Stormwater Pollution Prevention Plan

Prepared for:
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LaBella
Powered by partnership.

Tanglewood ADA Parking and Trail

Town of Big Flats, Chemung County, New York

DATE: AUGUST 2024
LAST REVISED: DECEMBER 2024
PROJECT NO. 2233035

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PREPARER OF THE SWPPP

"I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings."

Name and Title[1]: Michael Mishook, PE

Date: 12/16/2024

[1] *This is a signature of a New York State licensed Professional Engineer employed by LaBella Associates that is duly authorized to sign and seal Stormwater Pollution Prevention Plans (SWPPPs), NOIs, and NOTs prepared under their direct supervision. Refer to Appendix B for the SWPPP Preparer Certification Form, and Appendix I for the LaBella Certifying Professionals Letter.*

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1.0 EXECUTIVE SUMMARY

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared for major activities associated with construction of an ADA compliant trail and parking lot for the proposed canopy walk at Tanglewood Nature Center in the Town of Big Flats. 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-0-20-001, effective January 29, 2020 through January 28, 2025. 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 "Tanglewood ADA Parking and Trail" 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 a commercial redevelopment project with an increase in impervious area and a new development component completed on behalf of the Owner/Operator.

1.1 Project Description

Tanglewood Nature Center is proposing redevelopment project with an increase in impervious area inclusive of parking lot improvements and a new development component consisting of an ADA compliant trail and tree canopy walkway. For stormwater design purposes, the parking lot improvements are being considered as a redevelopment activity and the new tree canopy walkway and ADA trail is considered new development. Also included in the new development portion is a set of stairs connecting a new and existing trail, and a restored trail that will be used as the construction access road. The project will disturb approximately 3.5 acres of land. 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-0-20-001; and the project site is not located in one of the watersheds listed in Appendix C of GP-0-20-001. Therefore, this SWPPP includes post-construction stormwater management practices, as well as erosion and sediment controls.

The project will require tree removal for the construction of the tree canopy structure and the trail connecting to the existing parking lot. The extent of tree removal will be limited to the minimum required, and as directed by the owner. A preliminary assessment of tree removal on 8/13/2024 by LaBella Associates indicated the removal of approximately 57 dead trees and 23 live trees.

This project is located within the Town Of Big Flats regulated, traditional land use control Municipal Separate Stormwater Sewer System (MS4). Therefore, an MS4 SWPPP Acceptance Form is required to accompany NOIs submitted to the NYSDEC.

Runoff from the project site will discharge to the Chemung River, which is not included in the list of Section 303(d) water bodies included in Appendix E of GP-0-20-001.

Project construction activities will consist primarily of site grading, paving, lighting, and the installation of the tree canopy walkway structure. 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 practices, and other construction-phase pollution controls outlined herein.

The post-construction stormwater management utilizes a filter strip, an area reduction practice, that will be owned by Tanglewood Nature Center. The filter strip is being utilized to meet the WQv requirement for the redevelopment activities. The filter strip area will be permanently protected through the establishment of a legal conservation easement. Conservation of Natural Areas, an area reduction practice, will be utilized to meet the WQv requirement for the new development activities. The natural conservation area will be permanently protected through the establishment of a legal conservation easement.

Areas that have been disturbed and compacted due to construction activities shall be property restored prior to seeding. Soil restoration shall be completed in conformance with NYSDEC's document entitled Deep-Ripping and Decompaction, April 2008 and Table 5.3 of the NYS Stormwater Design Manual. The accompanying plans show the minimum areas that are expected to receive soil restoration. The extent of soil restoration will be established on-site as the impact of construction activities is determined.

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.

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 Land Use and Topography

The project site is located within the conservation zoning district. The intent of this land is to delineate open, public-owned, agricultural, and/or environmentally sensitive land and water areas of the town due to their current critical relationship with the Chemung River, agricultural potential, or extreme environmental sensitivity shall require preservation and utilization of only less intensive and carefully considered development that is compatible with the sensitive nature of their lands.

The overall site is moderately sloping, with slopes ranging from 5 to 40 percent. Site elevations range from approximately 1365 feet above mean sea level (MSL) to 1500 feet MSL. The entire project site slopes moderately towards the West before hitting a ravine off the project site and flowing to the Chemung River.

2.2 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	Permeability (inches/hour)	Erosion Factor K	Depth to Water Table (feet)	Depth to Bedrock (feet)
ChB – Chippewa silt loam, 3 to 8 percent slopes	D	<0.14	0.32	0-0.5	0.67-1.67
ChC – Chippewa silt loam, 8 to 15 percent slopes	D	<0.14	0.32	0-0.5	0.67-1.67
LnC – Lordstown channery silt loam, 8 to 15 percent slopes	C	0.14-1.42	0.20	>6.67	1.67-3.33
LnD – Lordstown channery silt loam, 15 to 25 percent slopes	C	0.14-1.42	0.20	>6.67	1.67-3.33
LoE – Lordstown and Arnot soils, 25 to 35 percent slopes, very rocky	C	0.14-1.42	NA	>6.67	1.67-3.33
TuB – Tuller channery silt loam, 0 to 8 percent slopes	D	0	0.24	0.5-1.5	0.83-1.67
VoB – Volusia channery silt loam, 2 to 8 percent slopes	D	<0.14	0.28	0.5-1.5	0.83-1.83
VoC – Volusia channery silt loam, 8 to 15 percent slopes	D	<0.14	0.28	0.5-1.5	0.83-1.83
VoD – Volusia channery silt loam, 15 to 25 percent slopes	D	<0.14	0.28	0.5-1.5	0.83-1.83

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 C soils and HSG D soils, as shown in the table below.

Table 2: Project Site HSG Data

HSG A	HSG B	HSG C	HSG D
0%	0%	14.4%	85.6%

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.

An on-site geotechnical investigation was performed by Michele Fiorillo on 6/1/2023. Two test borings at 9-13 feet deep were performed on the project site to obtain representative subsurface information within the limits of the proposed stormwater practices. For detailed geotechnical information, refer to the Geotechnical Interpretive Report entitled, "Tanglewood Nature Center Geotechnical Engineering Report" dated 8/28/2023 as prepared by Michele Fiorillo from Terracon Consultants-NY, Inc in Appendix K.

Soil infiltration testing was performed by Fagan Engineers on July 26, 2024. The results of the investigation are provided in Appendix L.

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

2.3 Watershed Designation

The project site is not located in a restricted watershed identified in Appendix C of GP-0-20-001.

2.4 Receiving Water Bodies

The nearest natural classified water body into which runoff from the project site will discharge is the Chemung River. The Chemung River is classified by NYSDEC as a Class A water body, is a stream order 5, a stream level 2, and is not included in the Section 303(d) list of impaired waters found in Appendix E of GP-0-20-001.

2.5 Aquifer Designation

The project site is not located over a US EPA designated Sole Source aquifer; nor is it located over a Primary or Principal aquifer listed in the NYSDEC Technical and Operational Guidance Series (TOGS) 2.1.3 (1980).

2.6 Wetlands

A search on the NYSDEC Environmental Resource Mapper on July 3, 2024, and a review of GIS data, did not reveal any known regulated wetlands located on or in the vicinity of the project site. A wetland and stream delineation survey was completed by LaBella Associates in August 2024. The survey identified streams and wetland on the project site that are USACE jurisdictional and potentially non-jurisdictional. The NYSDEC Environmental Resource Mapper has been provided in Appendix A, as Figure A-4. The Wetland and Stream Delineation Survey performed by Labella Associates has been provided in Appendix M.

2.7 Flood Plains

According to the National Flood Insurance Program Flood Insurance Rate Map (FIRM), Town of Big Flats, New York, Community Panel Number 30, the project site lies within Flood Zone X, areas determined to be outside 500-year floodplain The FEMA Flood Map has been provided in Appendix A, as Figure A-5.

2.8 Listed, Endangered, or Threatened Species

A search was performed on the NYSDEC Environmental Resource Mapper on July 3, 2024, and determined that the project site may contain threatened or endangered species, or critical habitat. There are currently no mapped occurrences in the vicinity of the project site. However, the Department is currently coordinating with the NYSNHP and the Nature Conservancy to map known occurrences of timber rattlesnakes on an adjacent property. If it is determined that there are mapped dens within the project area, surveys of the project area by a professional (biologist, botanist, or landscape architect) familiar with the species and its habitat may be recommended. If favorable habitats exist, a field survey would be needed to determine if the species is actually present. If populations of the endangered species are found to be in the project area, project modification should be considered to avoid or minimize impact. If state-listed threatened or endangered species of wildlife, or its habitat is present within or near a project area, a Part 182 Incidental Take permit may be required from the DEC.

An Environmental Resource Map has been provided in Appendix A, as Figure A-4. Appendix N, Timber Rattlesnake Habitat Assessment Report has been included.

2.9 Historic Places

A search on the New York State Cultural Resource Information System (CRIS) database, performed on July 3, 2024, revealed that the property is not located within an archeologically sensitive area, and 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. Additionally, the construction activity does not include the construction of a new building within 50 feet of any structure more than 50 years old. A printout of the historic places screening map is presented in Appendix A, as Figure A-3.

2.10 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 Chemung 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	1.97
10-year	3.42
100-year	5.89

2.11 Pre-development Watershed Conditions

The pre-development project site is covered predominantly by grass and woods with some areas being covered by gravel for an existing driveway and parking lot. Analysis of pre-development conditions considered existing drainage patterns, soil types, ground cover, and topography. The Pre-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 pre-development conditions are presented in Appendix D. A summary of the pre-development watershed runoff rates at each analysis point is presented in Table 8.

Subcatchment CM-E1 is a 2.49± acre watershed consisting of grass and gravel. Runoff flows overland via sheet and shallow concentrated flow toward the pond located in the Northwest region of the property. This subcatchment is tributary to Analysis Point (AP) E-1.

Subcatchment CM-E2 is a 14.99± acre watershed consisting of grass, woods, and gravel. Runoff flows overland via sheet and shallow concentrated flow toward the Southwest region of the property. This subcatchment is tributary to Analysis Point (AP) E-2.

2.12 Post-development Watershed Conditions

The post-development project site is covered predominantly by grass, woods, and asphalt. 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-7.

The results of the computer modeling used to analyze the overall watershed under post-development conditions are presented in Appendix E. A summary of the post-development watershed runoff rates at each analysis point is presented in Table 8.

The proposed project does not change the flow patterns compared to pre-development conditions. Both subcatchments experience a decrease in peak discharge rates; therefore, the project will not have a significant adverse impact on the adjacent or downstream properties or receiving water courses. The design is detailed on the accompanying plans.

2.13 Description of Analysis Points

The study area consists of an overall watershed that encompasses approximately 17.5 acres, including the 4 acre project site and approximate 3.5 acre area of disturbance. The overall watershed was broken down into smaller watersheds, or subcatchments, to allow for analysis of runoff conditions at several locations throughout the study area. Each of these locations was defined as a Analysis Point (AP) in order to compare the effects resulting from stormwater management facilities proposed as part of the project. Descriptions of each of the selected analysis points are provided below.

- Analysis Point 1: Runoff from the site discharges to an existing pond located at northwest of the site, north of the main building via overland flow.
- Analysis Point 2: Runoff from the site discharges to a point west of the project via overland flow.

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 (per DEC 1.0 inch minimum)
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. Analysis Point 2 receives runoff from the area of new development which includes the trail and canopy walkway. This project will implement conservation of natural areas to meet the water quality objective for the new development area. The practice has been sized to accommodate the Water Quality Volume, as per the performance criteria presented in Chapter 5 of the Design Manual. Water quality volume calculations for the proposed practice is presented in Appendix C. Figure A-8 WQv and Development Activities Diagram in Appendix A shows the breakdown of the water quality volume criteria being met for the new development and redevelopment components of the proposed project.

Table 4: Required WQv Summary – New Development

Required WQv	
1,372 cf	0.02 af

3.2.3 Methodology for Redevelopment Projects

Chapter 9 of the Design Manual outlines alternative WQv treatment objectives for redevelopment projects.

According to Section 9.2.1.A.II, redevelopment activities can achieve the water quality treatment objective if 25% of the disturbed redevelopment impervious area is captured and treated by implementation of standard SMPs or reduced by application of RR techniques. In this case, 100% of any new increase in impervious area to a given design point must be treated. This project will implement a filter strip to meet the water quality objective for the redevelopment area. Figure A-8 WQv and Development Activities Diagram in Appendix A shows the breakdown of the water quality volume criteria being met for the new development and redevelopment components of the proposed project.

Table 5: Required WQv Summary - Redevelopment

100% New Development WQv Required		25% Redevelopment WQv Required	
508 cf	0.01 af	201 cf	0 af
Total WQv Required 709 cf (0.02 af)			

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 of the Design Manual. Water quality volume calculations for the proposed practice is presented in Appendix C.

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 NYSDEC Requirements for Redevelopment

Section 9.2.1.B of the Design Manual indicates, “Although encouraged, meeting the RRv criteria is not required for the redevelopment activity portion of a project. The need to provide RRv shall be considered separately for each design point. For design points with a net increase in impervious area, RRv is required for the increase in impervious area only.”

As such, a filter strip has been applied to the project to meet the WQv objective for the redevelopment activity of the project. The increase in impervious cover will be treated as new development and both the WQv criteria and RRv criteria are met.

3.3.3 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.

3.3.4 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 Technique 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.

Table 6: Summary of RR Techniques being Applied

RR Technique	NYSDEC Design	RRv Capacity	WQv Required (CF)	WQv Reduced/RRv Provided (CF)
Runoff Reduction Techniques (Area Reduction)				
Conservation of Natural Areas	RR-1	100%	1,372	1,372
Sheet flow to Riparian Buffers/Filter Strips	RR-2	100%	709	1,084
RR Technique Totals			**2,081**	**2,456**

3.3.5 RRv Performance Summary

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

Table 7: RRv Summary

Development Type	WQv Required (CF)	RRv Provided WQv Reduced (CF)	% RRv Provided/ WQv Reduced
New Development	1,372	1,372	100%
Redevelopment	709	1,084	150%

As indicated in the above table, the RRv provided is greater than or equal to the RRv required for the project site. As such, the RRv criteria has been met and the designer can proceed to Step 6.

3.4 STEP 4 – Calculate the Minimum RRv Required

As previously discussed, the RRv provided is greater than or equal to the RRv required for this project. As such, the runoff reduction volume criteria has been met, and minimum RRv is not applicable.

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 the RRv practice. 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. According to the NYS Stormwater Design Manual, 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. Section 3.6.4 of the SWPPP concludes how the CPv requirement has been met for this project.

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. According to the NYS Stormwater Design Manual, 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. Section 3.6.4 of the SWPPP concludes how the Qp requirement has been met for this project.

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. According to the NYS Stormwater Design Manual, 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. Section 3.6.4 of the SWPPP concludes how the Qf requirement has been met for this project.

3.6.2 NYSDEC Requirements for Redevelopment

Chapter 9 of the Design Manual provides alternatives to the above quantity criteria, which may be applied to redevelopment projects. As indicated in Section 9.2.C, if there is 0% change to hydrology that increases the discharge rate from the project site, then the 10-year and 100-year criteria for quantity control do not apply. In addition if there is 0% change to hydrology that increases the discharge rate and volume from the project site, then providing 24-hr detention of the 1-year storm to meet channel protection criteria is not required.

Based upon the hydrologic analysis performed, the discharge rate from the site has been reduced from pre- to post-development conditions for the 1-year, 10-year, and 100-year storm events. Therefore, the stormwater quantity criteria have been met and stormwater quantity control practices have not been provided for this project. The following Section describes the methodology behind this hydrologic analysis.

3.6.3 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. Link: A multi-purpose mechanism used to introduce a hydrograph from another file. For the models, a link was used to represent each analysis point.

Subcatchments, and links are represented by hexagons 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 LiDAR generated contours, aerial photographs, a topographical survey, soil surveys, and site investigations.

A local IDF file was imported, and specific mass curves were generated, in HydroCAD to evaluate the pre- and post-development stormwater runoff characteristics for various 24-hour storm events identified in the following Table.

Table 8: Design Events

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

3.6.4 Performance Summary

Per Section 4.6 of the Design Manual, the CPv requirement for the new development portion does not apply as the reduction of the entire CPv is achieved by application of runoff reduction techniques. The CPv for the redevelopment portion of the project has been met by providing a 0% change to hydrology that increases the discharge rate from the project site.

A comparison of the pre- and post-development watershed conditions was performed for all analysis points and storm events evaluated herein. For all analysis 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 and the Qp and Qf requirements have been met.

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 9: Summary of Pre- and Post-Development Peak Discharge Rates

	Pre- vs. Post-Development Discharge Rate (cfs)					
Analysis Point (AP)	1-year 24-hour storm event		10-year 24-hour storm event		100-year 24-hour storm event	
	Pre	Post	Pre	Post	Pre	Post
1	2.67	2.66	6.76	5.25	14.22	14.18
2	10.45	10.04	28.97	27.93	63.99	61.77
Total	13.12	12.70	35.73	33.18	78.21	75.95

4.0 CONSTRUCTION SEQUENCE

This project encompasses less than five acres of land and disturbance of additional off-site properties to facilitate construction is not anticipated. Therefore, written approval from NYSDEC OR the Town of Big Flats allowing the disturbance of more than five acres of land at any one time is not required. If the Contractor's construction sequence requires the disturbance of more than five acres at any one time, written approval must be obtained from NYSDEC or the Town of Big Flats prior to disturbing more than five acres at once.

The "Erosion and Sediment Control Plan" 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.

Refer to the accompanying plans for details and specifications. The construction sequencing schedule is intended as follows:

1. Pre-construction meeting.
2. Delineate disturbed areas and install orange construction fence for protected areas.
3. Install compost filter sock & stabilized construction entrances.

4. Begin clearing and grubbing operations. Limit clearing and grubbing to areas of proposed earthwork and as indicated on plans.
5. Remove, stockpile and stabilize topsoil.
6. Perform rough grading and realign drainage ditch as shown on plans.
7. Install canopy walkway structure.
8. Install site utilities.
9. Perform deep-ripping and decompaction per the NYSDEC's document entitled deep-ripping and decompaction, April 2008 and table 5.3 of the NYS stormwater design manual.
10. Perform final grading.
11. Perform final stabilization of disturbed areas and plant trees.
12. Pave parking lot and ADA trail from parking lot to canopy structure.
13. Install signage.
14. Remove all temporary erosion and sediment controls once 80% stabilization has been achieved.

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-0-20-001 (effective January 29, 2020 through January 28, 2025)
- New York State Standards and Specifications for Erosion and Sediment Control, NYSDEC (November 2016)

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 Dust Control

Water trucks shall be used as needed during construction to reduce dust generated on-site. Dust control must be provided by the Contractor(s) to a degree that is acceptable to the Owner, and in compliance with the applicable local and state dust control requirements.

5.1.3 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.

5.1.4 Silt Fencing

Silt fencing shall be installed on the downhill side of soil stockpiles to prevent the transport of sediment from these areas.

5.1.5 Temporary Seeding

For areas undergoing clearing, grading, and disturbance as part of construction activities, where work has temporarily ceased, temporary soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the soil disturbance activity has temporarily ceased.

5.1.6 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.

5.1.7 Stone Check Dams

Stone check dams will be installed within drainage ditches to reduce the velocity of stormwater runoff, promote settling of sediment, and reduce sediment transport off-site.

Sediment accumulated behind the stone check dam will be removed as needed to maintain flow through the stone check dam and prevent large flows from carrying sediment over or around the dam. Stones shall be replaced as needed to maintain the design cross section of the structures.

5.1.8 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.

5.1.9 Compost Filter Sock

Prior to the initiation of and during construction activities, a compost filter sock (or silt sock) will be established downgradient of all disturbed areas. These filters may extend into non-impact areas to provide adequate protection of adjacent lands. The spacing of the compost filter sock, which will depend on the ground slope and diameter of the sock, shall be based upon New York State or EPA guidance.

Clearing and grubbing will be performed only as necessary for the installation of the sediment control filter; and unlike sediment control barriers, trenching is not required. The ends of the filter sock should be directed upslope, to prevent stormwater from running around the end of the sock. The preferred anchoring method is to drive stakes through the center of the sock at regular intervals; alternatively, stakes can be placed on the downstream side of the sock. To facilitate effectiveness of the compost filter sock, daily inspections and inspections immediately after significant storm events will be performed by the Contractor(s) to ensure that they are intact and the area behind the sock is not filled with sediment. Maintenance of the sock will be performed as needed.

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.

Permanent soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) 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.

5.2.2 Rock Outlet Protection

Rock outlet protection shall be installed at the locations as indicated and detailed on the accompanying plans. The installation of rock outlet protection will reduce the velocity and energy of water, such that the flow will not erode downstream surfaces.

5.3 Other Pollutant Controls

Part I.B.1.e of GP-0-20-001 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 10: 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-0-20-001, 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. The contractor or subcontractor shall begin implementing the corrective actions within one (1) business day of the notification and shall complete the corrective actions in a reasonable time frame.

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 Big Flats 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 Big Flats 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

A formal, signed, and enforceable maintenance agreement for the stormwater management system shall be provided by the Owner, accepted by the Town, and executed by the Owner prior to the issuance of the Certificate of Occupancy for this project. This agreement shall be binding and recorded with the Chemung County Clerk as a deed restriction on the property. The maintenance agreement shall convey to the Town the right of entry to perform periodic inspections by the Town and/or their representatives. 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-0-20-001, 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. Date and time of inspection.
2. Name and title of person(s) performing inspection.
3. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection.
4. A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow.
5. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any discharges of sediment to the surface waterbody.
6. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance.

7. 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.
8. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection.
9. Indication of the current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards.
10. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s).
11. Identification and status of all corrective actions that were required by previous inspection.
12. Color photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *Qualified Inspector/Qualified Professional* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *Qualified Inspector/Qualified Professional* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *Qualified Inspector/Qualified Professional* shall attach the 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 II.D.2 of GP-0-20-001, 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-0-20-00 conditions is outlined in the subsequent sections. For a complete listing of the definitions, responsibilities, and obligations, refer to the SPDES General Permit GP-0-20-001 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 I.B.1.(a)-(f) 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 I.C.2.a., b., c. or d. of GP-0-20-001.

3. Retain the services of a "Qualified Inspector" or "Qualified Professional" as defined under Section 2.1, to provide the services outlined in Section 2.5 "Qualified Inspector's/Qualified Professional's Responsibilities."

4. Retain the services of a "Qualified Professional," as defined under Section 2.1, 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 SWPPP acceptance 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 implementing the erosion and sediment control measures and stormwater management practices described in this SWPPP. Have each of these contractors and subcontractors identify at least one "Trained Contractor", as defined under Section 2.1 that will be responsible for the implementation of the SWPPP. Ensure that the Contractor has at least one "Trained Contractor" on site on a daily basis when soil disturbance activities are being performed.

9. Schedule a pre-construction meeting which shall include the Town of Big Flats 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. Provide proof of DEC approval of Notice of Intent to the Town of Big Flats prior or at the pre-construction meeting.

11. Retain the services of an independent certified materials testing and inspection firm operating under the direction of a licensed Professional Engineer to perform regular tests, inspections, and certifications of the construction materials used in the construction of all post-construction stormwater management practices.

12. Retain the services of a NYS licensed land surveyor to perform an as-built topographic survey of the completed post-construction stormwater management facilities.

13. Upon completion of the proposed stormwater construction, a licensed professional engineer shall provide a certification letter to the Town of Big Flats Code Enforcement Officer stating that the stormwater management system was constructed in conformance with the approved plans and specifications. Any changes shall be noted on the plans and a copy of the plans provided to the Town in the form of an as-built.

14. 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.

15. Silt, sediment, and/or dust shall not be allowed to leave the project site, including tracking onto public roads. Erosion and sediment controls shall be implemented and maintained to ensure this purpose. If silt, sediment, and/or dust are found to be leaving the site, the Owner (or representative) shall take immediate actions to correct the situation.

16. Forward a copy of the NOI Acknowledgement Letter received from the regulatory agency to the Owner's/Operator's Engineer for project records, and to the Contractor for display at the construction site.

17. Maintain a copy of the General Permit (GP-0-20-001), NOI, NOI Acknowledgement Letter, SWPPP, MS4 SWPPP Acceptance Form, inspection reports, Spill Prevention, Countermeasures, Cleanup ("SPCC") Plan, and all documentation in accordance with Part I.F.8.a.-d of GP-0-20-001 necessary to demonstrate eligibility with the permit at the construction site, until all disturbed areas have achieved final stabilization and the NOT has been submitted to the NYSDEC. Place documents in a secure location that must be accessible during normal business hours to an individual performing a compliance inspection.

18. Prior to submitting a Notice of Termination, ensure for post-construction stormwater management practice(s) that are privately owned, the Owner/Operator has a deed restriction in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan. All legal conservation easements required for the post-construction stormwater practices must be finalized and provided to the Town of Big Flats.

19. Submit a Notice of Termination (NOT) form (see Appendix B) within 48 hours of receipt of the Owner's/Operator's Engineer's certification of final site stabilization to the following:

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

    Town of Big Flats
    476 Maple Street

Big Flats, NY 14814

20. Request and receive all SWPPP records from the Owner's/Operator's Engineer and archive those records for a minimum of five (5) years after the NOT is filed.

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

22. The NOI, SWPPP, and inspection reports required by GP-0-20-001 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 the NOI, SWPPP, or inspection reports. Copying of documents will be done at the requester's expense.

23. 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.

24. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original owner or operator must notify the new owner or operator, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For construction activities subject to the requirements of a regulated, traditional land use control MS4, the original owner or operator must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.
    a) Once the new owner or operator obtains permit coverage, the original owner or operator shall then submit a completed NOT with the name and permit identification number of the new owner or operator to the Department at the address in Part II.B.1. of the permit. If the original owner or operator maintains ownership of a portion of the construction activity and will disturb soil, they must maintain their coverage under the permit.
    b) Permit coverage for the new owner or operator will be effective as of the date the Department receives a complete NOI, provided the original owner or operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new owner or operator.

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 Big Flats once all signatures and attachments are complete.

4. Enter Contractor's information in Section 2.5 "SWPPP Participants" once a Contractor is selected by the Owner/Operator.

