns of movement:

- The first series (pattern) of passes is applied lengthwise, parallel with the longest spread of the site; gradually progressing across the site's width, with each successive pass.

- The second series runs obliquely, crossing the first series at an angle of about 45 degrees.

- The third series runs at right angle (or 90 degrees), to the first series to complete the fracturing and shattering on severely compacted sites, and avoid leaving large unbroken blocks of compressed soil material. (In certain instances, the third series may be optional, depending on how thoroughly the first two series loosen the material and eliminate large chunks/blocks of material as verified by tests with a ¾-inch cone penetrometer.)

Fig. 12. Moderately dry topsoil is being replaced on the affected site now that Phase 1 deep ripping of the compressed subsoil is complete.

Fig. 13. The same deep, angled-leg subsoiler shown in Fig. 7 is engaged at maximum depth for Phase 2, decompaction (deep soiling), of the replaced topsoil and the upper subsoil materials.

Corridors
In long corridors of limited width and less maneuverability than larger sites, e.g.: along compacted areas used as temporary construction access, a modified series of pattern passes are used.

- First, apply the same initial lengthwise, parallel series of passes described above.

- A second series of passes makes a broad "S" shaped pattern of rips, continually and gradually alternating the "S" curves between opposite edges inside the compacted corridor.

- The third and final series again uses the broad, alternating S pattern, but it is "flip-flopped" to continually cross the previous S pattern along the corridor's centerline. This final series of the S pattern curves back along the edge areas skipped by the second series.

Maintenance and Cost

Once the two-phase practice of Deep Ripping and Decompation is completed, two items are essential for maintaining a site's soil porosity and permeability for infiltration. They are: planting and maintaining the appropriate ground cover with deep roots to maintain the soil structure (see Figure 15); and keeping the site free of traffic or other weight loads.

Note that site-specific choice of an appropriate vegetative ground-cover seed mix, including the proper seeding ratio of one or more perennial species with a deep taproot system and the proper amount of lime and soil nutrients (fertilizer mix) adapted to the soil-needs, are basic to the final practice of landscaping, i.e: surface tillage, seeding/planting/fertilizing and culti-packing or mulching is applied. The "maintenance" of an effectively deep-ripped and decompacted area is generally limited to the successful perennial (long-term) landscape ground cover; as long as no weight-bearing force of soil compaction is applied.

Fig. 14. The severely compacted soil of a temporary construction yard used daily by heavy equipment for four months; shown before deep ripping, topsoil replacement, and decompaction.

Fig. 15. The same site as Fig. 14 after deep ripping of the exposed subsoil, topsoil replacement, decompaction through the topsoil and upper subsoil and final surface tillage and revegetation to maintain soil permeability and infiltration.

The Deep Ripping and Decompaction practice is, by necessity, more extensive than periodic subsoiling of farmland.The cost of deep ripping and decompacting (deep subsoiling), will vary according to the depth and severity of soil-material compression and the relative amount of tractor and implement time that is required. In some instances, depending on open maneuverability, two-to-three acres of compacted project area may be deep-ripped in one day. In other situations of more severe compaction and - or less maneuverability, as little as one acre may be fully ripped in a day. Generally, if the Phase 1) Deep Ripping is fully effective, the Phase 2) Decompaction should be completed in 2/3 to 3/4 of the time required for Phase 1.

Using the example of two acres of Phase 1) Deep Ripping in one day, at $1800 per day, the net cost is $900 per acre. If the Phase 2) Decompacting or deep subsoiling takes 3/4 the time as Phase 1, it costs $675 per acre for a combined total of $1575 per acre to complete the practice (these figures do not include the cost of the separate practice of topsoil stripping and replacement). Due to the many variables, it must be recognized that cost will be determined by the specific conditions or constraints of the site and the availability of proper equipment.

Resources

Publications:

- American Society of Agricultural Engineers. 1971. *Compaction of Agricultural Soils.* ASAE.
- Brady, N.C., and R.R. Weil. 2002. *The Nature and Properties of Soils. 13th ed.* Pearson Education, Inc.
- Baver, L.D. 1948. *Soil Physics.* John Wiley & Sons.
- Carpachi, N. 1987 (1995 fifth printing). *Excavation and Grading Handbook, Revised. 2nd ed.* Craftsman Book Company
- Ellis, B. (Editor). 1997. Safe & Easy Lawn Care: The Complete Guide to Organic Low Maintenance Lawn. Houghton Mifflin.
- Harpstead, M.I., T.J. Sauer, and W.F. Bennett. 2001. *Soil Science Simplified. 4th ed.* Iowa State University Press.
- Magdoff, F., and H. van Es. 2000. *Building Soils for Better Crops. 2nd ed.* Sustainable Agricultural Networks
- McCarthy, D.F. 1993. *Essentials of Soil Mechanics and Foundations, Basic Geotechnics 4th ed.* Regents/Prentice Hall.
- Plaster, E.J. 1992. *Soil Science & Management. 3rd ed.* Delmar Publishers.
- Union Gas Limited, Ontario, Canada. 1984. *Rehabilitation of Agricultural Lands, Dawn-Kerwood Loop Pipeline; Technical Report.* Ecological Services for Planning, Ltd.; Robinson, Merritt & Devries, Ltd. and Smith, Hoffman Associates, Ltd.
- US Department of Agriculture in cooperation with Cornell University Agricultural Experiment Station. Various years. *Soil Survey of (various names) County, New York.* USDA.

Internet Access:

- Examples of implements:

V-Rippers. Access by internet search of *John Deere Ag -New Equipment for 915* (larger-frame model) *V-Rippe*; and, *for 913* (smaller-frame model) *V-Ripper*. Deep, angled-leg subsoiler. Access by internet search of: B*igham Brothers Shear Bolt Paratill-Subsoiler.* http://salesmanual.deere.com/sales/salesmanual/en_NA/primary_tillage/2008/feature/rippers/915v_pattern_frame.html?sbu=ag&link=prodcat Last visited March 08.

- Soils data of USDA Natural Resources Conservation Service. *NRCS Web Soil Survey.* http://websoilsurvey.nrcs.usda.gov/app/ and *USDA-NRCS Official Soil Series Descriptions; View by Name.* http://ortho.ftw.nrcs.usda.gov/cgi-bin/osd/osdname.cgi . *Last visited Jan. 08.*
- Soil penetrometer information. Access by internet searches of: *Diagnosing Soil Compaction using a Penetrometer (soil compaction tester), PSU Extension;* as well as *Dickey-john Soil Compaction Tester.* http://www.dickey-johnproducts.com/pdf/SoilCompactionTest.pdf and http://cropsoil.psu.edu/Extension/Facts/uc178pdf Last visited Sept. 07

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APPENDIX H:
LABELLA CERTIFYING PROFESSIONALS LETTER

LaBella
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LaBella
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February 21, 2025

RE: LaBella Certifying Professionals for NYSDEC SPDES GP-0-25-001

To Whom it May Concern:

In accordance with the NYSDEC SPDES General Permit GP-0-25-001, Part VII.J.2, Mufuta Tshimanga, PE, a New York State Qualified Professional employed by LaBella Associates, is duly authorized to sign and seal Stormwater Pollution Prevention Plans (SWPPPs), Notice of Intents (NOIs) and Notice of Terminations (NOTs).

Respectfully submitted,

LaBella Associates

Timothy Webber
Vice President, Civil Division Director

Mufuta Tshimanga, PE
Senior Civil Engineer
Renewable Market Leader

APPENDIX I:
NYSDEC SPDES GENERAL PERMIT GP-0-25-001

LaBella
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NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL
CONSERVATION (NYSDEC)

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP-0-25-001

Construction General Permit (CGP)

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2025 Expiration Date: January 28, 2030

Scott E. Sheeley

Chief Permit Administrator

Scott E. Sheeley JAN. 29, 2025

Authorized Signature Date

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

PREFACE

Pursuant to Section 402 of the Clean Water Act (CWA), and 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), *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 State 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 and 8, and Article 70, as well as 6 NYCRR Parts 621 and 750.

Construction activities constitute construction of a *point source* and, therefore, pursuant to ECL sections 17-0505, 17-0701, and 17-0803, the *owner or operator* must have coverage under a SPDES permit prior to *commencement of construction activities*. 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 CONSTRUCTION GENERAL PERMIT (CGP) GP-0-25-001
FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

Table of Contents

Part I. How to Obtain Coverage and General Requirements

To be covered under this permit, the *owner or operator* must meet all eligibility requirements in Part I.A. and follow the requirements for obtaining permit coverage in Part I.D., F., or G.

A. Eligibility Requirements

For a *common plan of development or sale*, the *phase(s)* that meet the eligibility requirements in Part I.A. may obtain coverage under this permit even if other *phase(s)* of the same *common plan of development or sale* do not meet the eligibility requirements and require an individual SPDES permit.

1. The *owner's or operator's construction activities* involve soil disturbances of:
    a. one or more acres; or
    b. less than one acre which are part of a *common plan of development or sale* that will ultimately disturb one or more acres; or
    c. less than one acre where NYSDEC 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*.
        i. 5,000 square feet or more, but less than one acre, and are in the New York City Watershed located east of the Hudson River, Appendix C Figure 1; or
        ii. 20,000 square feet or more, but less than one acre, within the municipal boundaries of the City of New York (NYC); or
        iii. less than 20,000 square feet which are part of a *common plan of development or sale* that will ultimately disturb 20,000 square feet or more, but less than one acre, within the municipal boundaries of NYC; or
        iv. that creates 5,000 square feet or more of *impervious area* within the municipal boundaries of NYC.

2. *Discharges* from the *owner's or operator's construction activities* are/were not:
    a. already covered by a different SPDES permit; or
    b. covered under a different SPDES permit that was denied, terminated, or revoked; or
    c. identified in an expired individual SPDES permit that was not renewed; or
    d. required to obtain an individual SPDES permit or another general SPDES permit in accordance with Part VII.K.
3. If *construction activities* may adversely affect a species that is endangered or threatened, the *owner or operator* must obtain a:
    a. permit issued pursuant to 6 NYCRR Part 182 for the project; or
    b. letter issued by NYSDEC of non-jurisdiction pursuant to 6 NYCRR Part 182 for the project.
4. If *construction activities* have the potential to affect an *historic property*, the *owner or operator* must obtain one of the following:
    a. documentation that the *construction activity* is not within an archeological buffer 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:
        i. 1-5 acres of disturbance - 20 feet; or
        ii. 5-20 acres of disturbance - 50 feet; or

iii. 20+ acres of disturbance - 100 feet.

b. NYSDEC consultation form sent to OPRHP,[1] and copied to NYSDEC's Agency Historic Preservation Officer (APO), and

i. the State Environmental Quality Review Act (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 or 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).

c. documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

i. No Affect; or

ii. No Adverse Affect; or

iii. Executed Memorandum of Agreement.

d. documentation that SHPA Section 14.09 has been completed by NYSDEC or another state agency.

5. If *construction activities* are subject to SEQR, the *owner or operator* must obtain documentation that SEQR has been satisfied.

6. If *construction activities* are not subject to SEQR, but subject to the equivalent environmental review from another New York State or federal agency, the

[1] The consultation form can be submitted, along with other project information, through OPRHP's Cultural Resource Information System (CRIS) portal. If submitted through CRIS, paper copies of the consultation form need not be mailed.

owner or operator must obtain documentation that project review, pursuant to a process equivalent to SEQR from another New York State or federal agency, has been satisfied.

7. If *construction activities* require Uniform Procedures Act (UPA) Permits (see 6 NYCRR Part 621) from NYSDEC, or the equivalent from another New York State or federal agency, the *owner or operator* must:

a. obtain all such necessary permits; or

b. receive notification from NYSDEC pursuant to 6 NYCRR 621.3(a)(4) excepting Part I.A.7.a.

8. *Construction activities* are not eligible if they meet the following criteria in Part I.A.8.a. or b.:

a. For linear transportation and linear utility project types, the *construction activities*:

i. are within the watershed of *surface waters of the State* classified as AA or AA-S identified utilizing the Stormwater Interactive Map on NYSDEC's website; and

ii. are undertaken on land with no existing *impervious cover*; and

iii. disturb two or more acres of *steep slope*.

b. For all other project types, the *construction activities*:

i. are within the watershed of *surface waters of the State* classified as AA or AA-S identified utilizing the Stormwater Interactive Map on NYSDEC's website; and

ii. are undertaken on land with no existing *impervious cover*; and

iii. disturb one or more acres of *steep slope*.

B. Types of *Discharges* Authorized

1. The following *stormwater discharges* are authorized under this permit:

   a. *Stormwater discharges*, including *stormwater* runoff, snowmelt runoff, and surface runoff and drainage, associated with *construction activity*, are authorized under this permit provided that appropriate *stormwater* controls are designed, installed, and maintained in accordance with Part **II.** and Part **III.**

   b. *Stormwater discharges* from construction support activities at the *construction site* (including concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, and borrow areas) if the following requirements are met:

      i. The support activity is directly related to the *construction site* required to have permit coverage for *stormwater discharges*; and

      ii. The support activity is not a commercial operation, nor does it serve multiple unrelated *construction sites*; and

      iii. The support activity does not continue to operate beyond the completion of the *construction activity* at the site it supports; and

      iv. *Stormwater* controls are implemented in accordance with Part **II.** and Part **III.** for *discharges* from the support activity areas.

2. The following non-*stormwater discharges* associated with *construction activity* are authorized under this permit:

   a. Non-*stormwater discharges* 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"; and

   b. Non-*stormwater discharges* of waters to which other components have not been added that are used in accordance with the *SWPPP* to control dust or irrigate vegetation in stabilized areas; and

   c. Uncontaminated *discharges* from *dewatering* operations

3. Authorized *discharges* of *stormwater* or authorized *discharges* of non-*stormwater*, commingled with a *discharge* authorized by a different SPDES permit and/or a *discharge* that does not require SPDES permit authorization, are also authorized under this permit.

C. Prohibited *Discharges*

1. Non-*stormwater discharges* prohibited under this permit include but are not limited to:

   a. Wastewater from washout of concrete; and

   b. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials; and

   c. Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance; and

   d. Soaps, solvents, or detergents used in vehicle and equipment washing or external building washdown; and

   e. Toxic or hazardous substances from a spill or other release.

D. Electronic Notice of Intent (eNOI) Submittal

To receive authorization in accordance with Part I.D.3.b., the *owner or operator* must submit a complete eNOI in accordance with the requirements in Part **I.D.** The eNOI contains questions to: ensure eligibility requirements in Part I.A. have been met; obtain *owner or operator* contact information; obtain the total area to be disturbed and the existing/future *impervious areas* (rounded to the nearest tenth of an acre); confirm *Traditional Land Use Control MS4 Operator* jurisdiction over construction projects; satisfy the EPA eRule requirements; confirm that the Water Quality-Based Effluent Limitations in Part **II.** have been met; demonstrate consideration of the future risks due to climate change in accordance with Part **III.**A.2.; and confirm that the other *Stormwater Pollution Prevention Plan (SWPPP)* requirements in Part **III.** have been met.

1. An eNOI may be submitted for:

   a. *construction activities* that are not part of a *common plan of development or sale*; or

b. an entire *common plan of development or sale*; or

c. separate *phase(s)* of a *common plan of development or sale* if the following requirements are met:

   i. the *common plan of development or sale* meets the eligibility requirements of Part I.A.5. or 6.; and

   ii. the *phase(s)* meet(s) all other eligibility requirements of Part I.A.; and

   iii. Part III.C. Required *SWPPP* Components by Project Type is based on the *common plan of development or sale*, not the *phase(s)*; or

d. *tree clearing* that is associated with, or will support, a *renewable energy* generation, transmission, or storage project that meets Part I.A.5. and 6., if the *tree clearing*:

   i. meets all other eligibility requirements of Part I.A.; and

   ii. will occur in NYSDEC's Regions 3-9; and

   iii. is not within ¼ mile of a bat hibernaculum protected pursuant to 6 NYCRR Part 182; and

   iv. will occur between November 1st and March 31st.

2. As prerequisites for submitting an eNOI, the *owner or operator* must:

   a. prepare a *SWPPP* for Part I.D.1.a., b., c., or d. in accordance with Part III.; and

   b. based on the following criteria, upload the following signature forms signed in accordance with Part VII.J. to the eNOI prior to submission:

      i. for all eNOIs:

         1. the SWPPP Preparer Certification Form, Appendix F, signed by the *SWPPP* preparer; and

         2. the Owner/Operator Certification Form, Appendix J, signed by the *owner or operator*; and

      ii. if an eNOI includes *construction activities* within the municipal boundary(ies) of *Traditional Land Use Control MS4 Operator(s)* that will *discharge* to the *MS4(s)*:

         1. determine if the *Traditional Land Use Control MS4 Operator(s)* have review authority. A *Traditional Land Use Control MS4 Operator* does not have review authority where:

            a. the *owner or operator* of the *construction activities* in Part I.D.2.b.ii. is the same entity as the *Traditional Land Use Control MS4 Operator* identified in Part I.D.2.b.ii.; or

            b. there is a statute exempting the *owner or operator* from zoning review by the *Traditional Land Use Control MS4 Operator*; or

            c. there is no such statute per Part I.D.2.b.ii.1.b., the *Traditional Land Use Control MS4 Operator* concludes, after public hearing, that it does not have zoning review authority in accordance with Legal Memorandum LU14 Updated January 2020 "Governmental Immunity from Zoning and Other Legislation"; and

         2. if the *Traditional Land Use Control MS4 Operator(s)* have review authority, submit the *SWPPP* to the *Traditional Land Use Control MS4 Operator(s)* for review and have:

            a. if outside the municipal boundaries of NYC: the MS4 SWPPP Acceptance Form, Appendix G, signed by the principal executive officer or ranking elected official from the *Traditional Land Use Control MS4 Operator,* or by a duly authorized representative of that person in accordance with Part VII.J.2.; or

b. if within the municipal boundaries of NYC: The City of New York Department of Environmental Protection (NYCDEP) SWPPP Acceptance/Approval Form, Appendix H, signed by the principal executive officer or ranking elected official from the Traditional Land Use Control MS4 Operator, or by a duly authorized representative of that person in accordance with Part VII.J.2.; and

3. if the *Traditional Land Use Control MS4 Operator* does not have review authority, have the MS4 No Jurisdiction Form, Appendix I, signed by the principal executive officer or ranking elected official from the *Traditional Land Use Control MS4 Operator,* or by a duly authorized representative of that person in accordance with Part VII.J.2.

3. Submitting an eNOI:

   a. The *owner or operator* must submit a complete Notice of Intent electronically using a NYSDEC approved form.[2]

   b. The *owner or operator* is authorized to *commence construction activity* as of the authorization date indicated in the Letter of Authorization (LOA), which is sent by NYSDEC after a complete eNOI is submitted.

      i. If an eNOI is received for a *SWPPP* that deviates from one of the technical standards but demonstrates *equivalence* in accordance with Part III.B.1.a.ii. or Part III.B.2.b.ii., if the *SWPPP* includes *construction activities* that are not within the municipal boundary(ies) of *Traditional Land Use Control MS4 Operator(s)*, and/or if the *SWPPP* includes *construction activities* within the municipal boundary(ies) of *Traditional Land Use Control MS4 Operator(s)* that do not have review authority in accordance with Part I.D.2.b.ii.1., the authorization date indicated in the LOA will be 60 business days after the eNOI submission date.

[2] Unless NYSDEC grants a waiver in accordance with 40 CFR 127.15(c) or (d). All waiver requests must be submitted to Stormwater_info@dec.ny.gov or NYSDEC, Bureau of Water Permits, 625 Broadway, 4th Floor, Albany, New York 12233-3505.

c. If *Traditional Land Use Control MS4 Operator(s)* have review authority in accordance with Part I.D.2.b.ii.2., the *owner or operator* must, within five business days of receipt of the LOA, send an electronic copy of the LOA to the *Traditional Land Use Control MS4 Operator(s)* with review authority.

E. General Requirements for *Owners or Operators* with Permit Coverage

1. As of the date the LOA is received, the *owner or operator* must make the eNOI, *SWPPP*, and LOA available for review and copying in accordance with the requirements in Part VII.H. When applicable, as of the date an updated LOA is received, the *owner or operator* must make the updated LOA available for review and copying in accordance with the requirements in Part VII.H.

2. The *owner or operator* must ensure compliance with all requirements of this permit and that the provisions of the *SWPPP*, including any changes made to the *SWPPP* in accordance with Part III.A.5., are properly implemented and maintained from the *commencement of construction activity* until:

   a. all areas of disturbance have achieved *final stabilization;* and

   b. the owner's or operator's coverage under this permit is terminated in accordance with Part V.A.5.a.

3. As of the date of the *commencement of construction activities* until Part I.E.2.a. and b. have been met, the *owner or operator* must maintain at the *construction site*, a copy of:

   a. all documentation necessary to demonstrate eligibility with this permit; and

   b. this permit; and

   c. the *SWPPP*; and

   d. the signed SWPPP Preparer Certification Form; and

   e. the signed MS4 SWPPP Acceptance Form or signed NYCDEP SWPPP Acceptance/Approval Form or signed MS4 No Jurisdiction Form (when applicable); and

   f. the signed Owner/Operator Certification Form; and

g. the eNOI; and

h. the LOA; and

i. the LOA transmittal to the Traditional Land Use Control MS4 Operator in accordance with Part I.D.3.c. (when applicable).

4. The *owner or operator* must maintain at the *construction site*, until Part I.E.2.a. and b. have been met, as of the date the documents become final or are received, a copy of the:

   a. responsible contractor's or subcontractor's certification statement(s) in accordance with Part III.A.7.; and

   b. inspection reports in accordance with Part IV.C.4. and 6.; and

   c. Request to Disturb Greater Than Five Acres and the Authorization Letter to Disturb Greater Than Five Acres in accordance with Part I.E.6. (when applicable); and

   d. Request to Continue Coverage and the Letter of Continued Coverage (LOCC) in accordance with Part I.F.2. and 4. (when applicable); and

   e. The updated LOA(s) in accordance with Part I.E.9. (when applicable).

5. The *owner or operator* must maintain the documents in Part I.E.3. and 4. 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. The documents must be paper documents unless electronic documents are accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be. If electronic documents are kept on site, the *owner or operator* must maintain functional equipment on site available to an inspector during normal hours of operation such that an inspector may view the electronic documents in a format that can be read in a similar manner as a paper record and in a legally dependable format with no less evidentiary value than their paper equivalent.

