Hudson Valley Community College Track Facility and Practice Field

Stormwater Pollution Prevention Plan

Prepared for:
Hudson Valley Community College
80 Vandenburgh Ave
Troy, NY 12180

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CHA Project Number: 30181

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Project Information:

Project Name and Location

Hudson Valley Community College
80 Vandenburgh Ave
Troy, New York 12180

Owner Name and Address

Hudson Valley Community College
80 Vandenburgh Ave
Troy, New York 12180

Project Description:

Purpose and Extent of Proposed Development

The proposed project will offer construction of new synthetic turf athletic field and track in place of an existing first athletic field and improvements to the existing second athletic field on the Hudson Valley Community College (HVCC) campus at 80 Vanderburgh Avenue in Troy, New York. The project site is located southeast of the Joseph L. Bruno Stadium as shown on the Site Location Map, Figure 1, in Appendix A. The site encompasses 7.6-acres and is bordered by asphalt parking lots on the west and south, tennis courts to the north, and a wooded area to the east. Williams Hall is also located south of the site. The site consists of grass soccer and football fields with bleachers. The ground surface elevation within the athletic fields is generally level and ranges from El. 305 feet to El. 306 feet; however, surface elevations within the parking lot on the west side of the site are around El. 299 feet. East of the existing soccer field, the site slopes upward into the woods at a 2 horizontal to 1 vertical (2H:1V) to 2.5H:1V slope. Subsurface utilities are present within the fields and surrounding areas. Photos of the site and subsurface explorations are included in Appendix B.

The proposed project will include construction of new synthetic turf athletic fields, a track, and ancillary structures. The structures will include new bleachers and an elevated press box, a combined restroom and concession facility, storage facilities, and high mast lighting. Column loading associated with the proposed structures was unknown at the time of this exploration. Four high mast light posts are currently proposed surrounding the eastern field and track which will become the primary athletic field. The western field will be used as a practice field. Grading for the construction of the track around the eastern field will require a retaining wall at the southeast corner of the site. There will be an approximately 7-foot cut into the existing slope at this location. At the northwest end of the site, a filling on the order of 5 feet will require a retaining wall to tie in the proposed grades.

The project will be designed in accordance with the criteria presented in the New York State Stormwater Management Design Manual (January 2015) and the State Pollutant Discharge Elimination System (SPDES) General Permit for Construction Activities (GP-0-15-002). Hudson Valley Community College is a Municipal Separate Storm Sewer System (MS4) community and requires a full Stormwater Pollution Prevention Plan (SWPPP) to be prepared for all non-residential land development activities disturbing 1.0 acre or more. This project will be designed the criteria presented in the New York State Stormwater Management Design Manual (January 2015), the State Pollutant Discharge Elimination System (SPDES) General Permit for Construction Activities (GP-0-15-002), and the New York State Standards and Specifications for Erosion and Sediment

Control (August 2005) and in accordance with the Hudson Valley Community College's Stormwater Management Regulations, This SWPPP covers the project construction, and is scheduled to proceed from approximately September 2015 until December 2017.

Project Description

The nature of this construction project is checked below:	
	New construction with proposed standard SMPs, Green Infrastructures, and ESC measures.
	Redevelopment with increase in impervious areas with proposed standard SMPs and ESC measures. Green Infrastructures are encouraged, but not required for redevelopment projects.
X	Redevelopment with no increase in impervious areas with proposed ESC measures only and no SMPs.
	Other -

Project Disturbance Area

Site Area:	7.6± acres
Total Disturbed Area:	7.6± acres
Existing Total Impervious Area:	2.0± acres
Proposed Total Impervious Area:	2.0± acres

Description and Limitations of On-Site Soils

A subsurface investigation was conducted on the project site in June 2015 by CHA which included five (5) test borings to depths ranging from 12 to 29 feet. One (1) infiltration test was performed at a depth of 4 feet below the ground surface. The Geotechnical Report is included in Appendix B of this SWPPP. Based on the boring logs, the seasonal ground water table was found between depths of 18.0 feet to 22.0 feet under the fields and ±14.0 feet under the parking lot on the west side of the site. The results of the one infiltration test at the north end of the eastern recreation field at Boring B-3 was found to be 0.4 to 0.5 inches per hour. (see Geotechnical Report Appendix B). The slower rates are likely due to the differing composition in the natural soil layers, compaction and prior disturbance at past development of the existing fields. However under ideal undisturbed rates, these soil types yield rates potentially 2 to 6 inches per hour. Due to the predominant presence of deep layers of underlying loamy sand / sandy gravel soils (70 to 90%) and low concentrations of clay or silt type soils layers (8 to 15%) at the location of the proposed ground recharging locations, infiltration practices are considered feasible and will be utilized within the stormwater design. Groundwater problems are not anticipated.

The soil disturbance for the proposed work is limited to 7.6± acres which includes topsoil stripping and removal of existing pavement. Based on a review of the USDA Soil Survey for Rensselaer County, New York, the soil disturbance for the proposed work is limited to Riverhead fine sandy loam (RkB) The Riverhead fine sandy loam is a very deep and well-drained soil with depths to the water table of greater than 80 inches below the ground surface (see Figure 2 – USDA Soils Classification). A summary of the soil composition is shown in Table 1.

The Riverhead soil is listed in Hydrologic Soil Group (HSG) “A”. Based on the K value (0.20) published for the soil, all horizons exhibit a low potential for erosion

Permeability rate of the soils on site is 1.95-5.95 inches/hour throughout the horizons. Due to the high permeability rate of the exposed subsoil during grading operations, surface wetness and high rates of runoff are not anticipated following a significant rainfall event. Groundwater problems are not anticipated.

Table 1 - Soil Analysis Summary

Soil Name	Hydrologic Soil Group
RkB – Riverhead fine sandy loam, 3-8% slopes	A

The Natural Resource Conservation Service (NRCS, formerly known as the SCS), as part of their soil classification system, assigns each soil series to a Hydrologic Soil Group (HSG). The HSG is a four-letter index intended to indicate the minimum rate of infiltration obtained after prolonged wetting. Additionally, the HSG indicates the relative potential for a soil type to generate runoff. The infiltration rate is the rate at which water enters the soil at the soil surface. Also, the HSG indicates the transmission rate – the rate at which water moves within the soil.

Soil scientists define the four groups as follows:

- HSG ‘A’ (sand, loamy sand, or sandy loam): Soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sands or gravels and have a high rate of water transmission (> than 0.30 inches/hour).
- HSG ‘B’ (silt loam or loam): Soils have moderate infiltration rates when thoroughly wetted, and consist chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to fine texture. These soils have a moderate rate of water transmission (0.15 to 0.30 inches/hour).
- HSG ‘C’ (sandy clay loam): Soils have low infiltration rates when thoroughly wetted and consist 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 (0.05 to 0.15 inches/hour).
- HSG ‘D’ (clay loam, silty clay loam, sandy clay, silty clay, or clay): Soils have high runoff potential. They have very low infiltration rates when thoroughly wetted, and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission (< 0.05 inches/hour).

Historic Places

The proposed project is located within a pre-determined archeological sensitive zone. However, due to extensive prior disturbance due to the previous development at the location of this site, there is a low potential for archeological recovery and no impacts are anticipated, whether stormwater discharge or construction activities, on a property that is listed or eligible for listing on the State or National Register of Historic Places in Rensselaer County, NY. This determination was confirmed based on consulting the NYS SHPO on-line GIS tool provided by The New York State Office of Parks, Recreation and Historic Preservation (OPRHP) online resources.

SHPO was provided with a project description, project location map, site photographs and project cover sheet for their evaluation in correspondence from CHA dated June 05, 2015 to determine the extent of any potential impacts. This area has been physically disturbed more than once. In addition the project area has been previously reviewed by SHPO for the presence of cultural resources as a part of the previous development in 2001. A Phase 1 Cultural Resources Investigation was completed and submitted to SHPO for review for the same location on October 31, 2000 in reference to the 2001 project. On January 19, 2001 SHPO generated a letter indicating a finding of no impact upon cultural resources for that project.

In response to the review of this present project, SHPO issued a letter of “No Impact upon cultural resources in or eligible for inclusion in the State of National Register of Historic Places” dated June 05, 2015. SHPO’s response indicates that no further evaluation of potential historic and archaeologic impacts are required. (see Figure 6 – Historic Preservation Map and SHPO letter in Appendix B).

Sequence of Major Activities:

This SWPPP presents erosion and sediment controls, both temporary and permanent, to assist the operator to proceed in compliance with the requirements with the SPDES General Permit GP-0-15-002 for construction activity and in accordance with the Hudson Valley Community College's Stormwater Management Regulations. To the degree practicable, all temporary erosion and sediment control mitigation measures shall be installed immediately before the associated project areas are disturbed in anticipation of all soil disturbing activities to follow. Based upon NYS DEC regulations, 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 MS4 community.

It is the responsibility of the Contractor to ensure that all soils removed from the project site are spoiled in a manner consistent with all local, state, and federal regulations. Appropriate erosion and sediment controls shall be installed at all spoil sites. Additionally, the Contractor is responsible for coordinating the application for a GP-0-15-002 permit (and development of an associated SWPPP) if disturbance associated with any soil spoils area is greater than 0.4 hectares (1 acre). GP-0-15-002 applications must be signed by the owner of the lands on which soils are spoiled. Disturbances associated with offsite spoil areas do not contribute to the total disturbances associated with onsite activities.

This project will be carried out in two (2) phases as outlined below, while maintaining the amount of concurrently disturbed soil in compliance with the NYS DEC limit.

Project Area– Total Acres (±7.6 acres)

Phase 1 (±4.9 acres)

- Establish work area, contractor staging area, and install stabilized temporary construction entrance.
- Install temporary erosion and sediment control measures as shown on plans.
- Cut track and field area (Eastern field) down to subgrade.
- Install Track inside and outside concrete curbing.
- Install utilities for track and field.
- Install geotextile and panel drains for turf field.
- Install base stone for turf field.
- Install geotextile and base stone for track.
- Install finish stone for turf field.
- Install binder asphalt course for track.
- Install artificial turf in field.
- Install top asphalt course for track.
- Install synthetic track surfacing.
- Construct the proposed storage building and associated parking area and stalls.
- Construct bleacher and bathroom facilities.
- Fine grade remaining disturbed areas.
- Install sod to stabilize remaining areas.

Phase 2 (±2.7 acres)

- Install temporary erosion and sediment control measures as shown on plans.
- Mill cut and remove portion of existing parking lot as shown on plans.

- Remove existing turf surface.
- Install utilities for field (Western field).
- Perform site grading.
- Install curbing at keyed edge of existing parking as shown on layout plans.
- Finalize site grading.
- Install proposed landscaping, topsoil, and seed for final stabilization of all disturbed areas.
- When all disturbed areas have been stabilized, remove all temporary sediment and erosion control measures.
- When all disturbed areas are permanently stabilized, remove all erosion and sediment control measures.

Name of Receiving Waters

Stormwater runoff will drain into an existing Hudson Valley Community College campus closed drainage system, and ultimately outlets into a tributary to Wynants Kill (Class C, Standards C (T)) and then into Wynants Kill (Class C, Standards C).

Controls:

Timing of Controls/Measures

The erosion and sediment control measures shall be constructed prior to clearing or grading of any portion of the project. Where land disturbance is necessary, temporary seeding or mulching must be used on areas which will be exposed for more than 14 days. Permanent stabilization should be performed as soon as possible after completion of grading. After the entire project area is stabilized, the accumulated sediment shall be removed from the project area. Erosion control devices shall remain in place until disturbed areas are permanently stabilized. For projects where soil disturbance is greater than five (5) acres, and construction activity has temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed and/or implemented within seven (7) days from the date the soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the most current version of the technical standard, New York Standards and Specifications for Erosion and Sediment Control.

Erosion and Sediment Controls / Stabilization Practice

Applicable erosion and sediment control measures and details are included in Appendix H.

Temporary Stabilization

Topsoil stockpiles, staging areas and disturbed pervious portions of the project area where construction activity temporarily ceases for at least 14 days shall be stabilized with temporary seed and mulch no later than 14 days from the last construction activity in that area.

Temporary seed shall be ryegrass applied at the rates specified below:

- If seeding in spring, summer or early fall then seed with annual or perennial rye at a rate of 30 lbs. per acre. If area is to remain stabilized over the winter into the following spring use perennial rye only.
- If seeding in late fall or early winter, use certified Aroostook winter rye (cereal rye) at a rate of 90 lbs. per acre.

Any seeding method may be used that will provide uniform application of seed to the area and result in relatively good soil to seed contact. The area must be free of large rocks and debris and seeded within 24 hours of disturbance or scarification of the soil surface will be necessary prior to seeding. Fertilizer or lime is not typically used for temporary plantings.

Mulch shall be applied in conjunction with seeding and applied at the rate of 90 lbs. per 1000 square feet. Mulch shall be reapplied as necessary. Areas of the project area, which are to be paved, shall be temporarily stabilized by applying temporary gravel sub base until pavement can be applied.

Proposed grades which will have slopes 3:1 or steeper shall be stabilized with erosion control fabric.

Sediment control fencing shall be installed around the site where depicted on the attached plan sheets. Prior to commencing any earthwork, a stabilized construction entrance shall be installed as indicated on the attached plans. This entrance shall be utilized as the exclusive construction entrance and exit to the construction areas. Construction traffic shall be limited to the construction entrance.

Permanent Stabilization

Disturbed portions of the project area where construction activities permanently cease shall be stabilized with permanent seed no later than 14 days after the last construction activity. The permanent seed mix shall be in accordance with the project specifications and plans. Construction and maintenance of erosion and siltation control measures are in accordance with the New York Standards and Specifications for Erosion and Sediment Control.

Where construction activity is complete over areas to be permanently vegetated, stabilize with permanent seeding. Verify seeding dates with engineer. If engineer determines that seed cannot be applied due to climate, topsoil shall not be spread and mulching shall be applied to the exposed surface to stabilize soils until the next recommended seeding period. Other project areas shall be permanently stabilized with pavement, concrete, gravel or building structures.

Winter Operations

If construction activities proceed through the winter season, access points should be enlarged and stabilized to provide for snow stockpiling. Drainage structures should be kept open and free of potential snow and ice dams. Inspection and maintenance are necessary to ensure the function of these practices during runoff events. For sites where construction activities temporarily cease, temporary and/or permanent soil stabilization measures shall be installed within seven (7) days from the date the soil disturbing activity ceased. Disturbed areas should be stabilized with seed and mulch, or other approved methods, even if the ground is covered by significant amounts of snow.

Winter Shutdown

Site inspections (by the qualified inspector) may be decreased to a minimum of one (1) time every thirty (30) days for sites where soil disturbing activities have ceased and at least 100% of the site has been stabilized by an approved method. Inlet protection should be installed and/or repaired before shutdown of the site. The owner or operator shall provide written notification to the respective City office prior to reducing the frequency of any site inspections.