5. Participate in a pre-construction meeting which shall include the Town of Big Flats 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. If deficiencies are identified, the contractor shall begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

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 Big Flats 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. Silt, sediment, and/or dust shall not be allowed to leave the project site, including tracking onto public roads. Erosion and sediment controls shall be implemented and maintained to ensure this purpose. If silt, sediment, and/or dust are found to be leaving the site, the Contractor shall take immediate actions to correct the situation.

10. Begin implementing corrective actions within one (1) business day of receipt of notification by the Qualified Inspector/Qualified Professional that deficiencies exist with the erosion and sediment control measures employed at the site. Corrective actions shall be completed within a reasonable time frame.

11. Soil restoration shall be completed in conformance with NYSDEC's document entitled Deep-Ripping and Decompaction, April 2008 and Table 5.3 of the NYS Stormwater Design Manual.

12. 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 is 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.

13. 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 Big Flats 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.a-k of GP-0-20-001. 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. Based on the as-built survey and material testing certifications performed by others, the Qualified Professional shall perform evaluations of the completed stormwater management practices to determine whether they were constructed in accordance with this SWPPP.

9. Qualified Professional shall conduct a final site assessment and prepare a certification letter to the Owner/Operator indicating that, upon review of the material testing and inspection reports prepared by the firm retained by the Owner/Operator, review of the completed topographic survey, and evaluation of the completed stormwater management facilities, the stormwater management facilities have been constructed substantially in accordance with the contract documents and should function as designed.

10. 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).

11. Transfer the SWPPP documents, along with all NOI's, permit certificates, NOT's, 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]: Michael Mishook, PE
   LaBella Associates, DPC
   100 West Water Street, Suite 101
   Elmira, NY 14901
   Phone: (607) 734-8492

2. Owner/Operator [3]: Elaine Smith
   Tanglewood Nature Center
   443 Coleman Avenue
   Elmira, NY 14903
   Phone: (607) 732-6060

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
A-6: Pre-Development Watershed Delineation Map
A-7: Post-Development Watershed Delineation Map
A-8: WQv and Development Activities Diagram

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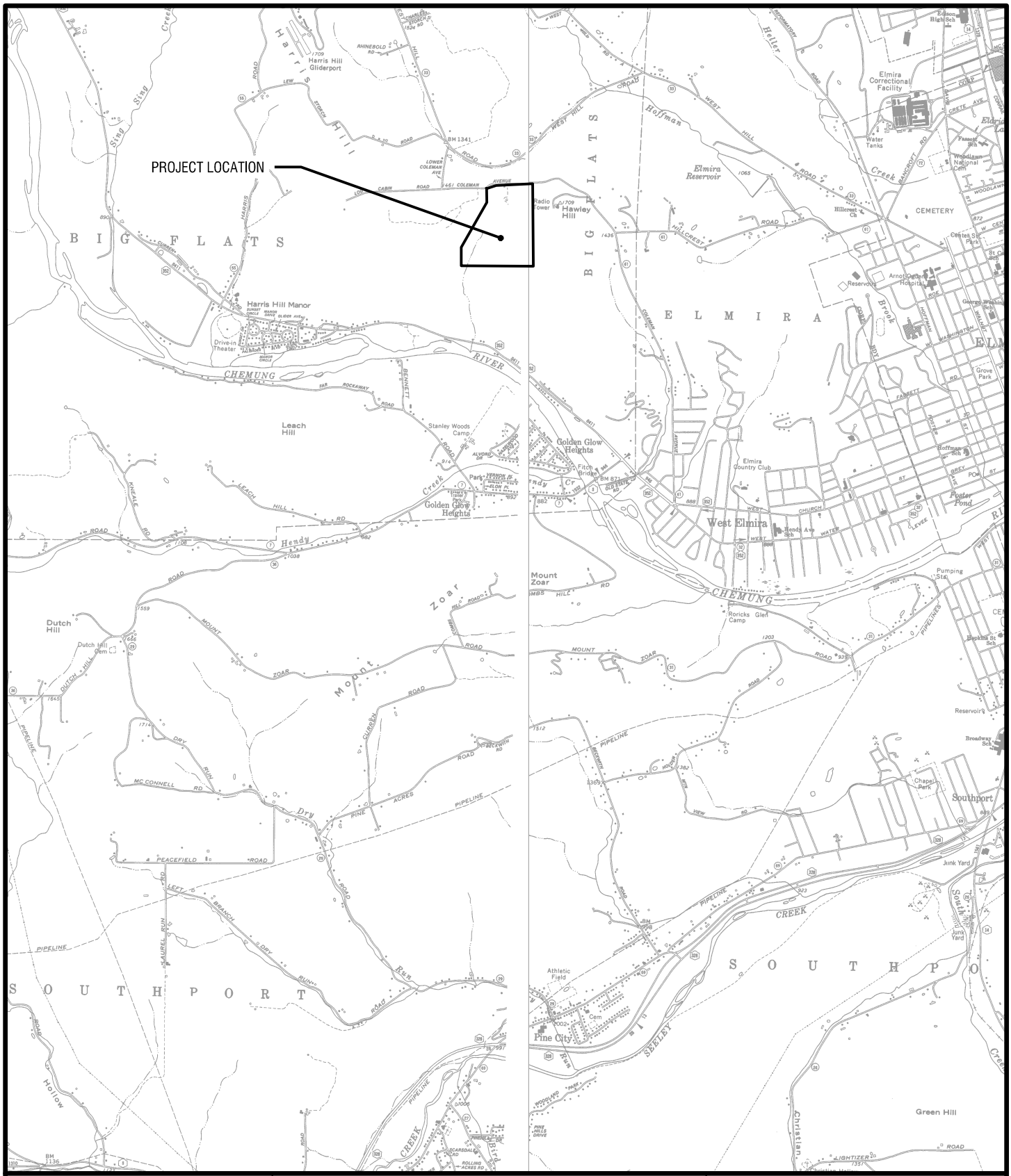

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ISSUED FOR:
SWPPP FIGURE - NOT FOR CONSTRUCTION

DRAWING NAME:
SITE LOCATION MAP

DRAWN BY:	DATE:	PROJECT NO.:
KLA	7/3/2024	2233035

PROJECT NAME:
TANGLEWOOD ADA PARKING AND TRAIL
443 COLEMAN AVENUE ELMIRA, NY

DRAWING NUMBER:
A-1

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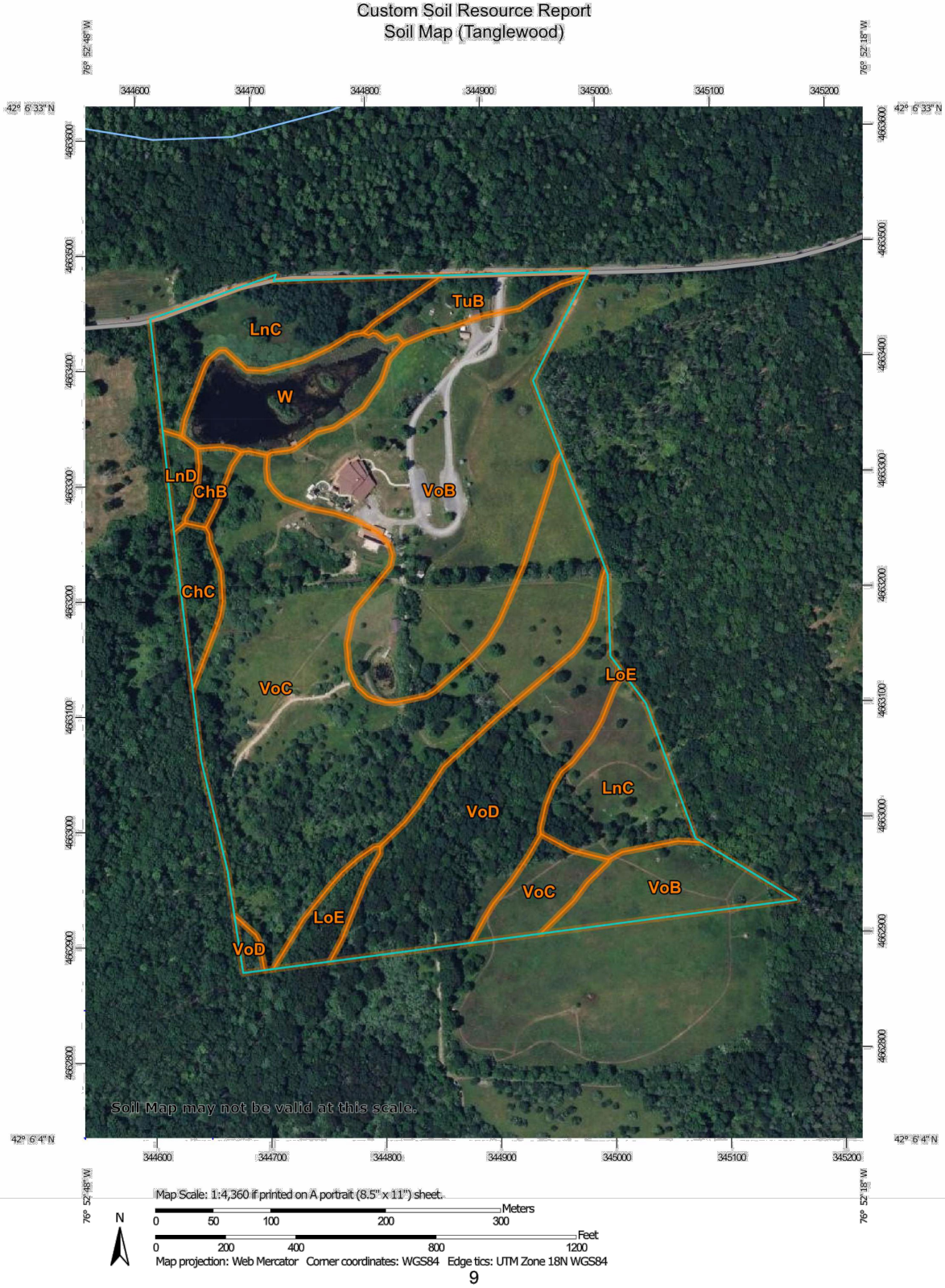
Custom Soil Resource Report
Soil Map (Tanglewood)



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DRAWING NAME:
SOILS MAP

DRAWN BY:	DATE:	PROJECT NO.:
KLA	7/3/2024	2233035

PROJECT NAME:
TANGLEWOOD ADA PARKING AND TRAIL
443 COLEMAN AVENUE ELMIRA, NY

DRAWING NUMBER:
A-2

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

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

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

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

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

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

Soil Survey Area: Chemung County, New York
Survey Area Data: Version 21, Sep 5, 2023

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

Date(s) aerial images were photographed: Apr 1, 2020—Oct 1, 2020

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

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DRAWING NAME: **SOILS LEGEND**

DRAWN BY:	DATE:	PROJECT NO.:
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PROJECT NAME: **TANGLEWOOD ADA PARKING AND TRAIL**
443 COLEMAN AVENUE ELMIRA, NY

DRAWING NUMBER: **A-2**

Map Unit Legend (Tanglewood)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
ChB	Chippewa silt loam, 3 to 8 percent slopes	0.4	0.8%
ChC	Chippewa silt loam, 8 to 15 percent slopes	0.9	1.7%
LnC	Lordstown channery silt loam, 8 to 15 percent slopes	6.5	12.0%
LnD	Lordstown channery silt loam, 15 to 25 percent slopes	0.4	0.8%
LoE	Lordstown and Arnot soils, 25 to 35 percent slopes, very rocky	0.9	1.6%
TuB	Tuller channery silt loam, 0 to 8 percent slopes	1.3	2.5%
VoB	Volusia channery silt loam, 2 to 8 percent slopes	14.7	27.2%
VoC	Volusia channery silt loam, 8 to 15 percent slopes	18.7	34.6%
VoD	Volusia channery silt loam, 15 to 25 percent slopes	7.2	13.3%
W	Water	3.0	5.5%
Totals for Area of Interest		**54.1**	**100.0%**

Map Unit Descriptions (Tanglewood)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties

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DRAWING NAME: **SOILS TABLE**

DRAWN BY:	DATE:	PROJECT NO.:
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443 COLEMAN AVENUE ELMIRA, NY

DRAWING NUMBER: **A-2**

Consultation Projects (View)

Archeologically Sensitive Areas

Survey Building Areas (View)

LPC Historic Districts

LPC Landmarks

USN Building Points (View)

- Eligible
- Listed
- Not Eligible
- Not Eligible - Demolished
- Undetermined

Survey Archaeology Areas (View)

National Register Building Sites (View)

USN Building Districts (View)

Cemeteries

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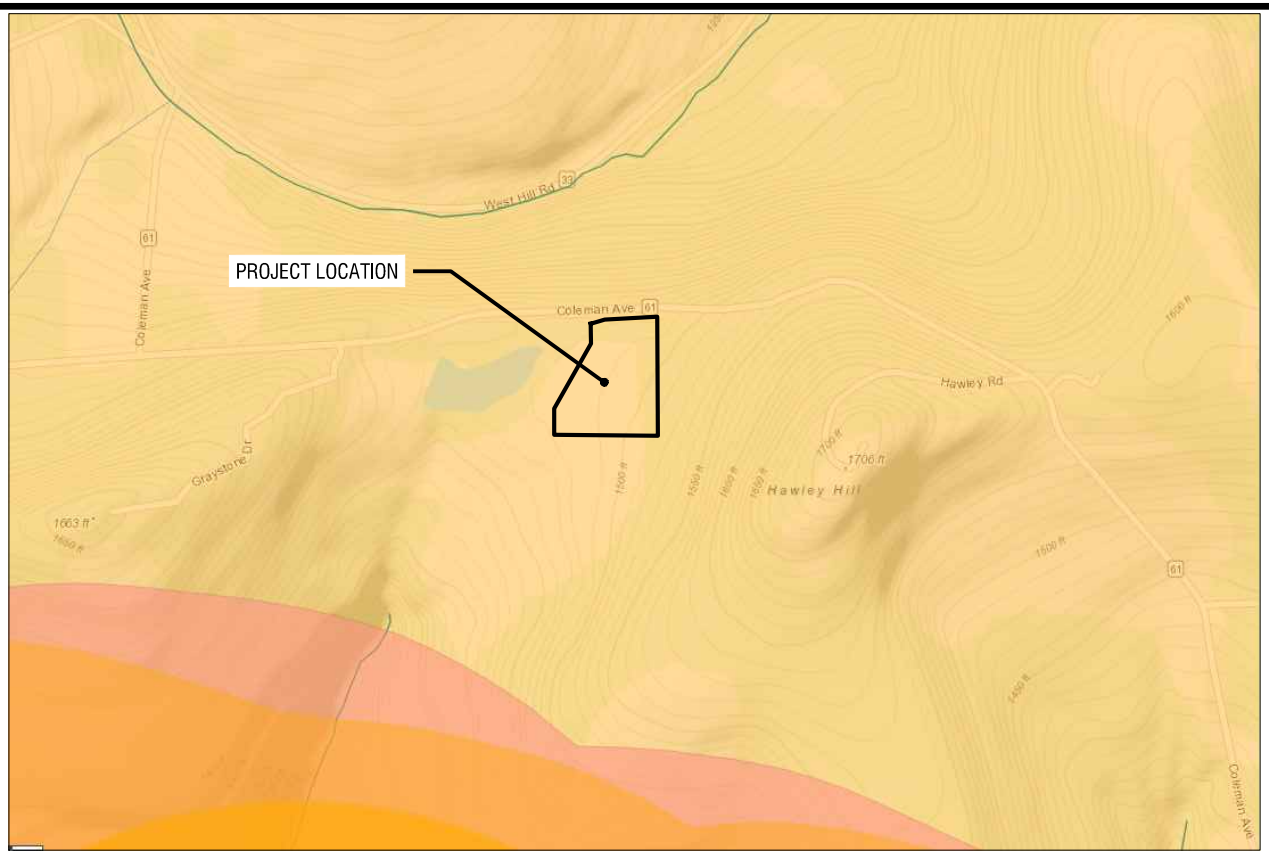
DRAWING NAME: **HISTORIC PLACES SCREENING MAP**

DRAWN BY:	DATE:	PROJECT NO.:
KLA	7/3/2024	2233035

PROJECT NAME: **TANGLEWOOD ADA PARKING AND TRAIL**
443 COLEMAN AVENUE ELMIRA, NY

DRAWING NUMBER: **A-3**



- Unique Geological Features
- Waterbody Classifications for Rivers/Streams
- Waterbody Classifications for Lakes
- Waterbody Inventory/Priority Waterbodies List
  - Lakes and Reservoirs
  - Estuaries
  - Rivers and Streams
  - Shorelines
- State Regulated Freshwater Wetlands (Outside of the Adirondack Park)
- State Regulated Wetland Checkzone
- Significant Natural Communities
- Natural Communities Near This Location
- Rare Plants or Animals
- National Wetlands Inventory
  - Estuarine and Marine Deepwater
  - Estuarine and Marine Wetland
  - Freshwater Emergent Wetland
  - Freshwater Forested/Shrub Wetland
  - Freshwater Pond
  - Lake
  - Other
  - Riverine

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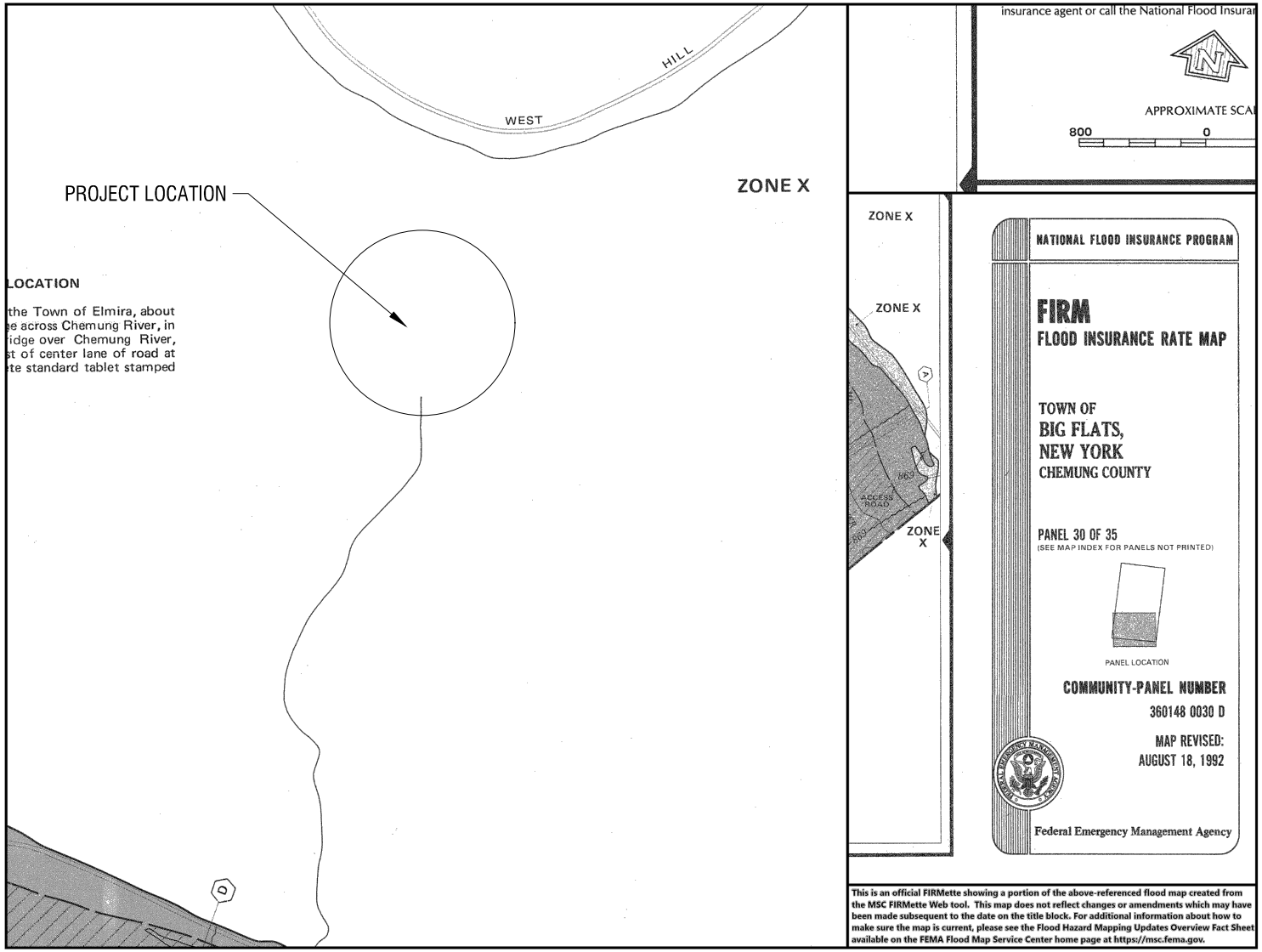
DRAWING NAME: **ENVIRONMENTAL RESOURCE MAP**

DRAWN BY:	DATE:	PROJECT NO.:
KLA	7/3/2024	2233035

PROJECT NAME: **TANGLEWOOD ADA PARKING AND TRAIL**
443 COLEMAN AVENUE ELMIRA, NY

DRAWING NUMBER: **A-4**



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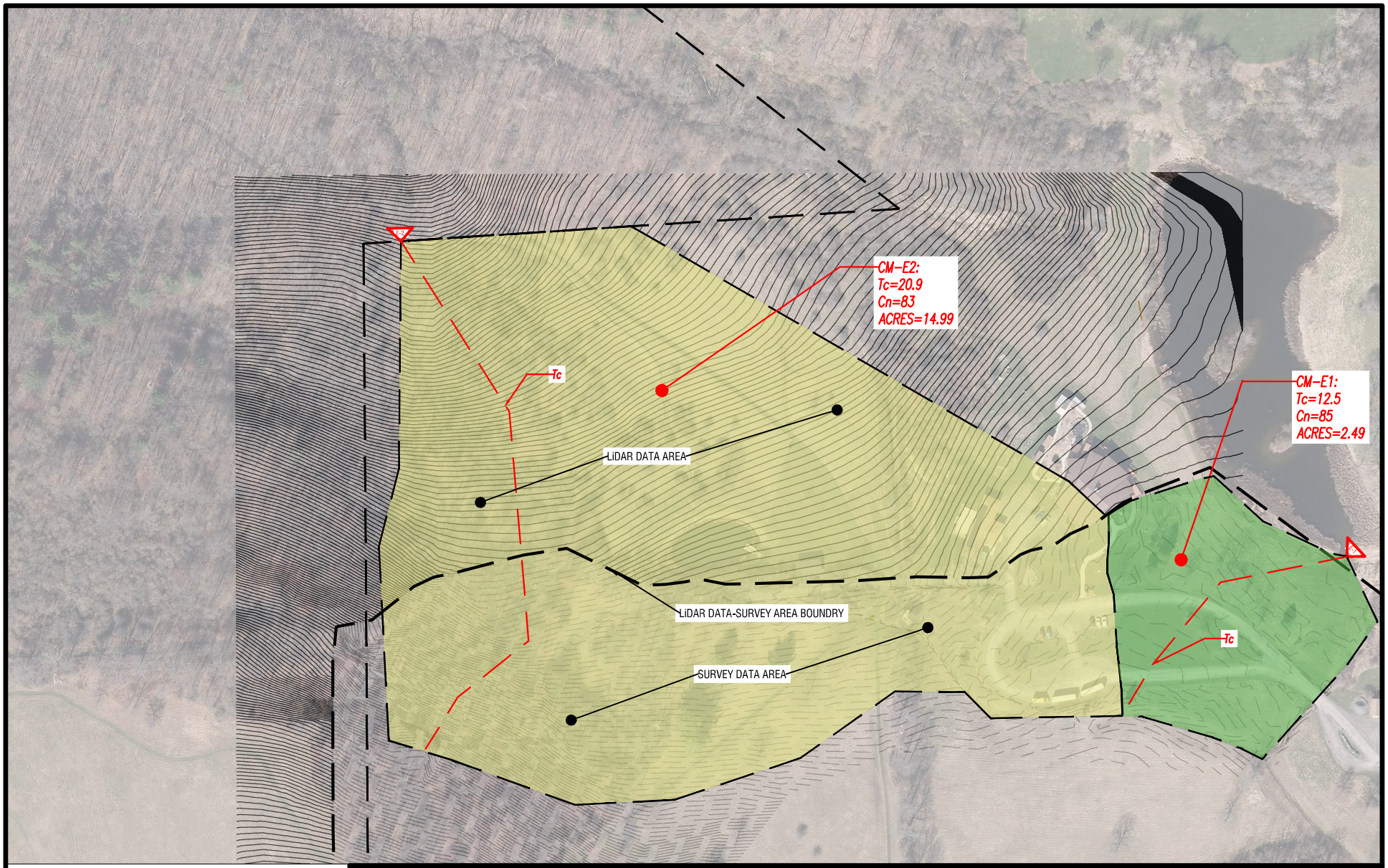
DRAWING NAME: **FEMA FIRM MAP**

DRAWN BY:	DATE:	PROJECT NO.:
KLA	7/3/2024	2233035

PROJECT NAME: **TANGLEWOOD ADA PARKING AND TRAIL**
443 COLEMAN AVENUE ELMIRA, NY

DRAWING NUMBER: **A-5**



SCALE: 1" - 200'