6. The *owner or operator* must meet the following requirements prior to disturbing greater than five acres of soil at any one time:

   a. The *owner or operator* must submit a written Request to Disturb Greater Than Five Acres to:

   i. NYSDEC's Regional Office Division of Water staff based on the project location, Appendix E, if a *Traditional Land Use Control MS4 Operator* does not have review authority in accordance with Part I.D.2.b.ii.1.; or

   ii. the *Traditional Land Use Control MS4 Operator*, if a *Traditional Land Use Control MS4 Operator* has review authority in accordance with Part I.D.2.b.ii.1.; or

   iii. NYSDEC's Regional Office Division of Water staff based on the project location, Appendix E, and each involved *Traditional Land Use Control MS4 Operator*, if the project spans multiple municipalities with more than one *Traditional Land Use Control MS4 Operator* involved with review authority in accordance with Part I.D.2.b.ii.1.

   b. The written Request to Disturb Greater Than Five Acres must include:

      i. The SPDES permit identification number (Permit ID); and

      ii. Full technical justification demonstrating why alternative methods of construction that would result in five acres of soil disturbance or less at any one time are not feasible; and

      iii. The phasing plan for the project and sequencing plans for all *phases* from the *SWPPP* in accordance with Part III.B.1.d.; and

      iv. Plans with locations and details of erosion and sediment control practices such that the heightened concern for erosion when disturbing greater than five acres at one time has been addressed; and

      v. Acknowledgment that "the *owner or operator* will comply with the requirements in Part IV.C.2.b."; and

      vi. Acknowledgment that "the *owner or operator* will comply with the requirements in Part II.B.1.b."

   c. The *owner or operator* must be in receipt of an Authorization Letter to Disturb Greater Than Five Acres, which will include when the

authorization begins and ends and indicate a maximum area (acres) of soil disturbance allowed at any one time, from:

i. NYSDEC, if Part I.E.6.a.i. or iii. apply; or

ii. the *Traditional Land Use Control MS4 Operator*, if Part I.E.6.a.ii. applies.

7. Upon a finding of significant non-compliance with the practices described in the *SWPPP* or violation of this permit, NYSDEC may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order must be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

8. 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).[3] *Construction activity* shall not resume until written permission to do so has been received from the RWE.

9. To be authorized to implement modifications to the information previously submitted in the eNOI, the *owner or operator* must:

   a. notify NYSDEC via email at Stormwater_info@dec.ny.gov requesting access to update the eNOI; and

   b. update the eNOI to reflect the modifications and resubmit the eNOI in accordance with Part I.D.; and

   c. receive an updated LOA.

10. The eNOI, *SWPPP*, LOA, updated LOAs (when applicable), 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 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.

[3] The Regional Water Manager where a DEC Region does not have a RWE.

F. Permit Coverage for *Discharges* Authorized Under GP-0-20-001

When applicable:

1. Upon the effective date of this permit, an *owner or operator* of *a construction activity*, with coverage under GP-0-20-001, will have interim coverage under GP-0-25-001 for 45 calendar days starting on the effective date of GP-0-25-001 so long as the *owner or operator* maintains compliance with all applicable requirements of this permit.

2. Within 30 calendar days of the effective date of this permit, the *owner or operator*, with coverage under GP-0-20-001, must submit a complete Request to Continue Coverage electronically using a NYSDEC approved form,[4] which contains the information identified in Part I.F.3. below, if:

   a. the *owner or operator* continues to implement the SMP component in conformance with the technical standards in place at the time of initial project authorization; and

   b. the *owner or operator* will comply with all non-design requirements of GP-0-25-001.

3. The Request to Continue Coverage form contains questions to: ensure eligibility requirements in Part I.A. have been met; verify *owner or operator* contact information; verify the permit identification number; verify the original eNOI submission ID, if applicable; verify Part I.F.2.a. and b.; verify the version of the Design Manual that the technical/design components conform to; and receive an updated Owner/Operator Certification Form, Appendix I.

4. The *owner or operator* has obtained continued coverage under GP-0-25-001 as of the date indicated in the LOCC, which is sent by NYSDEC after a complete Request to Continue Coverage form is submitted.

5. If the owner or operator does not submit the Request to Continue Coverage form in accordance with Part I.F.2. and 3., coverage under this permit is automatically terminated after interim coverage expires.

[4] Unless NYSDEC grants a waiver in accordance with 40 CFR 127.15(c) or (d). All waiver requests must be submitted to Stormwater_info@dec.ny.gov or NYSDEC, Bureau of Water Permits, 625 Broadway, 4th Floor, Albany, New York 12233-3505.

G. Change of *Owner or Operator*

When applicable:

1. When property ownership changes, or when there is a change in operational control over the construction plans and specifications, the following process applies:

   a. The new *owner or operator* must meet the applicable prerequisites for submitting an eNOI in accordance with Part I.D.2.; and

   b. The new *owner or operator* must submit an eNOI in accordance with Part I.D.3.; and

   c. Permit coverage for the new *owner or operator* will be effective upon receipt of the LOA in accordance with Part I.D.3.b.; and

   d. The new *owner or operator*, upon receipt of their LOA, must provide their Permit ID to the original *owner or operator*; and

   e. If the original *owner or operator* will no longer be the *owner or operator* of the *construction activity* identified in the original *owner's or operator's* eNOI, the original *owner or operator*, upon receipt of the new *owner's or operator's* Permit ID in accordance with Part I.G.1.d., must submit to NYSDEC a completed eNOT in accordance with Part V. that includes the name and Permit ID of the new *owner or operator*; or

   f. If the original *owner or operator* maintains ownership of a portion of the *construction activity*, the original *owner or operator* must maintain their coverage under the permit by modifying their eNOI; modifications to the eNOI must include:

      i. the revised area of disturbance and/or *impervious area(s)*; and

      ii. the revised SMP information, if applicable; and

      iii. a narrative description of what has changed; and

      iv. the new *owner's or operator's* Permit ID for the portion of the project removed from the eNOI.

   Owners or operators must follow Part I.E.9. to modify the eNOI.

Part II. Water Quality-Based Effluent Limitations

A. Maintaining Water Quality

NYSDEC expects that compliance with the requirements 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 the following *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:

1. There must be no increase in turbidity that will cause a substantial visible contrast to natural conditions; and

2. There must be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There must 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 standard,* the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this permit and document in accordance with Part IV.C.4. of this permit. To address the *water quality standard* violation the *owner or operator* must include and implement appropriate controls in the *SWPPP* to correct the problem or obtain an individual SPDES permit.

If, despite compliance with the requirements of this 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 NYSDEC determines that a modification of this permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit, and the *owner or operator* must obtain an individual SPDES permit prior to further *discharges* from the *construction site*.

B. Effluent Limitations Applicable to *Discharges* from *Construction Activities*

Discharges authorized by this permit must achieve, at a minimum, the effluent limitations in Part II.B.1.a., b., c., d., and e. 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 II.B.1.a., b., c., d., and e. and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control (BB), 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 *SWPPP* the reason(s) for the deviation, or alternative design, and provide information in the *SWPPP* demonstrating that the deviation or alternative design is *equivalent* to the technical standard.

   a. **Erosion and Sediment Controls.** At a minimum, erosion and sediment controls must be selected, designed, installed, implemented, and maintained to:

      i. *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharges*; and

      ii. Control *stormwater discharges*, including both peak flow rates and total *stormwater* volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points; and

      iii. *Minimize* the amount of soil exposed during *construction activity*; and

      iv. *Minimize* the disturbance of *steep slope*; and

      v. *Minimize* sediment *discharges* from the site; and

      vi. Provide and maintain *natural buffers* around surface waters, direct *stormwater* to vegetated areas and maximize *stormwater* infiltration to reduce *pollutant discharges*, unless *infeasible*; and

      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; and

      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 ceased, whether permanently or *temporarily ceased*, the application of soil stabilization measures must be initiated by the end of the next business day and completed within 14 calendar 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 D, or are located in one of the watersheds listed in Appendix C, or are authorized to disturb greater than five acres in accordance with Part I.E.5.a.viii., the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven calendar days from the date the soil disturbance activity 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.** Select, 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 selected, designed, installed, implemented, and maintained to:

      i. *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. Soaps, detergents and solvents cannot be used; and

      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. **Surface Outlets.** When discharging from basins and impoundments, the surface outlets must 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 (SMP) Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction SMPs, in accordance with Part III.C., must select, design, install, implement, and maintain the SMPs to meet the *performance criteria* in the New York State Stormwater Management Design Manual, dated July 31, 2024 (DM), using sound engineering judgment. Where SMPs are not designed in conformance with the *performance criteria* in the DM, 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 SMPs in accordance with Part III.C., must design the practices to meet the applicable *sizing criteria* in Part II.C.2.a., b., c., or d.

a. Sizing Criteria for *New Development*

i. Runoff Reduction Volume (RRv) and Water Quality Volume (WQv):

1. Reduce the total WQv by application of RR techniques and standard SMPs with RRv capacity. The total WQv must be calculated in accordance with the criteria in Section 4.2 of the DM; or

2. Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the requirements in Part II.C.2.a.i.1. due to *site limitations* must 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 must 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 4.4 of the DM. The remaining portion of the total WQv that cannot be reduced must be treated by application of standard SMPs.

ii. Channel Protection Volume (CPv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event, remaining after runoff reduction. Where a CPv control orifice is provided, the minimum orifice size must be 3 inches, with acceptable external trash rack or orifice protection. 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 1-year post-development peak *discharge* is less than or equal to 2.0 cfs without detention or velocity controls; or

3. The site *directly discharges* into a fifth order or larger water body (stream, river, or lake), or tidal waters, where the increase in smaller flows will not impact the stream bank or channel integrity. However, the point of *discharge* must be adequately protected against scour and erosion by the increased peak *discharge*.

iii. *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 *directly discharges* to tidal waters or fifth order or larger streams, or

2. A downstream analysis reveals that *overbank* control is not required.

iv. 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 *directly discharges* 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 Watersheds

i. Runoff Reduction Volume (RRv) and Water Quality Volume (WQv):

1. Reduce the 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 must be calculated in accordance with the criteria in Section 4.3 of the DM; or

2. Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part II.C.2.b.i.1. due to *site limitations* must 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 must 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 4.5 of the DM. The remaining portion of the total WQv that cannot be reduced must be treated by application of standard SMPs.

ii. Channel Protection Volume (CPv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event, remaining after runoff reduction. Where a CPv control orifice is provided, the minimum orifice size must be 3 inches, with acceptable external trash rack or orifice protection. 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 1-year post-development peak *discharge* is less than or equal to 2.0 cfs; or

3. The site *directly discharges* to tidal waters, or a fifth order or larger water body (stream, river, or lake) where the increase in smaller flows will not impact the stream bank or channel integrity. However, the point of *discharge* must be adequately protected against scour and erosion by the increased peak *discharge*.

iii. *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 *directly discharges* to tidal waters or fifth order or larger streams; or

2. A downstream analysis reveals that *overbank* control is not required.

iv. 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 *directly discharges* 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* must be addressed by one of the following options, as outlined in Section 9.2.1. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C) must calculate the WQv in accordance with Section 4.3 of the DM. All other *redevelopment activities* must calculate the WQv in accordance with Section 4.2 of the DM.

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 DM must be applied to all newly created pervious areas; or

2. Capture and treat 100% of the required WQv, for a minimum of 25% of the disturbed redevelopment *impervious area*, by implementation of standard SMPs or reduced by application of runoff reduction techniques; or

3. Capture and treat 100% of the required WQv, for a minimum of 75% of the disturbed redevelopment *impervious area*, by implementation of a volume-based alternative SMP, as defined in Section 9.4 of the DM; or

4. Capture and treat 100% of the required WQv, for a minimum of 75% of the disturbed redevelopment *impervious area*, by implementation of a flow-through alternative SMP sized to treat the peak rate of runoff from the WQv design storm; or

5. Application of a combination of 1 through 4 above that provide a weighted average of at least two of the above methods. Application of this method must be in accordance with the criteria in Section 9.2.1(A)(V) of the DM; or

6. If there is an existing SMP 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 through 5 above.

ii. Channel Protection Volume (CPv) is not required if there is 0% change to hydrology that increases the *discharge* rate and volume from the project site.

iii. *Overbank* Flood Control (Qp) is not required if there is 0% change to hydrology that increases the *discharge* rate from the project site.

iv. Extreme Flood Control (Qf) is not required if there is 0% change to hydrology that increases 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*, must use SMPs that meet the *sizing criteria* calculated as an aggregate of the *sizing criteria* in Part II.C.2.a. or b. for the *new development* portion of the project and Part II.C.2.c. for the *redevelopment activity* portion of the project.

Part III. Stormwater Pollution Prevention Plan (SWPPP)

A. General *SWPPP* Requirements

1. A *SWPPP* must be prepared and implemented by the *owner or operator* of all *construction activity* covered by this permit. All authorized *discharges* must be identified in the *SWPPP*. 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 II.B. and, where applicable, the SMP requirements in Part II.C.

2. The *SWPPP* must demonstrate consideration in narrative format of the future physical risks due to climate change pursuant to the Community Risk and Resiliency Act (CRRA), 6 NYCRR Part 490, and associated guidance.

   a. The owner or operator must consider:

      i. the following physical risks due to climate change:

         (i) increasing temperature; and

         (ii) increasing precipitation; and

         (iii) increasing variability in precipitation, including chance of drought; and

         (iv) increasing frequency and severity of flooding; and

         (v) rising sea level; and

         (vi) increasing storm surge; and

         (vii) shifting ecology.

      ii. for each of the following:

         (i) overall site planning; and

         (ii) location, elevation, and sizing of:

            a. control measures and practices; and

            b. conveyance system(s); and

            c. detention system(s).

3. The *SWPPP* must describe the erosion and sediment control practices and where required, SMPs that will be used and/or constructed to reduce the *pollutants* in *stormwater discharges* and to assure compliance with the

requirements of this permit. In addition, the *SWPPP* must identify potential sources of pollution which may reasonably be expected to affect the quality of *stormwater discharges*.

4. All *SWPPPs*, that require the SMP component in accordance with Part III.B.2., must be prepared by a *qualified professional*.

5. The *owner or operator* must keep the *SWPPP* current so that, at all times, it accurately documents the erosion and sediment control practices that are being used or will be used during construction, and all SMPs that will be constructed on the site. At a minimum, the *owner or operator* must modify the *SWPPP*, including construction drawings:

   a. whenever the current provisions prove to be ineffective in *minimizing pollutants* in *stormwater discharges* from the site; and

   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*; and

   c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* NYSDEC, or other regulatory authority; and

   d. to document the final construction conditions in an as-built drawing.

6. NYSDEC 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 must 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 NYSDEC, the *owner or operator* must make the required changes to the *SWPPP* and submit written notification to NYSDEC that the changes have been made. If the *owner or operator* does not respond to NYSDEC's comments in the specified time frame, NYSDEC 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.

7. 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 SMPs included in the *SWPPP*. The *owner or operator* must have each of the contractors and subcontractors identify at least one person from their company to be *trained contractor* that will be responsible for implementation of the *SWPPP*. The *owner or operator* must ensure that at least one *trained contractor* is on site daily when soil disturbance activities are being performed.

The *owner or operator* must have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before the *commencement of construction activities*:

> "I hereby certify under penalty of law that I understand and agree to comply with the requirements 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 requirements of the most current version of the New York State Pollutant Discharge Elimination System (SPDES) Construction General Permit (CGP) 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* must 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 the *commencement of construction activities*, they must also sign the certification statement and provide the information listed above prior to performing *construction activities*.

B. Required *SWPPP* Contents

1. Erosion and sediment control component - The *owner or operator* must prepare a *SWPPP* that includes erosion and sediment control practices.

   a. Erosion and sediment control practices must be designed:

      i. in conformance with the BB; or

      ii. *equivalent* to the BB if deviating from Part III.B.1.a.i.

   b. If the erosion and sediment control practices are designed in conformance with Part III.B.1.a.ii., the *SWPPP* must include a demonstration of *equivalence* to the BB.

   c. At a minimum, the erosion and sediment control component of the *SWPPP* must include the following:

      i. Background information about the scope of the project, including the location, type and size of project; and

      ii. A site map/construction drawing(s) with north arrows for the project, including a general location map. At a minimum, the site map must 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) and receiving surface water(s); and

      iii. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG); and

      iv. A phasing plan for the project and sequencing plans for all *phases*, both of which must address clearing and grubbing, excavation and grading, utility and infrastructure installation, *final stabilization*,

and any other *construction activity* at the site that will result in soil disturbance.

1. The phasing plan must include:

    a. a map delineating and labeling the limits of soil disturbance for all *phases* of a project; and

    b. a table identifying the order and intended schedule of when each *phase* will begin and end its sequencing plan. The table must identify the total disturbed area for each *phase* at any one time and the total disturbed area for the overall project at any one time all on one timeline showing all overlapping quantities of disturbed area at any one time; and

2. A sequencing plan for a specific *phase* must include:

    a. a table indicating the order and intended schedule of *construction activities* within a *phase*, and corresponding construction drawings with a description of the work to be performed; and

    b. all permanent and *temporary stabilization* measures; and

v. 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; and

vi. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice; and

vii. 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; and

viii. A maintenance inspection schedule for the contractor(s) and subcontractor(s) identified in Part III.A.7. to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection schedule must be in accordance with the requirements in the BB technical standard; and

ix. 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*; and

x. 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

xi. Identification of any elements of the design that are not in conformance with the design criteria in the BB technical standard. 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. SMP component – The *owner or operator* of *construction activity* identified in Table 2 of Appendix B must prepare a *SWPPP* that includes SMPs.

    a. SMPs must be designed in conformance with the applicable *sizing criteria* in Part II.C.2.a., c., or d.; and

    b. SMPs must be designed in conformance with the *performance criteria*:

        i. in the DM; or

        ii. *equivalent* to the DM if deviating from Part III.B.2.b.i.; or

        iii. in the New York State Stormwater Management Design Manual, dated January 2015 (2015 Design Manual), or *equivalent* to it, if the following criteria are met:

1. The eNOI is submitted in accordance with Part I.D. before January 29, 2027 for *construction activities* that are either:

    a. subject to governmental review and approval:

        i. where the *owner or operator* made any application to that governmental entity prior to the effective date of this permit; and

        ii. such application included a *SWPPP* developed using the 2015 Design Manual or *equivalent* to it; or

    b. not subject to governmental review and approval:

        i. where a fiscal allocation for the *construction activities* has been developed and approved by a governmental entity; and

        ii. the *SWPPP* was developed using the 2015 Design Manual or *equivalent* to it; and

c. If SMPs are designed in conformance with Part III.B.2.b.ii., the *SWPPP* must include the reason(s) for the deviation or alternative design and a demonstration of *equivalence* to the DM; and

d. If SMPs are designed in conformance with Part III.B.2.b.iii., the *SWPPP* must include supporting information or documentation demonstrating that Part III.B.2.b.iii.1.a. or b. apply; and

e. The SMP component of the *SWPPP* must include the following:

    i. Identification of all SMPs to be constructed as part of the project, including which option the SMP designs conform to, either Part III.B.2.b.i., ii., or iii. Include the dimensions, material specifications and installation details for each SMP; and

    ii. A site map/construction drawing(s) showing the specific location and size of each SMP; and

iii. 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; and

    (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and SMPs; and

    (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; and

    (iv) Summary table, with supporting calculations, which demonstrates that each SMP has been designed in conformance with the *sizing criteria* included in the DM; and

    (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part II.C.; and

    (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the DM. 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 DM.

iv. Soil testing results and locations (test pits, borings); and

v. Infiltration test results, when required in accordance with Part III.B.2.a.; and

vi. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each SMP. The plan must identify the entity

that will be responsible for the long-term operation and maintenance of each practice; and

3. Enhanced Phosphorus Removal Standards - The *owner or operator* of *construction activity* identified in Table 2 of Appendix B that is located in a watershed identified in Appendix C must prepare a *SWPPP* that includes SMPs designed in conformance with the applicable *sizing criteria* in Part II.C.2.b., c., or d. and the *performance criteria* Enhanced Phosphorus Removal Standards included in the DM. At a minimum, the SMP component of the *SWPPP* must meet the requirements of Part III.B.2.

C. Required *SWPPP* Components by Project Type

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 accordance with Part III.B.1. *Owners or operators* of the *construction activities*, identified in Table 2 of Appendix B, must prepare a *SWPPP* that also includes SMPs designed in accordance with Part III.B.2 or 3.

For the entire area of disturbance, including the entire *common plan of development or sale* if applicable, the owner or operator must evaluate every bullet from Appendix B Table 1 and Table 2 separately. If bullets from both Table 1 and Table 2 apply, the *SWPPP* must include erosion and sediment control practices for all *construction activities* but SMPs for only those portions of the *construction activities* that fall under Table 2 bullet(s).

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 SMPs identified in the *SWPPP*, are inspected and maintained in accordance with Part IV.B. and C.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity*, identified in Tables 1 and 2 of Appendix B, must 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 must:

a. if the corrective action does not require engineering design:

   i. begin implementing corrective actions within one business day; and

   ii. complete the corrective actions within five business days; or

b. if the corrective action requires engineering design:

   i. begin the engineering design process within five business days; and

   ii. complete the corrective action in a reasonable time frame but no later than within 60 calendar days.

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 in accordance with Part IV.B.1. The *trained contractor* must begin conducting the maintenance inspections in accordance with Part IV.B.1. 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 in accordance with Part IV.B.1. if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all SMPs required for the completed portion of the project have been constructed in conformance with the *SWPPP* and are operational.

C. *Qualified Inspector* Inspection Requirements

1. With the exception of the following *construction activities* identified in Tables 1 and 2 of Appendix B, a *qualified inspector* must conduct site inspections for all other *construction activities* identified in Tables 1 and 2 of Appendix B:

   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 or equal to 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 D; and

b. the construction of a single-family home that involves soil disturbances of one (1) or more acres but less than or equal to 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 D; and

c. construction on *agricultural property* that involves soil disturbances of one (1) or more acres but less than five (5) acres; and

d. *construction activities* located in the New York City Watershed located east of the Hudson River, see Appendix C Figure 1, that involve soil disturbances of 5,000 square feet or more, but less than one acre.

2. The *qualified inspector* must conduct site inspections in accordance with the following timetable:

a. For *construction sites* where soil disturbance activities are on-going, the *qualified inspector* must conduct a site inspection at least once every seven (7) calendar days; or

b. For *construction sites* where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part I.E.6. to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* must conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections must be separated by a minimum of two (2) full calendar days; or

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* must conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* must notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix E) or, in areas under the jurisdiction of a *Traditional Land Use Control MS4 Operator,* the *Traditional Land Use Control MS4 Operator* (provided the *Traditional Land Use Control MS4 Operator* is not the *owner or operator* of the *construction activity*) by hard copy or email prior to reducing the inspections to this frequency and again by hard copy or email prior to re-commencing construction; or

d. For *construction sites* where soil disturbance activities have been shut down with partial project completion, the requirement to have the *qualified inspector* conduct inspections ceases if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all SMPs required for the completed portion of the project have been constructed in conformance with the *SWPPP* and are operational. The *owner or operator* must notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix E) or, in areas subject to the review authority of *Traditional Land Use Control MS4 Operator(s)* in accordance with Part I.D.2.b.ii.1., the *Traditional Land Use Control MS4 Operator(s)* (provided the *Traditional Land Use Control MS4 Operator(s)* are not the *owners or operators* of the *construction activity*) in writing prior to the shutdown and again in writing prior to resuming *construction activity*. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* must terminate coverage by meeting the requirements of Part V; or

e. For *construction sites* involving soil disturbance of one (1) or more acres that *directly discharge* to one of the 303(d) segments listed in Appendix D or is located in one of the watersheds listed in Appendix C, the *qualified inspector* must conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections must be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* must inspect:

a. all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness; and

b. all SMPs under construction to ensure that they are constructed in conformance with the *SWPPP*; and

c. all areas of disturbance that have not achieved *final stabilization*; and

d. all points of *discharge* to *surface waters of the State* located within, or immediately adjacent to, the property boundaries of the *construction site*; and

e. all points of *discharge* from the *construction site*.