Other Controls

Waste Disposal

Waste materials – Foreign waste materials shall be collected and stored in a secured area until removal and disposal by a licensed solid waste management company. All trash and construction debris from the project area shall be disposed of in a portable container unit. No foreign waste materials shall be buried within the project area. All personnel shall be instructed regarding the correct procedure for waste disposal. Notices stating these practices shall be posted in the project trailer and the individual who manages day-to-day project operations will be responsible for seeing that these procedures are followed.

Petroleum Impacted Waste – During the excavation activities, there is the potential that petroleum impacted soils may be encountered. In the event that field evidence of contamination is identified during the project, potentially contaminated soils will be segregated and stockpiled on polyethylene sheeting and covered in a predetermined staging area. The potentially impacted, stockpiled soils will then be sampled to determine if the soils are suitable for use as clean backfill. In the event that the soils are not suitable for re-use, the contaminated soil will be properly characterized and disposed of at an off-site NYSDEC permitted facility. The excavation will then be backfilled with clean, imported fill.

Hazardous Waste - All hazardous waste materials shall be disposed of in a manner specified by local or state regulations or by the manufacturer. Project personnel shall be instructed in these practices and the individual who manages day-to-day project operations shall be responsible for seeing that these practices are followed.

Sanitary Waste - Any sanitary waste from portable units shall be collected from the portable units by a licensed sanitary waste management contractor, as required by NYS DEC regulations.

Sediment Tracking by Vehicles

A stabilized construction entrance shall be installed (where depicted on attached plan) and maintained as necessary to help reduce vehicular tracking of sediment. The entrance shall be cleaned of sediment and redressed when voids in the crushed stone become filled and vehicular tracking of sediment is occurring. Dump trucks hauling materials to and from the construction project area shall be covered with a tarpaulin to reduce dust. Any sediment and debris tracked from work area along project adjacent roadways shall be immediately removed with a street sweeper or equivalent sweeping method.

Non-Stormwater Discharges

Non-stormwater discharges are not expected to exit the project area during construction.

Certification of Compliance with Federal, State, and Local Regulations

The stormwater pollution prevention plan reflects the New York State requirements for stormwater management and erosion and sediment control. To ensure compliance, this plan was prepared in accordance with New York State Standards. There are no other applicable State or Federal requirements for sediment and erosion plans (or permits), or stormwater management plans (or permits).

Post-Construction Stormwater Management

Hydrologic Evaluation

Methodology

The proposed project has been designed in accordance with the New York State Stormwater Management Design Manual (January 2015) and the State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities (GP-0-15-002, January 2015).

In order to evaluate the potential impacts associated with the development of the site, existing and proposed condition hydrographs were generated. The conditions were modeled using the SCS unit hydrograph method using a type II rainfall distribution. Rainfall amounts were referenced from the New York State Stormwater Management Design Manual, January 2015. The 24-hour rainfall amounts for the 1-, 10-, and 100-year design storms in Rensselaer County are 2.3-, 3.8-, and 6.5-inches respectively.

Runoff curve numbers and times of concentration were computed using standard NRCS TR-55 methodology. Additionally, peak stormwater flows and hydrographs for the existing and post-development conditions were computed using the Haestad Method's Pondpack Hydrology Program (Version V8i).

The required WQ_v for the watershed area was computed using the Runoff Frequency Spectrum (RFS) Method, discussed in the New York State Stormwater Management Design Manual.

$$WQ_v = \{(P)(R_v)(A)\} / 12$$

Where:

WQ_v = *water quality volume (acre-feet)*
P = *90 % rainfall event (inches)*
R_v = $0.05 + 0.009 (I)$, *where I is percent impervious cover*
A = *watershed area (acres)*

For Rensselaer County near the Hudson River, 90% of the annual runoff is generated by storms of 1.2 inches of rainfall.

Redevelopment Criteria

Redevelopment of previously developed sites is encouraged from a watershed protection standpoint because it often provides an opportunity to conserve natural resources in less impacted areas by targeting development to areas with existing services and infrastructure. Redevelopment provides an opportunity to correct existing problems and reduce pollutant discharges from previously developed areas that were constructed without effective stormwater pollution controls.

Because the technical standards contained in the New York State Stormwater Management Design Manual were primarily intended for new development projects, compliance with the standards may present a challenge on some redevelopment projects. Therefore, Chapter 9 of the New York State Stormwater Management Design Manual sets forth alternatives for certain redevelopment projects if the following criteria are met:

1) An already impervious area is reconstructed,
   - The project involves redevelopment of previously developed areas.

2) And, there is inadequate space for controlling stormwater runoff from the reconstructed area,
   - The program elements required for the project leave limited area for the treatment of stormwater run-off. The project is located within a unique campus of mixed uses that include research, office/training facilities, and athletic/recreational activities. The uses within the campus require dense development that includes large buildings with vast interior spaces, parking areas, and visitor and spectator accommodations along with athletic fields. The proposed athletic field improvements includes storage, bleachers and parking space that requires specific program elements that increase the development area within a fully utilized existing developed area. The site is constricted directly by the existing campus tennis courts and Joseph L. Bruno Stadium to the north, parking areas to the west and south and a subdivision to the east.

3) Or, the physical constraints of the site do not allow meeting the required elements of the standard practices
   - The site limits consists entirely of expansion and improvements of track and field redevelopment that is bounded by existing development (i.e. surrounding pavements, roadways and buildings, development and slopes produce numerous physical constraints that preclude the implementation of standard treatment practices.

As the proposed project meets the criteria listed above, it will be considered as redevelopment, and the design criteria established in Chapter 9 will be applied to the areas being redeveloped only. Any new areas within the project, had they occurred, would be subject to full water quality and water quantity control measures as outlined in the NYS Stormwater Management Design Manual.

Existing Condition Hydrology

For the purposes of this analysis, the extent of the hydrologic model was limited to those areas impacted by the proposed improvement areas. Based on this evaluation, the contributing watersheds consist of approximately 8.0 acres. For the purposes of the existing condition analysis, three (3) design points consisting of nine (9) contributing sub-areas were defined to characterize the natural drainage pattern of the watershed (See Figure 2-Existing Watershed Map).

Design Point 1 (DP-1) is located at an existing catch basin that is connected to a 54-inch HDPE line via. a 12 HDPE at the northeast corner of the eastern athletic field or at northeast boundary of the site construction limits. Runoff sheets flows from center of both the east and west fields and a portion of the Cogan Hall building and parking to the south where it is collected by a collective network of HDPE and PVC lines that direct discharge east to the 54-inch HDPE line that runs south to north along the east side of the eastern athletic field. The 54-inch HDPE line outfalls to a tributary of Wynants Kill 300 feet to the north after immediately crossing under an access drive bordering north of the limits.

Design Point 2 (DP-2) is located at the northwest corner of the site construction limits at an existing 15” HDPE that runs westward along the north side of the existing parking lot adjacent to the Joseph L. Bruno complex. This 15” line connects to an 18-inch HDPE line via. a catch basin at the northwest corner of the parking lot. Runoff sheets flows northward on the parking lot where it is collected to the 18-inch HDPE line which outfalls to the west into the campus stormsewer collection network which ultimately outfalls to the Wynants Kill tributary at another location downstream.

Design Point 3 (DP-3) is located at the southwest corner of the site construction limits at an existing 12" CMP that runs westward along the south side of the existing parking lot that adjacent to the Joseph L. Bruno complex. Runoff is collected from the Cogan Hall building and associated parking area to the south of the site construction limits. The flow enters the 12" CMP line via a catch basin in the Cogan Hall parking lot. That runs west through the campus system which ultimately outfalls to the Wynants Kill tributary at another location downstream.

Results of the existing condition analyses are shown in Table 2 and detailed computations are included in Appendix C. (See Figure 3 – Existing Conditions Watershed Map).

Table 2 - Existing Condition Analysis Summary

Design Point	Watershed	Area (acres)	T_c (hrs)	Curve Number	Peak Flow Rate (cfs)		
					1-yr	10-yr	100-yr
DP-1	DA-1A	0.95	0.37	47	0.00	0.04	0.84
	DA-1B	1.18	0.42	47	0.00	0.04	0.95
	DA-1C	0.94	0.08	89	1.84	3.85	7.29
	DA-1D	1.11	0.32	51	0.00	0.15	1.52
	DA-1E	0.38	0.23	49	0.00	0.04	0.53
	DA-1F	1.55	0.33	50	0.00	0.16	1.91
	DA-1G	0.47	0.28	50	0.00	0.06	0.65
	Total	**6.59**	**-**	**-**	**1.82**	**3.80**	**10.04**
DP-2	DA-2A	1.59	0.08	86	2.60	5.90	11.72
	Total	**1.59**	**-**	**-**	**2.60**	**5.90**	**11.72**
DP-3	DA-3A	0.67	0.08	97	1.88	3.28	5.63
	Total	**0.67**	**-**	**-**	**1.88**	**3.28**	**5.63**

Proposed Condition Hydrology

The proposed improvements will not increase impervious area but will redistribute the direction of flows to closed stormwater system outfalls from the stormwater network within site construction limits. This redistribution will create the potential for overloading stormwater lines and will require the need for attenuation along with the need for the required stormwater treatment of redeveloped impervious areas according to redevelopment criteria. The existing condition drainage areas have been revised to reflect the new drainage patterns of the proposed watershed with three (3) design points consisting of nine (9) contributing sub-areas (See Figure 4 – Proposed Watershed Map).

The existing condition drainage areas have been revised to reflect the new drainage patterns of the proposed watershed (See Figure 4 – Proposed Conditions Watershed Map).

Design Point 1 (DP-1) is located at an existing catch basin that is connected to a 54-inch HDPE line via. a 12 HDPE at the northeast corner of the proposed track and synthetic turf field. Under proposed conditions, runoff is collected from the synthetic turf field and most of the new west practice field and is directed to the catch basin and 54” HDPE to the east. The track and field runoff is stored in the subbase media, collected via. header pipes and directed to an 10” restrictor pipe outlet at the northeast corner of the field inside of the track. Most of the new west practice field runoff is collected in trench drains and is directed to a 12” HDPE connection to an existing 12” HDPE line running west to east bordering to the north of the track and field. Additional runoff from a portion of the Cogan Hall building and proposed track storage building to the south also is collected to the 54-inch HDPE line. The 54” HDPE line outfalls to a tributary of Wynants Kill 300 feet to the north after immediately crossing under an access drive bordering north of the limits.

Design Point 2 (DP-2) is located at the northwest corner of the site construction limits at an existing 15” HDPE that runs westward along the north side of the existing parking lot adjacent to the Joseph L. Bruno complex. This 15” line connects to an 18-inch HDPE line via. a catch basin at the northwest corner of the parking lot. Runoff sheets westward off of the northwestern quadrant of the new practice field to a small swale bordering the Joe Bruno parking lot where the runoff is directed north to a catch basin connected to the existing 15” HDPE line to the 18-inch HDPE line at the northwest corner of the parking lot. Runoff outfalls to the west into the campus stormsewer collection network which ultimately outfalls to the Wynants Kill tributary at another location downstream.

Design Point 3 (DP-3) is located at the southwest corner of the site construction limits at an existing 12” CMP that runs westward along the south side of the existing parking lot that adjacent to the Joseph L. Bruno complex. Runoff continues to be collected from the Cogan Hall building, associated parking area and perimeter area of the south end of the proposed track. The flow enters the 12” CMP line via a catch basin in the Cogan Hall parking lot. That runs west through the campus system which ultimately outfalls to the Wynants Kill tributary at another location downstream.

Results of the proposed condition analysis are shown in Table 3 below and detailed computations are included in Appendix D.

Table 3 – Proposed Condition Analysis Summary

Design Point	Watershed	Area (acres)	T_c (hrs)	Curve Number	Peak Flow Rate (cfs)		
					1-yr	10-yr	100-yr
DP-1	DA-1A	0.43	0.10	44	0.00	0.01	0.49
	DA-1B	0.33	0.10	42	0.00	0.00	0.29
	DA-1C	0.59	0.08	74	0.38	1.32	3.29
	DA-1D	0.08	0.15	55	0.00	0.04	0.19
	DA-1EG1	0.40	0.27	50	0.00	0.05	0.56
	DA-1EG2	1.72	0.32	60	0.04	0.98	4.04
	DA-1F	3.72	1.24	*98	3.23	5.56	9.52
	Total	**7.27**	**-**	**-**	**3.32**	**6.03**	**11.82**
DP-2	DA-2A	0.98	0.34	50	0.00	0.10	1.20
	Total	**0.98**	**-**	**-**	**0.00**	**0.10**	**1.20**
DP-3	DA-3A	0.61	0.08	90	1.25	2.54	4.75
	Total	**0.61**	**-**	**-**	**1.25**	**2.54**	**4.75**

*Runoff entering synthetic turf subbase storage assumed to be unabstracted and CN value is assigned as an impervious surface.

Post-Development Stormwater Management Practices

Water Quality

Redevelopment projects require water quality volume treatment for 100% of the new and 25% of existing impervious cover if standard stormwater practices are utilized, or 100% of new and 75% of existing impervious cover if alternative stormwater practices are utilized. Required water quality volume is adjusted based on a weighted amount of existing to new impervious cover.

To meet the full stormwater quality (WQv) criteria for the entire project, stormwater devices were used at the site as described below:

Track and Field:

The artificial turf field acts much in the same way as a natural grass surface, except that all of the water filters vertically. Artificial turf fields initially drain vertically through the three layers (rather than the typical horizontal sheet flow on a natural grass field). During the "first flush", stormwater pollutants on the artificial turf fabric/infill (top) layer are carried downward into the stone layer. The vertical drainage rate is at first fairly rapid through the top and middle layers. Then, water drains significantly slower as it travels horizontally through the bottom layer on its way to the panel drains. The stone base layer removes suspended solids through mechanical filtration and by the increased time of concentration which allows some suspended solids to settle. Additionally, a portion of the runoff infiltrates directly into the underlying soils. The underlying soils present onsite are predominantly fine sandy loams in deep layers, thus are suitable for an opportunity for infiltration.

A subsurface perforated header pipe will be responsible for collecting all stormwater on the synthetic turf field via a series of panel drains and routing it towards a control structure. Upstream of the control structure is the perimeter stone filled trench system inside the track which holds the perforated HDPE storm header pipe which is mitigating the entire water quality volume for this site. A 10" restrictor pipe outlet connected to at a cleanout junction has an invert is set ±30" above the stone trench invert or 18 inches above the 12" storm header pipes to store and allow infiltration of the water quality volume for this site. Because of the proposed land use, which is only for sporting events, all water runoff will be "clean" water with very little to no pollutant load entering the stone trench. Therefore, no designated pre-treatment devices shall be required for the artificial turf system. The stone filled trenches that hold the perforated 12" HDPE storm header pipe will further filter the exiting water and act as the pretreatment devices. An infiltration rate of roughly 0.4 - 0.7 in/hr has been determined at one location, (Boring # B-3), at the north end of the track and field. (See the Geotechnical Report Appendix B). Since the underlying layers are predominantly fine sandy loams, groundwater recharge will not be an issue. Stormwater makes its way through the stone trench where water quality is stored and infiltrated behind the 10" HDPE restrictor pipe outlet invert. The remaining overflow is discharged through the 10" HDPE to an existing catch basin at the NE corner of the track which is connected to the 54" HDPE to the east. The 54" HDPE line outfalls to a tributary of Wynants Kill 300 feet to the north after immediately crossing under an access drive bordering north of the limits.