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DRAWING NAME: **PRE-DEVELOPMENT WATERSHED MAP**

DRAWN BY:	DATE:	PROJECT NO.:
KLA	11/27/2024	2233035

PROJECT NAME: **TANGLEWOOD ADA PARKING AND TRAIL**
443 COLEMAN AVENUE ELMIRA, NY

DRAWING NUMBER: **PRE DEV - 1**

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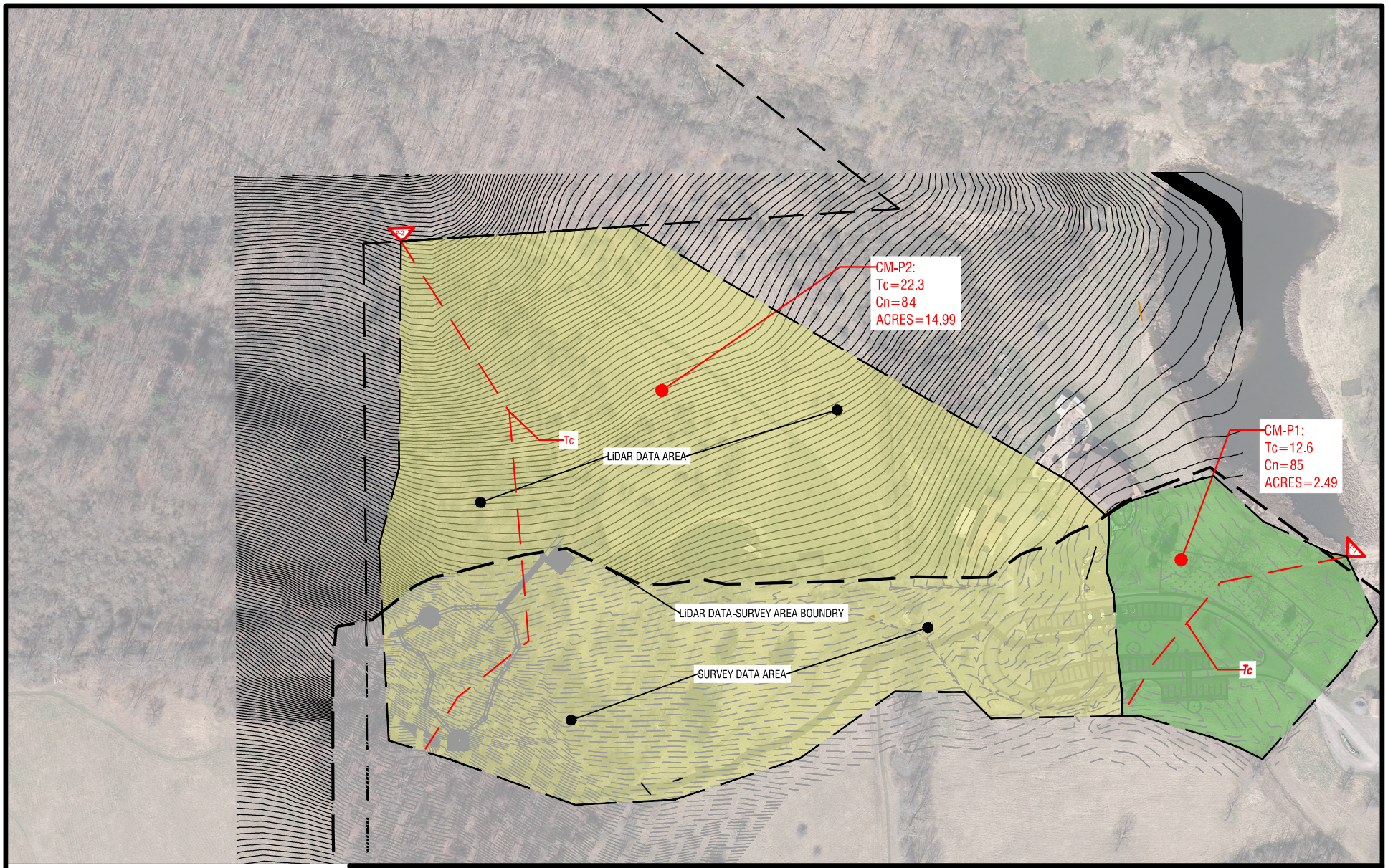

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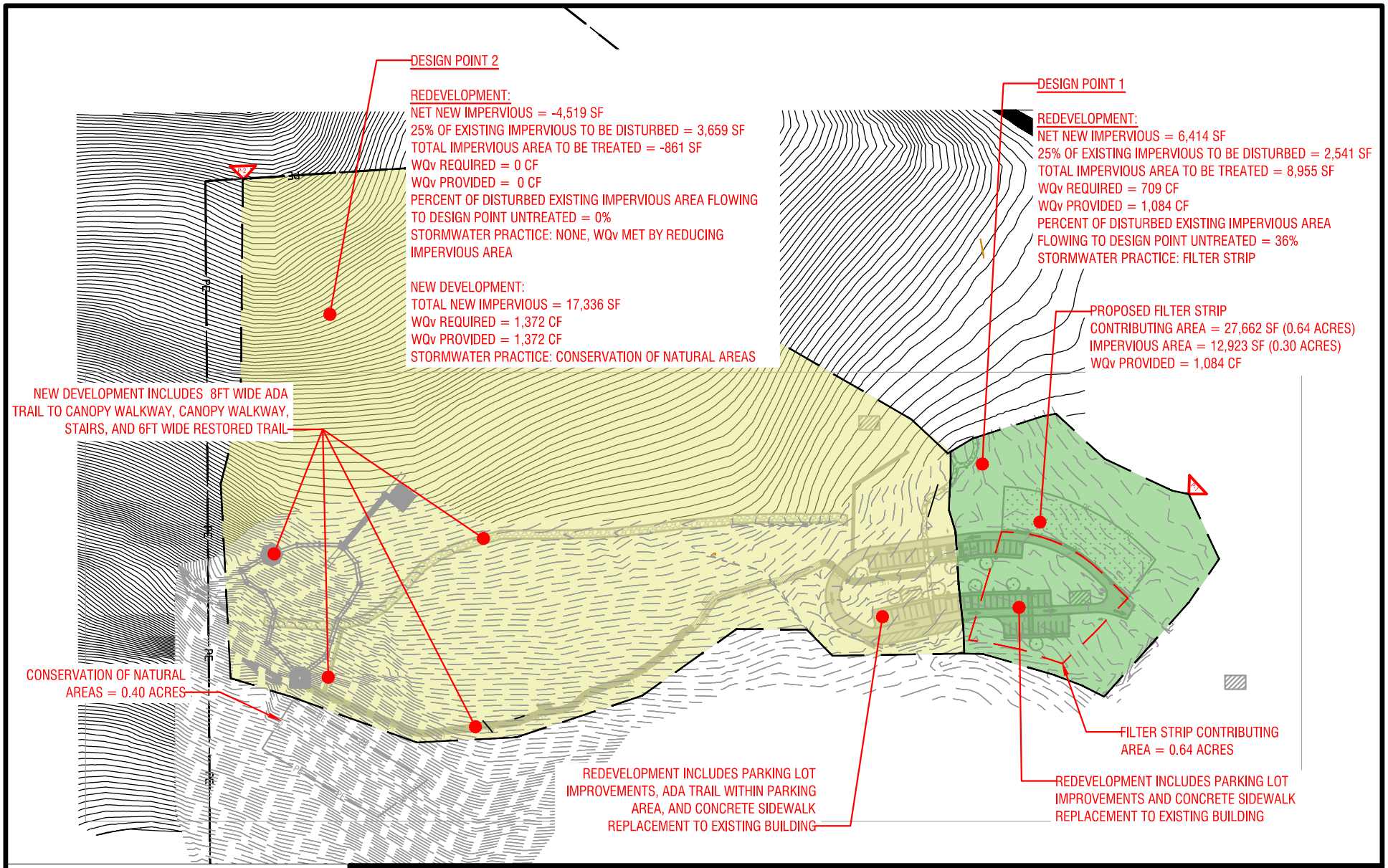
ISSUED FOR: SWPPP FIGURE - NOT FOR CONSTRUCTION

DRAWING NAME: **POST-DEVELOPMENT WATERSHED MAP**

DRAWN BY:	DATE:	PROJECT NO.:
KLA	11/27/2024	2233035

PROJECT NAME: **TANGLEWOOD ADA PARKING AND TRAIL**
443 COLEMAN AVENUE ELMIRA, NY

DRAWING NUMBER: **POST DEV - 1**



SCALE: 1" - 200'

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ISSUED FOR: SWPPP FIGURE - NOT FOR CONSTRUCTION

DRAWING NAME: **WQv AND DEVELOPMENT ACTIVITIES DIAGRAM**

DRAWN BY:	DATE:	PROJECT NO.:
KLA	12/13/2024	2233035

PROJECT NAME: **TANGLEWOOD ADA PARKING AND TRAIL**
443 COLEMAN AVENUE ELMIRA, NY

DRAWING NUMBER: **FIGURE A-8**

APPENDIX B:
FORMS

Notice of Intent (NOI)
MS4 SWPPP Acceptance Form
SWPPP Preparer Certification Form
Owner/Operator Certification Form
Contractor and Subcontractor Certification Forms
Notice of Termination (NOT)

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NOI for coverage under Stormwater General Permit for Construction Activity

version 1.40

(Submission #: HQ8-P50F-BN219, version 1)

Details

Originally Started By	Katie Austin
Alternate Identifier	Tanglewood ADA Parking and Trail
Submission ID	HQ8-P50F-BN219
Submission Reason	New
Status	Draft

Form Input

Owner/Operator Information

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

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

Owner/Operator Contact Person First Name
Elaine

Owner/Operator Mailing Address
443 Coleman Avenue

City
Elmira

State
New York

Zip
14903

Phone
6077326060

Email
tanglewooddirector@outlook.com

Federal Tax ID
16-1012352

> If the owner/operator is an organization, provide the Federal Tax ID number, or Employer Identification Number (EIN), in the format xx-xxxxxxx. If the owner/operator is an individual and not an organization, enter "Not Applicable" or "N/A" and do not provide the individual's social security number.

Project Location

Project/Site Name
Tanglewood ADA Parking and Trail

Street Address (Not P.O. Box)
443 Coleman Avenue

Side of Street
South

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Big Flats

State
NY

Zip
14814

DEC Region
8

> The DEC Region must be provided. Please use the NYSDEC Stormwater Interactive Map (https://gisservices.dec.ny.gov/gis/stormwater/) to confirm which DEC Region this site is located in. To view the DEC Regions, click on "Other Useful Reference Layers" on the left side of the map, then click on "DEC Administrative Boundary." Zoom out as needed to see the Region boundaries.
>
> For projects that span multiple Regions, please select a primary Region and then provide the additional Regions as a note in Question 39.

County
CHEMUNG

Name of Nearest Cross Street
Graystone Drive

Distance to Nearest Cross Street (Feet)
1584

Project In Relation to Cross Street
East

Tax Map Numbers Section-Block-Parcel
87.00-1.34.1

Tax Map Numbers
NONE PROVIDED

> If the project does not have tax map numbers (e.g. linear projects), enter “Not Applicable” or "N/A".

1. Coordinates

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

Navigate to your location and click on the map to get the X,Y coordinates
42.10662841686413,-76.87734603881836

Project Details

2. What is the nature of this project?
Redevelopment with increase in impervious area

> For the purposes of this eNOI, “New Construction” refers to any project that does not involve the disturbance of existing impervious area (i.e. 0 acres). If existing impervious area will be disturbed on the project site, it is considered redevelopment with either increase in impervious area or no increase in impervious area.

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse
Other: Recreational/Nature Center

Post-Development Future Land Use
Other: Recreational/Nature Center

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.
NONE PROVIDED

---

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

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

Total Site Area (acres)
170.3

Total Area to be Disturbed (acres)
3.5

Existing Impervious Area to be Disturbed (acres)
0.6

Future Impervious Area Within Disturbed Area (acres)
0.5

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

---

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

A (%)
0

B (%)
0

C (%)
14.4

D (%)
85.6

7. Is this a phased project?
No

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

Start Date
NONE PROVIDED

End Date
NONE PROVIDED

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

> Drainage ditches and storm sewer systems are not considered surface waterbodies. Please identify the surface waterbody that they discharge to. If the nearest surface waterbody is unnamed, provide a description of the waterbody, such as, “Unnamed tributary to Niagara River.”

9a. Type of waterbody identified in question 9?
River Off Site

Other Waterbody Type Off Site Description
NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified?
NONE PROVIDED

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001?
No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001?
No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?
No

> Please use the DEC Stormwater Interactive Map (https://gisservices.dec.ny.gov/gis/stormwater/) to confirm if this site is located in one of the watersheds of an AA or AA-S classified water. To view the watershed areas, click on “Permit Related Layers” on the left side of the map, then click on “Class AA AAS Watersheds.”

If No, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as D (provided the map unit name is inclusive of slopes greater than 25%), E or F on the USDA Soil Survey?
No

If Yes, what is the acreage to be disturbed?
NONE PROVIDED

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

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

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

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

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

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

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

Required SWPPP Components

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?
Yes

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)?
Yes

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

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the 2015 or 2024 NYS Stormwater Management Design Manual?
Yes

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

SWPPP Preparer
Michael Mishook

Contact Name (Last, First)
Mishook, Michael

Mailing Address
100 West Water Street, Suite 101

City
Elmira

State
New York

Zip
14901

Phone
6073675024

Email
MMishook@LaBellaPC.com

Download SWPPP Preparer Certification Form

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

1) Click on the link below to download a blank certification form
2) The certified SWPPP preparer should sign this form
3) Scan the signed form
4) Upload the scanned document
Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification
NONE PROVIDED
Comment
NONE PROVIDED

Erosion & Sediment Control Criteria

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

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

Temporary Structural
Construction Road Stabilization
Dust Control
Silt Fence
Stabilized Construction Entrance
Check Dams

Biotechnical
None

Vegetative Measures
Mulching
Protecting Vegetation
Seeding
Topsoiling

Permanent Structural
Land Grading

Other
Compost Filter Sock and Rolled Erosion Control Product

Post-Construction Criteria

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

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.
Preservation of Undisturbed Area
Preservation of Buffers
Reduction of Clearing and Grading
Driveway Reduction

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual.
All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
0.05

29. Post-construction SMP Identification

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

Identify the SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use the Post-Construction SMP Identification section to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)
0.05

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

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

32. Provide the Minimum RRv required based on HSG. [Minimum RRv Required = (P) (0.95) (Ai) / 12, Ai=(s) (Aic)] (acre-feet)
NONE PROVIDED

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?
NONE PROVIDED

If Yes, go to question 33.

Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs

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

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

NOTE: Use the Post-construction SMP Identification section to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question #29. (acre-feet)
NONE PROVIDED

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

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).
NONE PROVIDED

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?
NONE PROVIDED

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

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

CPv Required (acre-feet)
NONE PROVIDED

CPv Provided (acre-feet)
NONE PROVIDED

36a. The need to provide channel protection has been waived because:
Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

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

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
35.73

Post-Development (CFS)
33.18

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
78.21

Post-Development (CFS)
75.95

37a. The need to meet the Qp and Qf criteria has been waived because:
NONE PROVIDED

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

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

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). (See question #32a) This space can also be used for other pertinent project information.
NONE PROVIDED

Post-Construction SMP Identification

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs

Identify the Post-construction SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)
0.40

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)
0.40

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
0.64

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
0.30

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

Total Contributing Impervious Acres for Vegetated Swale (RR-5)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Garden (RR-6)
NONE PROVIDED

Total Contributing Impervious Acres for Stormwater Planter (RR-7)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)
NONE PROVIDED

Total Contributing Impervious Acres for Porous Pavement (RR-9)
NONE PROVIDED

Total Contributing Impervious Acres for Green Roof (RR-10)
NONE PROVIDED

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)
NONE PROVIDED

Total Contributing Impervious Acres for Infiltration Basin (I-2)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Well (I-3)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Infiltration System (I-4)
NONE PROVIDED

Total Contributing Impervious Acres for Bioretention (F-5)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Swale (O-1)
NONE PROVIDED

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Pond (P-2)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Extended Detention (P-3)
NONE PROVIDED

Total Contributing Impervious Acres for Multiple Pond System (P-4)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Pond (P-5)
NONE PROVIDED

Total Contributing Impervious Acres for Surface Sand Filter (F-1)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Sand Filter (F-2)
NONE PROVIDED

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)
NONE PROVIDED

Total Contributing Impervious Acres for Organic Filter (F-4)
NONE PROVIDED

Total Contributing Impervious Acres for Shallow Wetland (W-1)
NONE PROVIDED

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)
NONE PROVIDED

Total Contributing Impervious Acres for Pond/Wetland System (W-3)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Wetland (W-4)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Swale (O-2)
NONE PROVIDED

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

Total Contributing Impervious Area for Hydrodynamic
NONE PROVIDED

Total Contributing Impervious Area for Wet Vault
NONE PROVIDED

Total Contributing Impervious Area for Media Filter
NONE PROVIDED

"Other" Alternative SMP?
NONE PROVIDED

Total Contributing Impervious Area for "Other"
NONE PROVIDED

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

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

Manufacturer of Alternative SMP
NONE PROVIDED

Name of Alternative SMP
NONE PROVIDED

Other Permits

40. Identify other DEC permits, existing and new, that are required for this project/facility.
None

If SPDES Multi-Sector GP, then give permit ID
NONE PROVIDED

If Other, then identify
NONE PROVIDED

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

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth
0.04

42. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned.
NONE PROVIDED

MS4 SWPPP Acceptance

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?
Yes - Please attach the MS4 Acceptance form below

If No, skip question 44

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

> Please note that per Part VII.H.4. of GP-0-20-001, the MS4 SWPPP Acceptance Form must be signed by a principal executive officer or ranking elected official of the MS4, or a duly authorized representative of that person.

MS4 SWPPP Acceptance Form Download

Download form from the link below. Complete, sign, and upload.
MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload
NONE PROVIDED
Comment
NONE PROVIDED

Owner/Operator Certification

Owner/Operator Certification Form Download

Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.
Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form
NONE PROVIDED
Comment
NONE PROVIDED

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

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

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

I. Project Owner/Operator Information	
1. Owner/Operator Name:	Tanglewood Nature Center
2. Contact Person:	Elaine Smith
3. Street Address:	443 Coleman Ave
4. City/State/Zip:	Elmira, NY 14903
II. Project Site Information	
5. Project/Site Name:	Tanglewood ADA Parking and Trail
6. Street Address:	443 Coleman Ave
7. City/State/Zip:	Elmira, NY 14903
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:	Town of Big Flats
12. MS4 SPDES Permit Identification Number: NYR20A	
13. Contact Person:	
14. Street Address:	
15. City/State/Zip:	
16. Telephone Number:	

MS4 SWPPP Acceptance Form - continued

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

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

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

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

Project Site Information

Project/Site Name

Tanglewood ADA Parking and Trail

Owner/Operator Information

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

Tanglewood Nature Center

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Michael	W	Mishook
First name	MI	Last Name

Signature

12/16/2024

Date

Revised: January 2020

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

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

Project/Site Name: Tanglewood ADA Parking and Trail

eNOI Submission Number: HQ8-P50F-BN219

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

Certification Statement - Owner/Operator

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

Owner/Operator First Name M.I. Last Name

Elaine M Smith

Signature

12/13/24

Date

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

Tanglewood ADA Parking and Trail
443 Coleman Ave, Town of Big Flats, Chemung 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 terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations.

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.

[2] Signatory Requirements:

a. For a corporation, this form shall be signed by (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principle business function, or any other person who performs similar policy or decision-making functions for the corporation; or (ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

b. For a partnership or sole proprietorship, this form shall be signed by a general partner or the proprietor, respectively.

c. For a municipality, State, Federal, or other public agency, this form shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g. Regional Administrators of EPA).

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

Tanglewood ADA Parking and Trail
443 Coleman Ave, Town of Big Flats, Chemung 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 terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations.

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.

[2] Signatory Requirements:

a. For a corporation, this form shall be signed by (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principle business function, or any other person who performs similar policy or decision-making functions for the corporation; or (ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

b. For a partnership or sole proprietorship, this form shall be signed by a general partner or the proprietor, respectively.

c. For a municipality, State, Federal, or other public agency, this form shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g. Regional Administrators of EPA).

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

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

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

I. Owner or Operator Information

1. Owner/Operator Name: Tanglewood Nature Center

2. Street Address: 443 Coleman Ave

3. City/State/Zip: Elmira, NY 14903

4. Contact Person: Elaine Smith | 4a. Telephone:

4b. Contact Person E-Mail: tanglewooddirector@outlook.com

II. Project Site Information

5. Project/Site Name: Tanglewood ADA Parking and Trail

6. Street Address: 443 Coleman Ave

7. City/Zip: Elmira, NY 14903

8. County: Chemung

III. Reason for Termination

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

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

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

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

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

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

_____

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

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

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

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

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

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

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

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

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

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

V. Additional Information/Explanation:

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

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

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

Printed Name:

Title/Position:

Signature:	Date:

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

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

APPENDIX C:
PROJECT EVALUATION AND DESIGN CALCULATIONS

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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	Forrested areas, wetlands, and other natural habitats within the project area will be protected to the greatest extent possible and by the direction of the owner.
	Preservation of Buffers	Delineate and protect naturally vegetated buffers along perennial streams, rivers, shorelines, and wetlands.	Yes	Vegetated buffers along exising ponds and wetlands will be protected to the greatest extent possible.
	Reduction of Clearing and Grading	Limit clearing and grading to the minimum amount needed for roads, driveways, foundations, utilities and stormwater management facilities.	Yes	Grading of the site and clearing of vegetation for the new trail and canopy was limited as much as possible to protect existing vegetation and habitats.
	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.	No	The purpose of the project is to expose people to natural areas including the tree canopy. Accessing these natural areas and the tree canopy structure will require development in sensitive areas due to the topography of the site. The site has been designed to limit disruption to sensitive resource areas to the greatest extent practical.
	Open Space Design	Use clustering, conservation design or open space design to reduce impervious cover, preserve more open space and protect water resources.	Yes	The site layout has been designed to maximize open space. Impervious surfaces have been minimized to the greatest extent practical.
	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	All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual and the NYSDEC Division of Water's publication "Deep-Ripping and Decompaction," dated April 2008.
	Roadway Reduction	Minimize roadway widths and lengths, below local requirements, to reduce site impervious area	N/A	No new roadways are proposed as part of this project.

Step 1 - Site Planning

Reduction of Impervious Cover	**Sidewalk Reduction**	Minimize sidewalk lengths and widths, below local requirements, to reduce site impervious area	No	Reducing the sidewalk width/length is not feasible for the project's intended use.
	Driveway Reduction	Minimize driveway lengths and widths, below local requirements, to reduce site impervious area	Yes	The existing gravel pavement is being replaced with asphalt. In doing so, the edge of pavement was able to be reduced due to better definition of the pavement extents.
	Cul-de-sac Reduction	Minimize the number of cul-de-sacs and incorporate landscaped areas to reduce their impervious cover.	N/A	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.	N/A	No new buildings are proposed as part of this project.
	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.	No	The proposed canopy walkway is expected to increase attendance to the nature center. Therefore, adding parking to the site was a key component to the 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?	Redevelopment with increase in impervious area

Design Point:	1		
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	0.64	0.30	47	0.47	1,084	Sheet Flow to Grass Filter Strip
2						
3						
4						
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	0.64	0.30	47	0.47	**1084**	**Required WQv**	**0.02**	**af**

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?			Redevelopment with increase in impervious area						
Design Point:	2								
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	0.40	0.40	100	0.95	1,372	Conservation of Natural Areas			
2									
3									
4									
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	0.40	0.40	100	0.95	**1372**	**Required WQv**	**0.03**	**af**	

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.	Yes	The project proposes the use of this practice for the new development of the ADA trail and tree canopy walkway. These site improvements and the conservation area are within design point 2.
	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.	Yes	The project proposes sheet flow to a grass filter strip to reduce runoff. Calculations have been provided in the SWPPP. The grass filter strip is proposed to meet the redevelopment requirement and is located within design point 1.
	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.	No	Tree plantings 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.	N/A	
	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.	No	Vegetated swales were not utilized on the project site.
	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.	No	Rain gardens were not utilized on the project site.

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

RR Techniques	**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.	No	Stormwater planters were not utilized on the project site.
	Rainwater Harvesting System (RR-8)	Capture and store stormwater runoff to be used for irrigation systems or filtered and reused for non-contact activities.	No	Rainwater harvesting systems were not utilized on the project site.
	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.	No	Porous pavement was not utilized on the project site.
	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.	N/A	
	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.	N/A	
	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.	No	Infiltration trench was not utilized on the project site.
	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.	No	Infiltration basin was not utilized on the project site.
	Dry Well (I-3)	An infiltration practice similar in design to the infiltration trench, and best suited for treatment of rooftop runoff.	No	Dry well was not utilized on the project site.

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

Standard SMPs with RRv Capacity	**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.	No	Underground infiltration systems were not utilized on the project site.
	Infiltration Bioretention (F-4)	A shallow depression that treats stormwater as it flows through a soil matrix, before it is infiltrated into the ground.	No	Infiltration bioretention was not utilized on the project site.
	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.	No	Filtration bioretention was not utilized on the project site.
	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.	No	Bioslope was not utilized on the project site.
	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.	No	Dry swales were not utilized on the project site.