4. The *qualified inspector* must prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report must include and/or address all of the following, for all *construction activities* except those listed in Part IV.C.1.:

   a. Permit identification number; and

   b. Date and time of inspection; and

   c. Name and title of person(s) performing inspection; and

   d. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection, including the temperature at the time of the inspection; and

   e. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This must 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; and

   f. A description of the condition of all *surface waters of the State* located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This must include identification of any *discharges* of sediment to the *surface waters of the State*; and

   g. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance; and

   h. 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; and

   i. Description and sketch (map) 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; and

   j. Estimates, in square feet or acres, of the following areas:

      i. Total area with active soil disturbance (not requiring either *temporary stabilization* or *final stabilization*); and

      ii. Total area with inactive soil disturbance (requiring either *temporary stabilization* or *final stabilization*); and

      iii. Total area that has achieved *temporary stabilization*; and

      iv. Total area that has achieved *final stabilization*; and

   k. Current stage of construction of all SMPs and identification of all *construction activity* on site that is not in conformance with the *SWPPP* and technical standards; and

   l. 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 SMP(s); and

   m. Identification and status of all corrective actions that were required by previous inspection; and

   n. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* must attach 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* must 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* must 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* must notify the *owner or operator*, and appropriate contractor or subcontractor identified in Part III.A.7., of any corrective actions that need to be taken. The contractor or subcontractor must:

   a. if the corrective action does not require engineering design:

i. begin implementing corrective actions within one business day; and

ii. complete the corrective actions within five business days; or

b. if the corrective action requires engineering design:

i. begin the engineering design process within five business days; and

ii. complete the corrective action in a reasonable time frame but no later than within 60 calendar days.

6. All inspection reports must be signed by the *qualified inspector.* In accordance with Part I.E.3., the inspection reports must be maintained on site with the *SWPPP*.

Part V. How to Terminate CGP Coverage

A. Electronic Notice of Termination (eNOT) Submittal

The eNOT contains questions to ensure requirements in Part V.A. have been met.

1. An *owner or operator* must terminate coverage when one or more of the following requirements have been met:

a. Total project completion:

i. all *construction activity* identified in the *SWPPP* has been completed; and

ii. all areas of disturbance have achieved *final stabilization*; and

iii. all temporary, structural erosion and sediment control measures have been removed; and

iv. all SMPs have been constructed in conformance with the *SWPPP* and are operational; and

v. an as-built drawing has been prepared; or

b. Planned shutdown with partial project completion:

i. all soil disturbance activities have ceased; and

ii. all areas disturbed as of the project shutdown date have achieved *final stabilization*; and

iii. all temporary, structural erosion and sediment control measures have been removed; and

iv. all SMPs required for the completed portion of the project have been constructed in conformance with the *SWPPP* and are operational; and

v. an as-built drawing has been prepared; or

c. In accordance with Part I.G. Change of Owner or Operator; or

d. The *owner or operator* has obtained coverage under an alternative general SPDES permit or an individual SPDES permit.

2. For *construction activities* that require *qualified inspector* inspections in accordance with Part IV.C.1. and have met Part V.A.1.a. or b., the *owner or operator* must have the *qualified inspector* perform a final site inspection prior to submitting the eNOT. The *qualified inspector* must, by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice(s)" certification statements on the eNOT, certify that all the requirements in Part V.A.1.a. or b. have been achieved.

3. For *construction activities* that are subject to the review authority of *Traditional Land Use Control MS4 Operator(s)* in accordance with Part I.D.2.b.ii.1. and meet Part V.A.1.a. or b., the *owner or operator* must have the *Traditional Land Use Control MS4 Operator(s)* sign the "MS4 Acceptance" statement on the eNOT in accordance with the requirements in Part VII.J. A *Traditional Land Use Control MS4 Operator* official, by signing this statement, determined that it is acceptable for the *owner or operator* to submit the eNOT in accordance with the requirements of this Part. A *Traditional Land Use Control MS4 Operator* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) when required in Part V.A.2.

4. For *construction activities* that require SMPs and meet Part V.A.1.a. or b., the *owner or operator* must, prior to submitting the eNOT, ensure one of the following:

   a. for SMP(s) that were constructed by a private entity, but will be owned, operated, and maintained by a public entity, the SMP(s) and any right-of-way(s) needed to operate and maintain such practice(s) have been deeded to the municipality in which the practice(s) is located; or

   b. for SMP(s) that are privately owned, but will be operated and maintained by a public entity, an executed operation and maintenance agreement is in place with the municipality that will operate and maintain the SMP(s); or

   c. for SMP(s) 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; or

   d. for SMP(s) 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 policies and procedures in place that ensure operation and maintenance of the practices in accordance with the operation and maintenance plan.

5. An *owner or operator* that has met the requirements of Part V.A.1., 2., 3., and 4. must request termination of coverage under this permit by submitting a complete Notice of Termination form electronically using a NYSDEC approved form.[5]

   a. The owner's or operator's coverage is terminated as of the termination date indicated in the Letter of Termination (LOT), which is sent by NYSDEC after a complete eNOT is submitted.

[5] Unless NYSDEC grants a waiver in accordance with 40 CFR 127.15(c) or (d). All waiver requests must be submitted to Stormwater_info@dec.ny.gov or NYSDEC, Bureau of Water Permits, 625 Broadway, 4th Floor, Albany, New York 12233-3505.

Part VI. Record Retention and Reporting

A. Record Retention

The *owner or operator* must retain a copy of the documents listed in Part I.E.3. and a copy of the LOT for a period of at least five years from the date that NYSDEC accepts a complete NOT submitted in accordance with Part V.

B. Reporting

Except for the eNOI, the signature forms associated with the eNOI, and the eNOT, all other written correspondence requested by NYSDEC, including individual permit applications, must be sent to the address of the appropriate DOW (SPDES) Program contact at the Regional Office listed in Appendix E.

Part VII. Standard Permit Requirements

For the purposes of this permit, examples of contractors and subcontractors include: third-party maintenance and construction contractors.

A. Duty to Comply

The *owner or operator*, and all contractors or subcontractors, must comply with all requirements of this permit. Any non-compliance with the requirements of this permit constitutes a violation of the New York State Environmental Conservation Law (ECL), and its implementing regulations, and is grounds for enforcement action. Filing of a request for termination of coverage under this permit, or a notification of planned changes or anticipated non-compliance, does not limit, diminish or stay compliance with any requirements of this permit.

B. Need to Halt or Reduce Activity Not a Defense

The necessity to halt or reduce the *construction activity* regulated by this permit, in order to maintain compliance with the requirements of this permit, must not be a defense in an enforcement action.

C. Penalties

There are substantial criminal, civil, and administrative penalties associated with violating the requirements of this permit. Fines of up to $37,500 per day for each

violation and imprisonment for up to 15 years may be assessed depending upon the nature and degree of the offense.

D. False Statements

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 monitoring reports or reports of compliance or noncompliance must, upon conviction, be punished in accordance with ECL §71-1933 and or New York State Penal Law Articles 175 and 210.

E. Re-Opener Clause

Upon issuance of this permit, a determination has been made on the basis of a submitted Notice of Intent, plans, or other available information, that compliance with the specified permit requirements will reasonably protect classified water use and assure compliance with applicable *water quality standards*. Satisfaction of the requirements of this permit notwithstanding, if operation pursuant to this permit causes or contributes to a condition in contravention of State *water quality standards* or guidance values, or if NYSDEC determines that a modification is necessary to prevent impairment of the best use of the waters or to assure maintenance of *water quality standards* or compliance with other provisions of ECL Article 17 or the Clean Water Act (CWA), or any regulations adopted pursuant thereto, NYSDEC may require such modification and the Commissioner may require abatement action to be taken by the *owner or operator* and may also prohibit such operation until the modification has been implemented.

F. Duty to Mitigate

The *owner or operator*, and its contractors and subcontractors, must 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.

G. Requiring Another General Permit or Individual SPDES Permit

NYSDEC may require any *owner or operator* authorized to *discharge* in accordance with this permit to apply for and obtain an individual SPDES permit or apply for authorization to *discharge* in accordance with another general SPDES permit.

1. Cases where an individual SPDES permit or authorization to discharge in accordance with another general SPDES permit may be required include, but is not limited to the following:

   a. the *owner or operator* is not in compliance with the conditions of this permit or does not meet the requirements for coverage under this permit; and

   b. a change has occurred in the availability of demonstrated technology or practices for the control or abatement of *pollutants* applicable to the *point source*; and

   c. new effluent limitation guidelines or new source performance standards are promulgated that are applicable to *point sources* authorized to *discharge* in accordance with this permit; and

   d. existing effluent limitation guidelines or new source performance standards that are applicable to *point sources* authorized to *discharge* in accordance with this permit are modified; and

   e. a water quality management plan containing requirements applicable to such *point sources* is approved by NYSDEC; and

   f. circumstances have changed since the time of the request to be covered so that the *owner or operator* is no longer appropriately controlled under this permit, or either a temporary or permanent reduction or elimination of the authorized *discharge* is necessary; and

   g. the *discharge* is in violation of section 17-0501 of the ECL; and

   h. the *discharge(s)* is a significant contributor of *pollutants*. In making this determination, NYSDEC may consider the following factors:

      i. the location of the *discharge(s)* with respect to *surface waters of the State*; and

      ii. the size of the *discharge(s)*; and

      iii. the quantity and nature of the *pollutants discharged* to *surface waters of the State*; and

      iv. other relevant factors including compliance with other provisions of ECL Article 17, or the CWA.

2. When NYSDEC requires any *owner or operator* authorized by this permit to apply for an individual SPDES permit as provided for in this subdivision, it must notify the *owner or operator* in writing that a permit application is required. This notice must include a brief statement of the reasons for this decision, an application

form, a statement setting a time for the *owner or operator* to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from the *owner's or operator's* receipt of the notification letter, whereby the authorization to *discharge* under this permit must be terminated. NYSDEC may grant additional time upon demonstration, to the satisfaction of the RWE,[6] that additional time to apply for an alternative authorization is necessary or where NYSDEC has not provided a permit determination in accordance with 6 NYCRR Part 621.

3. When an individual SPDES permit is issued to an *owner or operator* authorized to *discharge* under this permit for the same *discharge(s)*, this permit authorization for *construction activities* authorized under the individual SPDES permit is automatically terminated on the effective date of the individual SPDES permit unless termination is earlier in accordance with 6 NYCRR Part 750.

H. Duty to Provide Information

The *owner or operator* must furnish to NYSDEC, within five business days, unless otherwise set forth by NYSDEC, any information that NYSDEC may request to determine whether cause exists to determine compliance with this permit or to determine whether cause exists for requiring an individual SPDES permit in accordance with 6 NYCRR 750-1.21(e) (see Part VII.G. Requiring Another General Permit or Individual Permit).

The *owner or operator* must make available to NYSDEC, for inspection and copying, or furnish to NYSDEC within 25 business days of receipt of a NYSDEC request for such information, any information retained in accordance with this permit.

Except for Part I.D.4. and 5. and Part I.G., the following applies: where the *owner or operator* becomes aware that it failed to submit any relevant facts on the Notice of Intent, or submitted incorrect information in a Notice of Intent or in any report to NYSDEC, the *owner or operator* must submit such facts or corrected information to NYSDEC within five business days.

I. Extension

In the event a new permit is not issued and effective prior to the expiration of this permit, and this permit is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, then the *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the requirements of this permit until a new permit is issued and effective.

[6] The Regional Water Manager where a DEC Region does not have a RWE.

J. Signatories and Certification

The Notice of Intent, Notice of Termination, and reports required by this permit must be signed as provided in 40 CFR §122.22.

1. All Notices of Intent and Notices of Termination must be signed as follows:

   a. For a corporation. 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 Notice of Intent or Notice of Termination requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

      Note: NYSDEC does not require specific assignments or delegations of authority to responsible corporate officers identified in 40 CFR §122.22(a)(1)(i). NYSDEC will presume that these responsible corporate officers have the requisite authority to sign the Notice of Intent or Notice of Termination unless the corporation has notified NYSDEC to the contrary. Corporate procedures governing authority to sign a Notice of Intent or Notice of Termination may provide for assignment or delegation to applicable corporate positions under 40 CFR §122.22(a)(1)(ii) rather than to specific individuals.

   b. For a partnership or sole proprietorship. By a general partner or the proprietor, respectively.

c. For a municipality, State, Federal, or other public agency. By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

   1. the chief executive officer of the agency; or

   2. 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. All reports required by this permit, and other information requested by NYSDEC, must be signed by a person described in Part VII.J.1., 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.J.1. or using the Duly Authorized Form, found on the DEC website; and

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, 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 is submitted to NYSDEC.

3. Changes to authorization. If an authorization under Part VII.J.2. is no longer accurate because a different individual or position has responsibility for the overall operation of the *construction activity*, a new authorization satisfying the requirements of Part VII.J.2. must be submitted to NYSDEC prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under Part VII.J.1. or 2. must make the following 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 gather and evaluate 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 there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

5. Electronic reporting. If documents described in Part VII.J.1. or 2. are submitted electronically by or on behalf of the *construction activity* with coverage under this permit, any person providing the electronic signature for such documents must meet all relevant requirements of this section, and must ensure that all of the relevant requirements of 40 CFR Part 3 (including, in all cases, subpart D to Part 3) (Cross-Media Electronic Reporting) and 40 CFR Part 127 (NPDES Electronic Reporting Requirements) are met for that submission.

K. Inspection and Entry

The *owner or operator* must allow NYSDEC, the USEPA Regional Administrator, the applicable county health department, or any authorized representatives of those entities, 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 requirements of this permit; and

2. have access to and copy at reasonable times, any records that must be kept under the requirements of this permit, including records required to be maintained for purposes of operation and maintenance; and

3. inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit; and

4. sample or monitor at reasonable times, for the purposes of assuring general SPDES permit compliance or as otherwise authorized by the CWA or ECL, any substances or parameters at any location; and

5. enter upon the property of any contributor to the regulated facility or activity under authority of the *owner or operator*.

L. Confidentiality of Information

The following must not be held confidential: this permit, the fact sheet for this permit, the name and address of any *owner or operator*, effluent data, the Notice of Intent, and information regarding the need to obtain an individual permit or an alternative general SPDES permit. This includes information submitted on forms themselves and any attachments used to supply information required by the forms (except information submitted on usage of substances). Upon the request of the *owner or operator*, NYSDEC must make determinations of confidentiality in accordance with 6 NYCRR Part 616, except as set forth in the previous sentence. Any information accorded confidential status must be disclosed to the Regional Administrator upon his or her written request. Prior to disclosing such information to the Regional Administrator, NYSDEC will notify the Regional Administrator of the confidential status of such information.

M. Other Permits May Be Required

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

N. NYSDEC Orders or Civil Decrees/Judgments

The issuance of this permit by the NYSDEC, and the coverage under this permit by the *owner or operator*, does not supersede, revoke, or rescind any existing order on consent or civil Decree/Judgment, or modification to any such documents or to any order issued by the Commissioner, or any of the terms, conditions, or requirements contained in such order or modification therefore, unless expressly noted.

O. Property Rights

Coverage under this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations, nor does it obviate the necessity of obtaining the assent of any other jurisdiction as required by law for the *discharge* authorized.

P. Compliance with Interstate Standards

If the *construction activity* covered by this permit originates within the jurisdiction of an interstate water pollution control agency, then the *construction activity* must also comply with any applicable effluent standards or *water quality standards* promulgated by that interstate agency and as set forth in this permit for such *construction activities*.

Q. Oil and Hazardous Substance Liability

Coverage under this permit does not affect the imposition of responsibilities upon, or the institution of any legal action against, the *owner or operator* under section 311 of the CWA, which must be in conformance with regulations promulgated pursuant to section 311 governing the applicability of section 311 of the CWA to *discharges* from facilities with *NPDES* permits, nor must such issuance preclude the institution of any legal action or relieve the *owner or operator* from any responsibilities, liabilities, or penalties to which the *owner or operator* is or may be subject pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. section 9601 et seq. (CERCLA).

R. 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, must not be affected thereby.

S. NYSDEC Approved Forms

The *owner or operator* must provide all relevant information that is requested by NYSDEC, and required by this permit, on all NYSDEC approved forms.

APPENDIX A – Abbreviations and Definitions

Abbreviations

APO – Agency Preservation Officer
BB – New York State Standards and Specifications for Erosion and Sediment Control (Blue Book), dated November 2016
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)
DM – New York State Stormwater Management Design Manual (Design Manual), dated July 31, 2024
DOW – Division of Water
EAF – Environmental Assessment Form
ECL – chapter 43-B of the Consolidated Laws of the State of New York, entitled the 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
NYC – The City of New York
NYCDEP – The City of New York Department of Environmental Protection
NYSDEC – The New York State Department of Environmental Conservation
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RR – Runoff Reduction
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SMP – Post-Construction Stormwater Management Practice
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. If a word is not italicized in the permit, use its common definition.

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 – the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Best Management Practice Systems Catalogue" (dated June 2023).

Alter Hydrology from Pre- to Post-Development Conditions – 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 System – a sewer system which conveys sewage and *stormwater* through a single pipe system to a publicly owned treatment works.

Commence (Commencement of) Construction Activities – 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.

Common Plan of Development or Sale – a contiguous area where multiple separate and distinct *construction activities* are occurring, or may occur, under one plan. The "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 (SEQR) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating *construction activities* may occur on a specific plot. A *common plan of development or sale* is comprised of two or more *phases*.

Common plan of development or sale does not include separate and distinct *construction activities* that are occurring, or may occur, under one plan that are at least 1/4 mile apart provided any interconnecting road, pipeline or utility project that is part of the same "common plan" is not concurrently being disturbed.

Construction Activity(ies) – identified within 40 CFR 122.26(b)(14)(x), 122.26(b)(15)(i), and 122.26(b)(15)(ii), any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, mechanized 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, which is excluded from the calculation of the soil disturbance for a project. Routine maintenance includes, but is not limited to:

- Re-grading of gravel roads or parking lots; and
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and maintains or improves the hydraulic capacity of the ditch; and
- Replacement of existing culverts that maintains the approximate original line and grade, and maintains or improves the hydraulic capacity of a ditch; and
- Replacement of existing bridges that maintains the approximate original line and grade, and maintains or improves the hydraulic capacity beneath the bridges; and
- 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); and
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*; and
- 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; and
- Long-term use of equipment storage areas at or near highway maintenance facilities; and
- 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*; and
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts; and
- Maintenance of ski trails including brush hog use and mowing; and
- Above ground snowmaking pipe replacement; and
- Replacement of existing utility poles; etc.

Construction Site – the land area where *construction activity(ies)* will occur. See also the definitions for "*Commence (Commencement of) Construction Activities"* and "*Common Plan of Development or Sale."*

Dewatering – the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Directly Discharge(s)(ing) (to a specific surface waterbody) – 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)(d) – any addition of any *pollutant* to waters of the State through an outlet or *point source*.

Embankment – an earthen or rock slope that supports a road/highway.

Equivalent (Equivalence) – 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 – 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.

Historic Property – 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) – all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and compacted gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – not technologically possible, or not economically practicable and achievable considering best industry practices.

Minimize(ing)(ation) – 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 System (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):

1. owned or operated by a State, city, town, village, 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*; and

2. designed or used for collecting or conveying *stormwater*; and

3. which is not a *combined sewer system*; and

4. which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

Natural Buffer(s) – an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – 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.

Nonpoint Source(s) – 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 – flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator – 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 requirements.

Performance Criteria – the six performance criteria for each group of SMPs in Chapters 5 and 6 of the technical standard, New York State Stormwater Management Design Manual (DM), dated July 31, 2024. These include feasibility, conveyance, pretreatment, treatment, landscaping, and maintenance. It does not include the *Sizing Criteria* (i.e. WQv, RRv, CPv, Qp and Qf) in Part I.C.2. of the permit.

Phase – a defined area in which *construction activities* are occurring or will occur separate from other defined area(s).

Point Source – 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(s) – 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 – 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 NYSDEC 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 NYSDEC endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other NYSDEC 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 SMPs that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional – 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 NYSDEC endorsed individual(s). Individuals preparing *SWPPPs* that require the SMP 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) – 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.).

Renewable Energy – electricity or thermal energy generated by renewable energy systems through use of the following technologies: solar thermal, photovoltaics, on land and offshore wind, hydroelectric, geothermal electric, geothermal ground source heat, tidal energy, wave energy, ocean thermal, and fuel cells which do not utilize a fossil fuel resource in the process of generating electricity.

Site Limitations – 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 – the criteria included in Part I.C.2 of the permit that are used to size SMPs. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

Steep Slope – land area designated on the current United States Department of Agriculture (USDA) Soil Survey as Soil Slope Phase D, (provided the map unit name or description 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.

Stormwater – that portion of precipitation that, once having fallen to the ground, is in excess of the evaporative or infiltrative capacity of soils, or the retentive capacity of surface features, which flows or will flow off the land by surface runoff to waters of the State.

Streambank – 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) – 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 SMPs); and identifies procedures the *owner or operator* will implement to comply with the requirements 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 – an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization – 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 Load (TMDL) – 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 and still meet *water quality standards*, and an allocation of that amount to the *pollutant's* sources. A TMDL stipulates Waste Load Allocations (WLA) for *point source discharges*, Load Allocations (LA) for *nonpoint sources*, and a margin of safety (MOS).

Traditional Land Use Control MS4 Operator – 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).

Trained Contractor – an employee from the contracting (construction) company, identified in Part III.A.7., that has received four (4) hours of NYSDEC endorsed training

in proper erosion and sediment control principles from a Soil and Water Conservation District, or other NYSDEC 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.7., 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 NYSDEC endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other NYSDEC endorsed entity).

The *trained contractor* is responsible for the day-to-day implementation of the *SWPPP*.

Tree Clearing – *construction activities* limited to felling and removal of trees.

Tree clearing does not include hand felling and leaving the trees in place with no support from mechanized equipment, which is not considered *construction activity* requiring coverage under this permit.