Grass Turf Practice Field: Trench drains will be provided to collected stormwater via sheet flow from the grassy turf along the perimeter of the field and from the bleacher area between the recreation field and track and the practice field.

A summary of the existing WQv volume and total site required WQv volumes are shown in Table 4 below. Detailed computations are included in Appendix F.

Table 4 - Summary of Water Quality Volume – Replaced Impervious Area

Design Point	Drainage Areas	Total Area (ac)	Percent Impervious Cover	Calculated WQv (ac-ft)	Required 25% WQv (ac-ft)	Provided WQv (ac-ft)	Standard Treatment Practices
DP-1	Total Project Limits	7.6	26.3	0.218	0.055	0.155	Subbase Stone Media-Infiltration

The total WQv provided is 0.155 ac ft, which satisfies the required WQv volume (0.055 ac ft). As such, onsite requirements for water quality volume and treatment have been met.

Runoff Reduction Volume

In accordance with the New York State Stormwater Management Design Manual (January 2015) Chapter 9 Redevelopment criteria, although encouraged, meeting the Runoff Reduction Volume (RRv) sizing criteria is not required for redevelopment projects that meet the application criteria in Section 9.2.1 B.II (page 9-4). As such, no Green Infrastructure practices are proposed.

Peak Flow Attenuation

Based on a comparison between the existing conditions and the unmitigated proposed peak flow rates, the proposed development will not increase peak flow rates at design points DP-1, DP-2 and DP-3. The existing impervious areas have been replaced and the net impervious area is not increased. Hence, further peak flow attenuation is not required.

A summary of the existing conditions and mitigated post-development peak flow comparison is shown in Table 5, and detailed computations are included in Appendix E.

Table 5 – Existing Condition & Mitigated Post-Development Peak Flow Comparison

Design Point	Peak Flow Rate (cfs)								
	1-Year Storm			10-Year Storm			100-Year Storm		
	Exist (cfs)	Mitigated (cfs)	Δ (cfs)	Exist (cfs)	Mitigated (cfs)	Δ (cfs)	Exist (cfs)	Mitigated (cfs)	Δ (cfs)
DP-1	1.82	1.58	*-0.24*	3.80	2.32	*-1.48*	10.04	8.21	*-1.83*
DP-2	2.60	0.00	*-2.60*	5.90	0.10	*-5.80*	11.72	1.20	*-10.52*
DP-3	1.88	1.25	*-0.63*	3.28	2.54	*-0.74*	5.63	4.75	*-0.88*

Floodplains

Based on a review of the FEMA Flood Insurance Rate Map for the Town of North Green Bush, NY (dated June 18, 1980), the Hudson Valley Community College Campus is not located in the 100-year floodplain (see Figure 6- FEMA FIRM map in Appendix A).

Maintenance/Inspection Procedures:

Erosion and Sediment Control Inspection and Maintenance Practices

These are the minimum required inspection and maintenance practices that shall be used to maintain erosion and sediment controls:

Owner/Operator Inspection Requirements-

- Prior to construction activity the owner/operator shall have contractors and sub-contractors identify a trained individual responsible for the implementation of the SWPPP. The trained individual must be on-site on a daily basis when soil disturbing activities are occurring.
- The owner/operator shall inspect the erosion and sediment control measures as identified in the SWPPP to ensure that they are being maintained in effective operating conditions at all times. Where soil disturbing activities temporarily cease (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the owner/operator can reduce frequency of inspections, but shall maintain a minimum of monthly inspections, and after significant rain storms and snow thaws. The owner/operator shall resume inspections when soil disturbing activities begin again.
- Where soil disturbing activities have ceased with partial project completion, the owner/operator can stop conducting inspections when disturbed areas have reached final stabilization. The qualified inspector shall coordinate and obtain approval from the Owner and Engineer that final stabilization has been achieved. All post construction stormwater management practices required for the completed areas shall have been constructed in conformance with the SWPPP and be fully operational. 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.
- The owner/operator shall notify the City’s stormwater officer prior to any reduction in the frequency of site inspections.

Qualified Inspector Inspection Requirements

- The qualified inspector is defined as 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), licensed Landscape Architect, or other Department endorsed individual(s). It may also mean someone working under the direct supervision of the licensed Professional Engineer or licensed 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 the person has received four (4) hours of training endorsed by the Department and shall receive four (4) hours of training every three (3) years after the initial training.
- A site inspection shall be conducted at least once every seven (7) days by the qualified inspector when soil disturbing activities are occurring. A copy of the “Construction Duration Inspection Form” is included in the Appendix I section of this plan.
- All measures shall be maintained in good working order; if any repairs or corrective actions are necessary, it is the responsibility of the qualified inspector to notify the owner/operator and appropriate contractor within one business day. The contactor shall begin implementing the corrective action within one business day of being notified.

- All inspection forms must be signed by a qualified inspector, and kept on-site along with a copy of the SWPPP.
- For construction sites where soil disturbing activities are temporarily suspended, temporary stabilization measures shall be applied and the qualified inspector shall conduct a site inspection at least once every thirty (30) calendar days.
- Where soil disturbing activities have ceased with partial project completion the qualified inspector can stop conducting inspections when disturbed areas have reached final stabilization and all post construction stormwater management practices required for the completed areas have been constructed in conformance with the SWPPP and are fully operational.
- Where soil disturbing activities are not resumed within two (2) years, from the date of shut down of partial project completion, the qualified inspector shall perform a final inspection and certify that all disturbed areas have achieved final stabilization, all temporary and permanent erosion control measures have been removed, and post-construction stormwater management practices have been constructed in conformance with the SWPPP. Qualified inspector shall sign the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the Notice of Termination (NOT).

General Requirements

- A copy of the SPDES General Permit (GP-0-15-002), the signed Notice of Intent (NOI), NOI acknowledgement letter, SWPPP, MS4 SWPPP Acceptance Form, and inspection reports shall be maintained onsite until the site has achieved final stabilization.
- The construction entrance shall be cleaned of sediment and redressed when voids in the crushed stone become filled and vehicular tracking of sediment is occurring.
- Dust shall be controlled on access points and other disturbed areas subject to surface dust movement and blowing.
- Inspection must verify that all practices are adequately operational, maintained properly and that sediment is removed from all control structures.
- Inspection must look for evidence of soil erosion on the site, potential of pollutants entering drainage systems, problems at the discharge points, and signs of soil and mud transport from the site to the public road.

Post-Construction Stormwater Inspection and Maintenance Practices

Hudson Valley Community College will maintain ownership of the Athletic Fields. Long term inspection forms are included in Appendix H of this SWPPP. The owner shall refer to the synthetic turf manufacturers operations and maintenance manual for the post construction maintenance plan.

Inventory for Pollution Prevention Plan:

The materials or substances listed below are expected to be within the project area during construction:

- Portland cement concrete.
- Fertilizers / seeding materials.
- Stone.
- Bituminous asphalt.
- Petroleum based products.
- Silt fence fabric.
- Lumber.
- Pavement marking paint.
- PVC and HDPE.

Spill Prevention:

The following are the material management practices that shall be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.

Good Housekeeping

The following good housekeeping practices shall be followed within project areas during construction:

- An effort shall be made to store only enough products required to do the job.
- All materials stored within project areas shall be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
- Products shall be kept in their original containers with the original manufacturer's label.
- Substances shall not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product shall be used up before disposing of the container.
- Manufacturers' recommendations for proper use and disposal shall be followed.
- The project superintendent shall inspect daily to ensure proper use and disposal of materials.

Hazardous Products

These practices are used to reduce the risks associated with hazardous materials:

- Products shall be kept in original containers unless they are not resealable.
- Original labels and material safety data shall be retained.
- If surplus product must be disposed of, manufacturers' or local and state recommended methods of proper disposal shall be followed.
- Material Safety Data Sheets for all hazardous products shall be within the project area for the duration of construction.

Product Specific Practices

The following product-specific practices shall be followed within the project areas:

Petroleum Products

All project related vehicles shall be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products shall be stored in tightly sealed containers which are clearly labeled. Any asphalt substances used during construction shall be applied according to the manufacturer's recommendations.

Fertilizers

Fertilizers used shall be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer shall be worked into the soil to limit exposure to stormwater. Fertilizers shall be stored in a covered or other contained area.

Paints

All containers shall be tightly sealed and stored when not required for use. Excess paint shall not be discharged to the storm sewer system but shall be properly disposed of according to manufacturer’s instructions or State regulations.

Concrete Trucks

Concrete trucks shall be allowed to wash out within project areas provided that the contractor provides an area which collects and contains any concrete / slurry material washed from trucks for recovery and disposal at a later time. No concrete / slurry shall be discharged from the property at any time of construction. If such washing is anticipated, the contractor shall submit a plan detailing the control of concrete / slurry to the engineer for approval.

Watercourse Protection

Construction operations shall be conducted in such a manner as to prevent damage to watercourses from pollution of debris, sediment, or other foreign material, or from manipulation, from equipment and/or materials in or near the watercourse. The contractor shall not return directly to the watercourse any water used for wash purposes or other similar operations which may cause the water to become polluted with sand, silt, cement, oil or other impurities. If the contractor uses water from the water course, the contractor shall construct an intake or temporary dam to protect and maintain watercourse water quality.

Spill Control Practices

The contractor will be responsible for preparing a project area specific spill control plan in accordance with local and NYS DEC regulations. At a minimum this plan should:

- Reduce stormwater contact if there is a spill.
- Contain the spill.
- Stop the source of the spill.
- Dispose of contaminated material in accordance with manufactures procedures, and NYS DEC regulations.
- Identify responsible and trained personnel.

- Ensure spill area is well ventilated.

Updating the SWPPP:

The SWPPP shall be updated/revised as conditions merit or as directed by the regulating authority. The attached inspection forms included with this document allows for the certification of any updates/revisions.

SWPPP Certification:

Contracting Firm Information:

Contracting Firm

Address

City/Town *State* *Zip*

Site Location:

Hudson Valley Community College
80 Vandenburgh Ave.
Troy, New York 12180

Contractor's Certification

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

Signature (Contractor/Subcontractor) *Date*

For

Responsible For

Signature (Trained Individual) *Date*

For

Responsible For

Signature (Contractor/Subcontractor) *Date*

For

Responsible For

Signature (Trained Individual) *Date*

For

Responsible For

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the requirements of the Hudson Valley Community College (Stormwater Management Plan), and conforms to the substantive requirements of the NYS Department of Environmental Conservation State Pollution Discharge Elimination System (SPDES) General Permit for Construction Activities GP-0-15-002. 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.

Name: ____

Title: ____

Company: ____

Signature: ____

Date: ______________________

Owner Certification

I hereby certify that I have read the Stormwater Pollution Prevention Plan (SWPPP) that has been prepared for this project and that I understand it. This SWPPP was prepared under my direction or supervision, and the information it contains is, to the best of my knowledge and belief, true, accurate, and complete. I am also acknowledging that this SWPPP will be implemented as the first element of construction. I understand and agree to comply with the terms and conditions of the SWPPP and agree to require the Contractor to implement any corrective actions identified by the /qualified inspector/ during a site inspection. I also understand that I must comply with the substantive requirements of the most current version of the New York State Pollutant Discharge Elimination System (SPDES) general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Name: ____

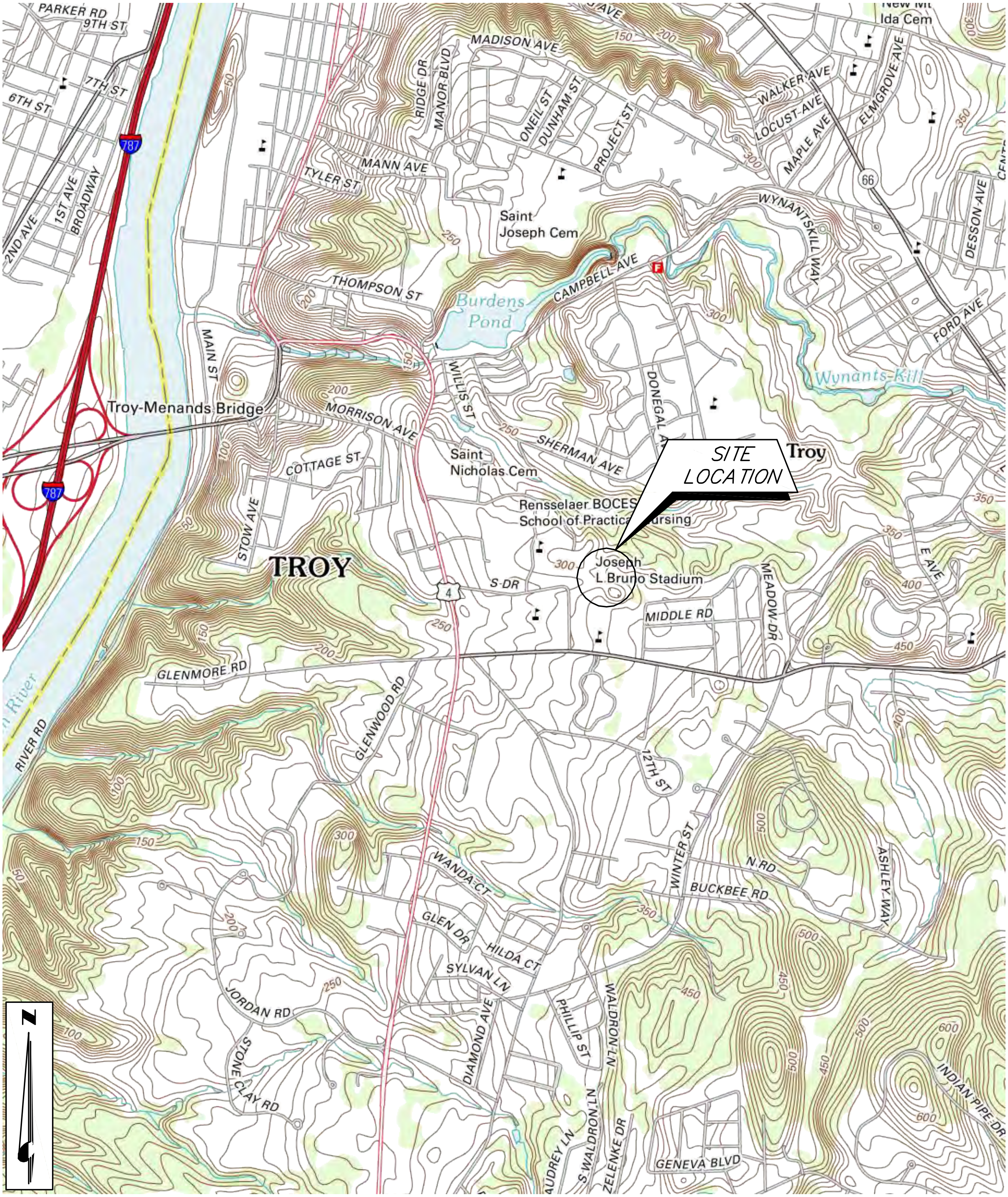
Title: ____

Company: ____

Signature: ____

Date: ______________________

Figures



SOURCE: U.S.G.S. 7.5' Topographic
QUADRANGLE: TROY SOUTH, NY

SCALE: 1"=2000'