Sheet Flow to Grass Filter Strip (RR-3)

Design Point:	1

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**
1	0.64	0.30	47	0.47	1,084	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)	150	
Enter the length of contributing flow path from impervious surfaces (ft)	50	
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*	2.35	inch	
Enter Overall Buffer Slope	*S*	0.08	ft/ft	
Enter Manning's Coefficient for Buffer	*n*	0.24		
Calculated Minimum Length of Buffer	*L*	56	ft	
Minimum Length of Buffer	*L*	56	ft	
Is the buffer within HSG C or D soils?		Yes		
Required Length of Buffer	*L*	64	ft	
Enter Provided Length of Buffer	*L*	64	ft	

Calculate Runoff Reduction		
RRv Provided	**1,084**	**cf**

Sheet Flow to Grass Filter Strip (RR-3)

Total Area	0.64	acres
Total Impervious	0	acres
Total RRv Provided	1,084	cf

Conservation of Natural Areas (RR-1)

Design Point:	2	Drainage Area Number	1

Design Criteria		
Does the conservation area proposed have a minimum contiguous area of 10,000	Yes	
Is the conservation area permanently protected through establishment of a legal conservation easement?	Yes	
Does the conservation area receive runoff from existing or new impervious areas?	No	
Is Sheet Flow to Riparian Buffer or another area based practice already being used for this area?	No	

Sizing Criteria

	Contributing Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (cf)	Precipitation (in)
Required WQv	0.40	0.40	100	0.95	1,372	1.00
Subtract Area Conserved	0.40					
Area Reduction WQv	0.00	0.40		0.95	0	1.00

Area Reduction Adjustments

RRv Provided	1,372	cf

Total Area	0.40	acres
Total RRv Provided	1,372	cf

Impervious Area Calculations Table - Redevelopment

Impervious Area Calculations For Redevelopment (Parking Lot)		
CM-1	SF	ACRES
Total impervious in proposed conditions	17817	0.41
Total impervious in existing conditions	11403	0.26
Net new impervious	6414	0.15
Existing impervious to be disturbed	10162	0.23
25% of existing impervious to be disturbed	2541	0.06
Total impervious area to be treated (net new + 25% disturbed existing impervious)	8955	0.21
Impervious area to be directed to filter strip	8955	0.21
CM-2	SF	ACRES
Total impervious in proposed conditions	56644	1.18
Total impervious for new development component (ADA trail, 6FT access trail, and canopy walkway)	17336	0.40
Total impervious for redevelopment only	39308	0.90
Total impervious in existing conditions	43827	1.01
Net new impervious for redevelopment portion only	-4519	-0.10
Existing impervious to be disturbed	14434	0.33
25% of existing impervious to be disturbed	3659	0.08
Total impervious area to be treated (net new + 25% disturbed existing impervious	-861	-0.02
Impervious area to be directed to practice	0	0.00

Impervious Area Calculations Table – New Development

Impervious Area Calculations for New Development (ADA Trail And Tree Canopy Walkway)		
CM-1	SF	ACRES
Proposed new impervious area/impervious area to be directed to practice	0	0
CM-2	SF	ACRES
Proposed new impervious area/impervious area to be directed to practice	17336	0.40

Impervious Area Summary Table

Design/Analysis Point	Minimum Impervious Area to be Treated/Reduced	Proposed Impervious Area to be Treated/Reduced
Analysis Point 1	Acres	Acres
Redevelopment	0.21	0.30
New Development	0	0
Analysis Point 2	Acres	Acres
Redevelopment	0	0
New Development	0.40	0.40

APPENDIX D:
PRE-DEVELOPMENT STORMWATER MODELING

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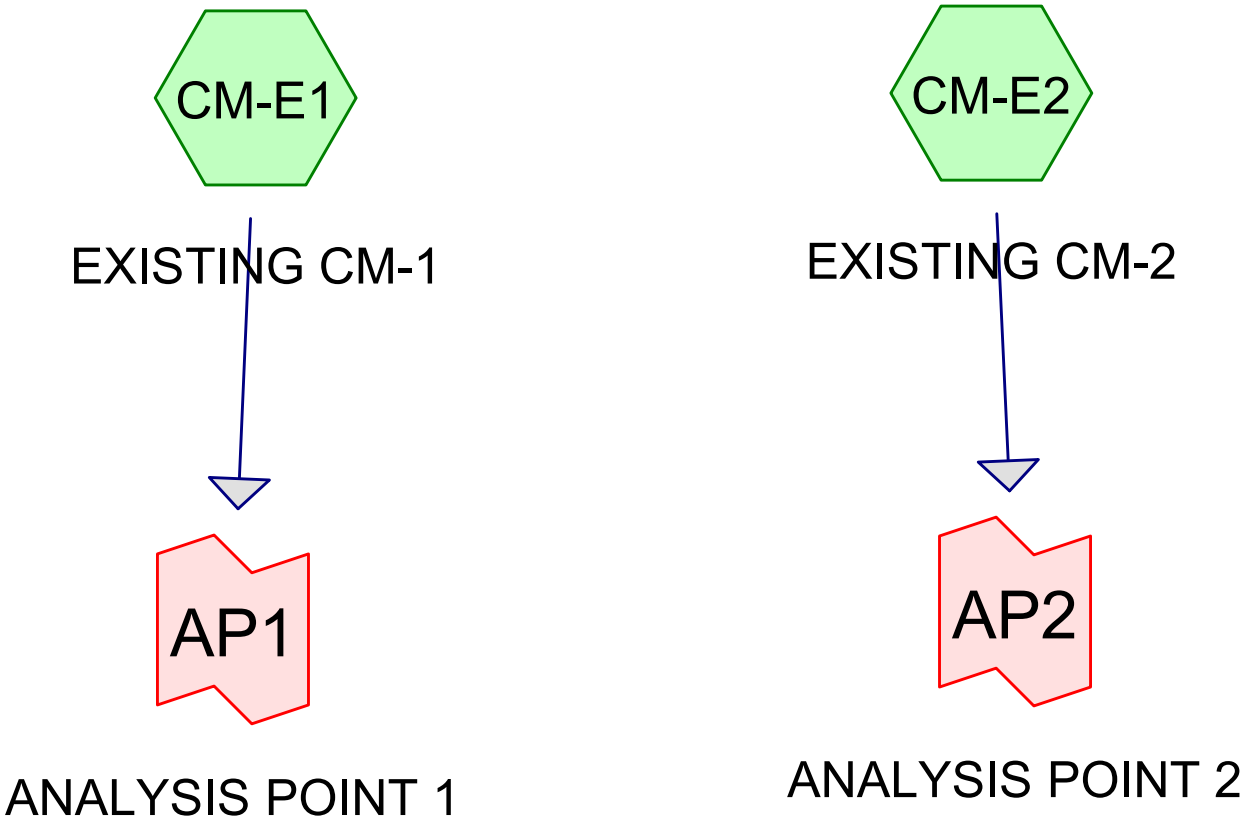

Subcat Reach Pond Link

Routing Diagram for 3_App D_Pre-Development Model
Prepared by HP Inc., Printed 11/27/2024

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	--1 Year	Type II 24-hr		Default	24.00	1	1.97	2
2	-10 Year	Type II 24-hr		Default	24.00	1	3.42	2
3	100 Year	Type II 24-hr		Default	24.00	1	5.89	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
10.342	84	50-75% Grass cover, Fair, HSG D (CM-E1, CM-E2)
1.085	98	Paved parking, HSG D (CM-E1, CM-E2)
0.183	98	Roofs, HSG D (CM-E2)
0.156	98	Water Surface, 0% imp, HSG D (CM-E2)
5.722	79	Woods, Fair, HSG D (CM-E2)
17.488	**84**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
17.488	HSG D	CM-E1, CM-E2
0.000	Other	
17.488		**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	10.342	0.000	10.342	50-75% Grass cover, Fair	CM-E1, CM-E2
0.000	0.000	0.000	1.085	0.000	1.085	Paved parking	CM-E1, CM-E2
0.000	0.000	0.000	0.183	0.000	0.183	Roofs	CM-E2
0.000	0.000	0.000	0.156	0.000	0.156	Water Surface, 0% imp	CM-E2
0.000	0.000	0.000	5.722	0.000	5.722	Woods, Fair	CM-E2
0.000	**0.000**	**0.000**	**17.488**	**0.000**	**17.488**	**TOTAL AREA**	

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

Subcatchment CM-E1: EXISTING CM-1 Runoff Area=108,620 sf 10.50% Impervious Runoff Depth>0.70"
Flow Length=409' Tc=12.5 min CN=85 Runoff=2.67 cfs 0.146 af

Subcatchment CM-E2: EXISTING CM-2 Runoff Area=653,162 sf 6.71% Impervious Runoff Depth>0.61"
Flow Length=848' Tc=20.9 min CN=83 Runoff=10.45 cfs 0.757 af

Link AP1: ANALYSIS POINT 1 Inflow=2.67 cfs 0.146 af
Primary=2.67 cfs 0.146 af

Link AP2: ANALYSIS POINT 2 Inflow=10.45 cfs 0.757 af
Primary=10.45 cfs 0.757 af

Total Runoff Area = 17.488 ac Runoff Volume = 0.903 af Average Runoff Depth = 0.62"
92.75% Pervious = 16.220 ac 7.25% Impervious = 1.268 ac

Summary for Subcatchment CM-E1: EXISTING CM-1

Runoff = 2.67 cfs @ 12.05 hrs, Volume= 0.146 af, Depth> 0.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr --1 Year Rainfall=1.97"

Area (sf)	CN	Description
11,404	98	Paved parking, HSG D
97,216	84	50-75% Grass cover, Fair, HSG D
108,620	85	Weighted Average
97,216		89.50% Pervious Area
11,404		10.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	34	0.0772	0.14		**Sheet Flow, SF: 33.8 GRASS** Grass: Dense n= 0.240 P2= 2.35"
0.4	28	0.0306	1.08		**Sheet Flow, SF: 28.4 PAVEMENT** Smooth surfaces n= 0.011 P2= 2.35"
4.1	38	0.0381	0.16		**Sheet Flow, SF: 37.8 GRASS** Grass: Short n= 0.150 P2= 2.35"
0.9	71	0.0395	1.39		**Shallow Concentrated Flow, SCF: 70.9 GRASS** Short Grass Pasture Kv= 7.0 fps
0.3	20	0.0034	1.18		**Shallow Concentrated Flow, SCF: 20.3 PAVEMENT** Paved Kv= 20.3 fps
2.7	218	0.0371	1.35		**Shallow Concentrated Flow, SCF: 217.7 GRASS** Short Grass Pasture Kv= 7.0 fps
12.5	409	Total			

Summary for Subcatchment CM-E2: EXISTING CM-2

Runoff = 10.45 cfs @ 12.15 hrs, Volume= 0.757 af, Depth> 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr --1 Year Rainfall=1.97"

Area (sf)	CN	Description
35,867	98	Paved parking, HSG D
7,960	98	Roofs, HSG D
353,280	84	50-75% Grass cover, Fair, HSG D
249,248	79	Woods, Fair, HSG D
6,807	98	Water Surface, 0% imp, HSG D
653,162	83	Weighted Average
609,335		93.29% Pervious Area
43,827		6.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	100	0.3400	0.12		**Sheet Flow, SF: 100 WOODS** Woods: Dense underbrush n= 0.800 P2= 2.35"
6.9	748	0.1297	1.80		**Shallow Concentrated Flow, SCF: 747.7 WOODS** Woodland Kv= 5.0 fps
20.9	848	Total			

Summary for Link AP1: ANALYSIS POINT 1

Inflow Area = 2.494 ac, 10.50% Impervious, Inflow Depth > 0.70" for --1 Year event
Inflow = 2.67 cfs @ 12.05 hrs, Volume= 0.146 af
Primary = 2.67 cfs @ 12.05 hrs, Volume= 0.146 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP2: ANALYSIS POINT 2

Inflow Area = 14.995 ac, 6.71% Impervious, Inflow Depth > 0.61" for --1 Year event
Inflow = 10.45 cfs @ 12.15 hrs, Volume= 0.757 af
Primary = 10.45 cfs @ 12.15 hrs, Volume= 0.757 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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

Subcatchment CM-E1: EXISTING CM-1 Runoff Area=108,620 sf 10.50% Impervious Runoff Depth>1.80"
Flow Length=409' Tc=12.5 min CN=85 Runoff=6.76 cfs 0.374 af

Subcatchment CM-E2: EXISTING CM-2 Runoff Area=653,162 sf 6.71% Impervious Runoff Depth>1.64"
Flow Length=848' Tc=20.9 min CN=83 Runoff=28.97 cfs 2.054 af

Link AP1: ANALYSIS POINT 1 Inflow=6.76 cfs 0.374 af
Primary=6.76 cfs 0.374 af

Link AP2: ANALYSIS POINT 2 Inflow=28.97 cfs 2.054 af
Primary=28.97 cfs 2.054 af

Total Runoff Area = 17.488 ac Runoff Volume = 2.428 af Average Runoff Depth = 1.67"
92.75% Pervious = 16.220 ac 7.25% Impervious = 1.268 ac

Summary for Subcatchment CM-E1: EXISTING CM-1

Runoff = 6.76 cfs @ 12.04 hrs, Volume= 0.374 af, Depth> 1.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr -10 Year Rainfall=3.42"

Area (sf)	CN	Description
11,404	98	Paved parking, HSG D
97,216	84	50-75% Grass cover, Fair, HSG D
108,620	85	Weighted Average
97,216		89.50% Pervious Area
11,404		10.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	34	0.0772	0.14		**Sheet Flow, SF: 33.8 GRASS** Grass: Dense n= 0.240 P2= 2.35"
0.4	28	0.0306	1.08		**Sheet Flow, SF: 28.4 PAVEMENT** Smooth surfaces n= 0.011 P2= 2.35"
4.1	38	0.0381	0.16		**Sheet Flow, SF: 37.8 GRASS** Grass: Short n= 0.150 P2= 2.35"
0.9	71	0.0395	1.39		**Shallow Concentrated Flow, SCF: 70.9 GRASS** Short Grass Pasture Kv= 7.0 fps
0.3	20	0.0034	1.18		**Shallow Concentrated Flow, SCF: 20.3 PAVEMENT** Paved Kv= 20.3 fps
2.7	218	0.0371	1.35		**Shallow Concentrated Flow, SCF: 217.7 GRASS** Short Grass Pasture Kv= 7.0 fps
12.5	409	Total			

Summary for Subcatchment CM-E2: EXISTING CM-2

Runoff = 28.97 cfs @ 12.14 hrs, Volume= 2.054 af, Depth> 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr -10 Year Rainfall=3.42"

Area (sf)	CN	Description
35,867	98	Paved parking, HSG D
7,960	98	Roofs, HSG D
353,280	84	50-75% Grass cover, Fair, HSG D
249,248	79	Woods, Fair, HSG D
6,807	98	Water Surface, 0% imp, HSG D
653,162	83	Weighted Average
609,335		93.29% Pervious Area
43,827		6.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	100	0.3400	0.12		**Sheet Flow, SF: 100 WOODS** Woods: Dense underbrush n= 0.800 P2= 2.35"
6.9	748	0.1297	1.80		**Shallow Concentrated Flow, SCF: 747.7 WOODS** Woodland Kv= 5.0 fps
20.9	848	Total			

Summary for Link AP1: ANALYSIS POINT 1

Inflow Area = 2.494 ac, 10.50% Impervious, Inflow Depth > 1.80" for -10 Year event
Inflow = 6.76 cfs @ 12.04 hrs, Volume= 0.374 af
Primary = 6.76 cfs @ 12.04 hrs, Volume= 0.374 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP2: ANALYSIS POINT 2

Inflow Area = 14.995 ac, 6.71% Impervious, Inflow Depth > 1.64" for -10 Year event
Inflow = 28.97 cfs @ 12.14 hrs, Volume= 2.054 af
Primary = 28.97 cfs @ 12.14 hrs, Volume= 2.054 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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

Subcatchment CM-E1: EXISTING CM-1 Runoff Area=108,620 sf 10.50% Impervious Runoff Depth>3.92"
Flow Length=409' Tc=12.5 min CN=85 Runoff=14.22 cfs 0.815 af

Subcatchment CM-E2: EXISTING CM-2 Runoff Area=653,162 sf 6.71% Impervious Runoff Depth>3.71"
Flow Length=848' Tc=20.9 min CN=83 Runoff=63.99 cfs 4.632 af

Link AP1: ANALYSIS POINT 1 Inflow=14.22 cfs 0.815 af
Primary=14.22 cfs 0.815 af

Link AP2: ANALYSIS POINT 2 Inflow=63.99 cfs 4.632 af
Primary=63.99 cfs 4.632 af

Total Runoff Area = 17.488 ac Runoff Volume = 5.446 af Average Runoff Depth = 3.74"
92.75% Pervious = 16.220 ac 7.25% Impervious = 1.268 ac

Summary for Subcatchment CM-E1: EXISTING CM-1

Runoff = 14.22 cfs @ 12.04 hrs, Volume= 0.815 af, Depth> 3.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=5.89"

Area (sf)	CN	Description
11,404	98	Paved parking, HSG D
97,216	84	50-75% Grass cover, Fair, HSG D
108,620	85	Weighted Average
97,216		89.50% Pervious Area
11,404		10.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	34	0.0772	0.14		**Sheet Flow, SF: 33.8 GRASS** Grass: Dense n= 0.240 P2= 2.35"
0.4	28	0.0306	1.08		**Sheet Flow, SF: 28.4 PAVEMENT** Smooth surfaces n= 0.011 P2= 2.35"
4.1	38	0.0381	0.16		**Sheet Flow, SF: 37.8 GRASS** Grass: Short n= 0.150 P2= 2.35"
0.9	71	0.0395	1.39		**Shallow Concentrated Flow, SCF: 70.9 GRASS** Short Grass Pasture Kv= 7.0 fps
0.3	20	0.0034	1.18		**Shallow Concentrated Flow, SCF: 20.3 PAVEMENT** Paved Kv= 20.3 fps
2.7	218	0.0371	1.35		**Shallow Concentrated Flow, SCF: 217.7 GRASS** Short Grass Pasture Kv= 7.0 fps
12.5	409	Total			

Summary for Subcatchment CM-E2: EXISTING CM-2

Runoff = 63.99 cfs @ 12.13 hrs, Volume= 4.632 af, Depth> 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=5.89"

Area (sf)	CN	Description
35,867	98	Paved parking, HSG D
7,960	98	Roofs, HSG D
353,280	84	50-75% Grass cover, Fair, HSG D
249,248	79	Woods, Fair, HSG D
6,807	98	Water Surface, 0% imp, HSG D
653,162	83	Weighted Average
609,335		93.29% Pervious Area
43,827		6.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	100	0.3400	0.12		**Sheet Flow, SF: 100 WOODS** Woods: Dense underbrush n= 0.800 P2= 2.35"
6.9	748	0.1297	1.80		**Shallow Concentrated Flow, SCF: 747.7 WOODS** Woodland Kv= 5.0 fps
20.9	848	Total			

Summary for Link AP1: ANALYSIS POINT 1

Inflow Area = 2.494 ac, 10.50% Impervious, Inflow Depth > 3.92" for 100 Year event
Inflow = 14.22 cfs @ 12.04 hrs, Volume= 0.815 af
Primary = 14.22 cfs @ 12.04 hrs, Volume= 0.815 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP2: ANALYSIS POINT 2

Inflow Area = 14.995 ac, 6.71% Impervious, Inflow Depth > 3.71" for 100 Year event
Inflow = 63.99 cfs @ 12.13 hrs, Volume= 4.632 af
Primary = 63.99 cfs @ 12.13 hrs, Volume= 4.632 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

APPENDIX E:
POST DEVELOPMENT STORMWATER MODELING

LaBella
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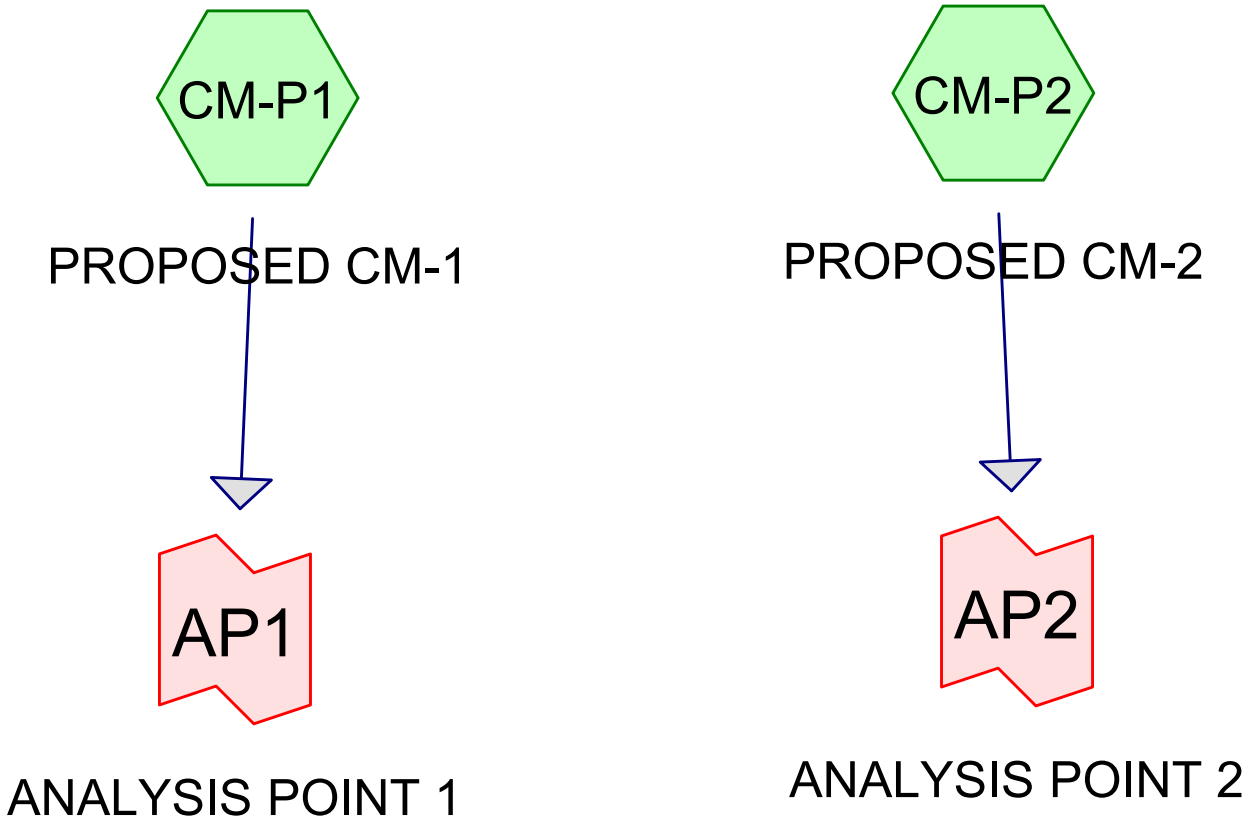

Subcat Reach Pond Link

Routing Diagram for 3_App E_Post-Development Model
Prepared by HP Inc., Printed 12/9/2024

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	--1 Year	Type II 24-hr		Default	24.00	1	1.97	2
2	-10 Year	Type II 24-hr		Default	24.00	1	3.42	2
3	100 Year	Type II 24-hr		Default	24.00	1	5.89	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
9.600	84	50-75% Grass cover, Fair, HSG D (CM-P1, CM-P2)
0.254	80	>75% Grass cover, Good, HSG D (CM-P1)
0.336	78	Meadow, non-grazed, HSG D (CM-P1)
1.276	98	Paved parking, HSG D (CM-P1, CM-P2)
0.183	98	Roofs, HSG D (CM-P2)
0.128	98	Unconnected roofs, HSG D (Canopy) (CM-P2)
0.122	98	Unconnected roofs, HSG D (Construction Access restored to 6ft wide trail) (CM-P2)
0.156	98	Water Surface, 0% imp, HSG D (CM-P2)
5.432	79	Woods, Fair, HSG D (CM-P2)
17.488	**84**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
17.488	HSG D	CM-P1, CM-P2
0.000	Other	
17.488		**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	9.600	0.000	9.600	50-75% Grass cover, Fair	CM-P1, CM-P2
0.000	0.000	0.000	0.254	0.000	0.254	>75% Grass cover, Good	CM-P1
0.000	0.000	0.000	0.336	0.000	0.336	Meadow, non-grazed	CM-P1
0.000	0.000	0.000	1.276	0.000	1.276	Paved parking	CM-P1, CM-P2
0.000	0.000	0.000	0.183	0.000	0.183	Roofs	CM-P2
0.000	0.000	0.000	0.250	0.000	0.250	Unconnected roofs	CM-P2
0.000	0.000	0.000	0.156	0.000	0.156	Water Surface, 0% imp	CM-P2
0.000	0.000	0.000	5.432	0.000	5.432	Woods, Fair	CM-P2
0.000	**0.000**	**0.000**	**17.488**	**0.000**	**17.488**	**TOTAL AREA**	

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

Subcatchment CM-P1: PROPOSED CM-1 Runoff Area=108,620 sf 16.40% Impervious Runoff Depth>0.70"
Flow Length=410' Tc=12.6 min CN=85 Runoff=2.66 cfs 0.146 af

Subcatchment CM-P2: PROPOSED CM-2 Runoff Area=653,162 sf 8.67% Impervious Runoff Depth>0.61"
Flow Length=847' Tc=22.3 min UI Adjusted CN=83 Runoff=10.04 cfs 0.757 af

Link AP1: ANALYSIS POINT 1 Inflow=2.66 cfs 0.146 af
Primary=2.66 cfs 0.146 af

Link AP2: ANALYSIS POINT 2 Inflow=10.04 cfs 0.757 af
Primary=10.04 cfs 0.757 af

Total Runoff Area = 17.488 ac Runoff Volume = 0.903 af Average Runoff Depth = 0.62"
90.23% Pervious = 15.779 ac 9.77% Impervious = 1.709 ac

Summary for Subcatchment CM-P1: PROPOSED CM-1

Runoff = 2.66 cfs @ 12.05 hrs, Volume= 0.146 af, Depth> 0.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr --1 Year Rainfall=1.97"

Area (sf)	CN	Description
17,817	98	Paved parking, HSG D
65,080	84	50-75% Grass cover, Fair, HSG D
11,075	80	>75% Grass cover, Good, HSG D
14,648	78	Meadow, non-grazed, HSG D
108,620	85	Weighted Average
90,803		83.60% Pervious Area
17,817		16.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	41	0.0716	0.14		**Sheet Flow, SF: 41.4528ft (Grass)** Grass: Dense n= 0.240 P2= 2.35"
0.6	45	0.0328	1.22		**Sheet Flow, SF: 44.8661ft (Pavement)** Smooth surfaces n= 0.011 P2= 2.35"
1.9	14	0.0365	0.13		**Sheet Flow, SF: 13.6811ft (Grass)** Grass: Short n= 0.150 P2= 2.35"
0.9	73	0.0381	1.37		**Shallow Concentrated Flow, SCF: 72.7655ft (Grass)** Short Grass Pasture Kv= 7.0 fps
1.3	16	0.0001	0.20		**Shallow Concentrated Flow, SCF: 15.5745ft (Pavement)** Paved Kv= 20.3 fps
1.0	100	0.0569	1.67		**Shallow Concentrated Flow, SCF: 100ft (Grass)** Short Grass Pasture Kv= 7.0 fps
2.0	121	0.0207	1.01		**Shallow Concentrated Flow, SCF: 120.5782ft (Grass)** Short Grass Pasture Kv= 7.0 fps
12.6	410	Total			

Summary for Subcatchment CM-P2: PROPOSED CM-2

Runoff = 10.04 cfs @ 12.17 hrs, Volume= 0.757 af, Depth> 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr --1 Year Rainfall=1.97"