Water Quality Standard – 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**

The following *construction activities* that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres: • Single-family home 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 D • Single-family residential subdivisions with 25% or less *impervious cover* at total site build-out and 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 D • Construction of a barn or other *agricultural building*, silo, stock yard or pen. • Structural agricultural conservation practices as identified in Table II in the "Agricultural Best Management Practice Systems Catalogue" (dated June 2023) that include construction or reconstruction of *impervious area* or *alter hydrology from pre- to post-development* conditions.
The following *construction activities* that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land: • All construction activities located in the New York City Watershed located east of the Hudson River, see Appendix C Figure 1, that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.
Within the municipal boundaries of NYC: • Stand-alone road reconstruction, where the total soil disturbance from only that road construction, is less than one (1) acre of land.
The following *construction activities*: • 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, *stormwater* retrofits, stream restoration, and resiliency projects that reconstruct shoreline areas to address sea level rise • Pond construction • Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an *impervious cover* • Cross-country ski trails, walking/hiking trails, and mountain biking trails, including a de minimis parking lot (maximum 10 spaces total, sized for passenger cars) with 35 feet minimum preservation of undisturbed area downgradient from the parking lot • Dam rehabilitation (the structure of the dam itself) • Sidewalks, bike paths, or walking paths, surfaced with an *impervious cover*, that are not part of residential, commercial, or institutional development; • Sidewalks, bike paths, or walking paths, 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.

Table 1 (Continued)
CONSTRUCTION ACTIVITIES **THAT REQUIRE THE PREPARATION OF A *SWPPP***
THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following *construction activities*:

- Slope stabilization
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics
- Spoil areas that will be covered with vegetation
- Vegetated open space (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) that do not *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 where vegetation will be established, and no *redevelopment activity* is planned[1]
- Installation or replacement of either an overhead electric transmission line or a ski lift tower that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*.
- Solar array field areas that have tables elevated off the ground, spaced one table width apart, do not *alter hydrology from pre- to post-development conditions*, and address water quality volume and runoff reduction volume by maintaining sheet flow on slopes less than 8%.
- Structural agricultural conservation practices as identified in Table II in the "Agricultural Best Management Practice Systems Catalogue" (dated June 2023) that do not include construction or reconstruction of *impervious area* and do not *alter hydrology from pre- to post-development* conditions.
- 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 (in this context, "temporary" means the *impervious area* will be in place for two years or less)
- Other *construction activities* that do not include the construction or reconstruction of *impervious area*, and do not *alter hydrology from pre- to post-development* conditions, and are not listed in Table 2.

1. If the site is redeveloped in the future, a new eNOI must be submitted.

Table 2
CONSTRUCTION ACTIVITIES **THAT REQUIRE THE PREPARATION OF A *SWPPP* THAT INCLUDES**
POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES (SMPS)

The following *construction activities*:

- 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 D
- 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 D
- 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 between 20,000 square feet and one (1) acre of land within the municipal boundaries of NYC 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 *common plan of development or sale* that will ultimately disturb five (5) or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Creation of 5,000 square feet or more of *impervious area* in the municipal boundaries of NYC
- 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) that involves soil disturbance greater than five acres.
- Structural agricultural conservation practices as identified in Table II in the "Agricultural Best Management Practice Systems Catalogue" (dated June 2023) that involves soil disturbance greater than five acres and include the construction or reconstruction of *impervious area* or *alter hydrology from pre- to post-development* conditions.
- Facility buildings, including ski lodges, restroom buildings, pumphouses, ski lift terminals, and maintenance and groomer garages
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills; including creation of landfills or capping landfills.
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTWs, water treatment plants, and water storage tanks
- Golf courses
- Office complexes

Table 2 (Continued)

***CONSTRUCTION ACTIVITIES* THAT REQUIRE THE PREPARATION OF A *SWPPP* THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES (SMPs)**

The following *construction activities*:

- Permanent laydown yards and equipment storage lots
- Playgrounds that include the construction or reconstruction of *impervious area*
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surfaces
- Road construction or reconstruction, outside the municipal boundaries of NYC
- Road construction within the municipal boundaries of NYC
- Stand-alone road reconstruction, within the municipal boundaries of NYC where the total soil disturbance from that road reconstruction involves soil disturbance of one (1) acre or more of land
- Parking lot construction or reconstruction (as with all Table 2 bullets, this includes parking lots constructed as part of the *construction activities* listed in Table 1, unless a Table 1 bullet specifies otherwise)
- 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 overhead electric transmission line, wind-power, cell tower, oil or gas well drilling, sewer or water main, ski lift, or other linear utility project
- Sidewalks, bike paths, or walking paths, surfaced with an *impervious cover*, that are part of a residential, commercial or institutional development
- Sidewalks, bike paths, or walking paths, surfaced with an *impervious cover*, that are part of highway construction or reconstruction
- Solar array field areas on slopes greater than 8% that cannot maintain sheet flow using management practices identified in the BB or the DM
- Solar array field areas on slopes less than 8% that will *alter the hydrology from pre- to post-development* conditions
- Solar array field areas with tables that are not elevated high enough to achieve *final stabilization* beneath the tables
- Traditional *impervious areas* associated with solar development (e.g. roads, buildings, transformers)
- Utility pads surfaced with *impervious cover*, including electric vehicle charging stations
- 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 SMPs designed in conformance with the Enhanced Phosphorus Removal Standards included in the DM technical standard.

- 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

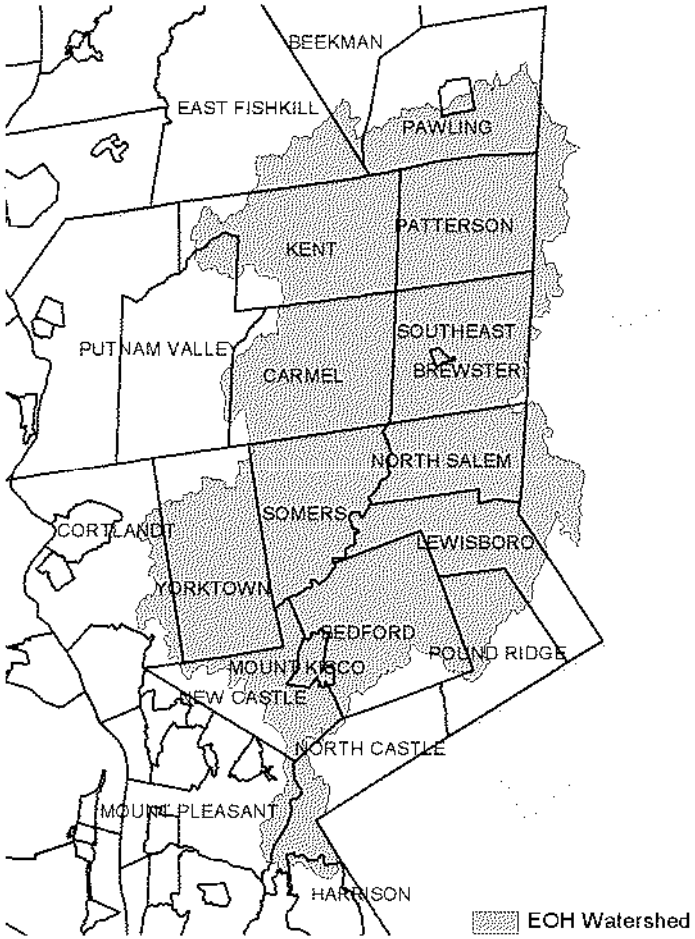


Figure 2 - Onondaga Lake Watershed

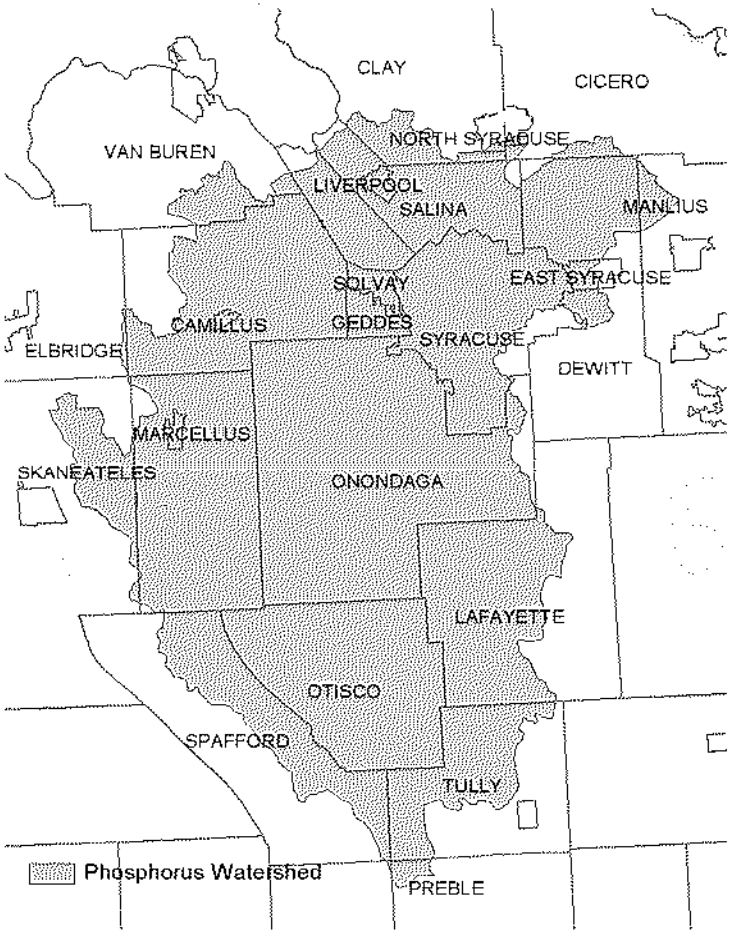


Figure 3 - Greenwood Lake Watershed

Figure 4 - Oscawana Lake Watershed

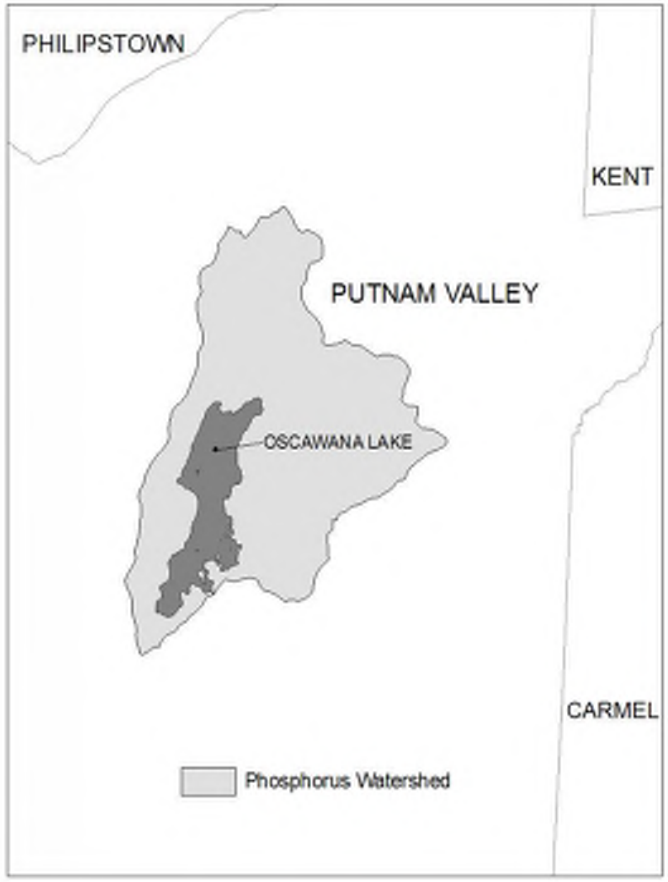
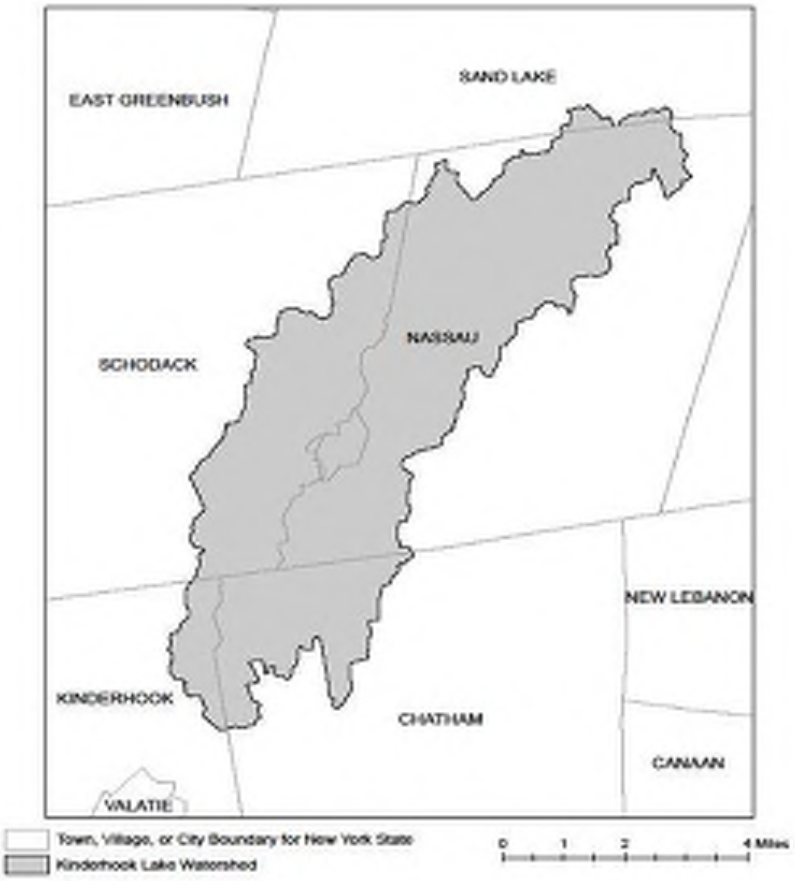


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Impaired Waterbodies (by Construction Related Pollutants)

List of waterbodies impaired by *pollutants* related to *construction activity*, including turbidity, silt/sediment, and nutrients (e.g. nitrogen, phosphorus). This list is a subset of "The Final New York State 2018 Section 303(d) List of Impaired Waters Requiring a TMDL" dated June 2020.

County	Waterbody	Pollutant
Albany	Ann Lee (Shakers) Pond, Stump Pond (1201-0096)	Phosphorus
Albany	Lawsons Lake (1301-0235)	Phosphorus
Allegany	Amity Lake, Saunders Pond (0403-0054)	Phosphorus
Allegany	Andover Pond (0403-0056)	Phosphorus
Bronx	Reservoir No.1/Lake Isle (1702-0075)	Phosphorus
Bronx	Van Cortlandt Lake (1702-0008)	Phosphorus
Broome	Blueberry, Laurel Lakes (1404-0033)	Phosphorus
Broome	Fly Pond, Deer Lake (1404-0038)	Phosphorus
Broome	Minor Tribs to Lower Susquehanna (0603-0044)	Phosphorus
Broome	Whitney Point Lake/Reservoir (0602-0004)	Phosphorus
Cattaraugus	Allegheny River/Reservoir (0201-0023)	Phosphorus
Cattaraugus	Beaver Lake/Alma Pond (0201-0073)	Phosphorus
Cattaraugus	Case Lake (0201-0020)	Phosphorus
Cattaraugus	Linlyco/Club Pond (0201-0035)	Phosphorus
Cayuga	Duck Lake (0704-0025)	Phosphorus
Cayuga	Owasco Inlet, Upper, and tribs (0706-0014)	Nutrients
Chautauqua	Chadakoin River and tribs (0202-0018)	Phosphorus
Chautauqua	Hulburt/Clymer Pond (0202-0079)	Phosphorus
Chautauqua	Middle Cassadaga Lake (0202-0002)	Phosphorus
Clinton	Great Chazy River, Lower, Main Stem (1002-0001)	Silt/Sediment
Columbia	Robinson Pond (1308-0003)	Phosphorus
Cortland	Dean Pond (0602-0077)	Phosphorus
Dutchess	Fallkill Creek (1301-0087)	Phosphorus
Dutchess	Hillside Lake (1304-0001)	Phosphorus
Dutchess	Wappingers Lake (1305-0001)	Phosphorus
Dutchess	Wappingers Lake (1305-0001)	Silt/Sediment
Erie	Beeman Creek and tribs (0102-0030)	Phosphorus
Erie	Delaware Park Pond (0101-0026)	Phosphorus
Erie	Ellicott Creek, Lower, and tribs (0102-0018)	Phosphorus
Erie	Ellicott Creek, Lower, and tribs (0102-0018)	Silt/Sediment
Erie	Green Lake (0101-0038)	Phosphorus
Erie	Little Sister Creek, Lower, and tribs (0104-0045)	Phosphorus
Erie	Murder Creek, Lower, and tribs (0102-0031)	Phosphorus

Erie	Rush Creek and tribs (0104-0018)	Phosphorus
Erie	Scajaquada Creek, Lower, and tribs (0101-0023)	Phosphorus
Erie	Scajaquada Creek, Middle, and tribs (0101-0033)	Phosphorus
Erie	Scajaquada Creek, Upper, and tribs (0101-0034)	Phosphorus
Erie	South Branch Smoke Cr, Lower, and tribs (0101-0036)	Phosphorus
Erie	South Branch Smoke Cr, Lower, and tribs (0101-0036)	Silt/Sediment
Genesee	Bigelow Creek and tribs (0402-0016)	Phosphorus
Genesee	Black Creek, Middle, and minor tribs (0402 0028)	Phosphorus
Genesee	Black Creek, Upper, and minor tribs (0402-0048)	Phosphorus
Genesee	Bowen Brook and tribs (0102-0036)	Phosphorus
Genesee	LeRoy Reservoir (0402-0003)	Phosphorus
Genesee	Mill Pond (0402-0050)	Phosphorus
Genesee	Oak Orchard Cr, Upper, and tribs (0301-0014)	Phosphorus
Genesee	Oatka Creek, Middle, and minor tribs (0402-0031)	Phosphorus
Genessee	Tonawanda Cr, Middle, Main Stem (0102-0002)	Phosphorus
Greene	Schoharie Reservoir (1202-0012)	Silt/Sediment
Greene	Sleepy Hollow Lake (1301-0059)	Silt/Sediment
Herkimer	Steele Creek tribs (1201-0197)	Phosphorus
Herkimer	Steele Creek tribs (1201-0197)	Silt/Sediment
Kings	Hendrix Creek (1701-0006) 18	Nitrogen
Kings	Prospect Park Lake (1701-0196)	Phosphorus
Lewis	Mill Creek/South Branch, and tribs (0801-0200)	Nutrients
Livingston	Christie Creek and tribs (0402-0060)	Phosphorus
Livingston	Conesus Lake (0402-0004)	Phosphorus
Livingston	Mill Creek and minor tribs (0404-0011)	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs (0402-0033)	Phosphorus
Monroe	Buck Pond (0301-0017)	Phosphorus
Monroe	Cranberry Pond (0301-0016)	Phosphorus
Monroe	Durand, Eastman Lakes (0302-0037)	Phosphorus
Monroe	Lake Ontario Shoreline, Western (0301-0069) 9	Phosphorus
Monroe	Long Pond (0301-0015)	Phosphorus
Monroe	Mill Creek and tribs (0302-0025)	Phosphorus 2
Monroe	Mill Creek/Blue Pond Outlet and tribs (0402-0049)	Phosphorus
Monroe	Minor Tribs to Irondequoit Bay (0302-0038)	Phosphorus
Monroe	Rochester Embayment - East (0302-0002) [9]	Phosphorus
Monroe	Rochester Embayment - West (0301-0068) 9	Phosphorus
Monroe	Shipbuilders Creek and tribs (0302-0026)	Phosphorus 2
Monroe	Thomas Creek/White Brook and tribs (0302-0023)	Phosphorus

Nassau	Bannister Creek/Bay (1701-0380)	Nitrogen
Nassau	Beaver Lake (1702-0152)	Phosphorus
Nassau	Browswere Bay (1701-0383)	Nitrogen
Nassau	Camaans Pond (1701-0052)	Phosphorus
Nassau	East Meadow Brook, Upper, and tribs (1701-0211)	Silt/Sediment
Nassau	East Rockaway Channel (1701-0381)	Nitrogen
Nassau	Glen Cove Creek, Lower, and tribs (1702-0146)	Silt/Sediment
Nassau	Grant Park Pond (1701-0054)	Phosphorus
Nassau	Hempstead Bay, Broad Channel (1701-0032)	Nitrogen
Nassau	Hempstead Lake (1701-0015)	Phosphorus
Nassau	Hewlett Bay (1701-0382)	Nitrogen
Nassau	Hog Island Channel (1701-0220)	Nitrogen
Nassau	Massapequa Creek, Upper, and tribs (1701-0174)	Phosphorus
Nassau	Milburn/Parsonage Creeks, Upp, and tribs (1701-0212)	Phosphorus
Nassau	Reynolds Channel, East (1701-0215) [12]	Nitrogen
Nassau	Reynolds Channel, West (1701-0216) 12	Nitrogen
Nassau	Tidal Tribs to Hempstead Bay (1701-0218)	Nitrogen
Nassau	Tribs (fresh) to East Bay (1701-0204)	Silt/Sediment
Nassau	Tribs (fresh) to East Bay (1701-0204)	Phosphorus
Nassau	Tribs to Smith Pond/Halls Pond (1701-0221)	Phosphorus
Nassau	Woodmere Channel (1701-0219)	Nitrogen
New York	Harlem Meer (1702-0103)	Phosphorus
New York	The Lake in Central Park (1702-0105)	Phosphorus
Niagara	Bergholtz Creek and tribs (0101-0004)	Phosphorus
Niagara	Hyde Park Lake (0101-0030)	Phosphorus
Niagara	Lake Ontario Shoreline, Western (0301-0053) 9	Phosphorus
Niagara	Lake Ontario Shoreline, Western (0301-0072) 9	Phosphorus
Oneida	Ballou, Nail Creeks (1201-0203)	Phosphorus
Onondaga	Ley Creek and tribs (0702-0001) 10	Nutrients (phosphorus)
Onondaga	Minor Tribs to Onondaga Lake (0702-0022) 10	Nutrients (phosphorus)
Onondaga	Minor Tribs to Onondaga Lake (0702-0022) 10	Nitrogen (NH3, NO2)
Onondaga	Onondaga Creek, Lower (0702-0023) 10	Nutrients (phosphorus)
Onondaga	Onondaga Creek, Lower, and tribs (0702-0023)	Turbidity
Onondaga	Onondaga Creek, Middle, and tribs (0702-0004)	Turbidity
Onondaga	Onondaga Creek, Upper, and tribs (0702-0024)	Turbidity
Ontario	Great Brook and minor tribs (0704-0034)	Phosphorus 2
Ontario	Great Brook and minor tribs (0704-0034)	Silt/Sediment