CHA
III Winners Circle, PO Box 5269
Albany, NY 12205-0269
518.453.4500 · www.chacompanies.com

SITE LOCATION MAP

HUDSON VALLEY COMMUNITY COLLEGE
ATHLETICS FIELD IMPROVEMENTS
TROY, NEW YORK

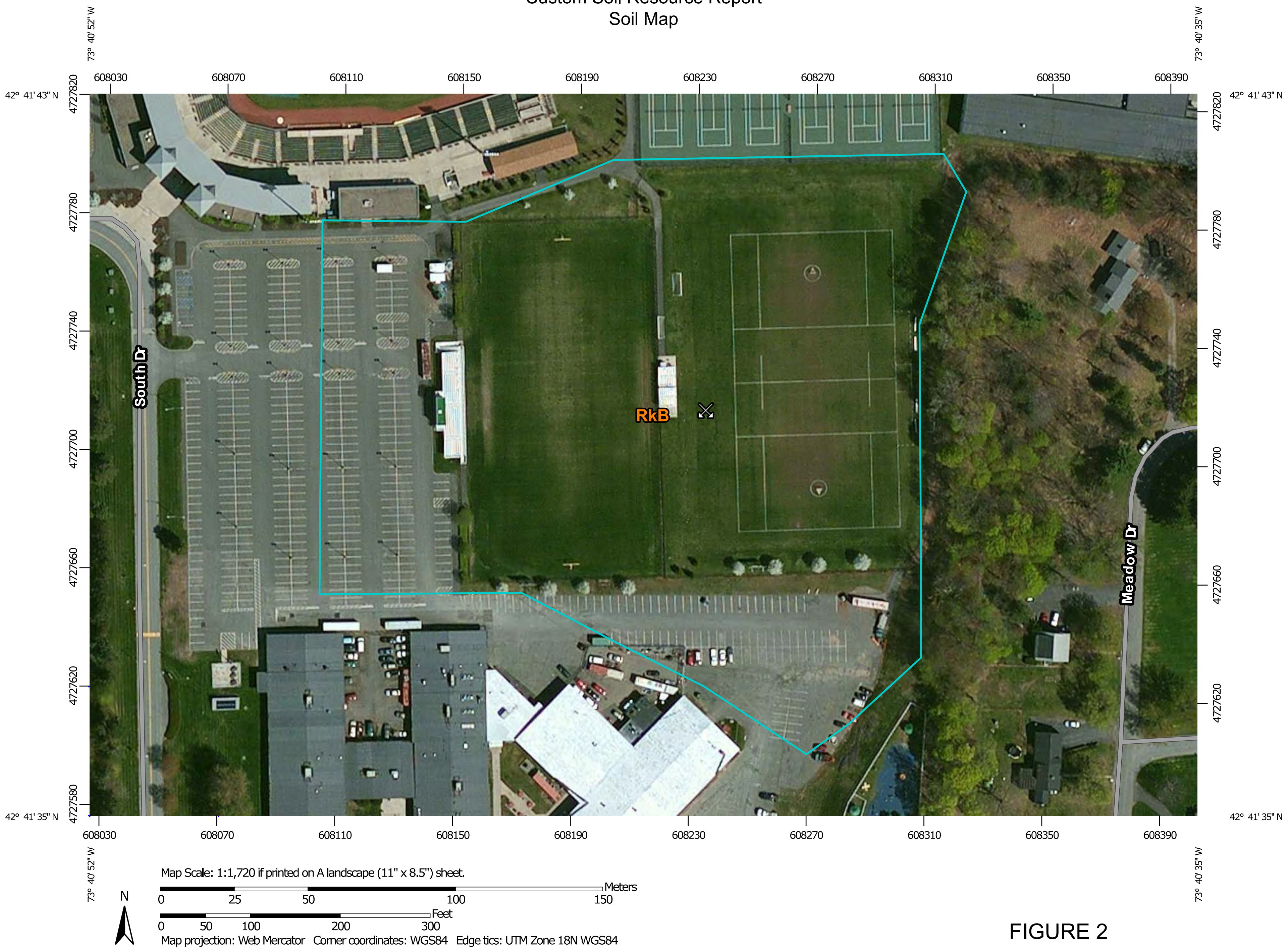
PROJECT NO.
30181

DATE: 07/2015

FIGURE 1

File: V:\PROJECTS\ANY\K4\30181\CADD\FIGURES\30181_SITELOC.DWG Saved: 7/15/2015 3:50:04 PM PLotted: 8/20/2015 4:01:01 PM User: Wilk, Ron

Custom Soil Resource Report
Soil Map



Map Scale: 1:1,720 if printed on A landscape (11" x 8.5") sheet.

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

FIGURE 2
NRCS SOILS MAP

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

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

Special Point Features

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
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: Rensselaer County, New York
Survey Area Data: Version 11, Sep 16, 2014

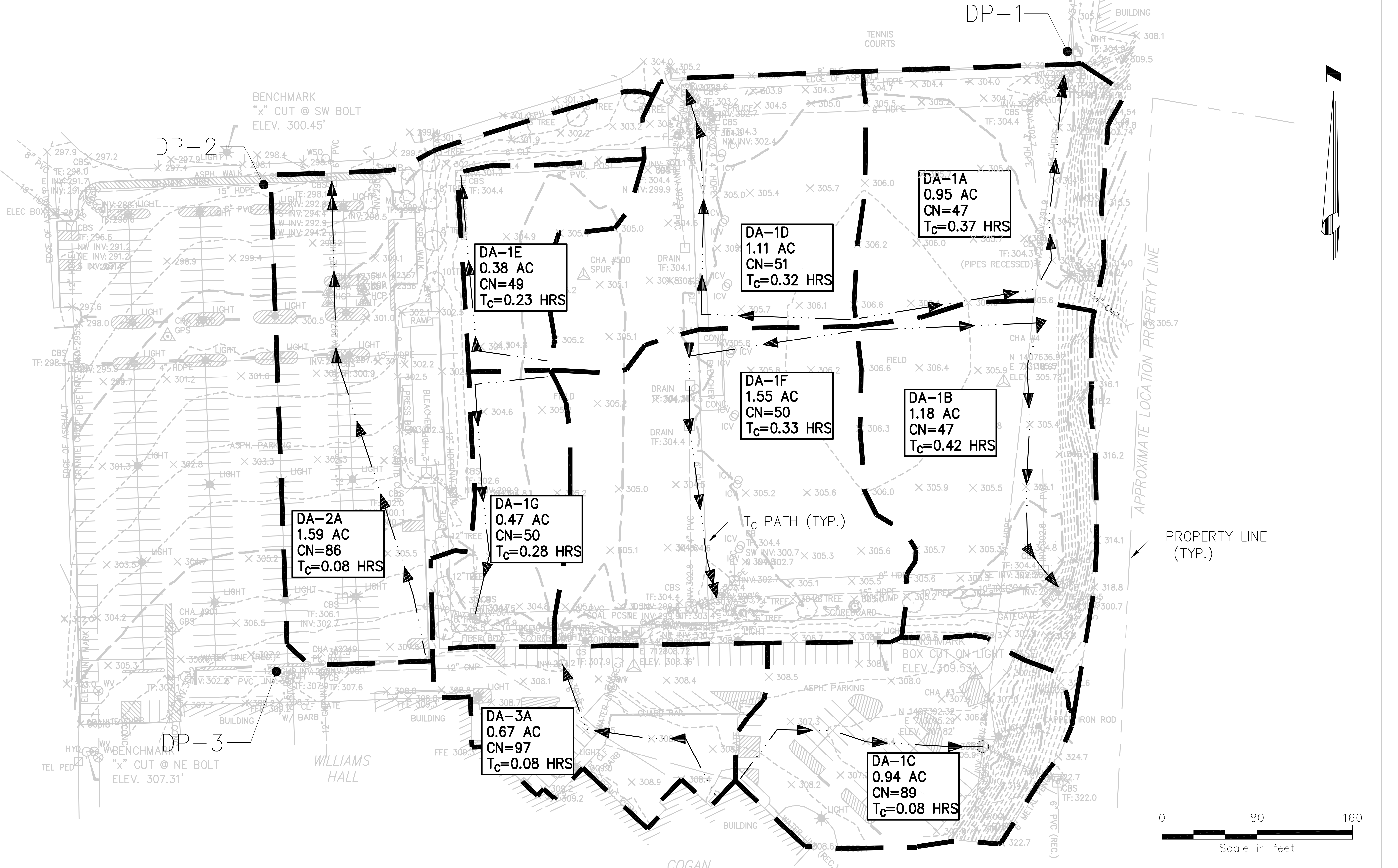
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

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

Map Unit Legend

Rensselaer County, New York (NY083)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
RkB	Riverhead fine sandy loam, 3 to 8 percent slopes	8.2	100.0%
Totals for Area of Interest		**8.2**	**100.0%**



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EXISTING CONDITIONS WATERSHED MAP

HUDSON VALLEY COMMUNITY COLLEGE
ATHLETICS FIELD IMPROVEMENTS
TROY, NEW YORK

PROJECT NO.
30181

DATE: 08/2015

FIGURE 3

File: V:\PROJECTS\ANY\K4\30181\CADD\FIGURES\STORMWATER\3 EXISTING CONDITIONS WATERSHED MAP.DWG
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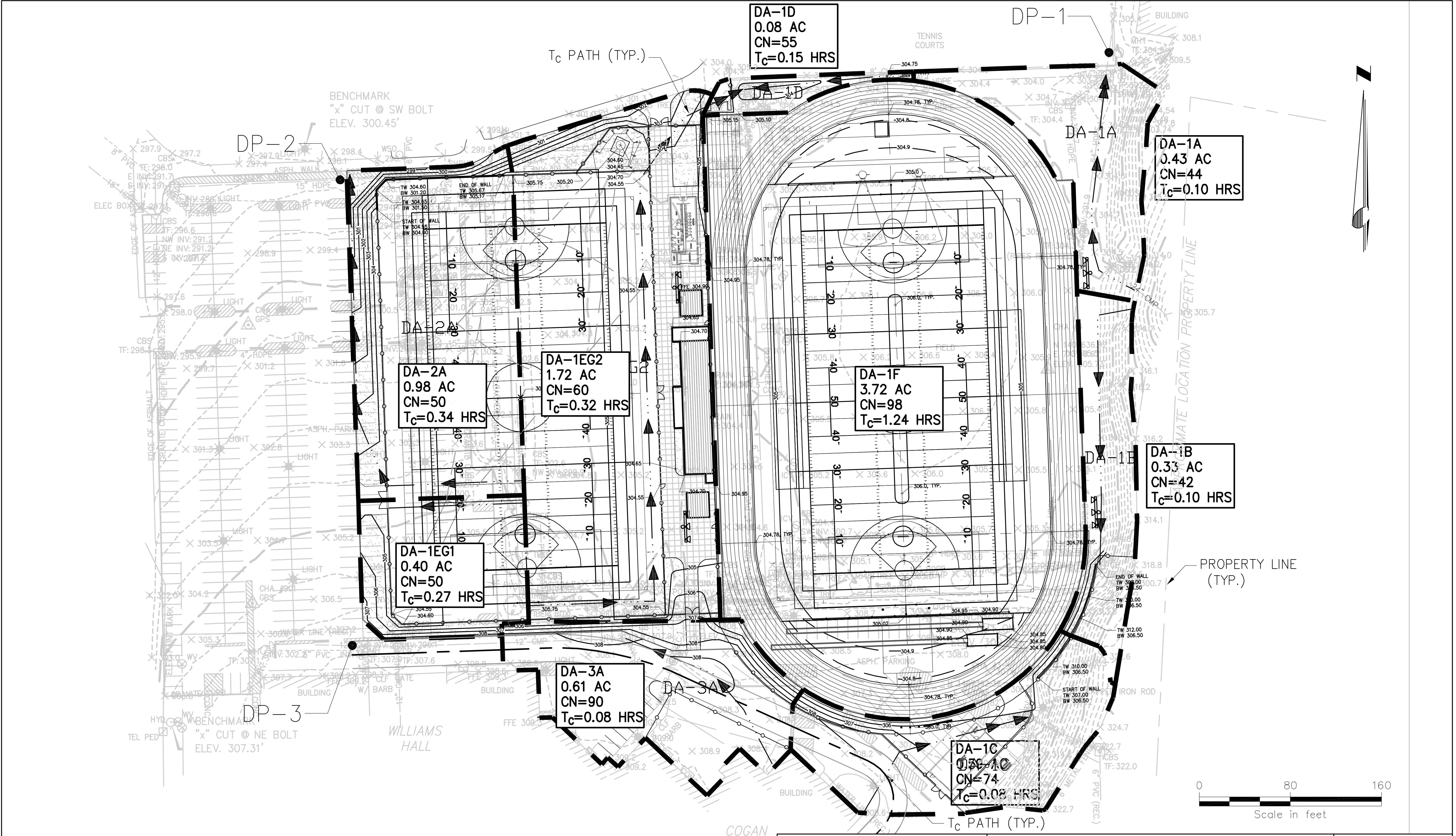

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PROPOSED CONDITIONS WATERSHED MAP