	Area (sf)	CN	Adj	Description
	37,774	98		Paved parking, HSG D
	7,960	98		Roofs, HSG D
	353,109	84		50-75% Grass cover, Fair, HSG D
	236,602	79		Woods, Fair, HSG D
	6,807	98		Water Surface, 0% imp, HSG D
*	5,575	98		Unconnected roofs, HSG D (Canopy)
*	5,335	98		Unconnected roofs, HSG D (Construction Access restored to 6ft wide trail)
	653,162	84	83	Weighted Average, UI Adjusted
	596,518			91.33% Pervious Area
	56,644			8.67% Impervious Area
	10,910			19.26% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	42	0.3400	0.10		**Sheet Flow, SF: 42 WOODS** Woods: Dense underbrush n= 0.800 P2= 2.35"
0.0	5	0.3400	2.01		**Sheet Flow, SF: 5 IMPERVIOUS** Smooth surfaces n= 0.011 P2= 2.35"
8.5	53	0.3400	0.10		**Sheet Flow, SF: 53 WOODS** Woods: Dense underbrush n= 0.800 P2= 2.35"
0.8	88	0.1297	1.80		**Shallow Concentrated Flow, SCF: 88 WOODS** Woodland Kv= 5.0 fps
0.0	15	0.1297	5.80		**Shallow Concentrated Flow, SCF: 15 IMPERVIOUS** Unpaved Kv= 16.1 fps
6.0	644	0.1297	1.80		**Shallow Concentrated Flow, SCF: 644 WOODS** Woodland Kv= 5.0 fps
22.3	847	Total			

Summary for Link AP1: ANALYSIS POINT 1

Inflow Area = 2.494 ac, 16.40% Impervious, Inflow Depth > 0.70" for --1 Year event
Inflow = 2.66 cfs @ 12.05 hrs, Volume= 0.146 af
Primary = 2.66 cfs @ 12.05 hrs, Volume= 0.146 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP2: ANALYSIS POINT 2

Inflow Area = 14.995 ac, 8.67% Impervious, Inflow Depth > 0.61" for --1 Year event
Inflow = 10.04 cfs @ 12.17 hrs, Volume= 0.757 af
Primary = 10.04 cfs @ 12.17 hrs, Volume= 0.757 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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

Subcatchment CM-P1: PROPOSED CM-1 Runoff Area=108,620 sf 16.40% Impervious Runoff Depth>1.80"
Flow Length=410' Tc=12.6 min CN=85 Runoff=6.74 cfs 0.374 af

Subcatchment CM-P2: PROPOSED CM-2 Runoff Area=653,162 sf 8.67% Impervious Runoff Depth>1.64"
Flow Length=847' Tc=22.3 min UI Adjusted CN=83 Runoff=27.93 cfs 2.053 af

Link AP1: ANALYSIS POINT 1 Inflow=6.74 cfs 0.374 af
Primary=6.74 cfs 0.374 af

Link AP2: ANALYSIS POINT 2 Inflow=27.93 cfs 2.053 af
Primary=27.93 cfs 2.053 af

Total Runoff Area = 17.488 ac Runoff Volume = 2.427 af Average Runoff Depth = 1.67"
90.23% Pervious = 15.779 ac 9.77% Impervious = 1.709 ac

Summary for Subcatchment CM-P1: PROPOSED CM-1

Runoff = 6.74 cfs @ 12.04 hrs, Volume= 0.374 af, Depth> 1.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr -10 Year Rainfall=3.42"

Area (sf)	CN	Description
17,817	98	Paved parking, HSG D
65,080	84	50-75% Grass cover, Fair, HSG D
11,075	80	>75% Grass cover, Good, HSG D
14,648	78	Meadow, non-grazed, HSG D
108,620	85	Weighted Average
90,803		83.60% Pervious Area
17,817		16.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	41	0.0716	0.14		**Sheet Flow, SF: 41.4528ft (Grass)** Grass: Dense n= 0.240 P2= 2.35"
0.6	45	0.0328	1.22		**Sheet Flow, SF: 44.8661ft (Pavement)** Smooth surfaces n= 0.011 P2= 2.35"
1.9	14	0.0365	0.13		**Sheet Flow, SF: 13.6811ft (Grass)** Grass: Short n= 0.150 P2= 2.35"
0.9	73	0.0381	1.37		**Shallow Concentrated Flow, SCF: 72.7655ft (Grass)** Short Grass Pasture Kv= 7.0 fps
1.3	16	0.0001	0.20		**Shallow Concentrated Flow, SCF: 15.5745ft (Pavement)** Paved Kv= 20.3 fps
1.0	100	0.0569	1.67		**Shallow Concentrated Flow, SCF: 100ft (Grass)** Short Grass Pasture Kv= 7.0 fps
2.0	121	0.0207	1.01		**Shallow Concentrated Flow, SCF: 120.5782ft (Grass)** Short Grass Pasture Kv= 7.0 fps
12.6	410	Total			

Summary for Subcatchment CM-P2: PROPOSED CM-2

Runoff = 27.93 cfs @ 12.16 hrs, Volume= 2.053 af, Depth> 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr -10 Year Rainfall=3.42"

	Area (sf)	CN	Adj	Description
	37,774	98		Paved parking, HSG D
	7,960	98		Roofs, HSG D
	353,109	84		50-75% Grass cover, Fair, HSG D
	236,602	79		Woods, Fair, HSG D
	6,807	98		Water Surface, 0% imp, HSG D
*	5,575	98		Unconnected roofs, HSG D (Canopy)
*	5,335	98		Unconnected roofs, HSG D (Construction Access restored to 6ft wide trail)
	653,162	84	83	Weighted Average, UI Adjusted
	596,518			91.33% Pervious Area
	56,644			8.67% Impervious Area
	10,910			19.26% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	42	0.3400	0.10		**Sheet Flow, SF: 42 WOODS** Woods: Dense underbrush n= 0.800 P2= 2.35"
0.0	5	0.3400	2.01		**Sheet Flow, SF: 5 IMPERVIOUS** Smooth surfaces n= 0.011 P2= 2.35"
8.5	53	0.3400	0.10		**Sheet Flow, SF: 53 WOODS** Woods: Dense underbrush n= 0.800 P2= 2.35"
0.8	88	0.1297	1.80		**Shallow Concentrated Flow, SCF: 88 WOODS** Woodland Kv= 5.0 fps
0.0	15	0.1297	5.80		**Shallow Concentrated Flow, SCF: 15 IMPERVIOUS** Unpaved Kv= 16.1 fps
6.0	644	0.1297	1.80		**Shallow Concentrated Flow, SCF: 644 WOODS** Woodland Kv= 5.0 fps
22.3	847	Total			

Summary for Link AP1: ANALYSIS POINT 1

Inflow Area = 2.494 ac, 16.40% Impervious, Inflow Depth > 1.80" for -10 Year event
Inflow = 6.74 cfs @ 12.04 hrs, Volume= 0.374 af
Primary = 6.74 cfs @ 12.04 hrs, Volume= 0.374 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP2: ANALYSIS POINT 2

Inflow Area = 14.995 ac, 8.67% Impervious, Inflow Depth > 1.64" for -10 Year event
Inflow = 27.93 cfs @ 12.16 hrs, Volume= 2.053 af
Primary = 27.93 cfs @ 12.16 hrs, Volume= 2.053 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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

Subcatchment CM-P1: PROPOSED CM-1 Runoff Area=108,620 sf 16.40% Impervious Runoff Depth>3.92"
Flow Length=410' Tc=12.6 min CN=85 Runoff=14.18 cfs 0.815 af

Subcatchment CM-P2: PROPOSED CM-2 Runoff Area=653,162 sf 8.67% Impervious Runoff Depth>3.71"
Flow Length=847' Tc=22.3 min UI Adjusted CN=83 Runoff=61.77 cfs 4.630 af

Link AP1: ANALYSIS POINT 1 Inflow=14.18 cfs 0.815 af
Primary=14.18 cfs 0.815 af

Link AP2: ANALYSIS POINT 2 Inflow=61.77 cfs 4.630 af
Primary=61.77 cfs 4.630 af

Total Runoff Area = 17.488 ac Runoff Volume = 5.444 af Average Runoff Depth = 3.74"
90.23% Pervious = 15.779 ac 9.77% Impervious = 1.709 ac

Summary for Subcatchment CM-P1: PROPOSED CM-1

Runoff = 14.18 cfs @ 12.04 hrs, Volume= 0.815 af, Depth> 3.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=5.89"

Area (sf)	CN	Description
17,817	98	Paved parking, HSG D
65,080	84	50-75% Grass cover, Fair, HSG D
11,075	80	>75% Grass cover, Good, HSG D
14,648	78	Meadow, non-grazed, HSG D
108,620	85	Weighted Average
90,803		83.60% Pervious Area
17,817		16.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	41	0.0716	0.14		**Sheet Flow, SF: 41.4528ft (Grass)** Grass: Dense n= 0.240 P2= 2.35"
0.6	45	0.0328	1.22		**Sheet Flow, SF: 44.8661ft (Pavement)** Smooth surfaces n= 0.011 P2= 2.35"
1.9	14	0.0365	0.13		**Sheet Flow, SF: 13.6811ft (Grass)** Grass: Short n= 0.150 P2= 2.35"
0.9	73	0.0381	1.37		**Shallow Concentrated Flow, SCF: 72.7655ft (Grass)** Short Grass Pasture Kv= 7.0 fps
1.3	16	0.0001	0.20		**Shallow Concentrated Flow, SCF: 15.5745ft (Pavement)** Paved Kv= 20.3 fps
1.0	100	0.0569	1.67		**Shallow Concentrated Flow, SCF: 100ft (Grass)** Short Grass Pasture Kv= 7.0 fps
2.0	121	0.0207	1.01		**Shallow Concentrated Flow, SCF: 120.5782ft (Grass)** Short Grass Pasture Kv= 7.0 fps
12.6	410	Total			

Summary for Subcatchment CM-P2: PROPOSED CM-2

Runoff = 61.77 cfs @ 12.15 hrs, Volume= 4.630 af, Depth> 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 Year Rainfall=5.89"

	Area (sf)	CN	Adj	Description
	37,774	98		Paved parking, HSG D
	7,960	98		Roofs, HSG D
	353,109	84		50-75% Grass cover, Fair, HSG D
	236,602	79		Woods, Fair, HSG D
	6,807	98		Water Surface, 0% imp, HSG D
*	5,575	98		Unconnected roofs, HSG D (Canopy)
*	5,335	98		Unconnected roofs, HSG D (Construction Access restored to 6ft wide trail)
	653,162	84	83	Weighted Average, UI Adjusted
	596,518			91.33% Pervious Area
	56,644			8.67% Impervious Area
	10,910			19.26% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	42	0.3400	0.10		**Sheet Flow, SF: 42 WOODS** Woods: Dense underbrush n= 0.800 P2= 2.35"
0.0	5	0.3400	2.01		**Sheet Flow, SF: 5 IMPERVIOUS** Smooth surfaces n= 0.011 P2= 2.35"
8.5	53	0.3400	0.10		**Sheet Flow, SF: 53 WOODS** Woods: Dense underbrush n= 0.800 P2= 2.35"
0.8	88	0.1297	1.80		**Shallow Concentrated Flow, SCF: 88 WOODS** Woodland Kv= 5.0 fps
0.0	15	0.1297	5.80		**Shallow Concentrated Flow, SCF: 15 IMPERVIOUS** Unpaved Kv= 16.1 fps
6.0	644	0.1297	1.80		**Shallow Concentrated Flow, SCF: 644 WOODS** Woodland Kv= 5.0 fps
22.3	847	Total			

Summary for Link AP1: ANALYSIS POINT 1

Inflow Area = 2.494 ac, 16.40% Impervious, Inflow Depth > 3.92" for 100 Year event
Inflow = 14.18 cfs @ 12.04 hrs, Volume= 0.815 af
Primary = 14.18 cfs @ 12.04 hrs, Volume= 0.815 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP2: ANALYSIS POINT 2

Inflow Area = 14.995 ac, 8.67% Impervious, Inflow Depth > 3.71" for 100 Year event
Inflow = 61.77 cfs @ 12.15 hrs, Volume= 4.630 af
Primary = 61.77 cfs @ 12.15 hrs, Volume= 4.630 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

APPENDIX F:
SWPPP INSPECTION REPORT
(SAMPLE FORM)

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Prepared by:
LaBella Associates
100 West Water Street, Suite 101
Elmira, NY 14901
(607) 734-8492

SWPPP INSPECTION REPORT NUMBER 01
TANGLEWOOD NATURE CENTER
TANGLEWOOD ADA PARKING AND TRAIL
443 COLEMAN AVE, TOWN OF BIG FLATS, CHEMUNG COUNTY, NY

Performed: 9/29/2025 @ 12:00 PM
Report Issued: 9/29/2025

Status: POTENTIAL CLEAN WATER ACT VIOLATION (Contractor must begin repairs within one (1) business day. Overdue corrective actions may result in fines from the NYSDEC in the amount of $37,500/day/violation)

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

NYSDEC Documentation and SWPPP Forms

NYSDEC Issued Permit Identification Number: NYRXXXXXX

5-Acre Waiver: N/A (No 5-acre waiver for this project - Contractor not authorized to disturb >5 acres)

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
☐	☐	☐	NOI Acknowledgement letter
☐	☐	☐	Copy of eNOI
☐	☐	☐	Owner / Operator Certification
☐	☐	☐	SWPPP Preparer Certification
☐	☐	☐	MS4 SWPPP Acceptance Form
☐	☐	☐	Contractor and Subcontractor Certifications
☐	☐	☐	SPDES General Permit
☐	☐	☐	5 Acre Waiver
☐	☐	☐	NOT

Comments:

Site Conditions

Approximate Disturbed Area at Time of Inspection: XX Acres			
Allowable Disturbed Area Per NOI and/or 5-acre waiver: XX Acres			
Current Status of Construction: Description			
Weather Conditions: Conditions		**Temperature:** XX °F	**Soil Conditions:** Choose an item.

Description of Discharge Point/Natural Surface Waterbody	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:							

Photo Log

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

Photo Log (continued)

Photo 4	***Photo 4A***
Date – Item in need of repair or maintenance:	*Date – Corrected Action:*
Photo 5	***Photo 5A***
Date – Item in need of repair or maintenance:	*Date – Corrected Action:*
Photo 6	***Photo 6A***
Date – Item in need of repair or maintenance:	*Date – Corrected 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 G:
POST-CONSTRUCTION INSPECTIONS AND MAINTENANCE

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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.

Disconnection & Sheetflow 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			

Table 2.4.1 D&S Drainage Area

Visually inspect any surfaces in the 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:

Table 2.4.1 D&S Drainage Area

Visually inspect any surfaces in the drainage area.

Problem (Check if Present)	Follow-Up Actions
	☐ 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

Inspect the energy dissipator closely, during a rain event if possible.

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

Examine where flow enters the treatment area as well as the whole flow path. Look for signs of concentrated flow.

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.

Table 2.4.3 D&S Treatment Area

Examine where flow enters the treatment area as well as the whole flow path. Look for signs of concentrated flow.

Problem (Check if Present)	Follow-Up Actions
☐ 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.

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

Disconnection & Sheetflow 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 – DISCONNECTION AND SHEETFLOW	
Recommended Repairs	**Triggers for Level 3 Inspection**
Observed Condition: Significant sediment on pavement that drains to disconnection area (e.g., grass strip)	
☐ Condition 1: Sediment on parking lot is widespread Enlist a mechanical sweeper or vacuum sweeper to remove sediment across entire pavement surface. Pay special attention to downhill edges of pavement where more sediment may have accumulated.	• Sediment accumulation is so serious that it cannot be sufficiently removed with mechanical sweeper. May indicate a high sediment load from uphill in the drainage area that needs to be mitigated. ☐ Level 3 inspection necessary
Observed Condition: Pavement edge deteriorating	
☐ Condition 1: Dips or damage at pavement edge causing runoff to concentrate Determine whether the damaged edge is causing significant enough concentration of runoff to warrant repair or regrading of the pavement.	• Edge must be patched or re-paved to make secure and level. • Parking lot not draining properly to the energy dissipator and treatment area. ☐ Level 3 inspection necessary
Observed Condition: Level spreader/energy dissipator	
☐ Condition 1: Level spreader sinking or uneven If basic equipment can be used, prop up and secure any section of level spreader that is sinking. Regrade soil all around level spreader and add stone as necessary to prevent erosion and bypassing. ☐ Condition 2: Level spreader is broken These repairs can be simple for small, residential-scale practices, such as at a downspout. Ensure the level spreader is level across, keyed in to soil at the edges, and made of durable material that can withstand the flow of water running across it. Larger or more complicated level spreaders (e.g., concrete) will likely require specialized skill and equipment.	• Level spreader requires specialized equipment, regrading, or large amount of material to make level again. • Level spreader needs to be re-designed and replaced. ☐ Level 3 inspection necessary

Level 2 Inspection – DISCONNECTION AND SHEETFLOW	
Recommended Repairs	**Triggers for Level 3 Inspection**
Observed Condition: Erosion in treatment area	
☐ Condition 1: Rills from concentrated flow Inspect energy dissipator to see whether it needs to be improved to better spread out incoming flow. Regrade flow path to ensure that it is relatively flat (if minor). If major re-grading is needed, the treatment area may need to be redesigned and fixed with specialized equipment.	• Major rills and gullies • Treatment area needs to be re-designed and major grading needed. ☐ 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 H:
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:

John E. Lacey,
Land Resource Consultant and Environmental Compliance Monitor
(Formerly with the Division of Agricultural Protection and Development Services,
NYS Dept. of Agriculture & Markets)

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.

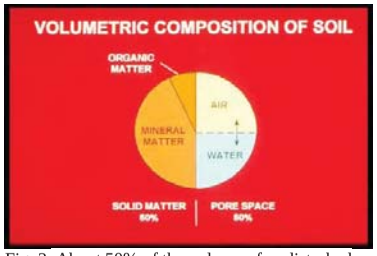

Fig. 2. About 50% of the volume of undisturbed loam surface soil is pore space, when soil is in good condition for plant growth. Brady, 2002.

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

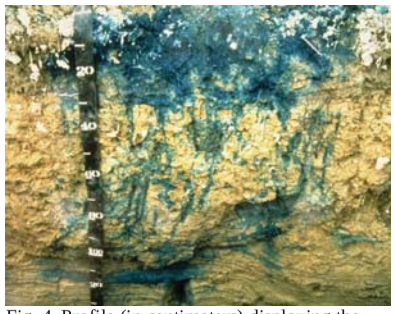

Fig. 4. Profile (in centimeters) displaying the infiltration test result of the natural undisturbed horizons of a soil in Hydrologic Soil Group C.

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

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- Baver, L.D. 1948. *Soil Physics.* John Wiley & Sons.
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- 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
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- 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 I:
LABELLA CERTIFYING PROFESSIONALS LETTER

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LaBella
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January 26, 2024

RE: LaBella Certifying Professionals for NYSDEC SPDES GP-0-20-001

To Whom it May Concern:

In accordance with the NYSDEC SPDES General Permit GP-0-20-001, Part VII.H.2, Michael Mishook, 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

Michael Mishook, PE
Senior Civil Engineer
Regional Manager

APPENDIX J:
NYSDEC SPDES GENERAL PERMIT GP-0-20-001

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NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

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

of the Environmental Conservation Law

Effective Date: January 29, 2020 Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature Date

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

PREFACE

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

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

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

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

Table of Contents

Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

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

B. Effluent Limitations Applicable to Discharges from Construction Activities

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

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

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

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharge*s from *dewatering* activities, including *discharge*s from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharge*s.** The following *discharge*s are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

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

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

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

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

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

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

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

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

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

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

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

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

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

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

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

D. Maintaining Water Quality

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

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

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

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

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharge*s; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharge*s from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

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

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

1. *Discharge*s after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharge*s that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

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

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

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

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

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

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

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

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

   d. Documentation that:

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

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

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

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

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

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied <u>all</u> of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

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

   c. the final SWPPP has been prepared, and

   d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are <u>not</u> subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has <u>not</u> been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

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

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

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

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

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

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

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

   a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

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

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

   a. Background information about the scope of the project, including the location, type and size of project

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

   b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

   c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

   d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

   a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

   b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

   c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed*;* and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

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

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

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

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

k. Identification and status of all corrective actions that were required by previous inspection; and

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

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

   b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

   c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

   d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

   a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

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

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

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

    a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

    b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner's or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities"* and "*Larger Common Plan of Development or Sale" also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term "plan" in "larger common plan of development or sale" is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same "common plan" is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State*;*
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity.*

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

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

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

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

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standard*s, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

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 or not *directly discharging* to one of the 303(d) segments listed in Appendix E • Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E • Construction of a barn or other *agricultural building*, silo, stock yard or pen.
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 watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.
The following construction activities that involve soil disturbances of one (1) or more acres of land: • Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains • Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects • Pond construction • Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover • Cross-country ski trails and walking/hiking trails • Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development; • Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path. • Slope stabilization projects • Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

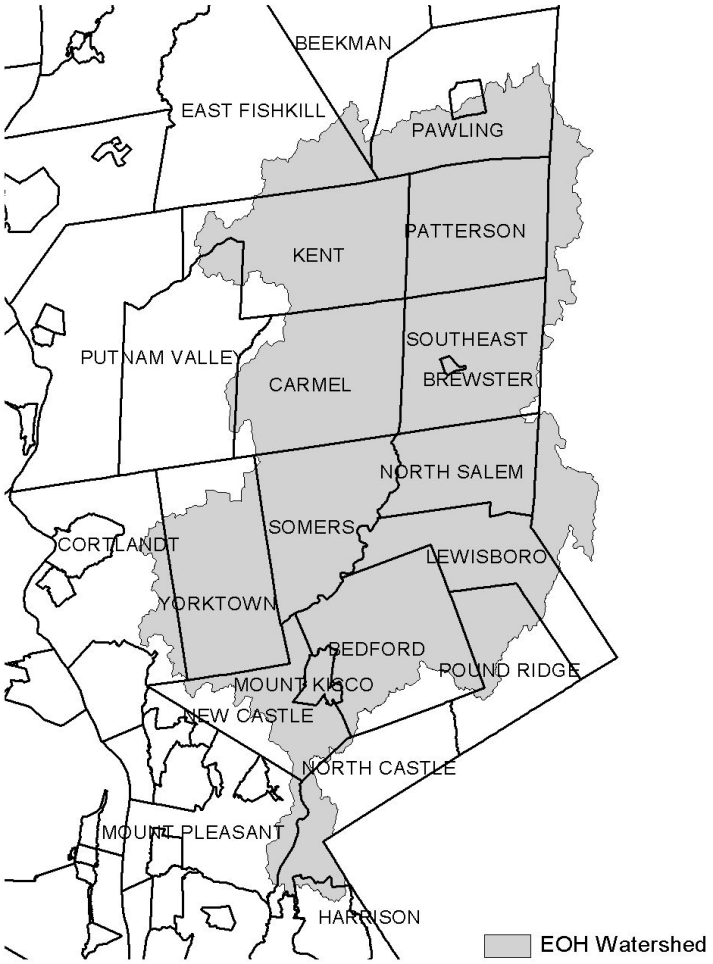


Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

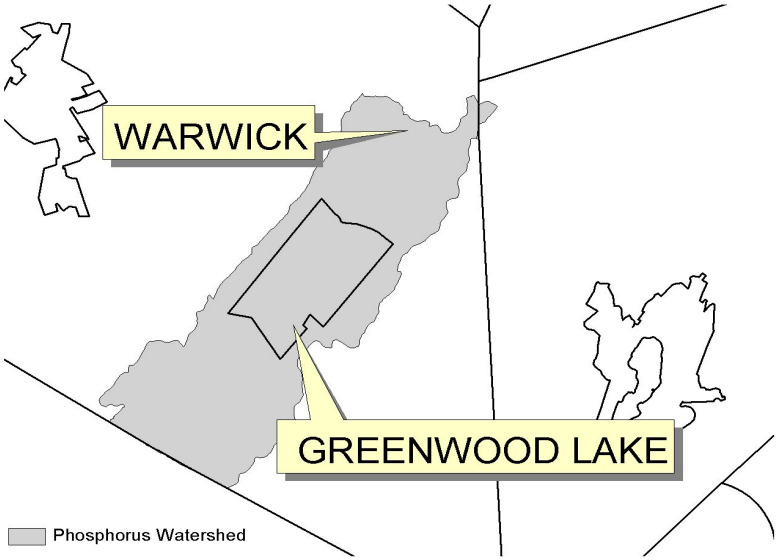


Figure 4 - Oscawana Lake Watershed

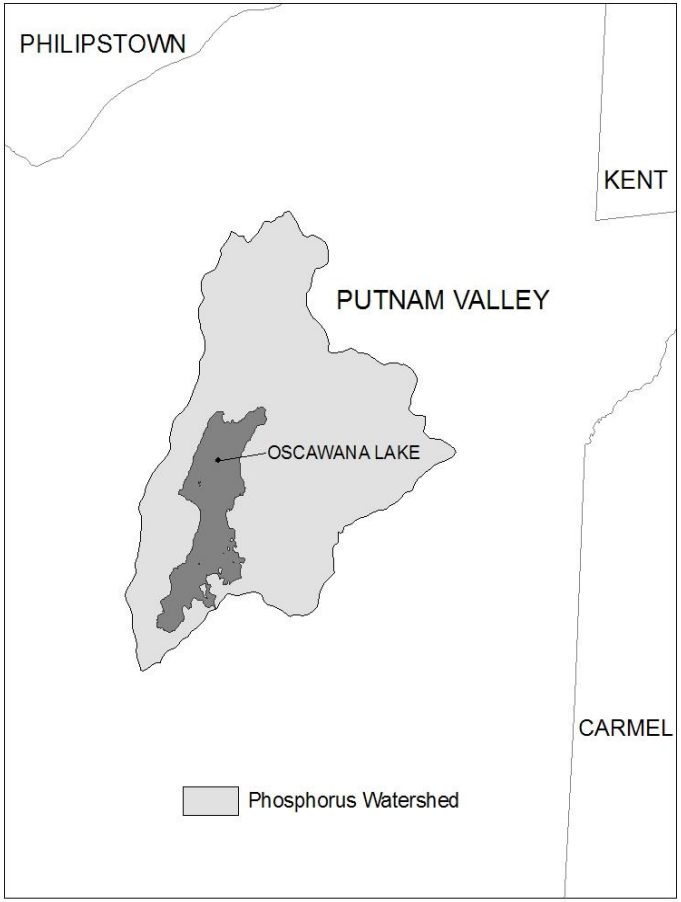
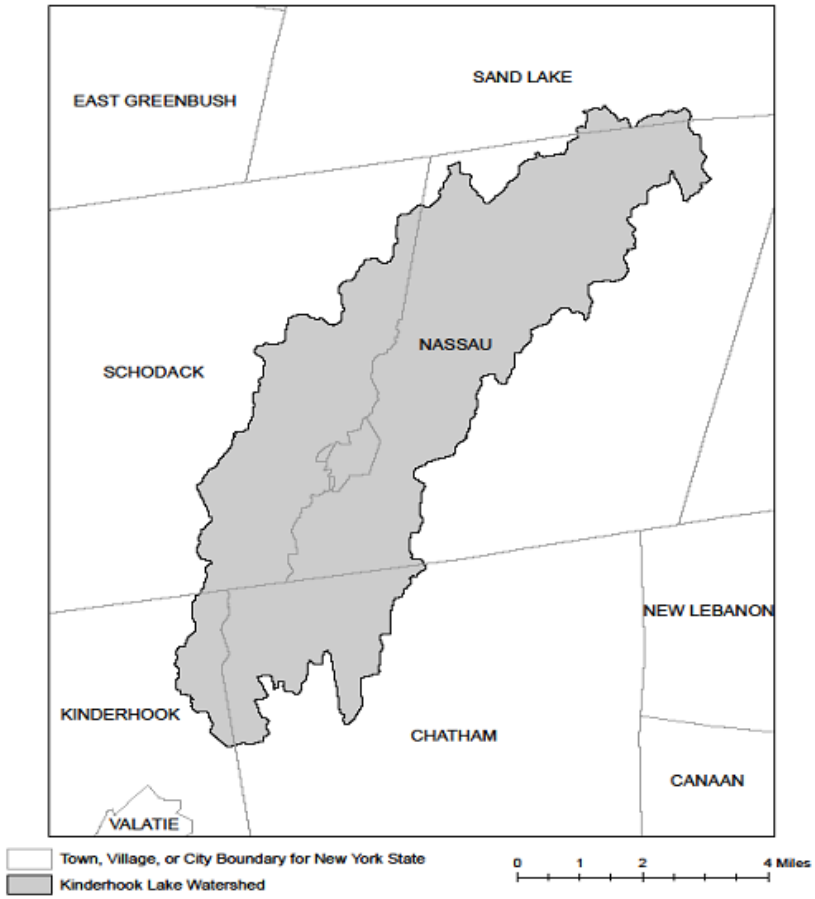