Ontario	Hemlock Lake Outlet and minor tribs (0402-0013)	Phosphorus
Ontario	Honeoye Lake (0402-0032)	Phosphorus
Orange	Brown Pond Reservoir (1303-0013)	Phosphorus
Orange	Lake Washington (1303-0012)	Phosphorus
Orange	Minor Tribs to Middle Wallkill (1306-0061)	Phosphorus
Orange	Monhagen Brook and tribs (1306-0074)	Phosphorus
Orange	Orange Lake (1301-0008) [16]	Phosphorus
Orange	Quaker Creek and tribs (1306-0025)	Phosphorus
Orange	Wallkill River, Middle, Main Stem (1306-0038)	Phosphorus
Orange	Wallkill River, Upper, and Minor tribs (1306-0017)	Phosphorus
Orleans	Glenvwood Lake (0301-0041)	Phosphorus
Orleans	Lake Ontario Shoreline, Western (0301-0070) 9	Phosphorus
Orleans	Lake Ontario Shoreline, Western (0301-0071) 9	Phosphorus
Oswego	Lake Neatahwanta (0701-0018)	Nutrients (phosphorus)
Oswego	Pleasant Lake (0703-0047)	Phosphorus
Putnam	Lost Lake, Putnam Lake (1302-0053)	Phosphorus
Putnam	Minor Tribs to Croton Falls Reservoir (1302-0001)	Phosphorus
Queens	Bergen Basin (1701-0009) 18	Nitrogen
Queens	Jamaica Bay, Eastern, and tribs, Queens (1701-0005) 18	Nitrogen
Queens	Kissena Lake (1702-0258)	Phosphorus
Queens	Meadow Lake (1702-0030)	Phosphorus
Queens	Shellbank Basin (1701-0001) 18	Nitrogen
Queens	Willow Lake (1702-0031)	Phosphorus
Rensselaer	Nassau Lake (1310-0001)	Phosphorus
Rensselaer	Snyders Lake (1301-0043)	Phosphorus
Richmond	Grassmere Lake/Bradys Pond (1701-0357)	Phosphorus
Rockland	Congers Lake, Swartout Lake (1501-0019)	Phosphorus
Rockland	Rockland Lake (1501-0021)	Phosphorus
Saratoga	Ballston Lake (1101-0036)	Phosphorus
Saratoga	Dwaas Kill and tribs (1101-0007)	Phosphorus
Saratoga	Dwaas Kill and tribs (1101-0007)	Silt/Sediment
Saratoga	Lake Lonely (1101-0034)	Phosphorus
Saratoga	Round Lake (1101-0060)	Phosphorus
Saratoga	Tribs to Lake Lonely (1101-0001)	Phosphorus
Schenectady	Collins Lake (1201-0077)	Phosphorus
Schenectady	Duane Lake (1311-0006)	Phosphorus
Schenectady Lake	Mariaville Lake (1201-0113)	Phosphorus
Schuyler	Cayuta Lake (0603-0005)	Phosphorus

Seneca	Reeder Creek and tribs (0705-0074)	Phosphorus
St.Lawrence	Black Lake Outlet, Black Lake (0906-0001)	Phosphorus
St.Lawrence	Fish Creek and minor tribs (0906-0026)	Phosphorus
Steuben	Smith Pond (0502-0012)	Phosphorus
Suffolk	Agawam Lake (1701-0117)	Phosphorus
Suffolk	Big/Little Fresh Ponds (1701-0125)	Phosphorus
Suffolk	Canaan Lake (1701-0018)	Phosphorus
Suffolk	Canaan Lake (1701-0018)	Silt/Sediment
Suffolk	Fresh Pond (1701-0241)	Phosphorus
Suffolk	Great South Bay, East (1701-0039)	Nitrogen
Suffolk	Great South Bay, Middle (1701-0040)	Nitrogen
Suffolk	Great South Bay, West (1701-0173)	Nitrogen
Suffolk	Lake Ronkonkoma (1701-0020)	Phosphorus
Suffolk	Mattituck/Marratooka Pond (1701-0129)	Phosphorus
Suffolk	Mill and Seven Ponds (1701-0113)	Phosphorus
Suffolk	Millers Pond (1702-0013)	Phosphorus
Suffolk	Moriches Bay, East (1701-0305)	Nitrogen
Suffolk	Moriches Bay, West (1701-0038)	Nitrogen
Suffolk	Quantuck Bay (1701-0042)	Nitrogen
Suffolk	Shinnecock Bay and Inlet (1701-0033)	Nitrogen
Suffolk	Tidal Tribs to West Moriches Bay (1701-0312)	Nitrogen
Sullivan	Bodine, Mongomery Lakes (1401-0091)	Phosphorus
Sullivan	Davies Lake (1402-0047)	Phosphorus
Sullivan	Evens Lake (1402-0004)	Phosphorus
Sullivan	Pleasure Lake (1402-0055)	Phosphorus
Sullivan	Swan Lake (1401-0063)	Phosphorus
Tompkins	Cayuga Lake, Southern End (0705-0040)	Phosphorus
Tompkins	Cayuga Lake, Southern End (0705-0040)	Silt/Sediment
Ulster	Ashokan Reservoir (1307-0004)	Silt/Sediment
Ulster	Esopus Creek, Lower, Main Stem (1307-0010) [17]	Turbidity
Ulster	Esopus Creek, Middle, Main Stem (1307-0003) 17	Turbidity
Ulster	Esopus Creek, Upper, and minor tribs (1307-0007)[3]	Silt/Sediment
Ulster	Wallkill River, Lower, Main Stem (1306-0027)	Phosphorus
Warren	Hague Brook and tribs (1006-0006)	Silt/Sediment
Warren	Huddle/Finkle Brooks and tribs (1006-0003)	Silt/Sediment
Warren	Indian Brook and tribs (1006-0002)	Silt/Sediment
Warren	Lake George (1006-0016) and tribs	Silt/Sediment
Warren	Tribs to Lake George, East Shore (1006-0020)	Silt/Sediment
Warren	Tribs to Lake George, Lk.George Village (1006-0008)	Silt/Sediment

Washington	Wood Cr/Champlain Canal and tribs (1005-0036)	Phosphorus
Westchester	Lake Katonah (1302-0136)	Phosphorus
Westchester	Lake Lincolndale (1302-0089)	Phosphorus
Westchester	Lake Meahagh (1301-0053)	Phosphorus
Westchester	Lake Mohegan (1301-0149)	Phosphorus
Westchester	Lake Shenorock (1302-0083)	Phosphorus
Westchester	Mamaroneck River, Lower (1702-0071)	Silt/Sediment
Westchester	Mamaroneck River, Upp, & minor tribs (1702-0123)	Silt/Sediment
Westchester	Saw Mill River (1301-0007)	Phosphorus
Westchester	Saw Mill River, Middle, and tribs (1301-0100)	Phosphorus
Westchester	Sheldrake River (1702-0069)	Phosphorus
Westchester	Sheldrake River (1702-0069)	Silt/Sedimnt
Westchester	Silver Lake (1702-0040)	Phosphorus
Westchester	Teatown Lake (1302-0150)	Phosphorus
Westchester	Truesdale Lake (1302-0054)	Phosphorus
Westchester	Wallace Pond (1301-0140)	Phosphorus

APPENDIX E – List of NYSDEC Regional Offices

Region	Covering the following counties:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators	DIVISION OF WATER (DOW) Water (SPDES) Program
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	220 White Plains Road, Suite 110 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1130 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	5786 WIDEWATERS PARKWAY SYRACUSE, NY 13214-1867 TEL. (315) 426-7438	5786 WIDEWATERS PARKWAY SYRACUSE, NY 13214-1867 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	700 DELAWARE AVENUE BUFFALO, NY 14209-2999 TEL. (716) 851-7165	700 DELAWARE AVENUE BUFFALO, NY 14209-2999 TEL. (716) 851-7070

APPENDIX F – SWPPP Preparer Certification Form

The SWPPP Preparer Certification Form required by this permit begins on the following page.

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b., the completed form must be attached to the eNOI and submitted to NYSDEC electronically.)

Project/Site Name:

eNOI Submission ID:

Owner/Operator Name:

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) has been prepared in accordance with the requirements of GP-0-25-001. I certify under penalty of law that the SWPPP and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate 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 there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SWPPP Preparer First Name | MI | SWPPP Preparer Last Name

Signature | Date

Revised: January 2025

APPENDIX G – MS4 SWPPP Acceptance Form

The MS4 SWPPP Acceptance Form required by this permit begins on the following page.

NEW YORK STATE | Department of Environmental Conservation

MS4 SWPPP Acceptance Form

for construction activities seeking authorization under the

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b., the completed form must be attached to the eNOI and submitted to NYSDEC electronically.)

I. Project Owner/Operator Information
1. Owner/Operator Name:
2. Contact Person:
3. Street Address:
4. City/State/Zip:
II. Project Site Information
5. Project/Site Name:
6. Street Address:
7. City/State/Zip:
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 Operator:
12. MS4 SPDES Permit Identification Number: NYR20A
13. Street Address:
14. City/State/Zip:
15. 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 section II. of this form has been reviewed and meets the substantive requirements in the SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP). Note: The MS4 Operator, 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 Operator does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.
Printed Name[1]:
Title/Position:
Signature:
Date:
VI. Additional Information

[1] Printed name of the principal executive officer or ranking elected official for the MS4 Operator or their duly authorized representative in accordance with CGP Part VII.J.2.

APPENDIX H – NYCDEP SWPPP Acceptance/Approval Form

The City of New York Department of Environmental Protection (NYCDEP) SWPPP Acceptance/Approval form required by this permit begins on the following page.

THE CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Environmental Planning and Analysis
59-17 Junction Blvd., 9th Floor; Flushing, NY 11373

SWPPP Acceptance/Approval

Application Number:

I. Project Owner/Operator Information
1. Owner/Operator Name:
2. Contact Person:
3. Street Address:
4. City/State/Zip:
II. Project Site Information
5. Project/Site Name:
6. Street Address:
7. City/State/Zip:
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance/Approval
8. SWPPP Reviewed by:
9. Title/Position: /
10. Date Final SWPPP Reviewed and Accepted:
11. Acceptance/Approval Expiration Date:
IV. Regulated MS4 Information for projects that require coverage under the NY State Pollution Discharge Elimination System General Permit for Stormwater Discharges from Construction Activity
12. Name of MS4: *CITY OF NEW YORK*
13. MS4 SPDES Permit Identification Number: *NY-0287890*
14. Contact Person:
15. Street Address: *59-17 Junction Blvd. 9th Floor*
16. City/State/Zip: *Flushing, NY 11373*
17. Telephone Number:

Projects in the MS4 area must submit a copy of this SWPPP Acceptance with a Notice of Intent for coverage under the NY SPDES General Permit for Stormwater Discharges from Construction Activity to: NYS Department of Environmental Conservation, Division of Water; 625 Broadway, 4th Floor; Albany, New York 12233-3505.

THE CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Environmental Planning and Analysis
59-17 Junction Blvd., 9th Floor; Flushing, NY 11373

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. Conditions of Acceptance/Approval and Additional Information

Projects in the MS4 area must submit a copy of this SWPPP Acceptance with a Notice of Intent for coverage under the NY SPDES General Permit for Stormwater Discharges from Construction Activity to: NYS Department of Environmental Conservation, Division of Water; 625 Broadway, 4th Floor; Albany, New York 12233-3505.

APPENDIX I – MS4 No Jurisdiction Form

The MS4 No Jurisdiction Form required by this permit begins on the following page.

NEW YORK STATE | Department of Environmental Conservation

MS4 No Jurisdiction Form

for construction activities seeking authorization under the

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b., the completed form must be attached to the eNOI and submitted to NYSDEC electronically.)

I. Project Owner/Operator Information

a. Owner/Operator Name:

b. Contact Person:

c. Street Address:

d. City/State/Zip:

II. Project Site Information

a. Project/Site Name:

b. Street Address:

c. City/State/Zip:

d. eNOI Submission ID:

III. Traditional Land Use Control MS4 Operator Information

a. Name of MS4 Operator:

b. MS4 SPDES Permit ID Number: NYR20A

c. Street Address:

d. City/State/Zip:

e. Telephone Number:

IV. Certification Statement

In accordance with CGP Part I.D.2.b.ii.3., I hereby certify that the Traditional Land Use Control MS4 Operator identified in section III. of this form does not have review authority over the construction project identified in section II. of this form, which is owned/operated by the entity identified in section I. of this form. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

a. Printed name of the principal executive officer or ranking elected official for the MS4 Operator or their duly authorized representative in accordance with CGP Part VII.J.2.:

b. Title/Position:

c. Signature:

d. Date:

APPENDIX J – Owner/Operator Certification Form

The Owner/Operator Certification Form required by this permit begins on the following page.

NEW YORK STATE | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b. or Part I.F.2. and 3., the completed form must be attached to the eNOI or the Request to Continue Coverage, and submitted to NYSDEC electronically.

Project/Site Name: _____

eNOI Submission ID: _____

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

Certification Statement - Owner/Operator

I hereby certify that I read, and will comply with, the GP-0-25-001 permit requirements. I understand that authorization to discharge under the permit for the project/site named above is dependent on receipt of a Letter of Authorization (LOA) or a Letter of Continued Coverage (LOCC) from the New York State Department of Environmental Conservation (NYSDEC) in accordance with CGP Part I.D.3.b. or Part I.F.4. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner/Operator First Name MI Owner/Operator Last Name

_____

Signature

_____

Date

Revised: January 2025

APPENDIX J:
NYSDEC SOLAR GUIDANCE

LaBella
Powered by partnership.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water, Bureau of Water Compliance
625 Broadway, Albany, New York 12233-3506
P: (518) 402-8177 | F: (518) 402-8082
www.dec.ny.gov

October 23, 2024

Noah Ginsburg
Executive Director
New York State Energy Industries Association
P.O. Box 1523
Long Island City, New York 11101

Dear Noah Ginsburg,

Thank you for your engagement efforts seeking to clarify New York State Department of Environmental Conservation (NYSDEC) requirements related to solar development. New York State Energy Industries Association (NYSEIA) provided correspondence and questions dated January 25, 2024 and June 26, 2024 seeking engagement on modernization of solar development techniques. In your correspondence, you raised scenarios and questions regarding common stormwater practices related to the NYSDEC Construction Stormwater General Permit (CGP), New York Standards and Specifications for Erosion and Sediment Control (Blue Book) dated November 2016, New York State Stormwater Management Design Manual (2024 White Book) dated July 2024, and use of common solar development methods. Your letter refers to a DEC memo of April 5, 2018 (Solar Memo) providing interpretation of the CGP in relation to solar installation. This letter responds to the correspondence and aids in the implementation of solar development consistent with clean energy goals, the CGP, and design standards while maintaining sound stormwater management related to these developments.

The following answers to these questions should be examined comprehensively as many factors together ultimately decide what post-construction treatment, if any, is required by the CGP and any specific project. When considering whether tables (solar panel arrays) should be modeled as pervious or impervious, NYSDEC recognizes that tables can be designed or constructed in such a way that runoff and infiltration can occur between and underneath tables. Variables such as table height, spacing between tables, site slope, soil conditions, vegetative cover, and hydrology analysis are studied together to determine whether runoff from tables can be considered disconnected for purposes of post-construction treatment practice selection or not.

The following are NYSEIA bullet points/questions and responses. For all responses, these are NYSDEC's interpretation of CGP, Blue Book, and 2024 White Book provisions which should be reviewed and considered for each site-specific application and govern any final determination for that application.

NYSDEC Scenario 1 Issues (Solar Memo):

Item #2: The panels are spaced apart so that rain can flow off the down gradient side of the panel and continue to sheet flow across the ground surface.

1. NYSEIA Question:

   Are the entirety of the solar rows and tables (made up of individual solar modules) considered one large impervious area? Typically, solar modules are installed to include a ~1" gap around all edges which will prevent one large leading drip edge and avoid significant drip edge erosion.

   NYSDEC Response:

   While the actual solar table may be impervious, solar array field areas may be designed to be disconnected impervious area and qualify for impervious area reduction when computing water quality volume requirements. To clarify, NYSDEC has attached a figure (Diagram 1: NYSDEC Solar Plan View) representing common terms and practices. It is typical practice to consider the leading drip edge as the most useful scenario to model in considering impact on sheet flow from the table. Combined with site characteristics like vegetative cover, soil conditions, panel spacing and slope, design professionals can design sites to avoid erosion, promote sheet flow and optimize the perviousness of the ground surface.

   In addition to site characteristics, table height can also influence infiltration capability. For solar panel projects where the panels are mounted directly to the ground with no space below panel to allow for the desired vegetative growth and infiltration of runoff, the panels would not meet the criteria for disconnection of impervious area. NYSDEC has not accepted or developed a specific table height requirement. A height requirement, like the assessment of slope and soil conditions, is a component of a designer's best professional judgement. However, the designer should keep in mind that the tables must be elevated enough to allow for permanent cover of 80% or more as required by the CGP definition for final stabilization. It is also noted that different seed mixes may factor into height requirements and become part of the design consideration for the designer and Landscape Architect team.

2. NYSEIA Question

   Please explain what you mean by the panels need to be spaced apart.

   NYSDEC Response:

   Panel spacing is consistent with the concept of disconnection of impervious area (Section 5.3.4 of the 2024 White Book) and is an important component to consider when avoiding erosive conditions. Disconnection can be achieved through adequate spacing of panel rows over areas of well-established vegetative cover (see Diagram 2: NYSDEC Solar Profile View: Inter-Row Space). For the designer to meet the intent of disconnection, a design should consider the largest solar panel width, considering all solar panel rotations/positions

and provide that width as the minimum spacing downgradient of every row of solar panels in the solar array field area. If inter-row space requirements are insufficient, infiltration is less likely, resulting in panels that are more likely to create concentrated flow paths and perform as impervious. For solar array field areas that have insufficient spacing for infiltration, the disconnection credit for runoff reduction would not be applicable. As a result, the SWPPP would need to address post-construction stormwater management control practices.

Item #3: For solar panels constructed on slopes, the individual rows of solar panels are generally installed along the contour so rainwater sheet flows down slope.

3. NYSEIA Question:

   If panels aren't "generally installed along the contour" does that automatically mean the area of solar panels should be considered impervious?

   NYSDEC Response:

   No. NYSDEC recognizes that rows of solar tables are frequently constructed to track the sun's path, not along the contour. The main intent of considering placement along the contour is to ensure that precipitation coming off the panels consists of sheet flow across the site. As explained in the previous section, practices that maintain sheet flow and promote infiltration are necessary to meet CGP sizing criteria for Water Quality Volume (WQv) and Runoff Reduction Volume (RRv).

4. NYSEIA Question:

   If panels aren't "generally installed along the contour" does that mean the area of solar panels wouldn't be allowed to function as a filter strip?

   NYSDEC Response:

   Through proper design and installation of panels even if not along the contour, the site could still be designed to allow the area to function as a pervious filter strip.

   The concept behind the Sheet Flow to Filter Strip practice is outlined in Section 5.3.2 of the 2024 White Book and is important when considering stormwater management needs on solar array field areas. Precipitation falls to a well-vegetated surface with suitable characteristics between the panels and then across the site, which allows infiltration. This meets the WQv and RRv sizing criteria in the CGP for this portion of the solar array field area. Since the panels are not treated as connected impervious area, the 10 ft. pretreatment requirement is not necessary for each row of tables.

   In accordance with Table 5.7 of the 2024 White Book, it is noted that there are slope limitations for the filter strip. They can only be used on slopes less than or equal to 8%. This is to ensure that sheet flow can be maintained. If slopes are greater than 8%, then there are two main alternatives:

a) Design and implement permanent engineered practices from the Blue Book and White Book or use the NYSDEC Gravel Diaphragm detail (Diagram 3) along the slope/contour, to reestablish and maintain sheet flow, which will meet RRv and WQv requirements. It is worth noting that the use of the gravel diaphragm has been effectively implemented in many scenarios. OR
b) Where sheet flow cannot be maintained, consider the panels in that area to be connected impervious and design post-construction stormwater management control practices to provide water quality and quantity controls for this portion of the solar array field area consistent with the CGP and White Book. Some acceptable design elements used on other sites for RRv and WQv include gravel diaphragms (see Diagram 3: NYSDEC Gravel Diaphragm Along the Contour), level spreaders and flow diffusers. Practices such as water bars have generally been shown to not be effective for large areas as they are diversion practices designed to convey stormwater to a stable outlet. Water bars as a practice to maintain sheet flow have posed their own unique set of issues on several sites including unintended ponding, traffic concerns, and poorly stabilized outlets.

Item #4: The ground surface below the panels shall consist of a well-established vegetative cover (see "Final Stabilization" definition in Appendix A of the CGP).

5. NYSEIA Question:

   Please confirm that in addition to the space under the panel, the ground surface between the rows needs to have well established vegetation.

   NYSDEC Response:

   This is correct. For the ground surface under the panel to aid in creating a pervious area, a well-established vegetative cover is required for the final stabilization of a site post construction. Please see the definition of "final stabilization" in the CGP.

Item #5: The project does not include the construction of any traditional impervious areas (i.e., buildings, substation pads, gravel access roads or parking areas, etc.)

6. NYSEIA Question:

   All solar facilities will require some impervious areas in the form of concrete or gravel equipment areas and access roads that are fire code compliant. These areas are typically treated with stormwater controls (with stone areas or adjacent grass filter strips). Please explain the rationale behind Item # 5 and how developers should address impervious areas within the proposed solar facility.

NYSDEC Response:

The CGP provides sizing criteria in Part I.C and Part III.C. to address impervious areas. When RRv and WQv are not met for the ancillary areas and/or tables, designers must implement post-construction stormwater practices in accordance with the White Book for those areas. If designers are looking for relief from designing post-construction practices, there are some approved alternatives such as limited use pervious access roads and alternative stormwater management practices for substations to achieve sizing criteria and reduce post-construction practices.

7. NYSEIA Question:

   Does DEC require pervious access roads into the solar facility? If so, is there a typical you can provide for developers to reference?

   NYSDEC Response:

   No, pervious access roads are not required by the CGP and are not listed in the 2024 White Book and therefore are not required on renewable energy sites. It is worth noting that on many solar sites, the pertinent design requirements for the pervious access road detail cannot be met. For example, there are slope limitations. Cross slopes cannot exceed 6% and the longitudinal slope should not exceed 15%. Additionally, these roads should not be utilized during construction as it may impact soil or other conditions and require testing and re-construction to be effective as a pervious feature. Many sites do not have enough available area to construct both temporary and permanent roads in separate footprints. Finally, the limited use pervious access road cannot be constructed or used until all areas subject to runoff onto the road have achieved final stabilization. Attached, please find a copy of a typical limited use pervious access road detail that has been accepted in SWPPP review for your reference.

   One alternative that has been accepted on other sites is the revegetated gravel road scarification detail for upland roads and work areas. This can be used in areas that are not wetlands and are not agricultural areas where restoration is required. This road is meant for minimal intermittent use and does not have the load-bearing capacity to serve as emergency access for the site.