HUDSON VALLEY COMMUNITY COLLEGE
ATHLETICS FIELD IMPROVEMENTS
TROY, NEW YORK

PROJECT NO.
30181

DATE: 08/2015

FIGURE 4

File: V:\PROJECTS\ANY\K4\30181\CADD\FIGURES\STORMWATER\4 PROPOSED CONDITIONS WATERSHED MAP.DWG
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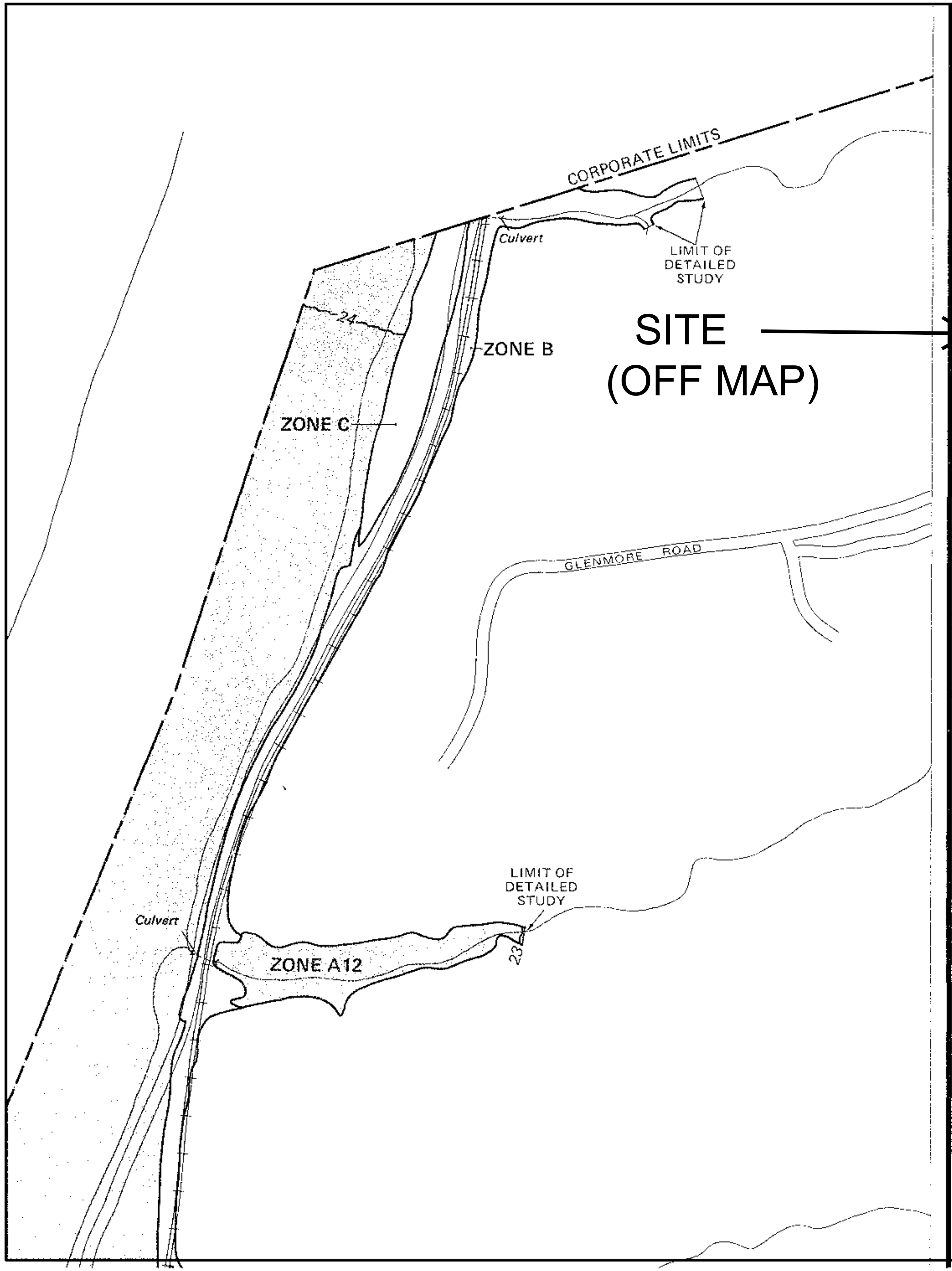

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

INITIAL IDENTIFICATION:
OCTOBER 3, 1975

FLOOD HAZARD BOUNDARY MAP REVISIONS:

FLOOD INSURANCE RATE MAP EFFECTIVE:
JUNE 18, 1980

FLOOD INSURANCE RATE MAP REVISIONS:

APPROXIMATE SCALE
400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
NORTH GREENBUSH, NEW YORK
RENSSELAER COUNTY

PANEL 3 OF 8
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
361164 0003 A

EFFECTIVE DATE:
JUNE 18, 1980

U.S. DEPARTMENT OF HOUSING
AND URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION

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

FIGURE 5

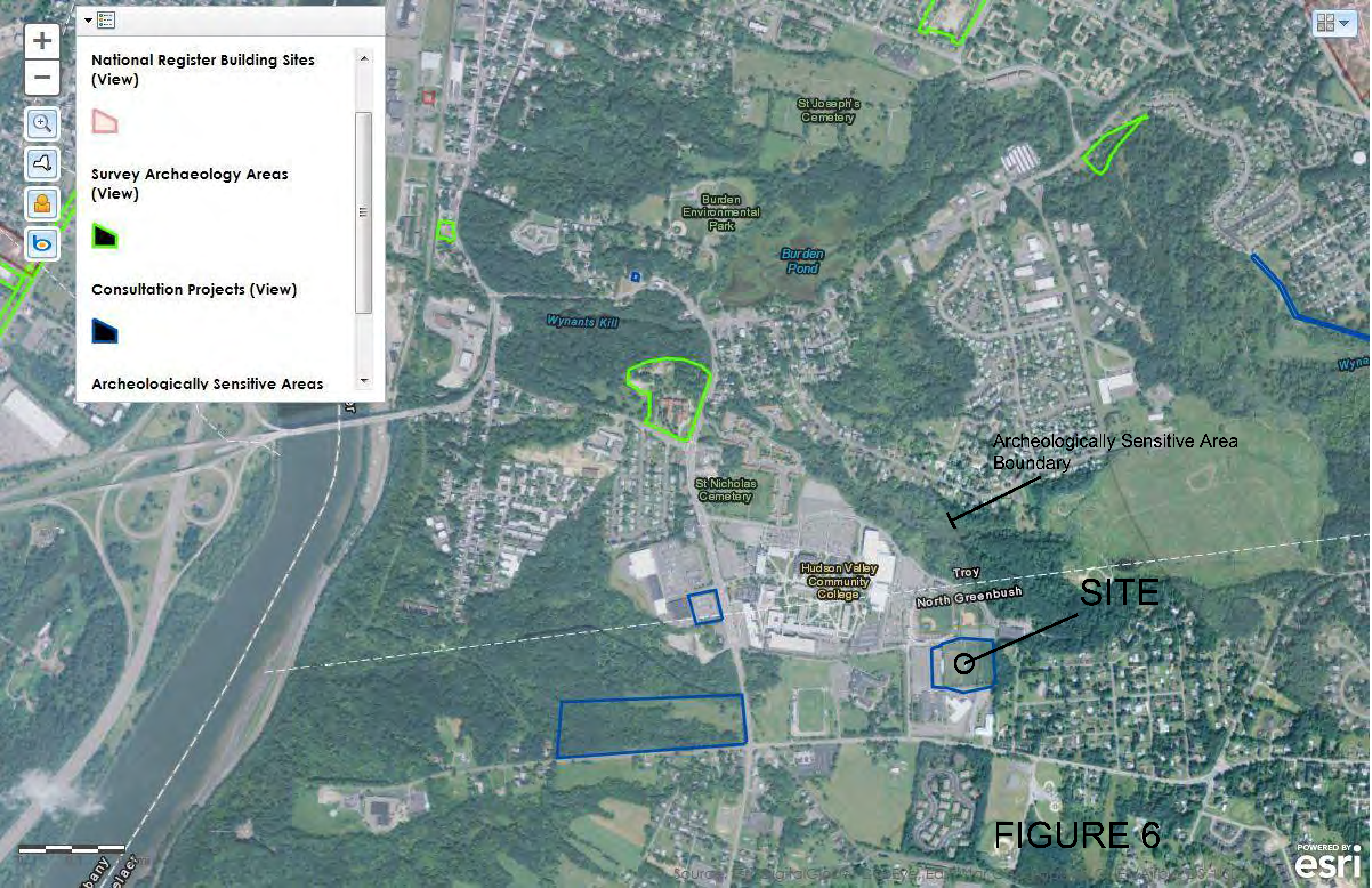
National Register Building Sites (View)
Survey Archaeology Areas (View)
Consultation Projects (View)
Archeologically Sensitive Areas
St Joseph's Cemetery
Burden Environmental Park
Burden Pond
Wynants Kill
St Nicholas Cemetery
Hudson Valley Community College
Troy
North Greenbush
Archeologically Sensitive Area Boundary
SITE
POWERED BY esri

FIGURE 6

Appendix B

Geotechnical Information / SHPO Letter for Historic Places

Geotechnical Engineering Report

HVCC Athletic Field Improvements
Troy, NY

Prepared for:

Hudson Valley Community College

80 Vandenburgh Avenue
Troy, NY 12180

July 2015

CHA Project No.:
30181.2000.32000

CHA

III Winners Circle
Albany, NY 12205

This report has been prepared and reviewed by the following qualified engineers employed by CHA.

Report Prepared By:

Tamara L Jameson

Tamara L. Jameson, I.E.

Geotechnical Engineer

Report Reviewed By:

Scott M. Doehla

Scott M. Doehla, P.E.

Section Manager – Geotechnical

STATE OF NEW YORK
CHARLES WHITTEN SYMMES
083968-1
LICENSED PROFESSIONAL ENGINEER

TABLE OF CONTENTS

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LIST OF APPENDICES

1.0 INTRODUCTION

This report summarizes the results of a geotechnical exploration performed by CHA for proposed improvements to the athletic fields at Hudson Valley Community College in the City of Troy, Rensselaer County, New York. The project site is shown on Figure 1 - Site Location Map, included in Appendix A.

The primary objectives of this exploration were to explore the subsurface conditions at the project site and to provide geotechnical recommendations for the design and construction of the proposed foundations.

2.0 PROJECT AND SITE DESCRIPTION

The proposed project will offer improvements to the existing soccer and football fields on the Hudson Valley Community College (HVCC) campus at 80 Vanderburgh Avenue in Troy, New York. The project site is located southeast of the Joseph L. Bruno Stadium as shown on the Site Location Map, Figure 1, in Appendix A. The 7-acre site is bordered by asphalt parking lots on the west and south, tennis courts to the north, and a wooded area to the east. Williams Hall is also located south of the site. The site consists of grass soccer and football fields with bleachers. The ground surface elevation within the athletic fields is generally level and ranges from El. 305 feet to El. 306 feet; however, surface elevations within the parking lot on the west side of the site are around El. 299 feet. East of the existing soccer field, the site slopes upward into the woods at a 2 horizontal to 1 vertical (2H:1V) to 2.5H:1V slope. Subsurface utilities are present within the fields and surrounding areas. Photos of the site and subsurface explorations are included in Appendix B.

The proposed project will include construction of new synthetic turf athletic fields, a track, and ancillary structures. The structures will include new bleachers and an elevated press box, a combined restroom and concession facility, storage facilities, and high mast lighting. Column loading associated with the proposed structures was unknown at the time of this exploration. Four high mast light posts are currently proposed surrounding the eastern field and track which will become the primary athletic field. The western field will be used as a practice field. Grading for the construction of the track around the eastern field will require a retaining wall at the southeast corner of the site. There will be an approximately 7-foot cut into the existing slope at this location. At the northwest end of the site, a filling on the order of 5 feet will require a retaining wall to tie in the proposed grades.

3.0 SUBSURFACE EXPLORATION

3.1 Test Boring Program

CHA conducted a subsurface exploration at the project site on June 24th and 25th, 2015. The exploration consisted of advancing five (5) borings, numbered B-1 through B-5, to depths ranging from 12 to 29 feet below grade. The borings were located on-site by measuring from existing features, and ground surface elevations at the boring locations were estimated based on topographic data available from the site survey performed by CHA. Prior to drilling, HVCC personnel marked and labeled underground utilities present within the vicinity of the boring locations. Boring locations were adjusted based on the marks. The location and elevation of the borings should be considered accurate only to the degree implied by the method used to determine them. The boring locations are shown on Figure 2, Boring Location Plan, included within Appendix A.

CHA retained Aquifer Drilling & Testing, Inc. of Waterford, New York to advance the borings. The field exploration was performed under the observation of a CHA geotechnical engineer who confirmed proper drilling and sampling methods were utilized for the exploration, inspected and described soil samples, and prepared field logs documenting the subsurface conditions. Typed copies of the boring logs are included in Appendix C.

The borings were advanced with a truck-mounted, Mobile B-61 drill rig utilizing hollow-stem augers with an inside diameter of 4.25 inches. Split spoon samples were obtained continuously to a depth of 12 feet within all borings and at a maximum of 5-foot intervals thereafter. Standard Penetration Testing (SPT) was performed in the borings in general accordance with ASTM Standard D1586 “Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils.” The split spoon samples were advanced using an automatic 140 (±) pound trip hammer falling 30 (±) inches. “Blow counts” were recorded on the boring logs, indicating the penetration resistance for a six-inch advancement of the split spoon. Initially, the spoon was driven six inches to seat the sampler in undisturbed material. The number of blows required to drive the sampler the next 12 inches was taken as the standard penetration test (SPT) resistance or "N" value. This value is considered to be indicative of the soil's in-place density or consistency. The final 6-inch increment that the spoon was driven was not included in the determination of "N". A resistance of greater than 50 blows per six inches of penetration is considered refusal. All borings were backfilled with soil cuttings, and those located within paved areas were patched with asphalt cold patch.

3.2 Laboratory Analysis

Select soil samples were submitted for laboratory analysis to aid in development of the geotechnical engineering recommendations. Testing was completed in accordance with applicable ASTM standards and included Particle Size Analysis with #200 Wash and Hydrometer (ASTM D422), Atterberg Limits (ASTM D4318), and Water Content Determination (ASTM D2216). The test results for specific samples are included on the boring logs in Appendix C, and complete results of the testing are included in Appendix D.

3.3 Infiltration Testing

Infiltration testing was performed in accordance with New York State Department of Environmental Conservation Stormwater Design Manual, Appendix D. The testing was conducted on June 25, 2015 in boring B-3 at a depth of 4 feet below ground surface, and the results are summarized in Table 1:

Table 1: Infiltration Test Results

Boring No.	**60 Minute Increment Readings**				
B-3	Begin	11:40 a.m.	12:40 p.m.	1:40 p.m.	2:40 p.m.
	End	12:40 p.m.	1:40 p.m.	2:40 p.m.	3:40 p.m.
	Results	0.48 inches/hour	0.72 inches/hour	0.48 inches/hour	0.42 inches/hour

4.0 SUBSURFACE CONDITIONS

The subsurface conditions at the site were assessed based on a review of published geologic maps and the results of the test borings performed on-site; the subsurface conditions are summarized below.

4.1 Regional Geology

According to the *Surficial Geologic Map of New York* (Cadwell, D.H. et. al, 1991), the surficial soil at the site is mapped as Lacustrine sand which is generally composed of well-sorted quartz sand. Lacustrine delta deposits composed of well-sorted, coarse to fine gravel and sand are mapped to the north.

According to the *Geologic Bedrock Map of New York:* (Fisher, et. al, 1970), the bedrock at the site is mapped as slate, shale, and thin quartzite of the Nassau Formation.

4.2 Subsurface Stratigraphy

Subsurface conditions encountered in individual borings are detailed and described on the boring logs included in Appendix C of this report. Subsurface conditions can generally be described as follows, in order of increasing depth:

<u>Asphalt Pavement</u> – Asphalt pavement was encountered in borings B-1 and B-4 and extended to a depth of approximately 6 inches below grade in both borings.

<u>Topsoil</u> – Topsoil was encountered at the ground surface in borings B-2, B-3, and B-5. Topsoil thickness ranged from 4 inches to 8 inches.