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

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	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

APPENDIX K:
GEOTECHNICAL REPORT

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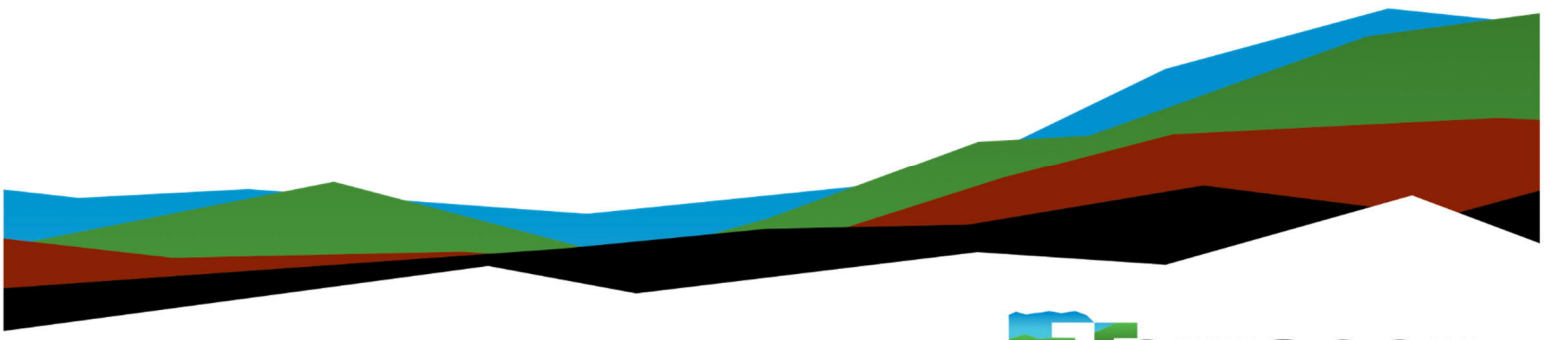
Tanglewood Nature Center

Geotechnical Engineering Report

August 28, 2023 | Terracon Project No. J5235110

Prepared for:

Signature Research Inc.
PO Box 6022
Douglasville, Georgia 30154



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August 28, 2023

Signature Research Inc.
PO Box 6022
Douglasville, Georgia 30154

Attn: Mr. Michael Rickerd
P: (678) 783-9893
E: mrickerd@signatureresearch.com

Re: Geotechnical Engineering Report
Tanglewood Nature Center
443 Coleman Avenue
Elmira, Chemung County, New York
Terracon Project No. J5235110

Dear Mr. Rickerd:

We have completed the scope of Geotechnical Engineering services for the above referenced project in general accordance with Terracon Proposal No. PJ5235110 dated June 1, 2023. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,

Terracon Consultants-NY, Inc.

Zeru B. Kiffle, EIT
Staff Engineer

Michele A. Fiorillo, P.E.
Geotechnical Department Manager

Table of Contents

Figures

Attachments

Note: This report was originally delivered in a web-based format. Blue Bold text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the Terracon logo will bring you back to this page. For more interactive features, please view your project online at client.terracon.com.

Refer to each individual Attachment for a listing of contents.

Introduction

This report presents the results of our subsurface exploration and Geotechnical Engineering services performed for the proposed Tanglewood Nature Center to be located at 443 Coleman Avenue in Elmira, Chemung County, New York. The purpose of these services was to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Seismic site classification per IBC
- Site preparation and earthwork
- Dewatering considerations
- Foundation design and construction

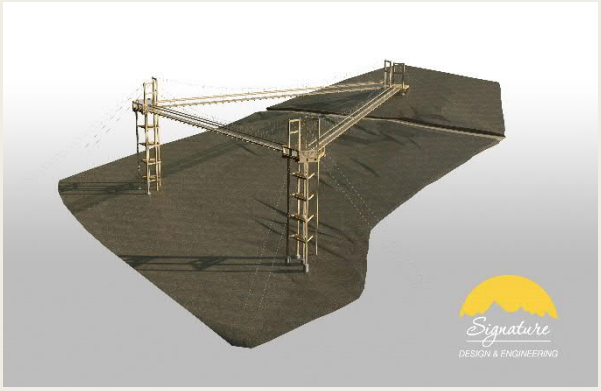
The geotechnical engineering Scope of Services for this project included the advancement of two test borings (B-1 and B-2), engineering analysis, and preparation of this report.

Drawings showing the site and boring locations are shown on the Site Location and Exploration Plan, respectively. The results of our field exploration are included on the boring logs in the Exploration Results section.

Project Description

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

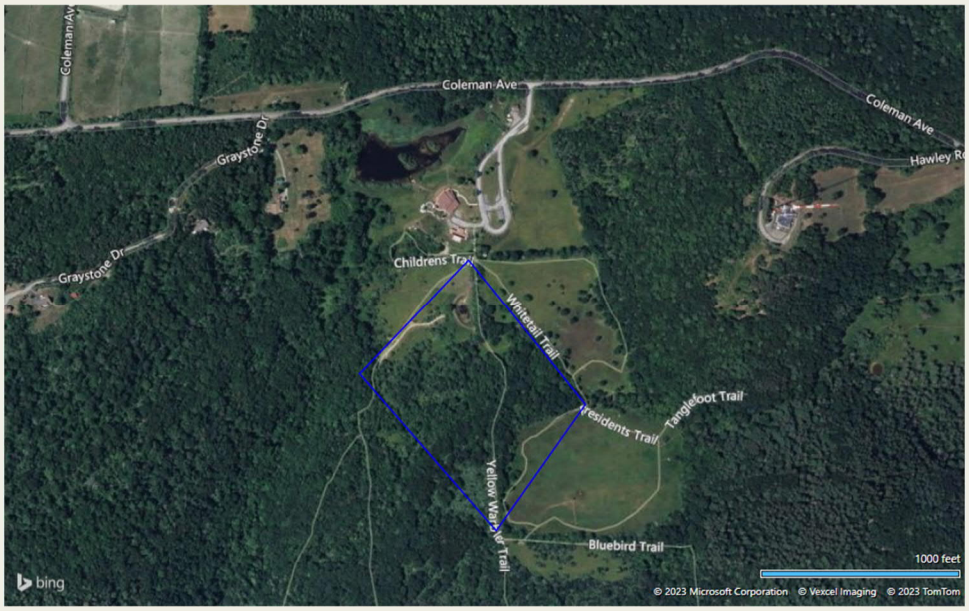
Item	Description
Information Provided	An email request for proposal was provided by Mr. Michael Rickerd with Signature Research on May 08, 2023. The request included a google map image of the project site, conceptual drawing of the proposed structures and a sketch of a typical foundation system.

Item	Description
Project Description and Proposed Structure	The project consists of the construction of canopy walkways (wooden suspension bridges) for educational, entertainment, and tourist purposes. A conceptual drawing of the proposed structures is shown below for reference purposes. 
Maximum Loads	Based on information provided by Signature, we anticipate the following loading: ■ Axial Load: 40 kips
Grading/Slopes	Grading information was not provided. Proposed finished grade elevation for the structure is expected to be near existing grades to minimize earthwork cut and fill operations.
Building Code	2020 Building Code of New York State based on the 2018 IBC

Terracon should be notified if any of the above information is inconsistent with the planned construction, especially the grading limits, as modifications to our recommendations may be necessary.

Site Conditions

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project is located at 443 Coleman Avenue in Elmira, Chemung County, New York, and is located at approximately Latitude 42.1065° N and Longitude 76.8772° W. The blue boundaries in the aerial image below show the limits of the project site.  See also Site Location
Existing Improvements	The site is located at a recreational facility which includes several buildings, asphalt surfaced drives and parking areas, and nature trails. At the location of the proposed improvements, the site is wooded.
Current Ground Cover	Earthen, moderately to heavily vegetated with scattered trees.
Existing Topography	Based on the USGS topographic base map, ground surface elevations appear to slope down toward the western portion of the site, with ground surface elevations ranging from about El. 1,550 to about El. 1,530 feet MSL.
Geology[1]	The project is located within the Allegheny Plateau physiographic province. Geological maps indicate surficial soils to consist of glacial till deposits. Primary bedrock is mapped as Shale of Gardeau Formation (Upper Devonian Unit Age).

1. References: Fisher, D.W., Isachsen, Y.W., and Rickard, L.V., 1970, Geologic Map of New York State, consisting of 5 sheets: Niagara, Finger Lakes, Hudson-Mohawk, Adirondack, and Lower Hudson, New York State Museum and Science Service, Map and Chart Series No. 15, scale 1: 250,000.

We also collected photographs at the time of our field exploration program. Representative photos are provided in our Photography Log.

Geotechnical Characterization

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of the site. Conditions observed at each exploration point are indicated on the individual logs. The individual logs can be found in the Exploration Results and the GeoModel can be found in the Figures attachment of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Model Layer	Layer Name	General Description
1	Surface	Topsoil (0.3 to 0.5 feet)
2	Native Soil	Sandy Silt with Gravel (ML); contains rock/cobble fragments; brown to grayish brown; stiff to hard

The dimensions of the sampling equipment may preclude sampling particles larger than 2-inch in any dimension. The variability in the SPT N-values, particularly when sampler refusal is noted, may be indicative of encountering cobbles and/or small boulders within the soils. Cobbles and boulders are commonly found in glacially deposited soil and should be anticipated at the site.

The boreholes were observed while drilling or after completion for the presence and level of groundwater. Groundwater was not encountered in encountered in both test borings while drilling or after completion. Groundwater conditions may change because of seasonal variations in rainfall, runoff, and other conditions not apparent at the time of drilling. Water may also become temporarily perched over low permeable soils or bedrock. Long-term groundwater monitoring was outside the scope of services for this project.

Seismic Site Class

The seismic design requirements for buildings and other structures are based on Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7 and the International Building Code (IBC). Based on the soil properties observed at the site and as described on the exploration logs and results, our professional opinion is for that a Seismic Site Classification of C be considered for the project. Subsurface explorations at this site were extended to a maximum depth of 13 feet. The site properties below the boring depth to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area. Additional deeper borings or geophysical testing may be performed to confirm the conditions below the current boring depth.

Geotechnical Overview

The site appears suitable for the proposed construction based upon geotechnical conditions encountered in the test borings, provided that the recommendations provided in this report are implemented in the design and construction phases of this project.

The subsurface materials generally consisted of stiff to hard silt and sand mixtures with varying amounts of silt and gravel/cobbles extending to the maximum depth 13 feet below the existing ground surface (bgs). Groundwater was not encountered within the maximum depths of exploration during or at the completion of drilling.

Based on the conditions encountered, the proposed structures can be supported on drilled shafts bearing within the hard native substratum. Design recommendations are presented in the Deep Foundations section of this report.

Alternatively, the proposed structures can be supported on helical piles or “drilled-in-displacements micropiles” bearing within the hard native substratum. Design recommendations are presented in the Specialty Foundations section of this report.

The recommendations contained in this report are based upon the results of field and laboratory testing (presented in the Exploration Results), engineering analyses, and our current understanding of the proposed project. The General Comments section provides an understanding of the report limitations.

Earthwork

Earthwork is anticipated to include removal of existing vegetation, root mat, and any unsuitable/soft material encountered, excavations, and fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for foundations.

Site Preparation

The site is covered with moderate to heavy vegetation. Prior to placing fill, existing vegetation, topsoil, and root mats should be removed. Complete stripping of the topsoil should be performed in the proposed structure.

The exposed subgrade (if applicable) should be proof rolled with a heavy vibratory roller in static mode. The proof-rolling should be performed under the direction of the Geotechnical Engineer. Areas excessively deflecting under the proof-roll should be delineated and subsequently addressed by the Geotechnical Engineer. Such areas should be replaced with compacted Select Backfill. Excessively wet or dry material should either be removed, or moisture conditioned and recompacted.

Except in areas to be excavated, stump holes and other holes caused by removal of tree roots and obstructions in wooded areas should be backfilled with suitable material and compacted in accordance with Fill Placement and Compaction Requirements.

Fill Material Types

Fill required to achieve design grade should be classified as structural fill and general fill. Structural fill is material used below, or within 10 feet of structures. General fill is material used to achieve grade outside of these areas.

Reuse of On-Site Soil: On-site soils be suitable for reuse as Structural Fill (if required), provided during construction proper compaction and optimum moisture content can be achieved. If construction is performed during the wet season, it is possible the moisture content of the excavated soils is more than the optimum moisture content required to achieve proper compaction, and proper compaction of the on-site soils may be difficult to achieve. We anticipate imported Structural Fill may be required. Saturated soils which cannot achieve compaction should be removed or used in non-structural areas where significant post construction settlement is acceptable. The contractor is ultimately responsible for moisture conditioning of fill/backfill materials to achieve proper compaction.

Imported Fill Materials: Imported fill materials should meet the following material property requirements.

Soil Type [1]	USCS Classification	Acceptable Parameters (for Structural Fill)	
		Sieve Size	Percent Finer
Granular	Varies	2-inch	100%
		¼ inch	30 to 75%
		No. 40	5 to 40%
		No. 200	0 to 10%

1. Structural and general fill should consist of approved materials free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site.

Non-Frost Susceptible (NFS): Non-Frost Susceptible material should consist of a free-draining granular material such as NYSDOT Item 203.21 Select Structural Fill; however, we recommend less than 5% passing the No. 200 sieve.

Fill Placement and Compaction Requirements

New fills, if required, should be placed in uniform loose layers no more than about 8 inches thick where heavy vibratory compaction equipment is used. Smaller lifts should be used where hand operated equipment is required for compaction. Each lift should be compacted to no less than 95 percent of its maximum dry density as determined by the Modified Proctor Compaction Test, ASTM D1557. In landscape areas, the compaction requirement may be relaxed to 90 percent of maximum dry density.

Onsite soil used for subgrade fill should have a moisture content within +/-2 percent of its optimum moisture content when it is placed and compacted.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of vegetation, topsoil, and existing fills, proof-rolling, and mitigation of areas delineated by the proof-roll to require mitigation.

If required, each lift of compacted fill should be tested, evaluated, and reworked, as necessary, until approved by the Geotechnical Engineer prior to placement of additional lifts.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

Deep Foundations

Drilled Shaft Design Parameters

Soil design parameters are provided below in the Drilled Shaft Design Summary table for the design of drilled shaft foundations. The values presented for end bearing include a safety factor of 3 and for allowable side friction include a factor of safety of 2.

Drilled Shaft Design Summary [1]

Average Depth (feet)	Material [2]	Allowable Skin Friction (psf) [3]	Allowable End Bearing Pressure (psf) [4]
0 to 4	Silt and Sand with Gravel	Ignore	---
4 to 9		550	6,000
9 to 13 (B-1 Only)		675	6,000

1. Design capacities are dependent upon the method of installation and quality control parameters. The values provided are estimates and should be verified when installation protocol have been finalized. We recommend ignoring the side resistance in the upper 4 feet because of disturbance during construction.
2. See Subsurface Profile in Geotechnical Characterization for more details on stratigraphy.
3. Applicable for compressive loading only. Reduce to 2/3 of values shown for uplift loading. The effective weight of the shaft can be added to uplift load resistance to the extent permitted by IBC.
4. Shafts should extend at least one diameter into the bearing stratum for end bearing to be considered.

Drilled shaft should have a minimum (center-to-center) spacing of three shaft diameters. Closer spacing may require a reduction in axial load capacity. Axial capacity reduction can be determined by comparing the allowable axial capacity determined from the sum of individual piles in a group versus the capacity calculated using the perimeter and base of the pile group acting as a unit. The lesser of the two capacities should be used in design.

Post-construction settlements of drilled shafts designed and constructed as described in this report are estimated to be less than 1 inch. Differential settlement between individual shafts is expected to be ½ to ⅔ of the total settlement.

Drilled Shaft Lateral Loading

The following table lists input values for use in LPILE analyses. Since deflection or a service limit criterion will most likely control lateral capacity design, no safety/resistance factor is included with the parameters.

Drilled Shaft Lateral Design Parameters

Depth (feet)	LPILE Soil Model	Φ[1] (deg.)	γ' (pcf)[1,2]	K (pci)[1]
0 to 4	Sand (Reese)	33	120	We recommend using LPile default values
4 to 9	Sand (Reese)	36	125	
9 to 13 (B-1 Only)	Sand (Reese)	36	125	

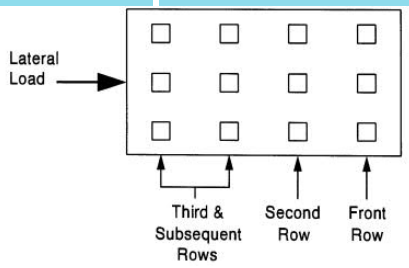
1. Definition of Terms:
   ϕ: Internal friction angle
   γ': Effective unit weight
   K: Horizontal modulus of subgrade reaction
2. Buoyant unit weight values should be used below water table. Groundwater was not encountered within the explored depth.

When shafts are used in groups, the lateral capacities of the shafts in the second, third, and subsequent rows of the group should be reduced as compared to the capacity of a single, independent shaft. Guidance for applying p-multiplier factors to the p values in the p-y curves for each row of pile foundations within a pile group are as follows:

Center to Center Pile Spacing [1,2]	P-Multiplier, P_m [3]		
	Front Row	Second Row	Third and Subsequent Rows
3B	0.8	0.4	0.3
4B	0.9	0.65	0.5
5B	1.0	0.85	0.7
6B	1.0	1.0	1.0

Center to Center Pile Spacing [1,2]	P-Multiplier, P_m [3]		
	Front Row	Second Row	Third and Subsequent Rows

1. Spacing in the direction of loading. B = pile diameter
2. For the case of a single row of piles supporting a laterally loaded grade beam, group action for lateral resistance of piles would need be considered when spacing is less than three pile diameters (measured center-to-center).
3. See adjacent figure for definition of front, second and third rows.



Spacing closer than 3D (where D is the diameter of the shaft) is not recommended without additional geotechnical consultation due to potential for the installation of a new shaft disturbing an adjacent installed shaft likely resulting in axial capacity reduction.

Drilled Shaft Construction Considerations

The drilling contractor should be experienced in the subsurface conditions observed at the boring locations, and the shaft excavations should be performed with equipment capable of providing a clean bearing area. The straight-sided drilled shaft foundations should be installed in general accordance with the procedures presented in “Drilled Shafts: Construction Procedure and Design Methods,” Publication No. FHWA-NHI-18-024, FHWA GEC 010, September 2018 by the U.S. Department of Transportation Federal Highway Administration, and “Standard Specification for the Construction of Drilled Piers,” ACI Publication No. 336.1-01, 2011.

The subsurface conditions predominately consisted of a mixture of stiff to hard silt and sand mixtures with varying amounts of gravel, and it should be relatively easy to drill through using conventional auger drilling equipment. However, difficult drilling conditions could be encountered as the soil stratum becomes denser with depth and with the presence of cobbles and boulders and possible bedrock underlying the native stratum. The shaft contractor should have temporary steel casing available to maintain stability of the upper portions of the excavation.

Prediction of excavation cave-in and the need for casing or mud slurry methods is not exact and depends on many factors including but not limited to soil strength, silt content, excavation, and drilling methods, planned diameter and depth of the excavation, water table at time of construction, amount of time shaft excavation will be open, etc. No exact determinations or depth of excavation caving are possible. It is expected that temporary casing and/or the slurry method will be required.

The drilled shaft installation process should be performed under the observation of the Geotechnical Engineer. The Geotechnical Engineer should document the shaft installation process including soil/rock and groundwater conditions observed, consistency with expected conditions, and details of the installed shaft.

Specialty Foundations

Helical Piles

Alternative to drilled shaft, we understand that helical piles foundations may also be being considered by the design team for support of proposed structures. The subsurface conditions encountered predominantly hard native soil and we anticipate installation of helical piles extending to hard stratum encounter drilling refusal and terminate before reaching proposed design embedment depths. Therefore, pre-drilling may likely be required to minimize damage of the helical piles during installation and extend the piles to proposed tip elevation.

Helical piles consist of a steel pipe lead section, typically with one or more increasing diameter helices, followed by single helix extensions or plain extensions, ultimately attached to the structure. Typically, the torque required to install the piles is measured and is used as a correlation to evaluate the pile capacity. However, pile load testing may be required on one or two piles to confirm pile capacity prior to installation of production piles.

Helical soil pile systems are capable of achieving allowable vertical compressive capacities of 50 to 75 kips, depending on the bearing strata and the diameter and stack of helices utilized.

Helical pipe piles can be designed to accommodate the design loads by adjusting the number of helices, depth, helix diameter, or by providing multiple piles. Helical pipe piles should be designed and installed on a design-build basis due to the variety of pile design and installation methods available. We would be able to provide contact information for local design-build contractors upon request.

To evaluate the geotechnical capacity of helical pipe piles, we recommend the initial design be based on the following soil parameters.

Description	Provisional Value [1]
Bearing Material	Native Soil Stratum
Depth to Bearing Stratum	Varies across the site[1]
Total Unit Weight	120 pcf (the upper4 feet) 125 pcf (greater than 4 feet)
Friction Angle	33-degrees (the upper 4 feet) 36-degrees (greater than 4 feet)

1. Please note that Pre-Drilling will likely be required in order to install the piles to the required depth Spacing in the direction of loading.

The installer of helical piles should have a minimum of 5 years of experience installing the proposed helical pile system for projects of similar size and complexity and should provide detailed design calculations sealed by a professional engineer licensed in the New York. The design calculations should demonstrate the helical pile system is estimated to control long-term total and differential settlements to that required for the project. The installer should warrant their work as well as the maximum total and differential settlements they predict.

A detailed work plan should be prepared by the helical pile installer and should be reviewed and approved by Terracon prior to implementation of pile installation.

Terracon should be provided the opportunity to assist with the review of the specifications for this work to confirm that appropriate quality control steps are implemented. As a minimum, installation of helical piles should be performed within the following criteria:

- Helical piles should be installed so that the center of each helical pile does not vary from the plan location by more than 3 inches. Do not allow the helical pile to vary from the vertical or established batter by more than 1/4 inch per foot, as measured above ground.
- Top of pile should be cut off at the elevation indicated in the contract documents.
- Piles should not be damaged during installation and should meet capacity demands as shown on the contract drawings and test pile passes the static load test.
- Unacceptable piles are piles that are damaged during installation or that do not meet the acceptance criteria identified in the paragraph above. The contractor shall remove unacceptable piles, or at the option of the Engineer of Record, a second pile may be installed adjacent thereto, if this can be done without impairing the structure.

The pile testing and installation process should be monitored by the Geotechnical Engineer. The Geotechnical Engineer should also document the pile installation process.

Drilled-in Displacement Micropiles (DDM)

Drilled-in displacement micropiles (DDM) are helical piles that are installed using a combination of torque and downward force. DDM consists of a helical-shaped displacement head at the tip of the pile followed by a secondary deformation structure and then a reverse-flight auger welded to the pile shaft continuing the full length of the pile including any extensions, if needed. High strength grout is continually pumped into the void created by the displacement head and is pulled down into the column created around the pile as the reverse auger advances through the subsoils. At the completion of the pile installation, the center of the steel shaft is to be filled with grout. The following is herein presented for design of the DDM:

- Overall, the ultimate capacity of each DDM (or grout-encased helical pile) should be at least twice the allowable load. In addition, the piles should be capable of withstanding the installation torques.
- A static load test should be performed on a single pile to confirm the pile design. The loading placed on the installed pile during the field test should be a minimum of twice the working load.
- The minimum center-to-center spacing of the grout-encased helical piles should be 30 inches or 2.5 pile diameters, whichever is greater.
- The load-transfer connections between the piles and the overlying structural elements should be coordinated between the structural engineer and the pile provider.
- Drilled-in displacement micropiles are generally installed by specialty contractors. The specialty contractor should be made responsible for the design and performance of the piles.
- A representative of Terracon should be on-site during the installation of the piles to monitor advancement of the pile, document the pile termination depths, and observe grout placement. The fresh grout should be sampled and tested for compressive strength by a certified materials testing laboratory.