Maryland DE's "Stormwater Design Guidance- Solar Panel Installations," Page 1, 2nd Paragraph: "Commonly used with smaller or narrower impervious areas like driveways or open roads, the Disconnection of Non-Rooftop Runoff technique (see pp. 5.61 to 5.65 of the 2000 Maryland Stormwater Design Manual) is a low-cost alternative for treating runoff in situations like rows of solar panels."

8. NYSEIA Question:

   Should the Maryland Department of the Environment (MDE) Stormwater Design Guidance be applicable in NYS? We feel that the guidance is outdated and doesn't represent typical field conditions in New York.

NYSDEC Response:

While the Maryland Department of the Environment's (MDE) Stormwater Guidance aided in NYSDEC's initial understanding of solar guidance standard development, designs should meet New York State standards. NYSDEC did not propose the MDE document as guidance or intend it to be adopted it in its entirety. Primarily, NYSDEC intended to reference use of the diagrams as suitable alternative practices. To eliminate confusion, changes have been proposed in the draft version of the CGP.

Maryland DE's "Stormwater Design Guidance- Solar Panel Installations," Page 1, 3rd Bullet: "Disconnections should be located on gradual slopes (≤ 5%) to maintain sheet flow. Level spreaders, terraces, or berms may be used to maintain sheet flow conditions if the average slope is steeper than 5%. However, installations on slopes greater than 10% will require an engineered plan that ensures adequate treatment and the safe and non-erosive conveyance of runoff to the property line or downstream stormwater management practice."

9. NYSEIA Question:

   If panels are placed on slopes greater than 10% does that automatically make them impervious?

   NYSDEC Response:

   No. Please refer to Question 4.

10. NYSEIA Question:

    Please clarify the requirement for an "engineered plan."

    NYSDEC Response:

    With regard to the Maryland guidance, NYSDEC's original intent was to reference diagrams and not the document as a whole. The draft CGP provides clarification as to the need for post-construction controls for solar array field areas. The need for an "engineered plan" references the use of suitable design practices from the White Book for post-construction controls for RRv, WQv, and quantity based on site conditions and solar table layout.

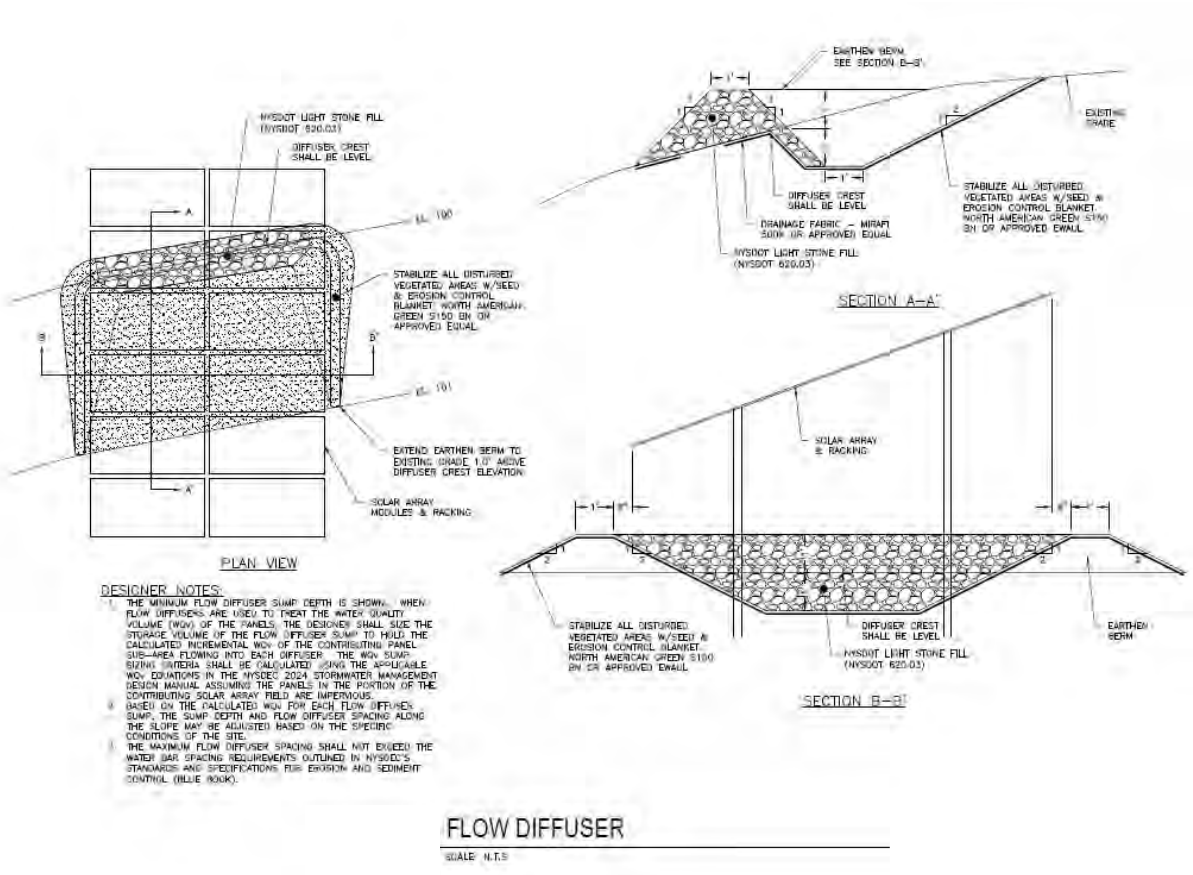
11. NYSEIA Question:

    If the panels are placed on slopes greater than 10%, what is acceptable to demonstrate developers are designing a site with effective stormwater management practices? In our experience we have proposed the following accepted solutions:

    To date, the majority of our solutions have been gravel level spreaders/diaphragms on slopes above 10%, generally spaced throughout the solar panel area site using the NYSDEC blue book spacing for like water bars.

In steep panel areas (e.g. in excess of ~20% slopes), we have had instances where we provided additional attenuation (reducing runoff rates further than what is required by the Stormwater Design Manual) in order to satisfy Town engineers.

An alternative "engineered" solution pioneered by Marathon Engineering have been flow diffusers which he has used at staggered locations primarily beneath the panels to catch water leaving the panels and slow it down while avoiding most of the drive aisles for construction (snip below).



NYSDEC Response:

NYSDEC acknowledges that well-designed projects on slopes steeper than 10 percent have successfully implemented some of the alternative practices mentioned such as flow diffusers and stone diaphragms. The flow diffuser detail (above) from Marathon Engineering has been applied on several sites. If there are instances that trigger 60 day review, please note that it will aid in review if you can provide examples of previous projects that this practice has been approved on.

It has come to NYSDEC's attention that there are a variety of practices that may be useful in managing stormwater on solar sites that have been approved in other states besides New York. NYSDEC will be seeking to include examples of these practices in future training. It is important that when submitting alternative practices for review, that as much documentation is provided to satisfy the Criteria for Practice addition in Section 3.3.2 in the White Book including an 80% reduction in total suspended solids (TSS) and 40% reduction in total phosphorous (TP).

The CGP, White Book, and Blue Book do not exclude solar development on steep slopes or establish specific practices for solar development. For these challenging projects, the designer will need to carefully consider practices and controls during design and provide sufficient information in the SWPPP to facilitate evaluation by NYSDEC staff, and manage erosion and sedimentation during construction, and post-construction stormwater management for the project. For solar projects on steep slopes, it is encouraged that NYSDEC, project developer, designer and contractors work together to ensure that New York's goals for renewable energy are achieved in an environmentally responsible manner and that balance water quality and climate goals.

Additional Question #1

12. NYSEIA Question:

    Are solar trackers (solar tables/rows which move with the sun) considered impervious? Do the current guidelines apply to them? The examples in the 2018 Solar Guidance Memo only show fixed tilt. How can a developer ensure these systems follow DEC guidelines?

    NYSDEC Response:

    Solar trackers are not considered disconnected impervious area unless they meet the criteria discussed above. The SWPPP must demonstrate that the site conditions and placement of the solar panels will allow for disconnection and achieve the runoff reduction objectives of the CGP in order to apply the area reduction credit for the panels in all positions.

Additional Question #2

13. NYSEIA Question:

    On slopes under 8%, can the meadow grass beneath the modules be counted as part of a filter strip to satisfy water quality and RRv? We have typically started our filter strips outside of the system area due to Town Designated Engineer preference and understanding of the "Filter Strip" practice, but we feel the area under the solar panels should suffice as a filter strip.

NYSDEC Response:

The area between the panels counts toward the filter strip. Since the panels are not treated as connected impervious area, the 10 ft. pretreatment requirement is not necessary for each row of tables. Please refer to Question 4.

We hope this information has been of assistance. Although currently solar development falls under Appendix B Table 2 of the current 2020 version of the CGP as "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" the 2024 White Book and the CGP have provisions that allow disconnection of impervious areas. Use of the clarifications provided in this letter will allow design and development practices under the requirements of the CGP and 2024 White Book to be applied for disconnection and should be utilized in lieu of the 2018 Solar Memo. Additionally, provisions for solar development are proposed in the 2024 draft of the new CGP. We hope you were able to review the draft and provide feedback during the public comment period which ended October 1, 2024.

Sincerely,

Edward Hampston

Edward Hampston, P.E.
Director, Bureau of Water Compliance

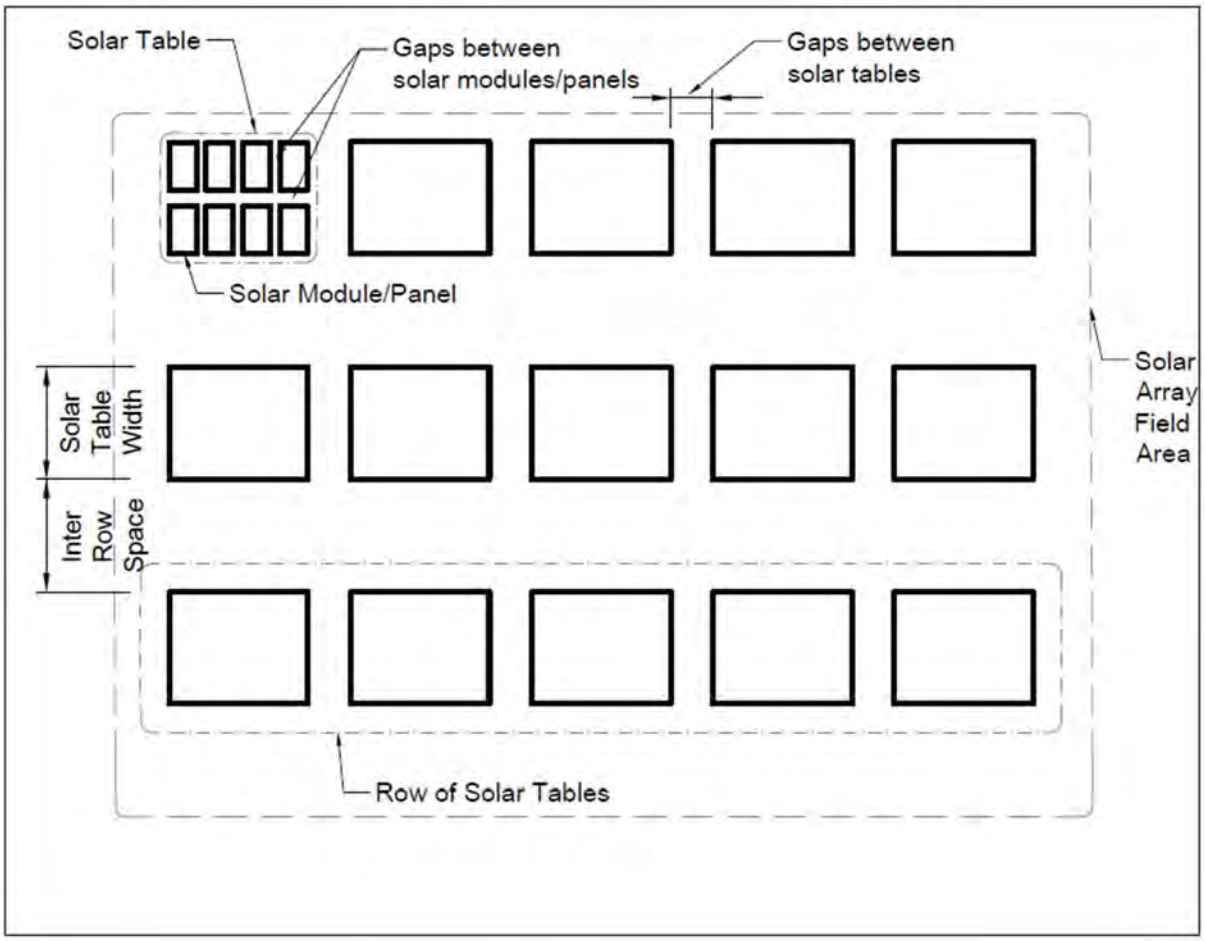
Attachments:

1. Diagram 1: NYSDEC Solar Plan View
2. Diagram 2: NYSDEC Solar Profile View: Inter-Row Space
3. Diagram 3: NYSDEC Gravel Diaphragm Along the Contour
4. Limited use pervious access road detail
5. Gravel road scarification detail for upland roads and work areas
6. NYSEIA Letter dated June 26th, 2024

cc: C. Lamb-Lafay, PE, NYSDEC
A. Smith, NYSDEC
J. Melançon, CPESC. NYSDEC
C. Warner, NYSERDA

2024 Solar Memo – Terminology

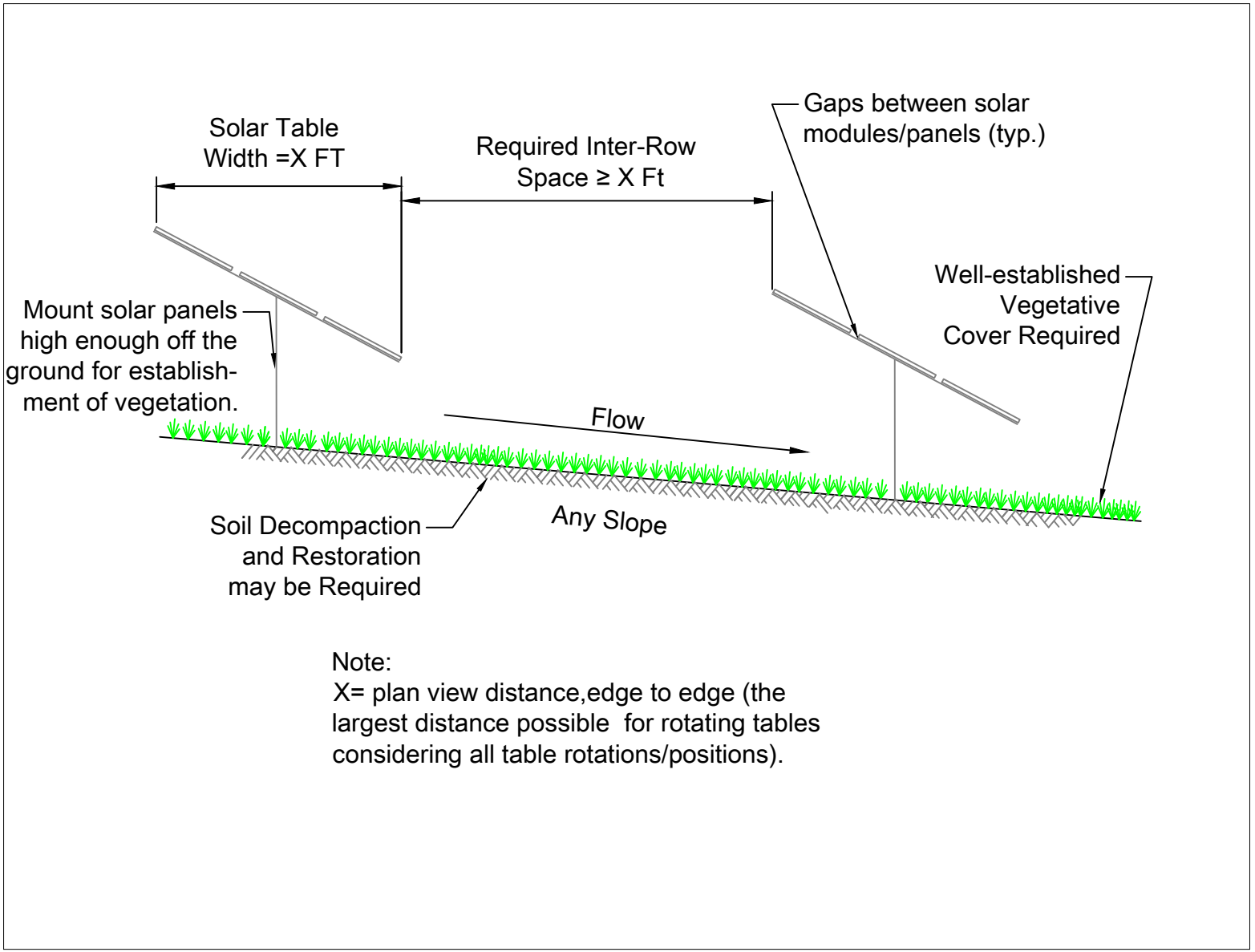
Diagram 1: NYSDEC Solar Plan View N.T.S.



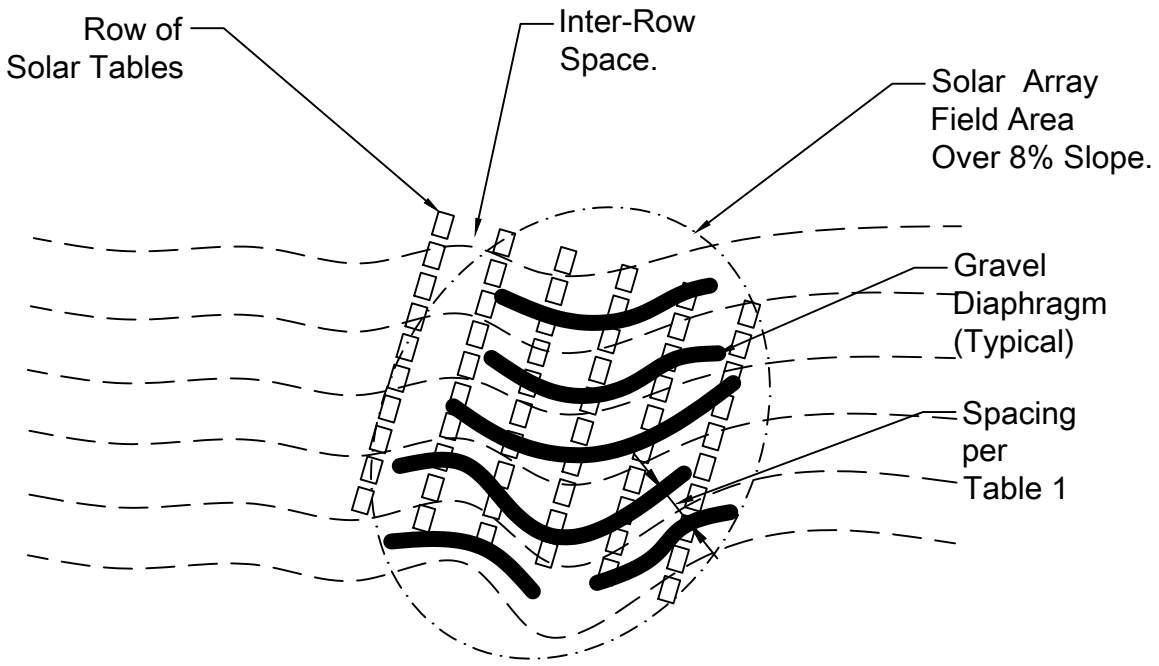
***Definitions:**

**NYSDEC provides the above diagram and the following definitions for solar terminology for the specific purpose of demonstrating how to interpret and apply the NYSDEC solar guidance. The following definitions are intended for that limited context only and are not meant to be used for any other purpose.*

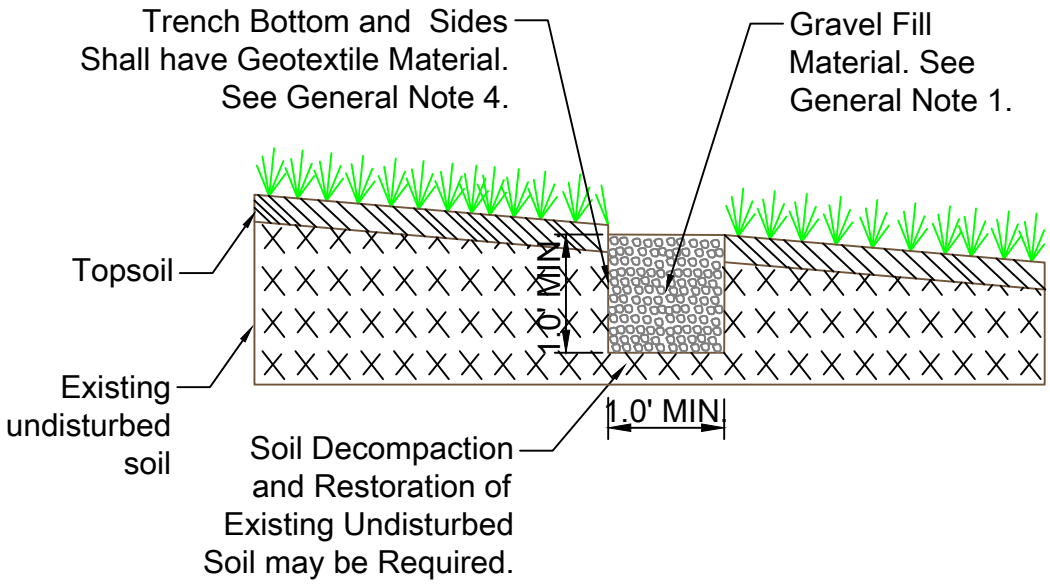
- Gap between solar table: the distance between two solar tables within a row of solar tables. This gap varies depending on the layout and design.
- Gaps between solar modules/panels: the distance(s) between solar modules/panels within a solar table. These gaps vary depending on the layout and design.
- Inter-row space: the plan view distance between two solar table rows. NYSDEC solar guidance sets the minimum inter-row space requirements; see Diagram 2: NYSDEC Solar Profile View: Inter-Row Space Requirements. This requirement is based on the solar table upgradient of the inter-row space.
- Solar array field area: the area of a solar site that includes the rows of solar tables, their inter-row spaces, and the surrounding buffer area. This area does not include access roads and other traditional impervious areas, even if those are located within the solar array field area.
- Solar module/panel: a unit comprised of photovoltaic cells.
- Solar table: one or more modules/panels wired and framed together. Solar tables may be a single module/panel, a single row of modules/panels, or stacked rows of modules/panels. The number of modules/panels framed and stacked together varies.
- Solar table width: the plan view distance, edge to edge, of a solar table. It is the largest distance possible for rotating tables considering all table rotations/positions.