Sand – Fine sand and fine to coarse sand was encountered below the topsoil and asphalt in all of the borings. A 2-foot thick layer of silt or clayey silt was encountered within the sand stratum at depths between 2 and 4 feet below the ground surface in borings B-1 and B-2. Borings B-1 and B-2 terminated in sand at a depth of 27 feet. Borings B-3 through B-5 primarily consisted of sand, with boring termination occurring in this layer in borings B-3 and B-4. The particle size within the sand varied across the site, and the sand contained varying amounts of silt and fine to coarse gravel. It was brown or brown/gray and visually classified as moist. Based on "N" values that ranged from 10 to 52 blows per foot (bpf), the relative density of the sand was loose to very compact.

Silt – Silt was observed within the sand layer in boring B-1 at a depth of 2 feet below ground surface. The silt layer was only about 2 feet thick and contained some fine to coarse sand and fine to coarse gravel. It was brown and visually classified as moist. Based on an "N" value of 31 bpf, the silt was compact in relative density.

Clayey Silt – A 2-foot thick layer of clayey silt was encountered within the sand layer in boring B-2. The clayey silt contained some fine to medium sand and was brown in color. It was visually classified as moist, and based on an "N" value of 19 bpf, it was very stiff in consistency.

Gravel – A thin (about six inch thick) layer of coarse gravel was observed in Boring B-5 at a depth of 25.5 feet below grade. The gray gravel layer contained no sand although it was located within a stratum primarily composed of sand, and it was visually classified as moist. Based on an "N" value of 56 bpf, the gravel was very compact.

Till – Glacial till was encountered at a depth of 26 feet below ground surface in boring B-5, and the boring terminated in the till. It consisted of fine to coarse sand with some clayey silt and fine gravel. The till was gray and visually classified as moist. The relative density of the till was very compact based on a correlation to "N" values ranging from 56 to 68 bpf.

4.3 Groundwater Conditions

Groundwater was not directly observed in the borings at the time of drilling. However, the color change of the soil from brown to gray at a depth of approximately 20 feet below ground surface in boring B-5 may indicate that the groundwater table is at this location (around elevation 285.0). Wet soil samples were recovered at shallow depths overlying fine grained soils at various locations, indicating that perched water conditions may exist.

It should be noted that static groundwater conditions may vary from those observed. Seasonal factors such as temperature and precipitation affect groundwater levels; therefore, groundwater may be present at different depths at other times.

5.0 GEOTECHNICAL RECOMMENDATIONS

The recommendations provided in this report are based on the results of the subsurface exploration and laboratory testing. The following sections outline our recommendations for design and construction of the project.

5.1 Shallow Spread Foundations

The existing sand and silt encountered within the borings is generally suitable for support of the foundations proposed at the site. Conventional spread footing foundations may be used for support of the elevated press box, restroom and concession facility, and storage facilities. Foundations should bear on the natural soil subgrade.

When on the natural sand soil subgrade, foundations for the proposed restroom and concession facility, storage facilities, and elevated press box structure should be designed utilizing a maximum net allowable soil bearing pressure equal to 3,000 pounds per square foot (psf). Foundations should bear below the minimum frost depth of 4 feet from outside grade. Strip footings should be a minimum of 24 inches in width, and individual footings should measure at least 36 inches in least dimension.

The ground surface below the proposed foundation footprints should be stripped of asphalt pavement, topsoil, and any deleterious materials and the exposed subgrade should be prepared in accordance with *Section 5.7 – Site and Subgrade Preparation*. Engineered fill should be used to raise grades, if required, to the footing elevation. Footing excavations shall be backfilled with engineered fill. Engineered fill shall be placed and compacted in accordance with *Section 5.8 – Engineered Fill.*

Footings should be constructed as soon as possible after excavation to minimize the risk of bearing surface disturbance by exposure to precipitation or other adverse conditions. On-site soils may be moisture sensitive and become unstable if exposed to precipitation or the bearing surface is disturbed. Any disturbed, frozen or loosened subgrade soil should be removed and replaced with engineered fill or the bottom of the footings should be lowered as required.

If it is anticipated that footing subgrades will be exposed for some time or if wet weather conditions are anticipated, we recommend that a mud mat consisting of 2.0 to 3.0 inches of concrete be placed on the bearing grades immediately after exposure. The mud mat will provide a firm and stable working platform during foundation construction and will protect the sensitive soils. Use of a mud mat will also aid in keeping the foundation reinforcement clean.

An alternate method to protecting the subgrade soils with a mud mat is placing a geotextile fabric on the exposed bearing grade with a minimum of 6.0 inches of a 50/50 mix of NYSDOT No. 1 and No. 2 stone on the fabric. The actual thickness of the stone layer should be based on site conditions encountered. The crushed stone should be underlain by a six-ounce per square yard or heavier, non-woven filter fabric with an apparent opening size (AOS) equal to or smaller than the U.S. Standard sieve size of 70, such as a Mirafi 160N or equal. This alternative to the mud mat will also provide a firm and stable working platform during foundation construction and will protect the subgrade soils.

A detailed settlement analysis was beyond the scope of this study. However, based on the information obtained during this study and the recommendations outlined herein, we anticipate that total settlement of the proposed footings will be less than 1.0 inch. These estimates are based on the assumption that proper site preparation and construction monitoring is performed and that foundations are constructed in accordance with the practices recommended in this report. If structures are placed in the fill area of the site (the northwest corner), there is a greater risk of total and differential settlement; however, we expect these settlements will remain within tolerable limits for these structures.

5.2 Bleacher Foundations

The proposed bleachers will likely be supported by a surface slab bearing no more than 12 inches below grade. Based on the results of the borings, the subsurface materials at the proposed bleacher location consist of layers of sand and clayey silt. The soil may be susceptible to frost heave due to the fine-grained nature of some of these materials. To facilitate an economical design while minimizing settlement and the potential for frost heave, the existing soil should be removed to a depth at least 24 inches below the base of the concrete slab. A layer of bi-axial geogrid such as Tensar BX1200 should be placed on the subgrade, followed by backfilling with crushed stone, as described below. After completion of this undercut and backfilling, the slab may be designed as an exterior concrete slab with the following considerations:

- A subgrade modulus of 125 pounds per cubic inch should be used to design the concrete base slab on the natural sand and silt soils.
- The use of a minimum of 24 inches of crushed stone will reduce the potential for frost heave below the slab; however, the native silty sand and clayey silt soil below the stone will retain water and will be subject to frost heave. Design of the slab and bleachers should consider the potential for some movement due to frost heave. Alternatively, turn-down frost walls or use of the crushed stone within the full depth of frost penetration (4 feet) could be considered.
- Crushed stone consisting of a 50/50 mix of NYSDOT No. 1 and No. 2 stone should be placed beneath the slab to enhance support and provide a working base above the natural soil subgrade. The actual thickness of this stone layer should be based on design requirements but not less than 24 inches. The crushed stone should be underlain by a 6 ounce per square yard or heavier, nonwoven geotextile with an apparent opening size (AOS) equal to or smaller than the U.S. Standard Sieve Size of 70 such as a Mirafi 160N or approved equal.
- The crushed stone should be kept moist, but not wet, immediately prior to the slab concrete placement.

- A geotechnical engineer should be retained to observe proof rolling of the subgrade and to review subgrade conditions prior to foundation and slab construction, as well as to offer recommendations if any unsuitable conditions are encountered. See *Section 5.7 – Site and Subgrade Preparation* for more information.

5.3 Stadium Light Foundations

Drilled shaft foundations bearing within the silt or sand are recommended for support of the stadium lights. When bearing within the sand deposits at depths greater than 10 feet below grade, the drilled shafts should be designed for an allowable base resistance of 6,000 psf. Side friction resistance may be considered in the design of the drilled shafts; see Table 2 for values of allowable unit side resistance, in psf.

Table 2: Side Friction Resistance of Drilled Shafts

Depth	Allowable Unit Side Resistance (psf)
0 to 4 ft bgs	0
4 to 10 ft bgs	80 to 210[1]
below 10 ft bgs	260

[1] Allowable unit side resistance calculated at depths of 4 ft bgs and 10 ft bgs, respectively. Interpolate values of allowable unit side resistance for depths in between.

Based on the stadium light heights, the foundation design will likely be governed by overturning and should be evaluated utilizing lateral soil analysis during design. Table 3 outlines the recommended geotechnical lateral analysis parameters.

Table 3: Lateral Analysis Parameters

Strata	Location	Soil Type	Total Unit Weight (pcf)	Friction Angle (°)	Lateral Soil Modulus – k (pci)
Fine Sand	0 to 4 ft bgs	Sand (Reese)	120	34	90
Silt	4 to 6 ft bgs	Sand (Reese)	115	29	60
Fine Sand	6 to 20 ft bgs	Sand (Reese)	120	34	90
Fine Sand	>20 ft bgs	Sand (Reese)	57.6[1]	34	60

[1] Effective unit weight should be utilized when considering strata below the groundwater elevation, at approximately relative elevation 285.0 feet. Effective unit weight is equivalent to the total unit weight less the unit weight of water, 62.4 pcf.

A specialty contractor will be required for drilled shaft foundations. Concrete should be placed immediately after drilling and inspection are completed.

It is the contractor's responsibility to use drilling methods that will maintain a stable excavation. If groundwater is encountered, the contractor may need to utilize measures such as drilling slurry and/or steel casing to minimize potential groundwater intrusion or base softening due to contact with water.

It is recommended that the concrete for the drilled shafts have a design slump of at least 7 inches in order to ensure concrete workability and plastic flow around the reinforcing cage, avoid arching of the concrete upon withdrawal of the temporary casing (if used), and promote uniform slurry (if used) displacement as the concrete is poured. Furthermore, a positive head of concrete should be maintained above groundwater during the withdrawal of the casing. Additional design and construction considerations regarding drilled shaft installation are as follows:

- The rebar cage for the shafts should be adequately sized to permit concrete to flow around the cage. Clear spacing between all bars should be greater than five times the diameter of the largest coarse aggregate.
- The water/cement ratio should be no greater than 0.45 to improve strength and durability, and low range water reducers should be used.
- Concrete should be placed rapidly and continuously.
- Concrete used to construct shafts in the wet should be placed using tremie methods to minimize concrete segregation. The contractor must maintain the tremie pipe discharge below the concrete level to minimize void development and drill slurry encapsulation in the concrete mass as it is being placed.

These measures will aid in reducing groundwater and soil contamination in the shaft concrete and safeguard the integrity of the shafts.

5.4 Retaining Walls

Improvements to the athletic fields will require two (2) retaining walls, one supporting a fill area and one supporting a cut area, to provide level playing fields. The retaining walls are currently proposed to be cast-in-place concrete walls and should be designed according to Table 4 when bearing on strata described in this report.

Table 4: Retaining Wall Bearing Capacities

Retaining Wall	Toe Elevation/ Bearing Elevation (ft)	Estimated Bearing Strata	Bearing Capacity (psf)	Friction Factor, tanδ
Northwest	301.2	Sand	3,000	0.6
Southeast	306.5	Sand	3,000	0.6

Wall designers typically do not analyze global stability. Once a wall configuration and design is available, global stability of the final configuration should be evaluated.

Cast-in-place concrete retaining walls are typically designed by a structural engineer retained by the Client rather than a specialty contractor or designer. The cast-in-place concrete retaining walls should be designed for the bearing capacities outlined in Table 4. They should be designed to retain engineered fill, using active earth pressures, which should be placed according to *Section 5.8* and should extend a distance behind new walls of at least half the wall height. The cast-in-place concrete retaining wall at the southeast corner of the site is in a cut location at the base of a slope; therefore, it will have a sloping retained soil mass with an inclination of approximately 26.565 degrees, corresponding to a backslope of 2 horizontal to 1 vertical. Any resistance due to passive soil pressure at the toes of wall should be neglected. Retaining walls can be designed based on the engineering properties of the engineered fill, as follows:

• Total unit weight, Engineered Fill	125 pcf
• Angle of internal friction, Engineered Fill	34 degrees
• Coefficient of active earth pressure, Engineered Fill – level backfill (K_a)	0.28
• Coefficient of active earth pressure, Engineered Fill – sloping backfill, i=26.565° (K_a)	0.42

Temporary excavation support walls, if required, should be designed using lateral earth pressure parameters for on-site soils. These walls can be designed based on the following engineering properties:

• Total unit weight, Fine Sand	120 pcf
• Angle of internal friction, Fine Sand	34 degrees
• Coefficient of active earth pressure, Fine Sand – level backfill (K_a)	0.28
• Coefficient of passive earth pressure, Fine Sand – level backfill (K_p)	3.54

All types of permanent retaining structures should incorporate drainage measures to prevent moisture buildup behind the walls which increases the lateral earth pressure against the wall. A 12-inch wide vertical drainage layer consisting of ¾ inch crushed stone wrapped in filter fabric should be placed against the face of the wall; a perforated drainage pipe set 6 inches below finished grade at the lower face of the wall should also be incorporated. The drainage pipe should either daylight to a positive outlet, be connected to weepholes through the wall, or connect to the site drainage system. Alternatively, a prefabricated geocomposite drain material may be placed directly against the wall and connected with the drainage pipe.

Buoyant unit weight should be used below the groundwater table, in conjunction with hydrostatic pressure for temporary excavation supports that do not include efforts to drain water away from the retaining wall. Buoyant unit weight is equivalent to the total unit weight less the unit weight of water, 62.4 pcf.

Appropriate surcharge loads for construction traffic and permanent vehicle traffic should be included in the design of retaining walls, and retaining structures should be designed with appropriate safety factors for temporary or permanent construction.

5.5 Surface Treatments

We understand that site improvements will involve reclaiming paved areas for expansion of the athletic fields. This will result in repairs being made to the parking lots to the west and south in order to tie in the new site layout; concrete or asphalt pavements may be used in the proposed design. The subgrade below the existing parking lots likely consists of sand and silt as encountered elsewhere across the site. For concrete pavements, a subgrade modulus of 125 pounds per cubic inch (pci) should be used for design, and for asphalt pavements, a California Bearing Ratio (CBR) value of 10 should be used for design.

For pavements and surface treatments placed on natural soil, the subgrade shall be prepared in accordance with Section 5.7. The subbase material shall consist of engineered fill in accordance with Section 5.8 and be compacted to 95 percent of the maximum dry density as determined by the modified Proctor test (ASTM D1557); it shall also be underlain by a geotextile separation/stabilization fabric. The geotextile separation/stabilization fabric will prevent potential future fouling of the newly placed subbase material. Additionally, a properly selected woven geotextile fabric can provide additional strength to the proposed full depth pavement sections. The woven geotextile will increase the resistance of the pavement to physical deterioration and loss of strength, thereby extending the pavement life. The fabric shall be a woven geotextile with an apparent opening size (AOS) equal to or smaller than the U.S. Standard sieve size of 50 (such as Mirafi 500X or equal).

The natural subgrade soils contain a significant percentage of fines in areas of the site. These soils are not free draining and will tend to trap infiltrating water in the subbase. Accordingly, for full depth pavement sections, all subgrade surfaces shall be crowned and sloped to promote drainage of the subbase course. Underdrains, if used, shall be connected to drainage structures or daylighted; positive drainage is necessary at the outlet to prevent water from backing up into the subbase. Failure to provide drainage for the subbase course will degrade future pavement performance and may result in premature pavement failure.