General Comments

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly effect excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety and cost estimating including excavation support and dewatering requirements/design are the responsibility of others. Construction and site development have the potential to affect adjacent properties. Such impacts can include damages due to vibration, modification of groundwater/surface water flow during construction, foundation movement due to undermining or subsidence from excavation, as well as noise or air quality concerns. Evaluation of these items on nearby properties are commonly associated with contractor means and methods and are not addressed in this report. The owner and contractor should consider a preconstruction/precondition survey of surrounding development. If changes in the nature, design, or location of the project are planned, our conclusions and

recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

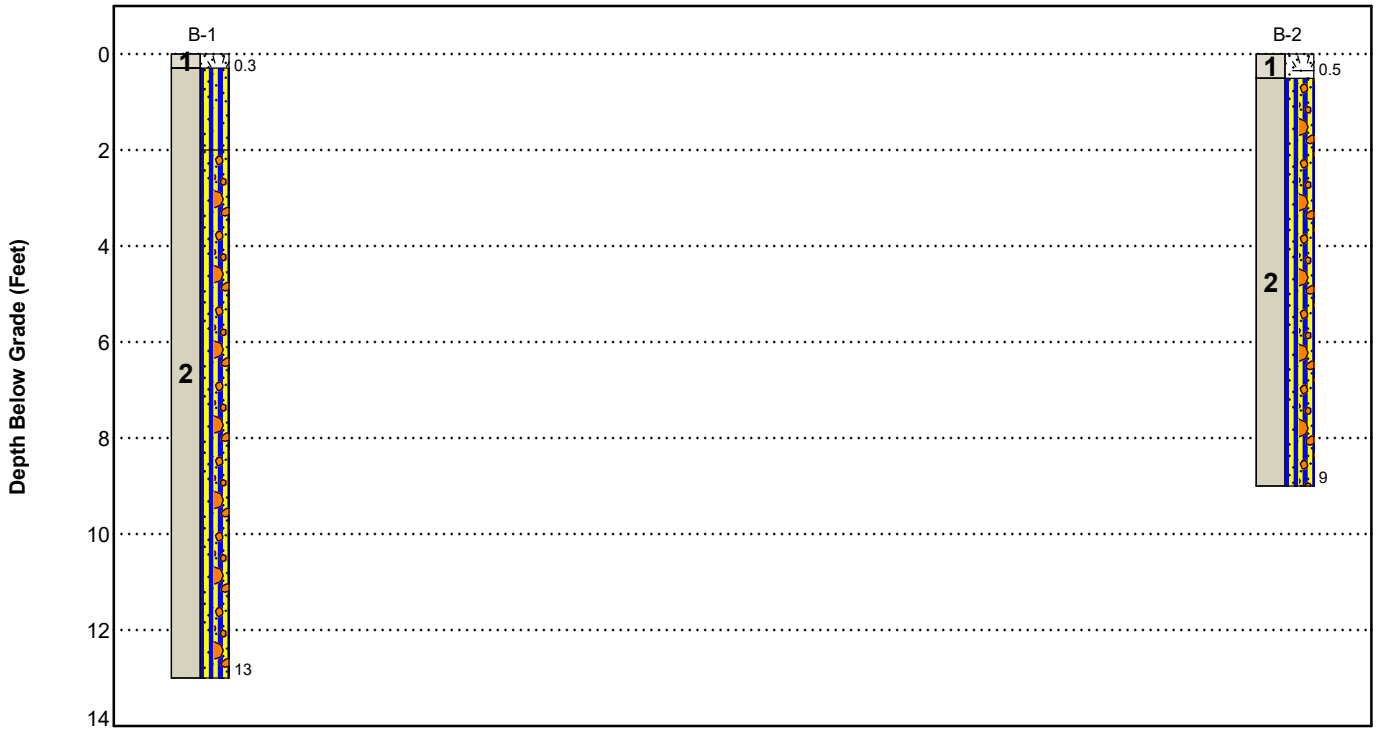
Figures

Contents:

Tanglewood Nature Center
443 Coleman Ave | Elmira, Chemung County, New York
Terracon Project No. J5235110

15 Marway Cir, Ste 2B
Rochester, NY

GeoModel



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	Surface	Topsoil (0.3 to 0.5 feet)
2	Native Soil	Sandy Silt with Gravel (ML); contains rock/cobble fragments; brown to grayish brown; stiff to hard

LEGEND

Topsoil

Sandy Silt

Sandy Silt with Gravel

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project.
Numbers adjacent to soil column indicate depth below ground surface.

Attachments

Exploration and Testing Procedures

Field Exploration

Number of Borings	Approximate Boring Depth (feet)	Location
2 (B-1 and B-2)	9 to 13	Canopy Walkway area

Boring Layout and Elevations: Terracon personnel provided the boring layout using handheld GPS equipment (estimated horizontal accuracy of about ±15 feet) and referencing existing site features. Approximate ground surface elevations were estimated from a USGS topographic plan. If elevations and a more precise boring layout are desired, we recommend borings be surveyed.

Subsurface Exploration Procedures: We advanced the borings with ATV-mounted rotary drill rig using continuous hollow stem augers. Split-spoon samples were obtained at depths as shown in the boring logs. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling 30 inches. The number of blows required to advance the sampling spoon the middle 12 inches of a normal 24-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. We observed and recorded groundwater levels during drilling and sampling. For safety purposes, the borings were backfilled with auger cuttings after their completion.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials observed during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Photography Log

Photo 1: Location of test boring B-1 before drilling

Photo 1: Location of test boring B-2 before drilling

Site Location and Exploration Plans

Contents:

Note: All attachments are one page unless noted above.

Site Location

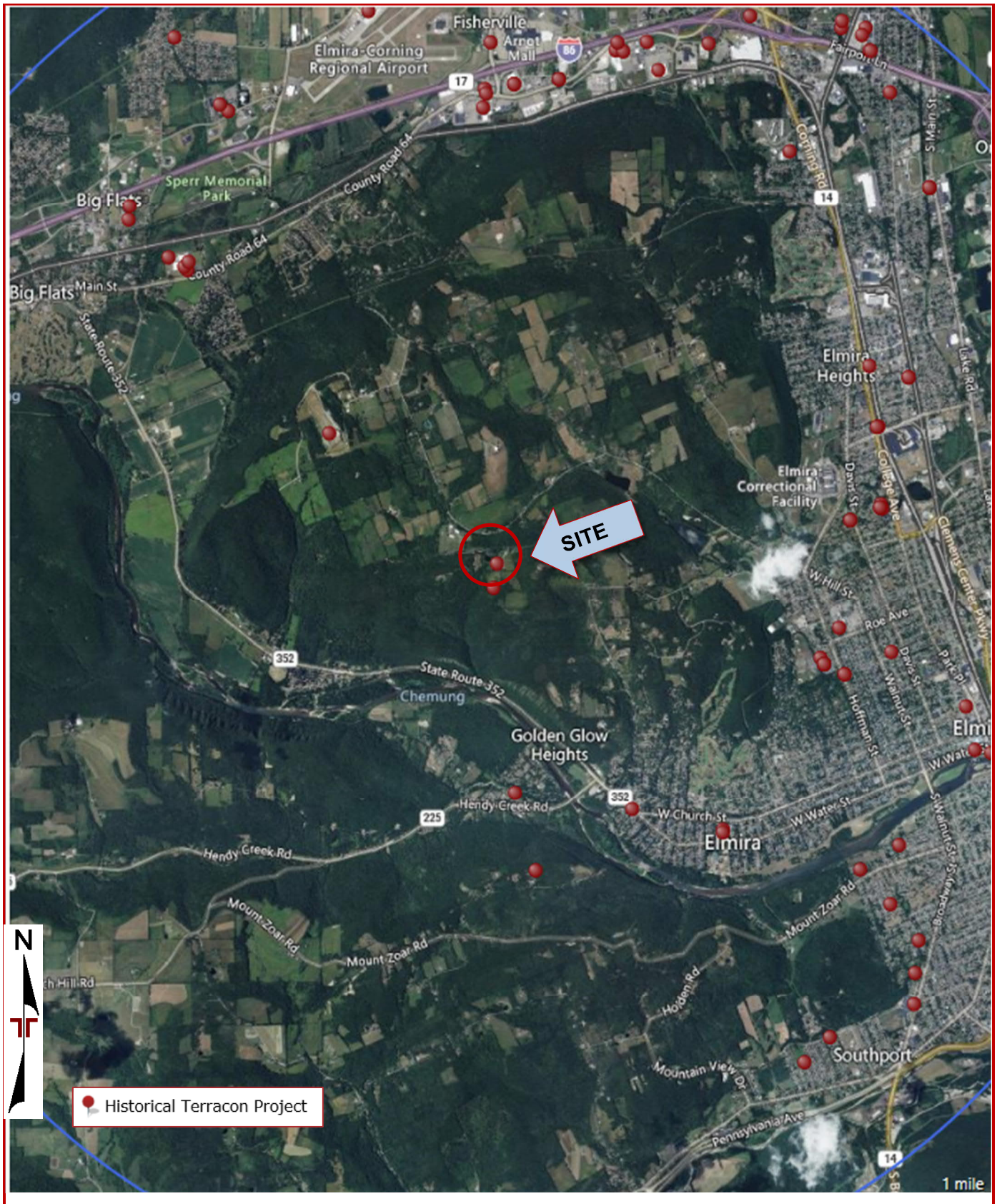


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Exploration Plan

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES MAP PROVIDED BY MICROSOFT BING MAPS

Exploration and Laboratory Results

Contents:

Tanglewood Nature Center
443 Coleman Ave | Elmira, Chemung County, New York
Terracon Project No. J5235110

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Log No. B-1

Location: See Exploration Plan

Latitude: 42.1037° Longitude: -76.8763°

Model Layer	Depth (Ft.)	Elevation: 1488 (Ft.) +/-	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results
1	0.3	**TOPSOIL** 1487.7				
2	2.0	**SANDY SILT (ML)**, trace gravel, brown, hard, contains occasional rock/cobble fragments 1486				3-4-27-15 N=31
		SANDY SILT WITH GRAVEL (ML), brown, had, contains occasional rock/cobble fragments	5			23-27-33-39 N=60
						28-25-30-33 N=55
						21-24-47-50 N=71
		Becomes grayish brown				23-18-50/5"
			10			38-50/2"
	13.0	1475				
		Auger refusal over possible cobbles/boulder or bedrock at 13 Feet				

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
Groundwater not encountered

Drill Rig
DR393

Hammer Type
Automatic

Driller
R. Brown

Logged by

Boring Started
08-01-2023

Boring Completed
08-01-2023

Notes
Elevation Reference: Elevations were interpolated from a USGS topographic base map

Advancement Method
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Tanglewood Nature Center
443 Coleman Ave | Elmira, Chemung County, New York
Terracon Project No. J5235110

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Log No. B-2

Location: See Exploration Plan

Latitude: 42.1041° Longitude: -76.8768°

Model Layer	Graphic Log	Depth (Ft.)	Elevation: 1450 (Ft.) +/-	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results
1		0.5	**TOPSOIL** 1449.5				
2			**SANDY SILT WITH GRAVEL (ML)**, brown, stiff, contains occasional rock/cobble fragments				3-4-10-20 N=14
			Orange and gray mottling observed; becomes hard	5			17-18-19-20 N=37
							18-32-50 N=82
							32-39-50/3"
							18-50/2"
		9.0	1441				
			Auger refusal over possible cobbles/boulder or bedrock at 9 Feet				

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
Groundwater not encountered

Drill Rig
DR393

Hammer Type
Automatic

Driller
R. Brown

Logged by

Boring Started
08-01-2023

Boring Completed
08-01-2023

Notes
Elevation Reference: Elevations were interpolated from a USGS topographic base map

Advancement Method
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Supporting Information

Contents:

Note: All attachments are one page unless noted above.

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

General Notes

Sampling	Water Level	Field Tests
Standard Penetration Test	Water Initially Encountered Water Level After a Specified Period of Time Water Level After a Specified Period of Time Cave In Encountered Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	N Standard Penetration Test Resistance (Blows/Ft.) (HP) Hand Penetrometer (T) Torvane (DCP) Dynamic Cone Penetrometer UC Unconfined Compressive Strength (PID) Photo-Ionization Detector (OVA) Organic Vapor Analyzer

Descriptive Soil Classification

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

Location And Elevation Notes

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

Strength Terms

Relative Density of Coarse-Grained Soils (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		Consistency of Fine-Grained Soils (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Relative Density	**Standard Penetration or N-Value (Blows/Ft.)**	**Consistency**	**Unconfined Compressive Strength Qu (tsf)**	**Standard Penetration or N-Value (Blows/Ft.)**
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	4 - 8
Dense	30 - 50	Stiff	1.00 to 2.00	8 - 15
Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
		Hard	> 4.00	> 30

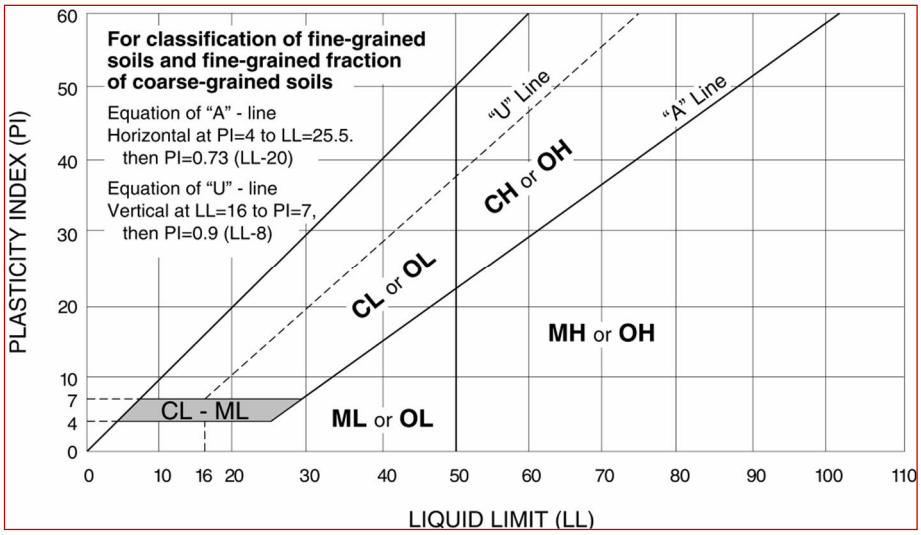
Relevance of Exploration and Laboratory Test Results

Exploration/field results and/or laboratory test data contained within this document are intended for application to the project as described in this document. Use of such exploration/field results and/or laboratory test data should not be used independently of this document.

Unified Soil Classification System

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]				Soil Classification	
				Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 4 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines [C]	Cu≥4 and 1≤Cc≤3 [E]	GW	Well-graded gravel [F]
			Cu<4 and/or [Cc<1 or Cc>3.0] [E]	GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH	GM	Silty gravel [F, G, H]
			Fines classify as CL or CH	GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines [D]	Cu≥6 and 1≤Cc≤3 [E]	SW	Well-graded sand [I]
			Cu<6 and/or [Cc<1 or Cc>3.0] [E]	SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH	SM	Silty sand [G, H, I]
			Fines classify as CL or CH	SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	Silts and Clays: Liquid limit less than 50	Inorganic:	PI > 7 and plots above "A" line [J]	CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]	ML	Silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried}$ < 0.75	OL	Organic clay [K, L, M, N]
					Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	Inorganic:	PI plots on or above "A" line	CH	Fat clay [K, L, M]
			PI plots below "A" line	MH	Elastic silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried}$ < 0.75	OH	Organic clay [K, L, M, P]
					Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.
[E] $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.



APPENDIX L:
INFILTRATION TESTING RESULTS

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FAGAN ENGINEERS & LAND SURVEYORS PC

Engineers Field Test Pit Log

Project Name:	Tanglewood Nature Center	Performed By:	CJH
Township	Elmira	County	Chemung
FE Job #:	2023-071	Weather:	Clear
Date:	2024-07-26	Temperature (°F):	76°
Equipment	1 John Deere Backhoe	Comments:	
Test Pit #	Infiltration Basin Soil Probe 1		No Groundwater Reached

Pit Dimensions:	Length (ft)	4’	Width (ft)	2’	Depth (ft)	3.0’
	Water Depth (ft)	n/a				

Depth (ft)	USCS ------ Classification	Description	Remarks
0’-0” 0’-8”	PT	Brown/Dark Brown, Root Bearing Zone, Coarse, Moist, Small Pockets of Mottling – Grays & Copper in Color	
0’-8” 3’-0”	ML	Light Brown, Fine, Silt, Very Moist, Few Rocks, Mottling Present – Gray & Copper in Color	
 3’-0” 		Extent of Equipment reached at 3’ – Hard Packed Rock Layer Encountered	

FAGAN ENGINEERS & LAND SURVEYORS PC

Engineers Field Test Pit Log

Project Name:	Tanglewood Nature Center	Performed By:	CJH
Township	Elmira	County	Chemung
FE Job #:	2023-071	Weather:	Clear
Date:	2024-07-26	Temperature (°F):	76°
Equipment	1 John Deere Backhoe	Comments:	
Test Pit #	Infiltration Basin Soil Probe 2		No Groundwater Reached

Pit Dimensions:	Length (ft)	4’	Width (ft)	2’	Depth (ft)	3.0’
	Water Depth (ft)	n/a				

Depth (ft)	USCS Classification	Description	Remarks
0’-0”	PT	Brown/Dark Brown & Black, Root Bearing Zone, Coarse, Moist	
1’-0”			
1’-0”	ML	Light Brown, Fine, Silt, Very Moist, Few Rocks, Mottling Present Throughout – Gray & Copper in Color	
3’-0”			
3’-0”		Extent of Equipment reached at 3’ – Hard Packed Layer with Rocks Encountered	Water Encountered in Adjacent Test Hole at a depth of approximately 3’

APPENDIX M:
WETLAND AND STREAM DELINEATION SURVEY

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Notes
1) Wetland/Stream delineation flag locations were surveyed using a sub-foot GPS unit.
2) All areas outside of the wetlands/streams delineated within the study area are considered to be upland.
3) Only select wetland/stream flag locations are labeled.
4) All wetland/stream boundaries and jurisdictions are subject to verification by USACE.

Coleman Ave
Wetland 4 PEM
Wetland 5 PuB
Wetland 4 PuB
Culvert
WET4-A
UPL4-A
Stream 3 Intermitttent
Wetland 3 PEM
Ditch 2 Ephemeral
UPL3-A
WET3-A
Culvert
Ditch 1 Ephemeral
Culverts
WET2-A
Stream 2 Ephemeral
Wetland 1 PEM
UPL-1A
UPL2-A
WET1-A
Culverts
Wetland 2 PuB
Stream 1 Ephemeral
UPV-1
Hawley Rd
LnB
LnC
LnD
LoE
LoF
ArB
ChB
ChC
VoB
VoC
VoD
TuB

Wetland-ID	Cowardin Classification	Approximate Area Within Study Area (acres)	Jurisdiction
Wetland 1	PEM	0.42	Potentially Non-Jurisdictional
Wetland 2	PuB	0.2	
Wetland 3	PEM	1.34	USACE
Wetland 4	PEM	0.86	
	PuB	1.24	
Wetland 5	PuB	0.02	Potentially Non-Jurisdictional

Stream Name	Classification	NYSDEC Waterbody Classification	Approximate Stream Length Within Study Area (lf)	Jurisdiction
Stream 1	Ephemeral	Unclassified	150	Potentially Non-Jurisdictional
Stream 2	Ephemeral	Unclassified	270	
Stream 3	Intermittent	Unclassified	450	USACE
Ditch 1	Ephemeral	Unclassified	130	Potentially Non-Jurisdictional
Ditch 2	Ephemeral	Unclassified	80	

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Tanglewood Nature Center

Wetland and Stream Delineation

ADA Parking and Trail
443 Coleman Avenue
Elmira, NY

N

0 100 200 Feet
1 inch = 200 feet

Legend
- Study
- Data Point Location
- Wetland/Stream Flag Location
- Culvert
- Emergent Wetland (PEM)
- Open Water (PuB)
- Intermittent Stream
- Ephemeral Stream/Ditch
- Culvert
- Approximate Offsite Wetland/Stream Boundary
- Stream Flow Direction
- Road
- Soil

Sources:
1. Study Area: Created by LaBella using information provided by the client.
2. Basemap: NYS Orthoimagery, 2021.
3. Mapped soil data were obtained from the NRCS online Soil Data (soildatamart.nrcs.usda.gov).

Wetland and Stream Delineation Survey

FIGURE 1

LaBella Project No: 2233035
Date: August 2024

Creator: AF Reviewer: LD
Path: B:\GLOBAL\Projects\Tanglewood Nature Center\2233035 - ADA Parking and Trail\06_Drawings\Environmental\Tanglewood Figure 1- Wetland and Stream Delineation Survey.mxd

APPENDIX N:
TIMBER RATTLESNAKE HABITAT ASSESSMENT REPORT

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TIMBER RATTLESNAKE HABITAT ASSESSMENT REPORT

ADA Parking and Trail Access
Town of Big Flats
Chemung County, New York
LaBella Project No. 2233035

Prepared For: Tanglewood Nature Center
443 Coleman Avenue
Big Flats, New York 14903

Prepared By: LaBella Associates, D.P.C.
4 British American Boulevard
Latham, New York 12110

Date: September 2024

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LIST OF APPENDICES

1.0 INTRODUCTION

LaBella Associates, D.P.C conducted a timber rattlesnake habitat assessment as part of the planning and permitting process for the proposed redevelopment of an existing parking area and the construction of ADA trail access. This habitat assessment is a review of habitat features to determine whether the Study Area has habitat suitable to support timber rattlesnake use and essential behaviors.

1.1 SITE LOCATION

The Study Area consists of an approximate 30.08-acre area located within the tax parcel 87.00-1-34.1 at 443 Coleman Avenue, in the Town of Big Flats, Chemung County, New York. Surrounding land uses include residential development, undeveloped forest, and farm fields. Figure 1 in Appendix A shows the Study Area for the Timber Rattlesnake Habitat Assessment.

1.2 PROPOSED PROJECT

The proposed project will include the development of a parking area and ADA trail access.

1.3 PROJECT-SPECIFIC BACKGROUND

As part of the standard background review, an inquiry was completed through the New York State Department of Environmental Conservation (NYSDEC) Environmental Assessment Form (EAF) Mapper regarding occurrence records within the Study Area. By summary report received September 20, 2024, the EAF Mapper indicated that timber rattlesnakes occur within the vicinity of the Project Site (EAF Mapper Summary Report in Appendix B). This element occurrence (EO) record buffer for timber rattlesnake is shown in orange on the Timber Rattlesnake Habitat Assessment map in Appendix A. The area of this EO record on the Project Site is 30.08 acres. The NYSDEC's Guidelines for Reviewing Projects for Potential Impacts to the Timber Rattlesnakes are included in Appendix C.

1.4 PURPOSE OF REPORT

The purpose of this Timber Rattlesnake Habitat Assessment Report is to determine whether the Project Site has habitat suitable to support timber rattlesnake use and essential behaviors, and if so, to describe the extent and quality of those habitat areas and their relationship to essential behaviors per NYSDEC Guidelines.

The NYSDEC's "Guidelines for Reviewing Projects for Potential Impacts to Timber Rattlesnakes" (NYSDEC 2009) last revised 7/31/2009 states under Impact Assessment Requirements, "*for projects that have been determined to be in close proximity to a known timber rattlesnake den, the project design will need to avoid alteration of suitable habitats and incorporate mitigation measures to prevent impacts to the snakes that would constitute a take under ECL Section 11-0535. Where the landscape will be significantly altered, mitigation is difficult and avoiding impacts may require detailed information about timber rattlesnakes on and around the project site. Therefore, if it has been determined that potential taking could result from the project, the following information may be required to assess the potential project-related impacts on timber rattlesnakes: 1) habitat assessment [identify all suitable hibernacula, transient habitat, and summer range], 2) site usage, and 3) movement between summer and winter habitats.*"

The guidance goes on to state, under "Habitat Assessment," "*due to the species' large home range and multiple habitat requirements, a habitat assessment (PFBC-NDS, 2004) should be conducted to determine the presence of suitable basking, foraging, gestating and denning habitat or potential travel corridors within the project boundaries. Information collected for each area identified as potentially suitable habitat should include, at a minimum, a habitat description and geographic location (i.e., GPS coordinates). Results of the habitat assessment will determine what additional information and/or mitigation may be required…Habitat assessments must be conducted by individuals that have knowledge of timber rattlesnake ecology.*"

This report is intended to address these NYSDEC guidelines relative to habitat assessment for timber rattlesnake.

2.0 TIMBER RATTLESNAKES AND HABITAT USE

Timber rattlesnakes are listed as a threatened species in New York State. The NYSDEC regulates threatened and endangered species under 6 NYCRR Part 182. This species is not federally-listed.

Timber rattlesnakes are found in southeastern New York, the Southern Tier, and the peripheral eastern Adirondacks. They are not located in the higher elevations of the Adirondacks, Catskills and Tug Hill Plateau (NYNHP 2011). Timber rattlesnakes are a non-aggressive snake species that will not pursue or attack a person unless provoked or startled (NYSDEC 2012). According to the NY Natural Heritage Program (NYNHP), there are approximately 205 known extant dens in New York State (NYNHP 2024). Population interactions between the extant dens ranges from 35 to 60 occurrences. Bounties on timber rattlesnakes were outlawed in New York State in 1971. Even with these regulations in place, illegal collecting still occurs as well as indiscriminate killing, which has depleted populations that were once numerous. Other threats to the population include development, mining, road mortality and other forms of disturbance.

Timber rattlesnakes mate in the spring and fall, with males traveling further to seek out females. Females give birth to an average of nine live young every 3 to 5 years during late-August to mid-September. Young are born with venom, hollow fangs and a tiny rattle that is referred to as a "button". The average life span is 16 to 22 years. Females do not reach sexual maturity until 7 to 11 years old. Adults shed their skin every 1 to 8 years. The main food source is small mammals, but occasionally consists of small birds, amphibians and other snakes. Timber rattlesnakes are sit-and-wait predators who position themselves strategically and wait for prey to approach.

According to the NYSDEC, "*timber rattlesnakes are typically associated with steep-slopes and rocky terrain of deciduous or mixed deciduous/coniferous forest. They are, however, known to use and/or move through a wide variety of land types (e.g., wetlands and early successional habitats) during a typical seasonal activity cycle. In areas where movements are not impeded by artificial barriers (e.g., major roads and urban areas) timber rattlesnakes may migrate three miles or more from their den each summer in search of essential summer habitats (e.g., basking and gestating areas), food and mating partners.*" These habitats are necessary to support essential behaviors key to the species' survival.