Note:
X= plan view distance,edge to edge (the largest distance possible for rotating tables considering all table rotations/positions).



SOLAR ARRAY FIELD AREA WITH GRAVEL DIAPHRAGMS PLAN VIEW



GRAVEL DIAPHRAGM CROSS SECTION

GENERAL NOTES:

1. USE OF THIS DETAIL/CRITERION IS LIMITED TO ACCESS ROADS USED ON AN OCCASIONAL BASIS ONLY (I.E. PROVIDE ACCESS FOR MOVING, EQUIPMENT REPAIR OR MAINTENANCE, ETC.).
2. LIMITED USE PERVIOUS ACCESS ROAD IS LIMITED TO LOW IMPACT IRREGULAR MAINTENANCE ACCESS ASSOCIATED WITH RENEWABLE ENERGY PROJECTS IN NEW YORK STATE.
3. REMOVE STUMPS, ROCKS AND DEBRIS AS NECESSARY. FILL VOIDS TO MATCH EXISTING NATIVE SOILS AND COMPACTION LEVEL.
4. REMOVED TOPSOIL MAY BE SPREAD IN ADJACENT AREAS A DIRECTED BY THE PROJECT ENGINEER. DO NOT PLACE IN AN AREA THAT IMPEDES STORMWATER DRAINAGE.
5. GRADE ROADWAY, WHERE NECESSARY, TO NATIVE SOIL AND DESIRED ELEVATION. MINOR GRADING FOR CROSS SLOPE CUT AND FILL MAY BE REQUIRED.
6. REMOVE REFUSE SOILS AS DIRECTED BY THE PROJECT ENGINEER. DO NOT PLACE IN AN AREA THAT IMPEDES STORMWATER DRAINAGE.
7. ROADWAY WIDTH TO BE DETERMINED BY CLIENT.
8. THE LIMITED USE PERVIOUS ACCESS ROAD CROSS SLOPE SHALL BE 2% IN MOST CASES AND SHOULD NOT EXCEED 6%. THE LONGITUDINAL SLOPE OF THE ACCESS DRIVE SHOULD NOT EXCEED 15%.
9. LIMITED USE PERVIOUS ACCESS ROAD IS NOT TO BE UTILIZED FOR CONSTRUCTION WHICH MAY SUBJECT THE ACCESS TO SEDIMENT TRACKING. THIS SPECIFICATION IS TO BE DEVELOPED FOR POST-CONSTRUCTION USE. SOIL RESTORATION PRACTICES MAY BE APPLICABLE TO RESTORE CONSTRUCTION RELATED COMPACTION TO PRE-EXISTING CONDITIONS AND SHOULD BE VERIFIED BY SOIL PENETROMETER READINGS. THE PENETROMETER READINGS SHALL BE COMPARED TO THE RESPECTIVE RECORDED READINGS TAKEN PRIOR TO CONSTRUCTION, EVERY 100 LINEAR FEET ALONG THE PROPOSED ROADWAY.
10. TO ENSURE THAT SOIL IS NOT TRACKED ONTO THE LIMITED USE PERVIOUS ACCESS ROAD, IT SHALL NOT BE USED BY CONSTRUCTION VEHICLES TRANSPORTING SOIL, FILL MATERIAL, ETC. IF ACCESS IS COMPLETED DURING THE INITIAL PHASES OF CONSTRUCTION, A STABILIZED CONSTRUCTION ACCESS/ENTRANCE IS REQUIRED TO REMOVE SEDIMENT FROM CONSTRUCTION VEHICLES AND EQUIPMENT PRIOR TO ENTERING THE LIMITED USE PERVIOUS ACCESS ROAD. MAINTENANCE OF THE PERVIOUS ACCESS ROAD WILL BE REQUIRED IF SEDIMENT IS OBSERVED WITHIN THE CLEAN STONE.
11. THE LIMITED USE PERVIOUS ACCESS ROAD SHALL NOT BE CONSTRUCTED OR USED UNTIL ALL AREAS SUBJECT TO RUNOFF ONTO THE PERVIOUS ACCESS HAVE ACHIEVED FINAL STABILIZATION.
12. PROJECTS SHOULD AVOID INSTALLATION OF THE LIMITED USE PERVIOUS ACCESS ROAD IN POORLY DRAINED AREAS, HOWEVER IF NO ALTERNATIVE LOCATION IS AVAILABLE, THE PROJECT SHALL UTILIZE WOVEN GEOTEXTILE MATERIAL AS DETAILED IN FOLLOWING NOTES.
13. THE DRAINAGE DITCH IS OFFERED IN THE DETAIL FOR CIRCUMSTANCES WHEN CONCENTRATING FLOW COULD NOT BE AVOIDED. THE INTENTION OF THIS DESIGN IS TO MINIMIZE ALTERATIONS TO HYDROLOGY, HOWEVER WHEN DEALING WITH 5%-15% GRADES NOT PARALLEL TO THE CONTOUR, A ROADSIDE DITCH MAY BE REQUIRED. THE NYS STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROLS FOR GRASSED WATERWAYS AND VEGETATED WATERWAYS ARE APPLICABLE FOR SIZING AND STABILIZATION. DIMENSIONS FOR THE GRASSED WATERWAY SPECIFICATION WOULD BE DESIGNED FOR PROJECT SPECIFIC HYDROLOGIC RUNOFF CALCULATIONS, AND A SEPARATE DETAIL FOR THE SPECIFIC GRASSED WATERWAY WOULD BE INCLUDED IN THIS PRACTICE. RUNOFF DISCHARGES WILL BE SUBJECT TO THE OUTLET REQUIREMENTS OF THE REFERENCED STANDARD. INCREASED POST-DEVELOPMENT RUNOFF FROM THE ASSOCIATED ROADSIDE DITCH MAY REQUIRE ADDITIONAL PRACTICES TO ATTENUATE RUNOFF TO PRE-DEVELOPMENT CONDITIONS.
14. IF A ROADSIDE DITCH IS NOT UTILIZED TO CAPTURE RUNOFF FROM THE ACCESS ROAD, THE PERVIOUS ACCESS ROAD WILL HAVE A WELL-ESTABLISHED PERENNIAL VEGETATIVE COVER, WHICH SHALL CONSIST OF UNIFORM VEGETATION, 20 FEET PARALLEL TO THE DOWN GRADIENT SIDE OF THE ACCESS ROAD. POST-CONSTRUCTION OPERATION AND MAINTENANCE PRACTICES WILL MAINTAIN THIS VEGETATIVE COVER TO ENSURE FINAL STABILIZATION FOR THE LIFE OF THE ACCESS ROAD.
15. THE DESIGN PROFESSIONAL MUST ACCOUNT FOR THE LIMITED USE PERVIOUS ACCESS ROAD IN THEIR SITE ASSESSMENT/HYDROLOGY ANALYSIS. IF THE HYDROLOGY ANALYSIS SHOWS THAT THE HYDROLOGY HAS BEEN ALTERED FROM PRE- TO POST-DEVELOPMENT CONDITIONS (SEE APPENDIX A OF GP-0-15-002 FOR THE DEFINITION OF "ALTER THE HYDROLOGY..."), THE DESIGN MUST INCLUDE THE NECESSARY DETENTION/RETENTION PRACTICES TO ATTENUATE THE RATES (10 AND 100 YEAR EVENTS) TO PRE-DEVELOPMENT CONDITIONS.

GEOGRID MATERIAL NOTES:

1. THE GEOGRID, OR COMPARABLE PRODUCT, IS INTENDED FOR USE FOR ALL CONDITIONS, IN ORDER TO ASSIST IN MATERIAL SEPARATION FROM NATIVE SOILS AND PRESERVE ACCESS LOADS.
2. GRAVEL FILL MATERIAL SHALL CONSIST OF 1-4" CLEAN, DURABLE, SHARP-ANGLED CRUSHED STONE OF UNIFORM QUALITY, MEETING THE SPECIFICATIONS OF NYSDOT ITEM 703-02, SIZE DESIGNATION 3-5 OF TABLE 703-4. STONE MAY BE PLACED IN FRONT OF, AND SPREAD WITH, A TRACKED VEHICLE. GRAVEL SHALL NOT BE COMPACTED.
3. GEOGRID SHALL BE MIRAFI BXG110 OR APPROVED EQUAL. GEOGRID SHALL BE DESIGNED BASED ON EXISTING SOIL CONDITIONS AND PROPOSED HAUL ROAD SLOPES.
4. IF MORE THAN ONE ROLL WIDTH IS REQUIRED, ROLLS SHOULD OVERLAP A MINIMUM OF SIX INCHES.
5. REFER TO MANUFACTURER'S SPECIFICATION FOR PROPER TYING AND CONNECTIONS.
6. LIMITED USE PERVIOUS ACCESS ROAD SHALL BE TOP DRESSED AS REQUIRED WITH ONLY 1-4" CRUSHED STONE MEETING NYSDOT ITEM 703-02 SPECIFICATIONS.

BASIS OF DESIGN: TENCATE MIRAFI BXG110 GEOGRIDS; 365 SOUTH HOLLAND DRIVE, PENDERGRASS, GA;800-685-9990 OR 706-693-2226; WWW.MIRAFI.COM

GEOWEB MATERIAL NOTES:

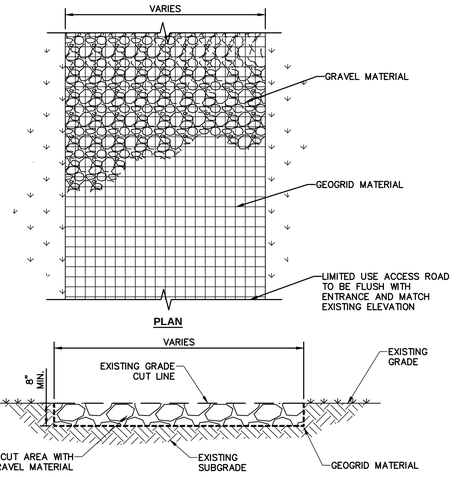
1. THE GEOWEB, OR COMPARABLE PRODUCT, IS SUGGESTED FOR USE ON ROAD PROFILES EXCEEDING 5%. THE GEOWEB PRODUCT IS INTENDED TO LIMIT SHIFTING STONE MATERIAL DURING USE.
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. WHERE REQUIRED, A NATIVE SOIL WEDGE SHALL BE PLACED TO ACCOMMODATE ROAD CROSS SLOPE OF 2% NATIVE SOIL SHALL BE COMPACTED TO MATCH EXISTING SOIL CONDITIONS.
4. GRAVEL FILL MATERIAL SHALL CONSIST OF 1-4" CLEAN, DURABLE, SHARP-ANGLED CRUSHED STONE OF UNIFORM QUALITY, MEETING THE SPECIFICATIONS OF NYSDOT ITEM 703-02, SIZE DESIGNATION 3-5 OF TABLE 703-4. STONE MAY BE PLACED IN FRONT OF, AND SPREAD WITH, A TRACKED VEHICLE. GRAVEL SHALL NOT BE COMPACTED.
5. GEOWEB SYSTEM SHALL BE PRESTO GEOSYSTEM GEOWEB OR APPROVED EQUAL. GEOWEB SHALL BE DESIGNED BASED ON EXISTING SOIL CONDITIONS AND PROPOSED HAUL ROAD SLOPES.
6. LIMITED USE PERVIOUS ACCESS ROAD SHALL BE TOP DRESSED AS REQUIRED WITH ONLY 1-4" CRUSHED STONE MEETING NYSDOT ITEM 703-02 SPECIFICATIONS.
7. THE TOP EDGES OF ADJACENT CELL WALLS SHALL BE FLUSH WHEN CONNECTING. ALIGN THE I-SLOTS FOR INTERLEAF AND END TO END CONNECTIONS. THE GEOWEB PANELS SHALL BE CONNECTED WITH ATRA KEYS AT EACH INTERLEAD AND END TO END CONNECTIONS. REFER TO MANUFACTURER'S SPECIFICATION FOR PROPER INSTALLATION, TYING AND CONNECTIONS.

BASIS OF DESIGN: PRESTO GEOSYSTEMS GEOWEB; 670 NORTH PERKINS STREET, APPLETON, WI; 800-548-3424 OR 920-738-1222; INFO@PRESTOGEO.COM; WWW.PRESTOGEO.COM

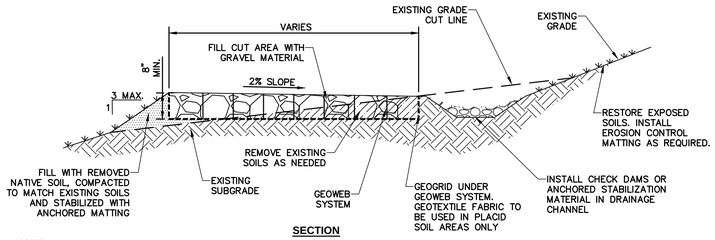
WOVEN GEOTEXTILE MATERIAL NOTES:

1. SPECIFIED GEOTEXTILE WILL ONLY BE UTILIZED IN PLACID SOILS. PLACID SOILS CONSIST OF POORLY DRAINED SOILS COMPOSED OF FINELY TEXTURED PARTICLES AND ARE PRONE TO RUTTING. PLACID SOILS ARE TYPICALLY PRESENT IN LOW-LYING AREAS WITH HYDROLOGIC SOILS GROUP (HSG) OF C OR D, OR AS SPCIFIED FROM AN ENVIRONMENTAL SCIENTIST, SOIL SCIENTIST, OR GEOTECHNICAL DATA.
2. THE CONCERN FOR POTENTIAL REDUCTION OF NATIVE INFILTRATION RATES DUE TO THE GEOTEXTILE MATERIAL WOULD NOT BE A SIGNIFICANT CONCERN IN POORLY DRAINED SOILS WHERE SEGREGATION OF PERVIOUS STONE AND NATIVE MATERIALS IS CRUCIAL FOR LONG TERM OPERATION AND MAINTENANCE.

BASIS OF DESIGN: TENCATE MIRAFI RSI-SERIES WOVEN GEOSYNTHETICS; 365 SOUTH HOLLAND DRIVE, PENDERGRASS, GA;800-685-9990 OR 706-693-2226; WWW.MIRAFI.COM



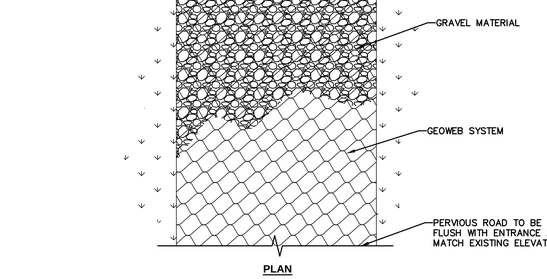
1 LIMITED USE PERVIOUS ACCESS ROAD - 0% TO 5% SLOPES
SCALE: N.T.S.



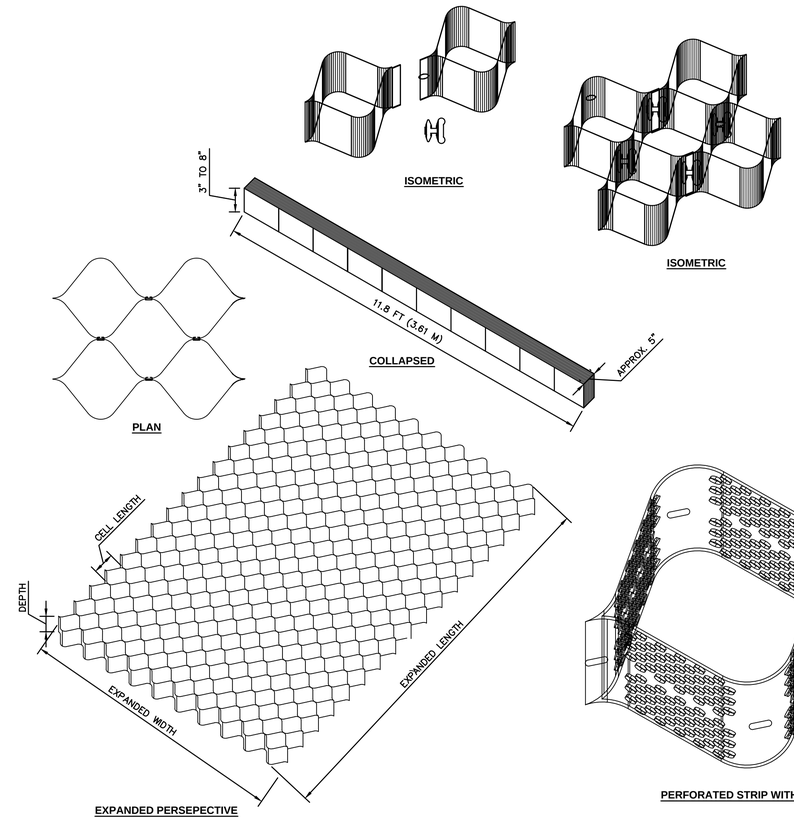
NOTE:

1. THE ROADSIDE DITCH SHALL BE DESIGNED IN ACCORDANCE WITH THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROLS FOR GRASSED AND VEGETATED WATERWAYS. ADDITIONAL DETAILS WILL BE PROVIDED SPECIFIC TO THE SITE DESIGN.

2 LIMITED USE PERVIOUS ACCESS ROAD - 5% TO 15% SLOPES WITH DITCH
SCALE: N.T.S.



3 LIMITED USE PERVIOUS ACCESS ROAD - 5% TO 15% SLOPES
SCALE: N.T.S.



4 GEOWEB SYSTEM
SCALE: N.T.S.

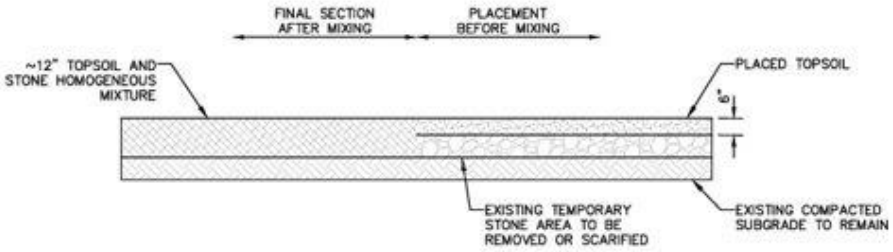
NO.	REVISION	DATE
1	ISSUED AS FINAL	10/30/2018

Client: OWNER OF RENEWABLE ENERGY PROJECTS

TRC Engineers, Inc.
215 Greenfield Parkway
Liverpool, NY 13088
www.trcsolutions.com

DRAWING TITLE: LIMITED USE PERVIOUS ACCESS ROAD DETAIL

SCALE:	N.T.S.
DATE:	10/16/2018
DRAWN BY:	CAK
CHECKED BY:	SML
PROJECT:	
DRAWING NO.:	



NOTES:

1. REFER TO THE PLAN DRAWINGS FOR LOCATIONS OF STONE WORK PADS AND ACCESS ROADS TO BE SCARIFIED.
2. FINISHED ROAD AND PAD ELEVATIONS SHALL REMAIN AFTER CONSTRUCTION UNLESS OTHERWISE INDICATED ON THE PLANS.
3. IN GENERAL, STONE MATERIAL SHALL REMAIN AFTER CONSTRUCTION AND BE MIXED WITH 6 INCHES OF TOPSOIL, HOWEVER IN SOME CASES THE STONE MAY BE ENTIRELY REMOVED FROM THE SITE REFER TO THE PLAN DRAWINGS FOR SPECIFIC LOCATIONS.
4. STONED AREAS SHALL BE SCARIFIED OR OTHERWISE LOOSENED TO A MINIMUM DEPTH OF 12 INCHES TO PERMIT BONDING OF THE TOPSOIL. TOPSOIL SHOULD BE UNIFORMLY DISTRIBUTED ACROSS THE AREA TO BE RESTORED TO A DEPTH OF 6 INCHES (MINIMUM OF 2 INCHES ON FILL OUTSLOPES) AND INCORPORATED OR TILLED INTO SCARIFIED STONE AREA.
5. SPREADING SHALL BE DONE IN A MANNER SUCH THAT SEEDING CAN BE COMPLETED WITH A MINIMUM OF ADDITIONAL TILLAGE. IRREGULARITIES OF THE SURFACE RESULTING FROM PLACEMENT SHALL BE CORRECTED IN ORDER TO PREVENT FORMATION OF DEPRESSIONS.
6. PRE-PLANTING FERTILIZERS AND PH ADJUSTING AGENTS MAY BE APPLIED PRIOR TO INCORPORATING.
7. RESTORATION AREA TO BE SEEDED IN ACCORDANCE WITH RECOMMENDATIONS OF LOCAL COUNTY EXTENSION SERVICE. SEED SHALL BE APPLIED VIA DRILL SEEDER, HYDROSEEDER OR BROADCAST SPREADER ALONG WITH A CARRIER. RAKE SEEDED AREA TO ENSURE PROPER SOIL-SEED CONTACT AND APPLY STRAW MULCH AT 3 TONS/ACRE TO PRESERVE MOISTURE.
8. ESTABLISHMENT OF VEGETATION ON THE RESTORED ACCESS ROAD SHALL BE MAINTAINED BY THE CONTRACTOR INCLUDING BUT NOT LIMITED TO SUPPLEMENTAL WATERING, FERTILIZATION, SEEDING AND OTHER TECHNIQUES, UNTIL AN ACCEPTABLE STAND OF VEGETATION HAS BEEN ESTABLISHED. ACCEPTABLE STAND IS GENERALLY CONSIDERED 80% VEGETATION COVERAGE OF ALL SURFACES..
9. UPON FINAL RESTORATION, THE SCARIFICATION AREAS SHALL BE REVIEWED BY THE DESIGN PROFESSIONAL TO CONFIRM THAT SITE HYDROLOGY HAS NOT BEEN ALTERED PER APPENDIX C OF THE CONSTRUCTION GENERAL PERMIT IF IT IS DETERMINED THAT THE HYDROLOGY HAS BEEN ALTERED, APPROPRIATE NECESSARY/RETENTION PRACTICES WILL NEED TO BE DESIGNED AND IMPLEMENTED TO RESTORE PRE-CONSTRUCTION HYDROLOGIC CONDITIONS.

REVEGETATED GRAVEL ROAD SCARIFICATION DETAIL FOR UPLAND ROADS AND WORK AREAS

SCALE: N.T.S.

Initial Questions/Bullet Points for DEC regarding the Solar Panel Construction Stormwater Permitting/SWPPP Guidance

A number of solar developers have reached out to us with concerns about the DEC's 2018 Solar Panel Construction Stormwater Permitting/SWPPP Guidance memo (attached). The concerns include inconsistencies in the Memo's interpretation and enforcement. The developers expressed concern about their ability to move their projects forward with upcoming interconnection costs, permit applications, etc.

To ensure we meet NYS climate goals, it is important that well designed projects move forward in a timely manner. Please provide clarification on the following items to ensure that developers and reviewers understand and follow the stormwater guidelines as they relate to solar facilities.