Similar considerations regarding subgrade preparation, use of geotextile separation, subbase placement, and drainage should be used in the design of the track surface. The track surface will consist of two layers of asphalt pavement which can be designed using a CBR of 10, overlain by a structural spray synthetic surface. The subgrade in the area of the proposed track likely consists of fine sand; although this material is generally free-draining, the presence of fines within the sand should be carefully evaluated during construction. Where poorly draining soils are encountered, they should be removed and replaced with properly compacted, free-draining soil containing less than 10 percent fines.

The subgrade for the turf fields also consists of sandy soil with fines. These fields shall be constructed utilizing a subbase of crushed stone compacted to 95 percent of the maximum dry density as determined by the modified Proctor test (ASTM D1557), underlain by a geotextile separation/stabilization fabric. The same type of geotextile used under the pavement subbase can be used here; this will provide a stable base for construction of the turf field. Underdrains in the form of perforated pipe, panels, or a similar system should be used to drain the subbase course.

The existing surficial soils are susceptible to frost heave, as detailed previously, and adequate drainage is required to prevent damage to the new turf fields.

5.6 Groundwater and Control of Water

As described in *Section 4.3* of this report, groundwater was not encountered during boring operations. Although groundwater is not anticipated to be encountered during construction, it is the responsibility of the contractor to maintain dry conditions so that foundation construction may be completed in the dry. Groundwater should be maintained at a minimum depth of 2.0 feet below excavation bottom at all times to maintain stable conditions. Dewatering methods suitable for use at this site include the use of sumps, diversion and drainage ditches, toe drains and other similar methods. Pumps should be of sufficient capacity to control the groundwater and operated in a manner which will limit the withdrawal of fines from the soil. It is recommended that pumps be installed in sumps lined with filter fabric such as Mirafi 160N or equal and a 50/50 mix of NYSDOT No. 1 and No. 2 stone in accordance with requirements previously specified herein. Surface runoff should be diverted away from excavations during construction.

5.7 Site and Subgrade Preparation

The areas within the proposed foundations and surface treatments should be stripped of asphalt pavement, topsoil, underground utilities, and any existing fill materials to subgrade elevation. Existing utilities interfering with foundations should be re-routed, excavated, and the resulting excavations backfilled with engineered fill. Any remaining deleterious materials should be subsequently removed, and the subgrade should be observed by a geotechnical engineer. Subgrade soils for footings should consist of medium compact sand or silt as described in this report or engineered fill. Any areas consisting of deleterious materials or soils unsuitable for subgrade support should be over-excavated. The exposed subgrade should then be proof rolled using a smooth drum roller with a weight of at least 10 tons when operated in the static mode. The roller should operate in its vibratory mode, and complete at least six (6) passes over the subgrade at a speed not exceeding 3 feet per second (fps). Any areas which pump or weave during proof rolling should be undercut by a minimum of 12 inches, or greater depths if recommended by the geotechnical engineer, and stabilized with engineered fill as specified in *Section 5.8 – Engineered Fill*. If the vibratory roller tends to "bring up" moisture, the subgrade should be proof rolled with the roller operating in the static mode.

5.8 Engineered Fill

Engineered fill shall be used for backfilling of excavations and undercuts and when raising grades beneath structures. Material suitable for use as engineered fill should consist of sound, durable, non-plastic sand and gravel free of stumps, roots, other organics and any frozen or deleterious materials. The engineered fill shall conform to the following gradation:

Table 5: Gradation Requirements for Engineered Fill

Sieve Size	Percent Passing by Weight
4-inch	100
No. 40	0 to 70
No. 200	0 to 12

Engineered fill shall be placed in loose lifts not exceeding 8 inches in thickness and should be compacted to at least 95 percent of the maximum laboratory dry density as determined by the modified Proctor test (ASTM D1557). Engineered fill around footings shall be thoroughly compacted to provide uniform slab support.

Certain, but not all, on-site soils meet the requirements for engineered fill. Construction phase testing, as indicated in *Section 7.0 – Observation During Construction*, should be performed on bulk samples to determine the most appropriate use for excavated material. On-site soils that are not tested or that do not meet the requirements for engineered fill may be used as fill at the site in landscaped areas where it will not affect the stability of the proposed construction, as determined by the Engineer.

5.9 Seismic Site Classification and Design Parameters

Based on the site location, subsurface conditions, and in accordance with the 2010 NYS Building Code which makes use of 2008 USGS hazard data, the seismic site class for the proposed structure is D, resulting in the following seismic design parameters:

• Mapped Spectral Response Acceleration at Short Periods (S_s)	0.182 g
• Mapped Spectral Response Acceleration at 1 Second Period (S_1)	0.070 g
• Site Coefficient (F_a)	1.6
• Site Coefficient (F_v)	2.4

6.0 EXCAVATIONS

In general, all excavation should be performed in accordance with the Occupational Safety and Health Administration (OSHA) standards and other applicable State and Federal regulations. In areas where sufficient sloping of excavation cuts is not possible, the excavation should be shored, sheeted and braced. All excavation support systems should be designed by a Professional Engineer licensed in New York State.

7.0 OBSERVATION DURING CONSTRUCTION

A qualified geotechnical engineer should carefully inspect the final excavation surface for spread foundations, concrete slabs, pavements, and synthetic field and track materials to ascertain that the subgrade has been properly prepared. The inspection of subgrade should include probing at select locations, specifically to verify the bearing capacity of the supporting soils and where load bearing soils may have been disturbed.

Materials used as engineered fill, including those used beneath footings, floor slabs and surface treatments, should be tested by a qualified soils laboratory to verify that they meet the specified gradations and to determine their maximum dry density for compaction. In-place density tests should be performed to verify that compaction methods and equipment achieve the required densities.

8.0 CLOSURE

The geotechnical recommendations presented in this report are based, in part, on project and subsurface information available at the time this report was prepared and in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. Some variation of subsurface conditions may occur between locations explored that may not become evident until construction. Depending on the nature and extent of the variations, it may be necessary to re-evaluate the recommendations presented in this report.

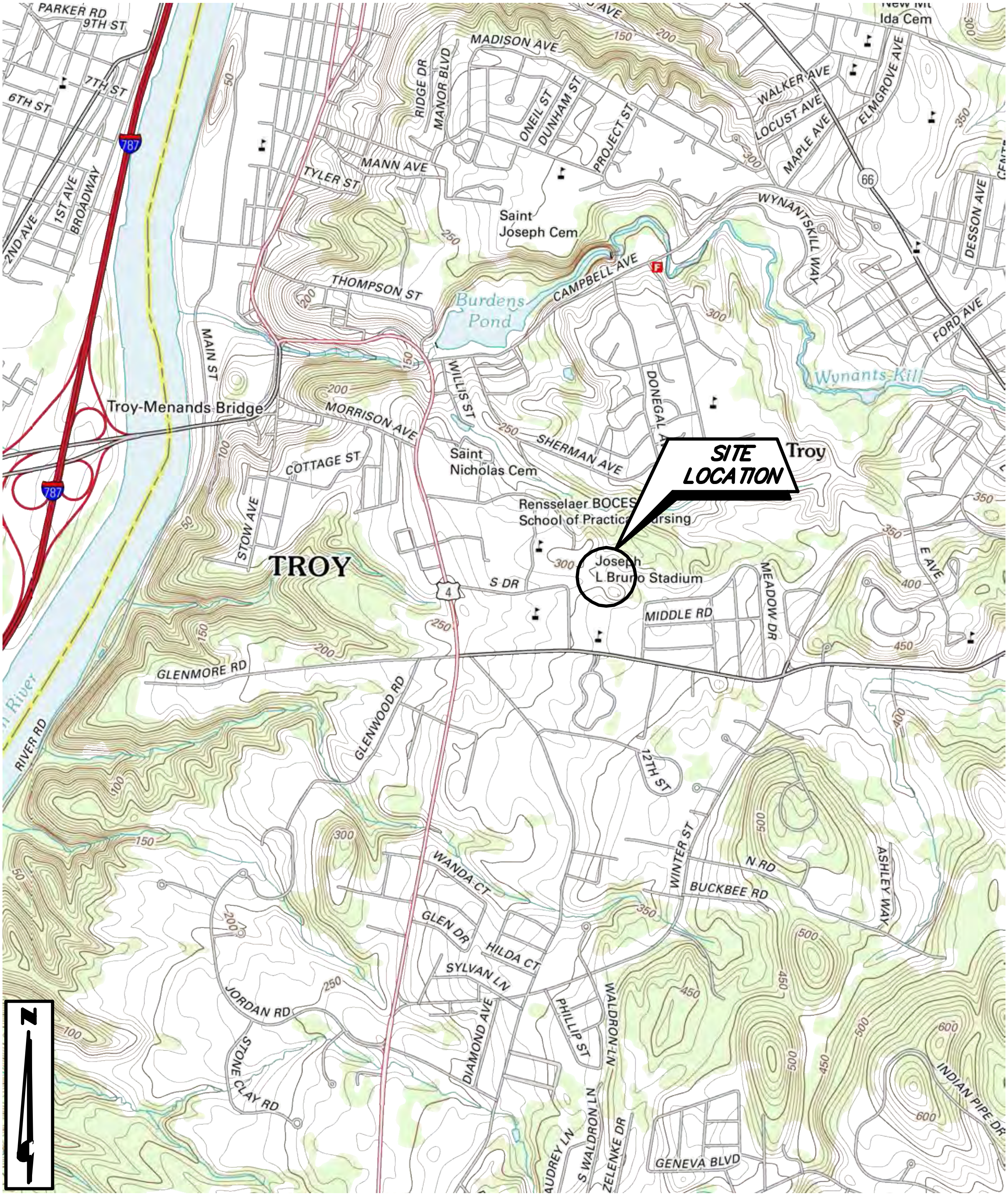
CHA does not accept responsibility for designs based upon our recommendations unless we are engaged to review the final plans and specifications to determine whether any changes in the project affect the validity of our recommendations and whether our recommendations have been properly implemented in the design.

This report has been prepared solely for design purposes and shall not be incorporated by reference or other means in the Contract Documents. If this report is included in the Contract Documents, it shall be for information only. Earthwork specification clauses shall take precedence.

APPENDIX A

Figures

File: V:\PROJECTS\ANY\K4\30181\CADD\FIGURES\30181_SITELOC.DWG Saved: 7/15/2015 3:40:52 PM PLotted: 7/15/2015 3:41:22 PM User: Gray, Timmolyn



SOURCE: U.S.G.S. 7.5' Topographic
QUADRANGLE: TROY SOUTH, NY

SCALE: 1"=2000'

III Winners Circle, PO Box 5269
Albany, NY 12205-0269
518.453.4500 · www.chacompanies.com

SITE LOCATION MAP

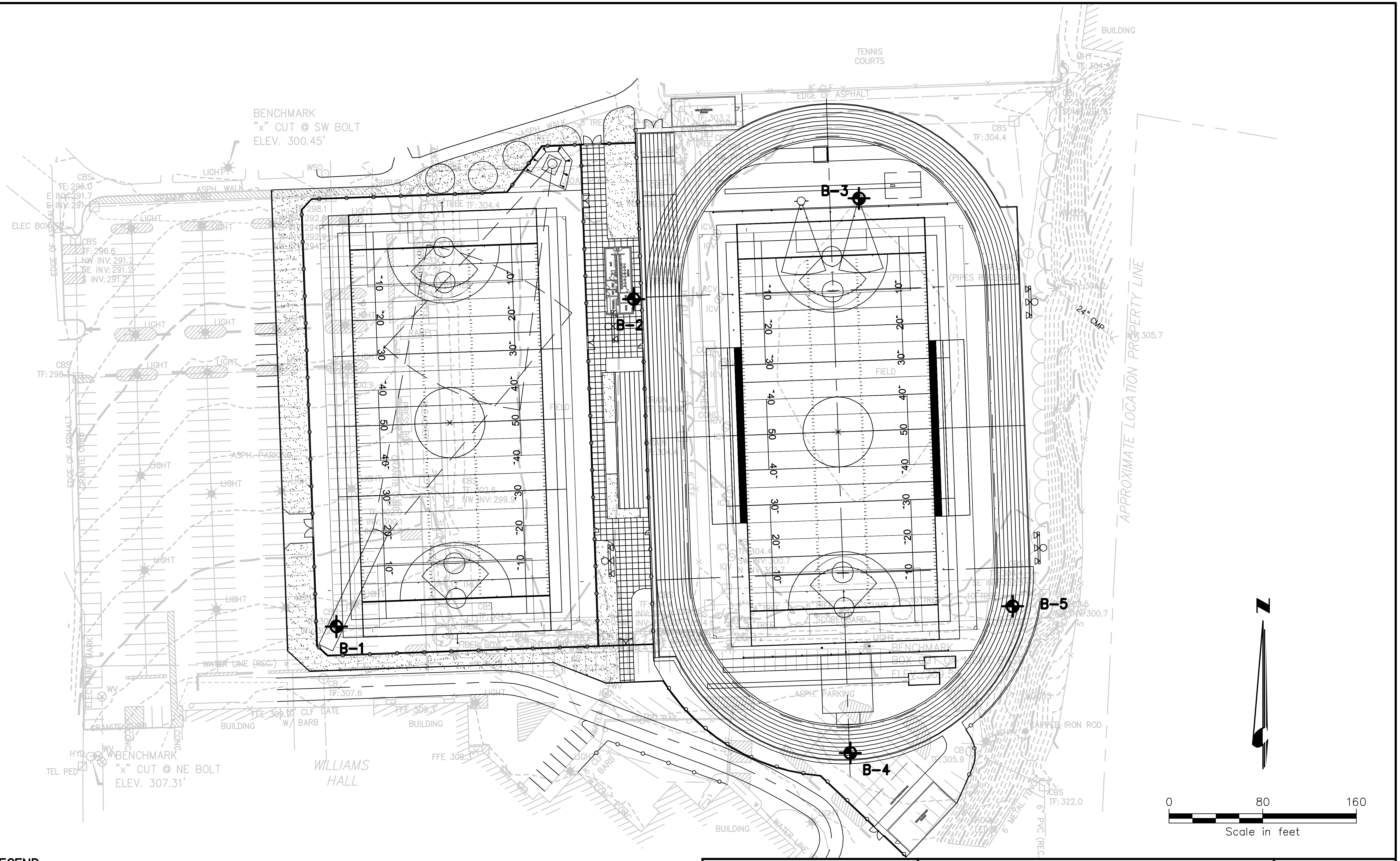
HUDSON VALLEY COMMUNITY COLLEGE
ATHLETICS FIELD IMPROVEMENTS
TROY, NEW YORK

PROJECT NO.
30181

DATE: 07/2015

FIGURE 1

File: V:\PROJECTS\ANY\K4\30181\CADD\FIGURES\30181_BLP.DWG Saved: 7/15/2015 1:52:46 PM Plotted: 7/15/2015 1:53:15 PM Current User: Gray, Timmolyn LastSavedBy: 3511