2.1 DENS AND OVERWINTERING

Timber rattlesnakes overwinter in communal dens with many other species of snakes, including copperheads (*Agkistrodon contortrix*). These dens are typically located on open steep south facing

slopes with rock fissures, underground crevices, or talus surrounded by hardwoods. Timber rattlesnakes are usually in their dens from mid-October through mid-April. Timber rattlesnakes show a high degree of fidelity to the same den, and studies have shown that the Timber rattlesnakes frequently return to the same den each year (CRACM 2012).

2.2 BASKING AND GESTTATING HABITAT

Once they emerge from their dens in mid-April to mid-May, timber rattlesnakes will utilize nearby open basking areas for thermoregulation. Sufficient ground cover by rocks is required within the basking areas is required for gestating females. In the summer, open canopy, rocky areas are used for basking and birthing. In the summer, gravid females prefer open rocky ledges where temperatures are higher, while males and non-gravid females prefer cooler, thicker woods where the forest canopy is more closed.

2.3 SUMMER FORAGING HABITAT

Summer foraging habitat includes woodlands, wetlands, and old field habitats where adequate prey resources, such as rodents, chipmunks, squirrels, and occasionally birds, are located. Often trees with mast crops, such as acorns, necessary to support populations of small mammals is needed for strong foraging habitat. Timber rattlesnakes may use forested areas in rugged terrain located up to three miles or greater from overwintering den sites for foraging and other activities; however, two miles is generally considered to be the maximum distance that most timber rattlesnakes will travel from their den sites.

2.4 MIGRATION CORRIDORS

Timber rattlesnakes may use forested areas in rugged terrain located up to 3 miles or greater from overwintering den sites for foraging and other activities; however, 2 miles is generally considered to be the maximum distance that most timber rattlesnakes will travel from their den sites.

3.0 PROJECT SITE FIELD REVIEWS

3.1 TIMBER RATTLESNAKE HABITAT ASSESSMENT

The Study Area was reviewed for timber rattlesnake habitat on August 12, 2024 by LaBella's Ecological Services Project Manager, David MacDougall, CWB®, PWS, who holds a NYSDEC timber rattlesnake handling license. This included a review, on foot, of the entire Study Area. The following is a discussion of habitat types and their ability to support essential behaviors. Photographs of these habitats are found in Appendix E.

3.1.1 Timber Rattlesnake EO Buffer Polygon

The NYNHP timber rattlesnake EO buffer polygon is shown in orange on the map provided as Appendix A. This polygon covers the entire Study Area and is associated with a known den site and occurrence records 1.5 miles distant. The area of this EO polygon on the Project Site is 30.08 acres. As stated above, during communications with the NYSDEC, the Department staff indicated that occurrence records for this species are considered "occupied habitat."

3.1.2 Potential Denning Habitat

There is no evidence of denning habitat found within the Study Area. Rock talus formations and bedrock with cracks and crevices were not observed within the Study Area. The Study Area could not be used as suitable denning habitat, per the descriptions of such habitat in Section 2.1.

3.1.3 Potential Basking Habitat

LaBella staff found no evidence of basking habitat within the Study Area. The site does not contain open canopy rocky areas that would be suitable for basking.

3.1.4 Potential Foraging Habitat (Forested Habitat)

Suitable foraging habitat was found within the Study Area. Forested areas south of the parking lots could be used as foraging habitat for timber rattlesnakes as they contain red oak, black cherry, and other plant species that would attract rodents and birds.

3.1.5 Migration and Associated Hinderances

There are no significant barriers observed in or around the Study Area that would prevent migration into and out of the Study Area.

4.0 CONCLUSION

The Project Site contains potential foraging and migration habitat. Consultation is required with the NYSDEC to determine avoidance and minimization measures.

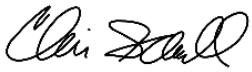
5.0 SIGNATURE OF TIMBER RATTLESNAKE PROFESSIONALS

We appreciate the opportunity to serve your professional environmental needs. If you have any questions, please do not hesitate to contact David MacDougall (CWB®, PWS) at dmacdougall@labellapc.com or 518-266-7326.

Report Prepared By:

David MacDougall, CWB®, PWS
Ecological Services Project Manager

Report Prepared By:



Christopher Schrull
Environmental Scientist

6.0 REFERENCES

Center for Reptile and Amphibian Conservation and Management (CRACM). 2012. Timber Rattlesnake Identification, Status, Ecology, and Conservation in the Midwest. Available from http://herpcenter.ipfw.edu. Accessed June 2024.

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New York State Department of Environmental Conservation (NYSDEC). 2012. Timber Rattlesnake Fact Sheet. Available from http://www.dec.ny.gov/animals/7147.html. Accessed June 2024.

NYSDEC. 2009. Guidelines for Reviewing Projects for Potential Impacts to the Timber Rattlesnake. Revised 7/31/2009: SJJ.

New York Natural Heritage Program (NYNHP). 2024. Online Conservation Guide. Timber Rattlesnake. Crotalus horridus. See https://guides.nynhp.org/timber-rattlesnake. Accessed June 2024.

APPENDIX A

Mapping

Path: B:\GLOBAL\Projects\Tanglewood Nature Center\2233035 - ADA Parking and Trail\06_Drawings\Environmental\Habitat Assessment\Tanglewood Figure 1-USGS Site Location.mxd

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Tanglewood Nature Center

Habitat Assessment

ADA Parking and Trail
443 Coleman Avenue
Elmira, NY

N

0 1,000 2,000 Feet

1 inch = 2,000 feet

Legend

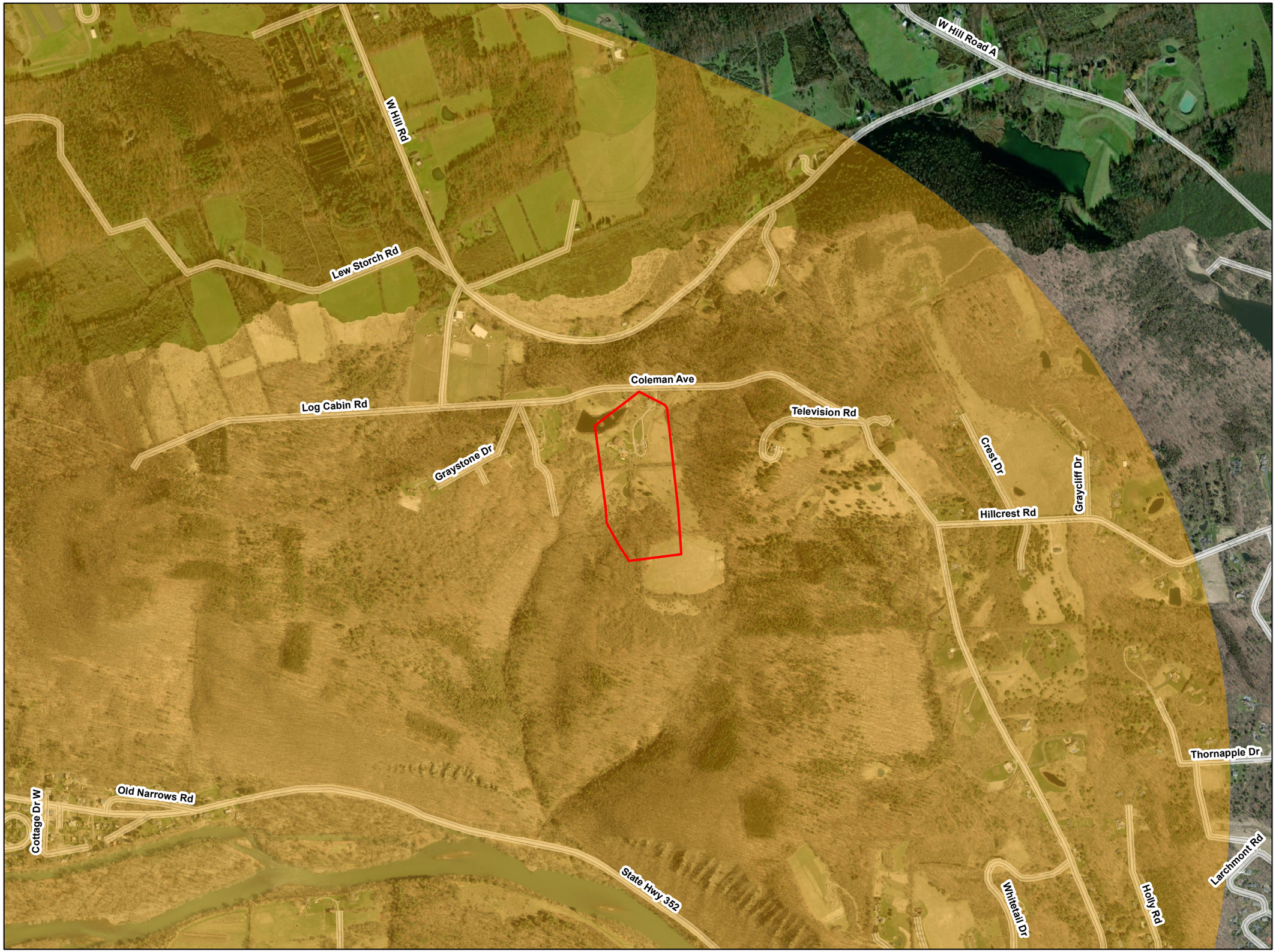
Study Area

Sources:
1. Study Area: Created by LaBella using information provided by the client.
2. Basemap: ESRI USA Topo Map (Updated: 2019) in reference to USGS Topographic Seeley Creek (1953) and Elmira (1953) Quadrangle.

USGS Site Location

FIGURE 1

LaBella Project No: 2233035
Date: August 2024



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Path: B:\GLOBAL\Projects\Tanglewood Nature Center\2233035 - ADA Parking and Trail\06_Drawings\Environmental\Habitat Assessment\Tanglewood Figure 2 - Habitat Overview.mxd

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Tanglewood Nature Center

Habitat Assessment

ADA Parking and Trail
443 Coleman Avenue
Elmira, NY

N

0 500 1,000 Feet

1 inch = 1,000 feet

Legend

- Study Area
- Approximate Element Occurence (EO) Buffer Polygon
- Road

Sources:
1. Study Area: Created by LaBella using information provided by the client.
2. Basemap: Esri, HERE, Garmin, (c) OpenStreetMap contributors, 2022 & 2023.

Habitat Overview

FIGURE 2

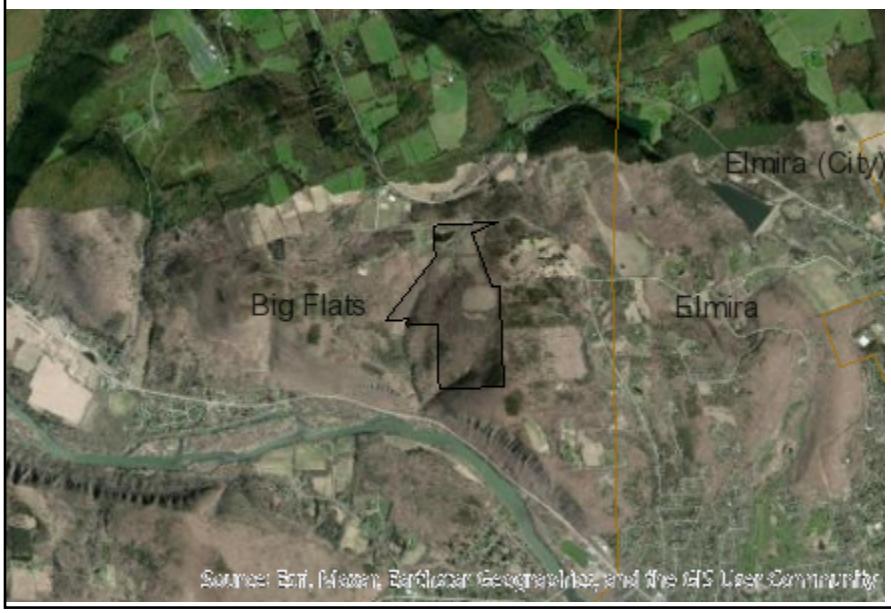
LaBella Project No: 2233035
Date: September 2024

APPENDIX B

Correspondence

EAF Mapper Summary Report

Friday, September 20, 2024 10:10 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	NYS Major Basins:Upper Susquehanna
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Stream Name]	811-30
E.2.h.iv [Surface Water Features - Stream Classification]	C
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.

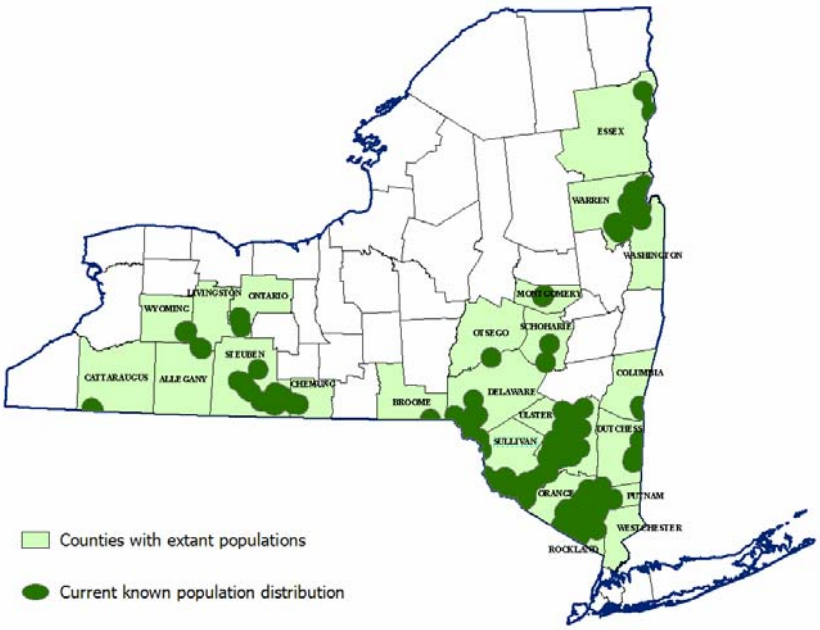
E.2.j. [100 Year Floodplain]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.2.k. [500 Year Floodplain]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.2.l. [Aquifers]	Yes
E.2.l. [Aquifer Names]	Principal Aquifer
E.2.n. [Natural Communities]	Yes
E.2.n.i [Natural Communities - Name]	Shale Talus Slope Woodland
E.2.n.i [Natural Communities - Acres]	34.12
E.2.o. [Endangered or Threatened Species]	Yes
E.2.o. [Endangered or Threatened Species - Name]	Nodding Onion, Green Floater, Timber Rattlesnake
E.2.p. [Rare Plants or Animals]	No
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

APPENDIX C

NYSDEC's Guidelines for Reviewing Projects for Potential Impacts to the Timber Rattlesnakes

Guidelines for Reviewing Projects for Potential Impacts to the Timber Rattlesnake

The timber rattlesnake (*Crotalus horridus*) is listed as a *threatened* species in New York and is protected by Environmental Conservation Law (ECL) section 11-0535 and the New York Code of Rules and Regulations (6 NYCRR Part 182). A permit is required for any proposed project that may result in a "take", which includes, but is not limited to, adverse modification, degradation or destruction of occupied habitat of any species listed as endangered or threatened pursuant to the above laws and regulations. In New York, timber rattlesnakes are typically associated with steep-slopes and rocky terrain of deciduous or mixed deciduous/coniferous forest. They are, however, known to use and/or move through a wide variety of land types (e.g. wetlands and early successional habitats) during a typical seasonal activity cycle. In areas where movement is not impeded by artificial barriers (e.g. major roads and urban areas) timber rattlesnakes may migrate three miles or more from their den each summer in search of essential summer habitats (e.g. basking and gestating areas), food, and mating partners. Human-rattlesnake interactions are most likely to occur during the summer and early autumn when movement rates peak and snakes are typically at their maximum distance from the den; in some locations, migration routes may require snakes to pass through residential developments or other areas of intensive land use. Where multiple den sites are clustered in relatively close proximity, areas of potential range overlap between snakes from different dens may be particularly important locations for continued gene flow. Thus, avoiding fragmentation of these areas of genetic exchange is critical for the long-term viability of a local population.



Timber rattlesnake distribution in New York State

Impact Assessment Requirements

For projects that have been determined to be in close proximity to a known timber rattlesnake den, the project design will need to avoid alteration of suitable habitats and incorporate mitigation measures to prevent impacts to the snakes that would constitute a take under ECL Section 11-0535. Where the landscape will be significantly altered, mitigation is difficult and avoiding impacts may require detailed information about timber rattlesnakes on and around the project site. Therefore, if it has been determined that a potential taking could result from the project, the following information may be required to assess the potential project-related impacts on timber rattlesnakes: 1) habitat assessment [identify all suitable hibernacula, transient habitat, and summer range, 2) site usage, and 3) movement between summer and winter habitats.

Habitat Assessment

Due to the species' large home range and multiple habitat requirements a habitat assessment (PFBC-NDS, 2004) should be conducted to determine the presence of suitable basking, foraging, gestating and denning habitat or potential travel corridors within the project boundaries. Information collected for each area identified as potentially suitable habitat should include, at minimum, a habitat description and geographic location (i.e. GPS coordinates). Results of the habitat assessment will determine what additional information and/or mitigation may be required. Locations identified as potential habitat will also be used as the primary focus areas of presence-absence surveys, if necessary. Habitat assessments must be conducted by individuals that have knowledge of timber rattlesnake ecology.

Population Surveys

If the project site contains suitable habitat(s), it may be assumed rattlesnakes utilize the site during some stage of their annual cycle and the potential impacts to the species and their habitats should be assessed and mitigation measures (see Mitigation Recommendations) should be incorporated into the project design. If any of the above habitat elements occur on or in close proximity to the project site ***AND*** usage of the site by timber rattlesnakes will not be assumed, then surveys to detect the presence (e.g. den emergence, basking and gestating habitat searches) and site usage/snake movement (e.g. radio telemetry) should be conducted.

Population surveys (Casper *et al.* 2001) must be conducted during the time when timber rattlesnakes are not hibernating and can be expected to be active. To ensure accurate results, surveys should only be conducted between April 15th and October 31st on days when the air temperatures is 66^{o} F or greater ***AND*** there is no appreciable precipitation.

To adequately assess the site for the presence (or probable absence) of timber rattlesnakes, each location identified as suitable basking, gestating, or denning habitat or as a potential travel corridor should be visited at least four (4) times within the survey period, and visits to each suitable habitat location should be separated by seven (7) or more days.

Survey to detect the presence of timber rattlesnakes at potential den habitats are confined to the beginning and end of the active season when snakes are most likely to be detected at or near den sites. Thus, two (2) visits per potential den should occur post den emergence between April 15th and May 15th, and an additional two (2) visits per potential den should occur between September 15th and October 25th when the snakes are congregating around dens prior to den ingress for winter hibernation.

The collection of site usage and snake movement data may require telemetric monitoring (via external and/or internal radio transmitters) to record the location and behavior of a representative sample of snakes throughout their annual cycle. In order to assess movement patterns, or to be reasonably certain that rattlesnakes do not use specific areas of a proposed project site, up to three field seasons of data collection may be required (a minimum of two full activity cycles of data are recommended). Contingent upon the data collection requirements of the project, a detailed scope of work should be developed by the project sponsor (in consultation with Department staff) and approved by the Department prior to the initiation of any field work.

All timber rattlesnake population surveys should be conducted by individuals that have knowledge of the species' ecology, and surveys that may involve handling snakes (e.g. marking, radio telemetry) must be conducted by individuals that have experience with such techniques and are licensed by New York State to handle timber rattlesnakes.

Threats

- Loss and/or degradation of habitat - residential and commercial development and mining operations eliminate available habitat and may degrade that which is not destroyed (e.g. stormwater runoff, use of residential chemicals).

- Persecution and illegal collection - increased human activity in timber rattlesnake habitats increases the potential for snake mortality from intentional killing of snakes by humans. A higher rate of illegal collection (effective mortality) for the pet trade is also often a result of increased human presence near timber rattlesnake populations.

- Fragmentation and road mortality - the species' large home range and a high degree of site fidelity result in timber rattlesnakes typically following the same route each year during long-distance migrations between habitats. Thus, any newly-constructed road that intersects a snake's traditional travel route will become either an impassable barrier to migration or an annual road-mortality hazard.

Mitigation Recommendations

The following is a list of potential mitigation methods that may be used to avoid or minimize certain project-related impacts; however, not all methods are appropriate for all projects.

- Seasonal restrictions

  All allowable disturbance activities, including movement of construction vehicles, excavation, and alteration of vegetation, should be conducted during the period when the snakes would be expected to be hibernating and are less likely to be directly impacted by above-ground disturbances. The acceptable work period is November 1st through March 31st.

  Habitat management (including timber harvesting) and trail maintenance activities should also be timed to minimize the potential for injury/death of snakes. Habitats that are actively managed (e.g. mowing and prescribed burning) and trailsides that are cleared using a brush hog may increase mortality as snakes are killed by machinery or incinerated by fire (Means and Campbell, 1982b)

  In addition to the seasonal restrictions applied to vegetation management practices, disturbance to non-transient habitats should be avoided at ***ALL*** times. Roads, skid trails and landings should be kept at least 330 feet from all known or potentially suitable basking and gestating habitats, and to minimize the potential for collapse or disturbance of dens, heavy equipment and site preparation work (e.g. disk-harrowing, shearing, root-raking) should be prohibited within 660 feet of any known hibernacula.

- Timber rattlesnake monitor

  If any project-related work is to occur (in whole or in part) during April 1st through October 31st, the project sponsor should retain the services of a snake monitor. The snake monitor must be a qualified biologist that has knowledge of timber rattlesnake ecology and relocation procedures. The monitor must also have experience handling rattlesnakes and be licensed by New York State to do so.

  The snake monitor should be on site during all construction activities and would be responsible for: 1) conducting reconnaissance surveys for timber rattlesnakes within the work area prior to the initiation of any disturbance activities, and 2) relocating snakes as required.

- Temporary barrier

When disturbance is likely to occur from actions occurring outside of the acceptable work periods, a temporary restrictive (Stechert, 2001) barrier may help to avoid impacts if installed around the perimeter of the disturbance footprint of small projects (< 1 acre). The barrier should be: 1) installed before the end of the acceptable work period and maintained until the end of the construction phase of the project or until the beginning of the next acceptable work period, whichever occurs first, 2) inspected daily and, if necessary, repaired immediately to a fully functional condition*, and 3) constructed in accordance with the following design specifications:

- made of ¼ inch square hardware cloth or wire mesh
- a minimum of 48" high
- anchored into the ground with reinforcement bars placed on the "disturbance side" of the barrier and spaced between 6 – 8 feet apart.
- secured at the base (barrier/ground interface) with at least 6" of fence material covered with soil backfill

* The effectiveness of the barrier will be diminished and snakes may be able to gain access to the disturbance area if debris (e.g. tree limbs, soil) is allowed to overtop or pile up along side of the barrier.

- Education

Persecution by humans is a significant source of timber rattlesnake mortality and is thought to be a major contributing factor to the population declines experienced by the species over the past 100 years. Misconceptions about the actual versus perceived threat posed by timber rattlesnakes often leads to the snakes being injured or killed by humans who, when encountering a timber rattlesnake, are fearful of being attacked. Prospective residents in subdivisions located near known den sites should be provided with educational materials that help identify timber rattlesnakes and accurately describe the snakes' non-aggressive behavior. Educational materials should also include information about the Department's nuisance rattlesnake relocation program. The subdivision's prospectus could also be required to disclose the potential for the presence of timber rattlesnakes on the property. Homeowners and local law enforcement agencies should be provided with phone numbers of nuisance rattlesnake responders in the area.

- Habitat creation/enhancement

In some locations, natural succession may cause shading-over of hibernacula or essential summer habitats. Such habitat suitability changes, particularly that of gestating and birthing areas, can decrease the long-term viability of the location's timber rattlesnake population. Vegetation thinning to reclaim the site or the establishment of open stone piles to create escape cover and basking areas may mitigate some of habitat lost to successional changes. In such cases, the development of a site management plan, along with a long-term commitment by the landowner, may more than offset the loss of non-essential habitat resulting from project-related actions.

- Herp tunnel

Where roads and highways separate summer and winter habitats, it may be possible to maintain migration corridors via herp tunnels.

References

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Casper et al. 2001. *Recommended Standard Survey Protocol For the Eastern Massasauga, Sistrurus catenatus catenatus*. Unpublished.

Means, D. Bruce and Howard W. Campbell. 1982b. Effects of prescribed burning on amphibians and reptiles. Pages 89-97 *in* G. W. Wood, editor. Prescribed fire and wildlife in Southern forests. Proceedings of a symposium. Belle W. Baruch Forest Science Institute, Clemson University, Clemson, South Carolina, USA.

PFBC-NDS. 2004. Pennsylvania Fish and Boat Commission Natural Diversity Section Timber Rattlesnake Presence-Absence Survey Guidelines (Form-06, revised 3/9/04).

Stechert, R. 2001. Effectiveness of an experimental timber rattlesnake (*Crotalus horridus*) exclusion fence at Schunemunk Mountain, Town of Woodbury, Orange County, New York. Report to the Eastern Chapter of the New York Natural Conservancy and the New York State Department of Environmental Conservation. 23p.

Related Resources and Links

New York Natural Heritage Program

New York Natural Heritage Program. 2008. Online Conservation Guide for *Crotalus horridus*. Available from: http://www.acris.nynhp.org/guide.php?id=7536

NatureServe Explorer

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer

NYSDEC

New York State Department of Environmental Conservation, Division of Fish, Wildlife and Marine Resources. 2006. Timber Rattlesnake Fact Sheet. http://www.dec.ny.gov/animals/7147.html

APPENDIX D

Photographs of the Study Area

Timber Rattlesnake Habitat Assessment Photos – Tanglewood Nature Center

Big Flats, Chemung County, New York – August 12, 2024

Successional field.

Forested area would be suitable foraging habitat

Successional forest.

Successional field.

Timber Rattlesnake Habitat Assessment Photos – Tanglewood Nature Center

Big Flats, Chemung County, New York – August 12, 2024

Existing pathway through forested area.

Northern deciduous forest.

Successional field.

Existing pathway through shrubs.