Scenario 1 from 2018 NYSDEC Stormwater and Solar Memo:

Item # 2. The panels are spaced apart so that rain can flow off the down gradient side of the panel and continue to sheet flow across the ground surface.

- Questions: Please explain what you mean by the panels need to be spaced apart? Are the entirety of the solar rows and tables (made up of individual solar modules) considered one large impervious area? Typically, solar modules are installed to include a ~1" gap around all edges which will prevent one large leading drip edge and avoid significant drip edge erosion.

Item # 3. For solar panels constructed on slopes, the individual rows of solar panels are generally installed along the contour so rainwater sheet flows down slope.

- Question: If panels aren't "generally installed along the contour" does that automatically mean the area of solar panels should be considered impervious?
- Question: If panels aren't "generally installed along the contour" does that mean the area of solar panels wouldn't be allowed to function as a filter strip?
- Questions: If the solar facility does not align with the contours, could the developer propose effective engineering designs to ensure sheet flow where the panels can't align with the contours? Are there any designs that you would recommend to meet the intent of this item?

Item # 4. The ground surface below the panels shall consist of a well-established vegetative cover (see "Final Stabilization" definition in Appendix A of the CGP).

- Question: Please confirm that in addition to the space under the panel, the ground surface between the rows needs to have well established vegetation.

Item # 5. The project does not include the construction of any traditional impervious areas (i.e., buildings, substation pads, gravel access roads or parking areas, etc.)

- Question: All solar facilities will require some impervious areas in the form of concrete or gravel equipment areas and access roads that are fire code-compliant. These areas are typically treated with stormwater controls (with stone areas or adjacent grass filter strips). Please explain the rationale behind Item # 5 and how developers should address impervious areas within the proposed solar facility.
- Question: Does DEC require pervious access roads into the solar facility? If so, is there a typical you can provide for developers to reference?

Maryland DE's "Stormwater Design Guidance- Solar Panel Installations"

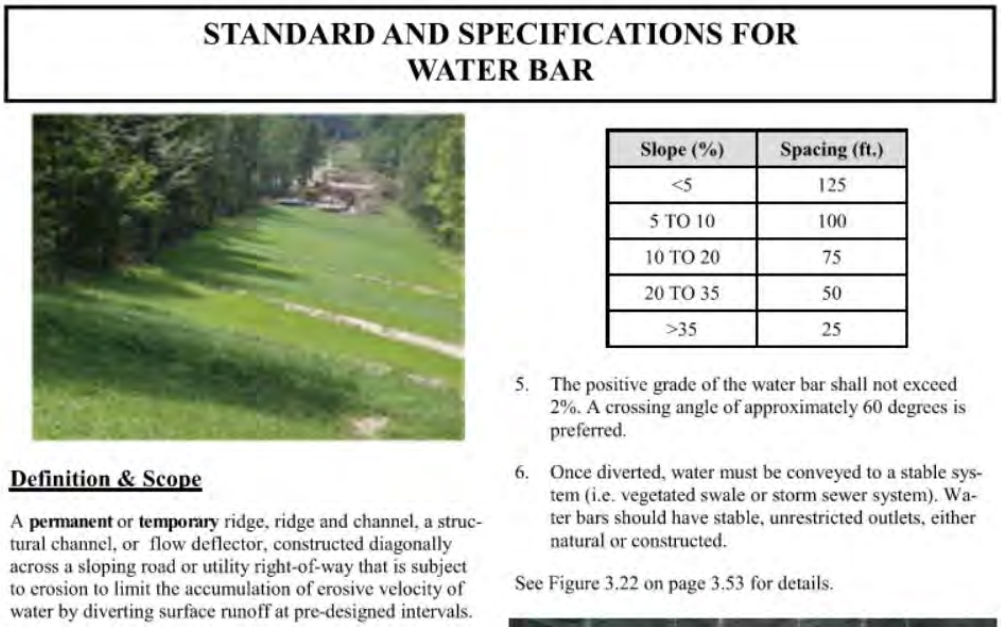
Page 1. 2nd Paragraph. "Commonly used with smaller or narrower impervious areas like driveways or open roads, the Disconnection of Non-Rooftop Runoff technique (see pp. 5.61 to 5.65 of the 2000 Maryland Stormwater Design Manual) is a low-cost alternative for treating runoff in situations like rows of solar panels."

- Question: Should the Maryland Department of the Environment (MDE) Stormwater Design Guidance be applicable in NYS? We feel that the guidance is outdated and doesn't represent typical field conditions in New York.

Page 1. Bullet 3. "Disconnections should be located on gradual slopes (≤ 5%) to maintain sheetflow. Level spreaders, terraces, or berms may be used to maintain sheetflow conditions if the average slope is steeper than 5%. However, installations on slopes greater than 10% will require an engineered plan that ensures adequate treatment and the safe and non-erosive conveyance of runoff to the property line or downstream stormwater management practice."

- Questions: If panels are placed on slopes greater than 10% does that automatically make them impervious? Please clarify the requirement for an "engineered plan". If the panels are placed on slopes greater than 10%, what is acceptable to demonstrate developers are designing a site with effective stormwater management practices ? In our experience we have proposed the following accepted solutions:

To date, the majority of our solutions have been gravel level spreaders /diaphragms on slopes above 10%, generally spaced throughout the solar panel area site using the NYSDEC blue book spacing for like waterbars (see snip below).



STANDARD AND SPECIFICATIONS FOR WATER BAR

Slope (%)	Spacing (ft.)
<5	125
5 TO 10	100
10 TO 20	75
20 TO 35	50
>35	25

Definition & Scope

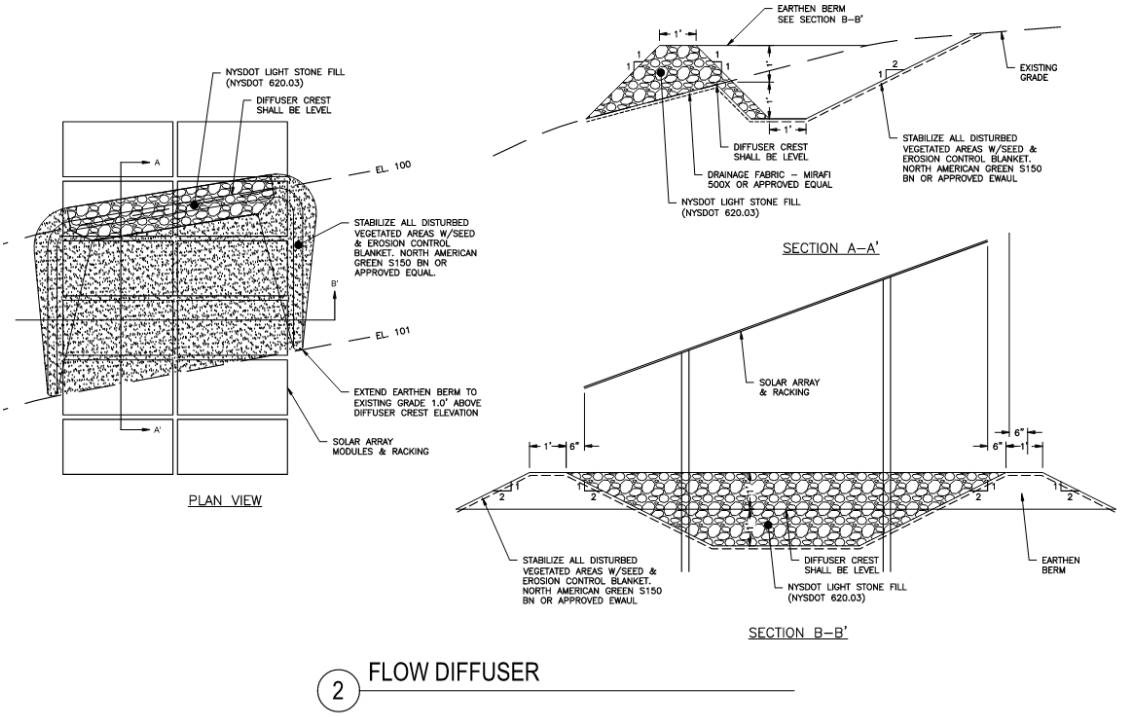
A **permanent** or **temporary** ridge, ridge and channel, a structural channel, or flow deflector, constructed diagonally across a sloping road or utility right-of-way that is subject to erosion to limit the accumulation of erosive velocity of water by diverting surface runoff at pre-designed intervals.

5. The positive grade of the water bar shall not exceed 2%. A crossing angle of approximately 60 degrees is preferred.
6. Once diverted, water must be conveyed to a stable system (i.e. vegetated swale or storm sewer system). Water bars should have stable, unrestricted outlets, either natural or constructed.

See Figure 3.22 on page 3.53 for details.

In steep panel areas (e.g. in excess of ~20% slopes), we have had instances where we provided additional attenuation (reducing runoff rates further than what is required by the Stormwater Design Manual) in order to satisfy Town engineers.

An alternative "engineered" solution pioneered by Adam Fishel from Marathon have been flow diffusers which he has used at staggered locations primarily beneath the panels to catch water leaving the panels and slow it down while avoiding most of the drive aisles for construction (snip below)



2 FLOW DIFFUSER

Additional Questions:

- Are solar trackers (solar tables/rows which move with the sun) considered impervious? Do the current guidelines apply to them? The examples in the 2018 Memo only show fixed tilt. How can a developer ensure these systems follow DEC guidelines?

- On slopes under 8%, can the meadow grass beneath the modules be counted as part of a filter strip to satisfy water quality and RRv? We have typically started our filter strips outside of the system area due to Town Designated Engineer preference and understanding of the "Filter Strip" practice, but we feel the area under the solar panels should suffice as a filter strip.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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MEMORANDUM

TO: Regional Water Engineers

FROM: Robert Wither, Chief, South Permit Section

SUBJECT: Solar Panel Construction Stormwater Permitting/SWPPP Guidance

DATE: January 17, 2020

Issue

The Department is seeing an increase in the number of solar panel construction projects across New York State. This has resulted in an increase in the number of questions on Construction General Permit (CGP) and Stormwater Pollution Prevention Plan (SWPPP) requirements from design professionals because the current CGP (GP-0-15-002) does not include a specific reference to the SWPPP requirements for solar panel projects in Tables 1 and 2 of Appendix B. To address this issue, the Division of Water (DOW) has developed the following guidance on CGP/SWPPP requirements for the different types of solar panel projects.

Scenario 1

The DOW considers solar panel projects designed and constructed in accordance with the following criteria to be a "*Land clearing and grading for the purposes of creating vegetated open space (i.e. recreational parks, lawns, meadows, fields)*" type project as listed in Table 1, Appendix B of the CGP. Therefore, the SWPPP for this type of project will typically just need to address erosion and sediment controls.

1. Solar panels are constructed on post or rack systems and elevated off the ground surface,
2. The panels are spaced apart so that rain water can flow off the down gradient side of the panel and continue as sheet flow across the ground surface*,
3. For solar panels constructed on slopes, the individual rows of solar panels are generally installed along the contour so rain water sheet flows down slope*,
4. The ground surface below the panels consist of a well-established vegetative cover (see "Final Stabilization" definition in Appendix A of the CGP),
5. The project does not include the construction of any traditional impervious areas (i.e. buildings, substation pads, gravel access roads or parking areas, etc.),
6. Construction of the solar panels will not alter the hydrology from pre-to post development conditions (see Appendix A of the CGP, for definition of "Alter the hydrology…"). Note: The design professional shall perform the necessary site assessment/hydrology analysis to make this determination.

*Refer to Maryland's "Stormwater Design Guidance- Solar Panel Installations" attached for guidance on panel installation.
**See notes below for additional criteria.

Scenario 2

If the design and construction of the solar panels meets all the criteria above, except for item 6, the project will fall under the "*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*" project type as listed in Table 2, Appendix B of the CGP. Therefore, the SWPPP for this type of project must address post-construction stormwater practices designed in accordance with the sizing criteria in Chapter 4 of the NYS Stormwater Management Design Manual, dated January 2015 (Note: Chapter 10 for projects in NYC EOH Watershed). The Water Quality Volume (WQv)/Runoff Reduction Volume (RRv) sizing criteria can be addressed by designing and constructing the solar panels in accordance with the criteria in items 1 – 4 above, however, the quantity control sizing criteria (Cpv, Qp and Qf) from Chapter 4 (or 10) of the Design Manual must still be addressed, unless one of the waiver criteria from Chapter 4 can be applied. **See notes below for additional criteria.

**** Notes**

- Item 1: For solar panel projects where the panels are mounted directly to the ground (i.e. no space below panel to allow for infiltration of runoff), the SWPPP must address post-construction stormwater management controls designed in accordance with the sizing criteria in Chapter 4 of the NYS Stormwater Management Design Manual, dated January 2015 (Note: Chapter 10 for projects in NYC EOH Watershed).

- Item 5: For solar panel projects that include the construction of traditional impervious areas (i.e. buildings, substation pads, gravel access roads or parking areas, etc.), the SWPPP must address post-construction stormwater management controls for those areas of the project. This applies to both Scenario 1 and 2 above.

cc: Carol Lamb-Lafay, BWP
Dave Gasper, BWP

Stormwater Design Guidance – Solar Panel Installations

Revisions to Maryland's stormwater management regulations in 2010 require that environmental site design (ESD) be used to the maximum extent practicable (MEP) to mimic natural hydrology, reduce runoff to reflect forested wooded conditions, and minimize the impact of land development on water resources. This applies to any residential, commercial, industrial, or institutional development where more than 5,000 square feet of land area is disturbed. Consequently, stormwater management must be addressed even when permeable features like solar panel installations exceed 5,000 square feet of land disturbance.

Depending on local soil conditions and proposed imperviousness, the amount of rainfall that stormwater requirements are based on varies from 1.0 to 2.6 inches. However, addressing stormwater management does not mean that structural or micro-scale practices must be constructed to capture and treat large volumes of runoff. Using nonstructural techniques like disconnecting impervious cover reduces runoff by promoting overland filtering and infiltration. Commonly used with smaller or narrower impervious areas like driveways or open roads, the Disconnection of Non-Rooftop Runoff technique (see pp. 5.61 to 5.65 of the **2000 Maryland Stormwater Design Manual**[1]) is a low cost alternative for treating runoff in situations like rows of solar panels.

When non-rooftop disconnection is used to treat runoff, the following factors should be considered:

- The vegetated area receiving runoff must be equal to or greater in length than the disconnected surface (e.g., width of the row of solar panels)
- Runoff must sheet flow onto and across vegetated areas to maintain the disconnection
- Disconnections should be located on gradual slopes (≤ 5%) to maintain sheetflow. Level spreaders, terraces, or berms may be used to maintain sheetflow conditions if the average slope is steeper than 5%. However, installations on slopes greater than 10% will require an engineered plan that ensures adequate treatment and the safe and non-erosive conveyance of runoff to the property line or downstream stormwater management practice.
- Disconnecting impervious surfaces works best in undisturbed soils. To minimize disturbance and compaction, construction vehicles and equipment should avoid areas used for disconnection during installation of the solar panels.
- Groundcover vegetation must be maintained in good condition in those areas receiving disconnected runoff. Typically this maintenance is no different than other lawn or landscaped areas. However, areas receiving runoff should be protected (e.g., planting shrubs or trees along the perimeter) from future compaction.

Depending on the layout and number of panels installed, the disconnection of non-rooftop runoff technique may address some or all of the stormwater management requirements for an individual project. Where the imperviousness is high or there is other infrastructure (e.g., access roads, transformers), additional runoff may need to be treated. In these situations, other ESD techniques or micro-scale practices may be needed to provide stormwater management for these features.

Example 1 – Using Non-Rooftop Disconnection Where the Average Slope ≤ 5%

Several rows of solar panels will be installed in an existing meadow. The soils within the meadow are hydrologic soil group (HSG) B and the average slope does not exceed 5%. Each row of panels is 10 feet wide and the distance between rows is 20 feet. The rows of solar panels will be installed according to Figure 1 below. In this scenario, the disconnection length is the same as the distance between rows (20 feet) and is greater than the width of each row (10 feet). Therefore, each row of panels is adequately disconnected and the runoff from 1.0 inch of rainfall is treated.

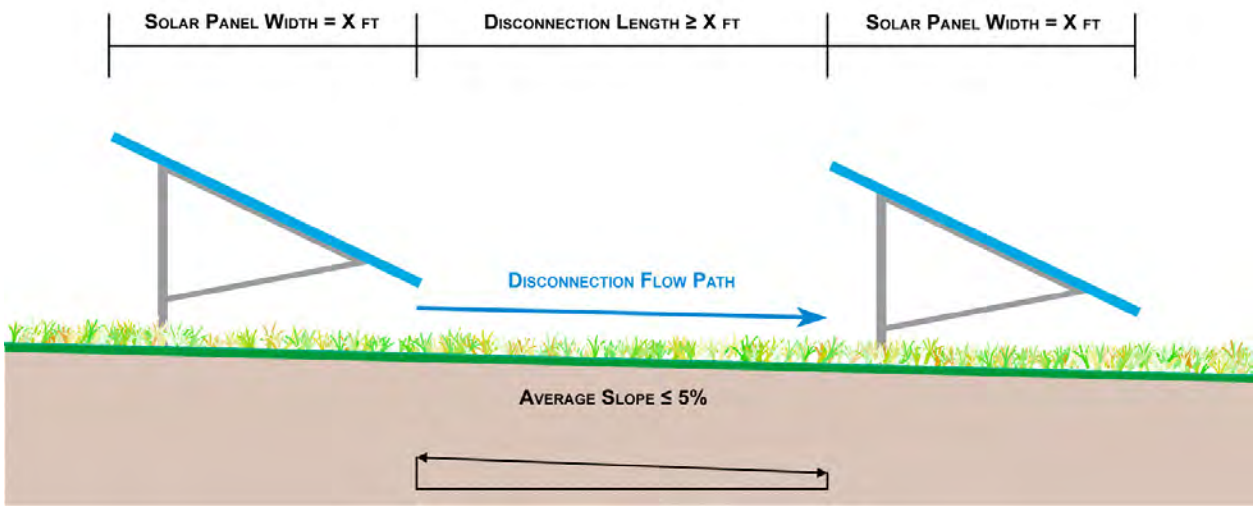

Figure 1. Typical Installation - Slope ≤ 5%

Example 2 – Using Non-Rooftop Disconnection Where the Average Slope ≥ 5% but ≤ 10%

Several rows of solar panels will be installed in an existing meadow. The soils within the meadow are hydrologic soil group (HSG) B and the average slope is greater than 5% but less than 10%. Each row of panels is 10 feet wide and the distance between rows is 20 feet. The rows of solar panels will be installed as shown in Figure 2 below. The disconnection length is the same as the distance between rows (20 feet) and is greater than the width of each row (10 feet). However, in this example, a level spreader (typically 1 to 2-foot wide and 1 foot deep) has been located at the drip edge of each row of panels to dissipate energy and maintain sheetflow.

Discussion

To meet State and local stormwater management requirements, ESD must be used to the MEP to reduce runoff to reflect forested conditions. While all reasonable options for implementing ESD must be investigated, minimally, the runoff from 1 inch of rainfall must be treated. In each of the examples above, there may be additional opportunities to implement ESD techniques or practices and reduce runoff that should be explored. However, simply disconnecting the runoff from the solar panel arrays captures and treats the runoff from 1.0 inch of rainfall. Where imperviousness is low and soil conditions less optimal (e.g., HSG C or D), this may be sufficient to completely address stormwater management requirements. In more dense applications or in sandy soils, additional stormwater management may be required.

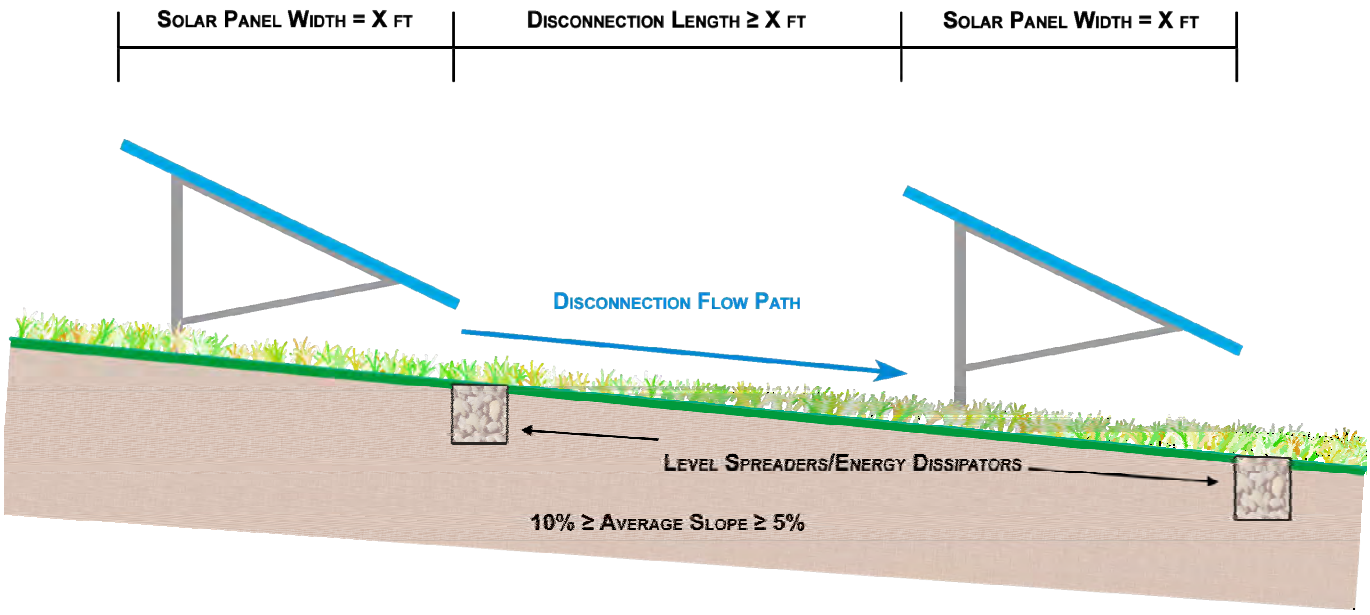

Figure 2. Typical Installation – Slope ≥ 5% but ≤ 10%

Conclusion

The primary purpose of Maryland's stormwater management program is to mimic natural hydrologic runoff characteristics and minimize the impact of land development on water resources. Any land development project that exceeds 5,000 square feet of disturbance, including solar panel projects, must address stormwater management. However, for solar panels, stormwater management may be provided in a cost-effective manner by disconnecting each row of panels and directing runoff over the vegetated areas between the individual rows.

Resources

[1] 2000 Maryland Stormwater Design Manual, Volumes I and II, MDE, October 2000 (http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/MarylandStormwaterDesignManual/Pages/Programs/WaterPrograms/SedimentandStormwater/stormwater_design/index.aspx)