LEGEND

B-1
APPROXIMATE BORING LOCATION

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BORING LOCATION PLAN

HUDSON VALLEY COMMUNITY COLLEGE
ATHLETICS FIELD IMPROVEMENTS
TROY, NEW YORK

PROJECT NO.
30181

DATE: 07/2015

FIGURE 2

APPENDIX B

Photographs

1

Drilling Operations at Boring B-1

2

Cold Patch Asphalt at Boring B-1

Athletic Field Improvements
HVCC

Troy, New York

CHA # 30181.2000.32000

June 2015

3

Drilling Operations at Boring B-2

4

PVC Pipe Installation for Infiltration Testing at Boring B-3

	Athletic Field Improvements **HVCC** **Troy, New York**
CHA # 30181.2000.32000	June 2015

5

Drill Rig Mobilized at Boring B-4

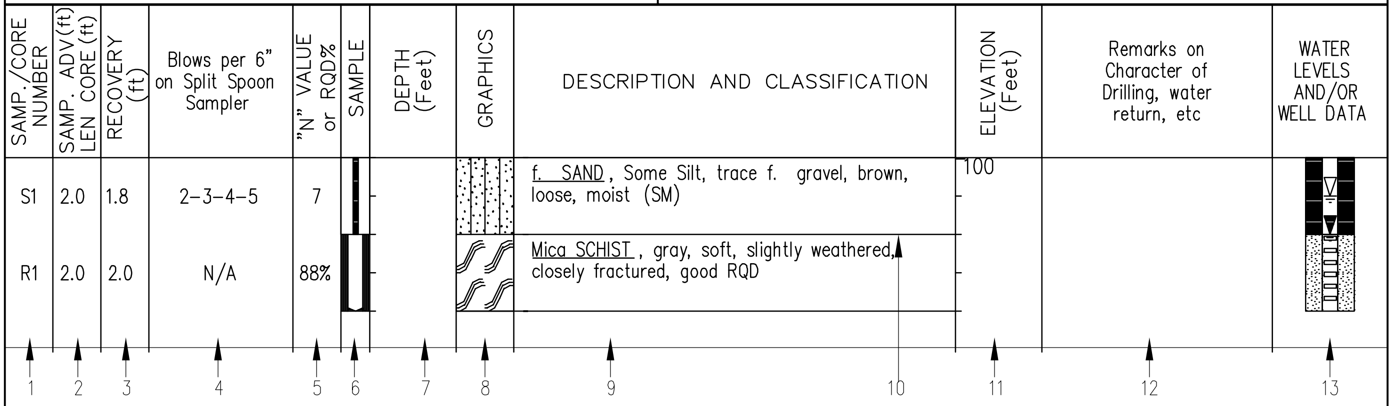
6

Drilling Operations at Boring B-5

APPENDIX C

Boring Logs

LEGEND TO SUBSURFACE LOGS



Subsurface Logs present material classifications, test data, and observations from subsurface investigations at the subject site as reported by the inspecting geologist or engineer. In some cases, the classifications may be made based on laboratory test data when available. It should be noted that the investigation procedures only recover a small portion of the subsurface materials at the site. Therefore, actual conditions between borings and sampled intervals may differ from those presented on the Subsurface Logs. The information presented on the logs provide a basis for an evaluation of the subsurface conditions and may indicate the need for additional exploration. Any evaluation of the conditions reported on the logs must be performed by Professional Engineers or Geologists.

1. SAMP./CORE NUMBER – Samples are numbered for identification on containers, laboratory reports or in text reports.

2. SAMP.ADV/LEN.CORE – Length of sampler advance or length of coring run measured in feet.

3. RECOVERY – Amount of sample actually recovered after withdrawing sampler or core barrel from bore hole measured in feet.

4. SAMPLE BLOWS/6" – Unless otherwise noted, blow counts represent values obtained by driving a 2.0" (O.D.), 1-3/8" (I.D.) split spoon sampler into the subsurface strata with a 140 pound weight falling 30" as per ASTM International D1586. After an initial penetration of 6" to seat the sampler into undisturbed material, the sampler is then driven an additional 2 or 3 six inch increments. Refusal is defined as a resistance greater than 50 blows per 6" of penetration.

5. "N" Value or RQD % – "N" VALUE – The sum of the second and third sample blow increments is generally termed the Standard Penetration Test (SPT) "N" value. Refusal (R) is defined as a resistance greater than 50 blows for 6 inches of penetration. CORE RQD – Core Rock Quality Designation, RQD, is defined as the summed length of all pieces of core equal to or longer than 4 inches divided by the total length of the coring run. Fresh, irregular breaks distinguishable as being caused by drilling or recovery operations are ignored and the pieces are counted as intact lengths. RQD values are valid only for cores obtained with NX size core barrels.

6. SAMPLE – Graphical presentation of sample type and advance or core run length. See Table 1.

7. DEPTH – Depth as measured from the ground surface in feet.

8. GRAPHICS – Graphical presentation of subsurface materials. See Table 4. Dual soil classification and rock graphics may vary and are not shown on Table 4.

9. DESCRIPTION AND CLASSIFICATION – SOIL – Recovered samples are visually classified in the field by the supervising geologist or engineer unless otherwise noted. Particle size and plasticity classification is based on field observations, and using the Unified Soil Classification System (USCS). See Table 4. USCS symbols are presented in parentheses following the soil description. Where necessary, dual symbols may be used for combinations of soil types. Relative proportions, by weight and/or plasticity, are described in general accordance with "Suggested Methods of Test for Identification of Soils" by D.M. Burmister, ASTM Special Publication 479, 6-1970. See Table 2. Soil density or consistency description is based on the penetration resistance. See Table 3. Soil moisture description is based on the observed wetness of the soil recovered being dry, moist, wet, or saturated. Water introduced into the boring during drilling may affect the moisture content of the materials. Other geologic terms may also be used to further describe the subsurface materials. ROCK – Rock core descriptions are based on the inspector's observations and may be examined and described in greater detail by the project engineer or geologist. Terms used in the description of rock core are presented in Table 5.

10. DIVISION LINES – Division lines between deposits are based on field observations and changes in recovered material. Solid lines depict contacts between two deposits of different geologic depositional environment of known elevation. Dashed lines represent estimated elevation of contacts between two deposits of different geologic depositional environment. Dotted lines depict transitions of deposits within the same depositional environment, such as grain size or density.

11. ELEVATION – Elevation of strata changes in feet.

12. REMARKS – Miscellaneous observations.

13. WATER LEVELS & WELL DATA – Hollow water level symbol, if present, represents level at which first saturated sample or water level was encountered. Solid water level symbol, if present, depicts the most probable static water elevation at the time of drilling or as measured in an installed observation well at a later date. Subsurface water conditions are influenced by factors such as precipitation, stratigraphic composition, and drilling/coring methods. Conditions at other times may differ from those described on the logs. For graphical presentation of observation/monitoring well construction, see Table 6. Elevations of changes in construction are noted at the bottom of each section.

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LEGEND TO SUBSURFACE LOGS

Page 2 of 2

TABLE 1
TYPICAL SAMPLE TYPES

- SPLIT SPOON (1 3/8" I.D.)
- NX SIZE ROCK CORE
- SHELBY TUBE "UNDISTURBED"
- AUGER SAMPLE

TABLE 2
SAMPLE MATERIAL PROPORTIONS

ADJECTIVE	PERCENTAGE OF SAMPLE
"and"	35% – 50%
"some"	20% – 35%
"little"	10% – 20%
"trace"	< 10%

Standard split spoon samples may not recover particles with any dimension larger than 1 3/8". Therefore, reported gravel percentages may not reflect actual conditions.

TABLE 3
DENSITY/CONSISTENCY

GRANULAR SOILS		COHESIVE SOILS	
Blows/ft.	Density	Blows/ft.	Consistency
< 5	Very Loose	< 2	Very Soft
5–10	Loose	2–4	Soft
11–30	Med. Compact	5–8	Med. Stiff
31–50	Compact	9–15	Stiff
> 50	Very Compact	16–30	Very Stiff
		> 30	Hard

TABLE 4
USCS CLASSIFICATION, PARTICLE SIZE, & GRAPHICS

	MAJOR PARTICLE SIZE DIVISION	USCS SYMBOL	GRAPHIC SYMBOL	GENERAL DESCRIPTION
COARSE GRAINED SOILS	GRAVEL Coarse: 3"–3/4" Fine: 3/4"–#4 Classification based on > 50% being gravel	GW	●	Well graded gravels, gravel & sand mix.
		GP	○	Poorly graded gravels, gravel & sand mix.
		GM	○	Gravel, sand and silt mix.
		GC	▨	Gravel, sand and clay mix.
	SAND Coarse: #4–#10 Med.: #10–#40 Fine: #40–#200 Classification based on > 50% being sand	SW	▦	Well graded sand, sand & gravel mix.
		SP	░	Poorly graded sand, sand & gravel mix.
		SM	▥	Sand and silt mix.
		SC	▨	Sand and clay mix.
FINE GRAINED SOILS	SILT & CLAY Classification based on > 50% passing #200 sieve.	ML	▥	Inorganic silt, low plasticity.
		CL	▨	Inorganic clay, low plasticity.
		OL	☰	Organic silt/clay, low plasticity.
		MH	▥	Inorganic silt, high plasticity.
		CH	▨	Inorganic clay, high plasticity.
		OH	≋	Organic silt/clay, high plasticity.
	ORGANIC SOILS	Pt	ψ	Peat and other highly organic soils.
	FILL	Fill	▩	Miscellaneous fill materials.

TABLE 5
ROCK CLASSIFICATION TERMS

HARDNESS:

Very Soft	Carves
Soft	Grooves with knife
Med. Hard	Scratched easily with knife
Hard	Scatched with difficulty
Very Hard	Cannot be scratched with knife

WEATHERING:

Fresh	Slight or no staining of fractures, little or no discoloration, few fractures.
Slightly	Fractures stained, discoloration may extend into rock 1", some soil in fractures.
Moderately	Significant portions of rock stained and discolored, soil in fractures, loss of strength.
Highly	Entire rock discolored and dull except quartz grains, severe loss of strength.
Complete	Weathered to a residual soil.

BEDDING:		FRACTURE SPACING:		RQD:	
Massive	> 40"	Massive/V. Wide	> 6'	Excellent	> 90%
Thick	12' – 40"	Thick/Wide	2' – 6'	Good	76% – 90%
Medium	4" – 12"	Med./Med.	8" – 24"	Fair	51% – 75%
Thin	< 4"	Thin/Close	2 1/2" – 8"	Poor	25% – 50%
		V. Thin/V. Close	< 2 1/2"	V. Poor	< 25%

TABLE 6
WELL CONSTRUCTION

- SOLID PVC PIPE
- SCREENED PVC PIPE
- STAINLESS STEEL SCREENED PIPE
- FINE GRAINED WASHED SAND
- WASHED SAND
- BENTONITE PLUG
- AIR ENTRAINED CEMENT
- NATURAL SOIL/ ROCK FILL
- BENTONITE/ CEMENT GROUT

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PROJECT NUMBER: 30181.2000.32000 6/26/2015

HVCC Outdoor Athletic Field
SUBSURFACE LOG
HOLE NUMBER B-1

LOCATION: Troy, NY

CLIENT: HVCC

CONTRACTOR: Aquifer Drilling & Testing, Inc.

DRILLER: R. Baley

INSPECTOR: A. Bryant

START DATE and TIME: 6/25/2015 8:20:00 AM

FINISH DATE and TIME: 6/25/2015 10:05:00 AM

SURFACE ELEV: 306.80 (ft; Estimated)

CHECKED BY: S. Doehla

DRILL FLUID: None

DRILLING METHOD: HSA

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	6-25-15	10:05 AM		none		

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
								ASPHALT PAVEMENT			
S-1	1.5	0.8	8-22-14	36		2		**f.m.c. SAND**, Some Silt, little f. gravel, brown, m. compact, moist **(SM)**	306		
S-2	2	0.9	21-18-13-19	31		4		**f.m.c. SAND**, And f.c. Gravel, trace silt, brown, compact, moist **(SP-SM)**	304	Sample S-2 Laboratory Results: Gravel= 37.5% Sand= 53.6% Fines= 8.9% Moisture Content (MC)= 7.6% tip of spoon wet	
S-3	2	0.6	10-18-23-24	41		6		**f.m.c. SAND**, little silt, little f. gravel, brown, compact, moist **(SM)**	302		
S-4	2	0.7	35-28-15-10	43		8		**f.m.c. SAND**, Some Silt, Some f. Gravel, brown, compact, moist **(SM)**	300	wet soil with pockets of clay in middle of sample, most likley perched water	
S-5	2	0.6	10-13-14-16	27		10		grades to little silt, becomes wet **(SM)**	298	thick seam of clay in middle of sample	
S-6	2	0.9	14-16-13-13	29		12		grades to Some Silt **(SM)**	296		
						14			294		
									292		
S-7	2	0.5	2-8-18-18	26		16		**f.m.c. SAND**, And Silt, trace f. gravel, brown, m. compact, wet **(SM)**	290	last .2' of recovery was wet	
						18			288		

PROJECT NUMBER: 30181.2000.32000

6/26/2015

HVCC Outdoor Athletic Field

SUBSURFACE LOG

HOLE NUMBER B-1

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
								<u>f. SAND</u>, trace silt, brown, m. compact, moist **(SP)**			
									286		
S-8	2	1.2	6-8-9-14	17							
						22					
									284		
						24					
									282		
								becomes compact **(SP)**			
S-9	2	1.1	4-16-15-21	31		26					
									280		
								End of Boring at 27 ft			
						28					
									278		
						30					
									276		
						32					
									274		
						34					
									272		
						36					
									270		
						38					
									268		
						40					
									266		
						42					
									264		
						44					

PROJECT NUMBER: 30181.2000.32000 6/26/2015

HVCC Outdoor Athletic Field
SUBSURFACE LOG
HOLE NUMBER B-2

Page 1 of 2

LOCATION: Troy, NY
CLIENT: HVCC
CONTRACTOR: Aquifer Drilling & Testing, Inc.
DRILLER: R. Baley INSPECTOR: A. Bryant
START DATE and TIME: 6/25/2015 1:35:00 PM
FINISH DATE and TIME: 6/25/2015 3:30:00 PM
SURFACE ELEV: 304.80 (ft; Estimated) CHECKED BY: S. Doehla

DRILL FLUID: None
DRILLING METHOD: HSA

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	6-25-15	3:30 PM		none		

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
								TOPSOIL			
								f. SAND, little silt, brown, m. compact, moist **(SM)**	304		
S-1	2	1.5	2-4-7-12	11							
						2		**f.m. SAND**, Some Clayey Silt, brown, m. compact, moist **(SM)**		Sample S-2 Laboratory Results: Gravel= 0.6% Sand= 73.5% Fines= 25.9% MC= 14.9% Plastic Limit (PL)= NP Liquid Limit (LL)= NV Plastic Index (PI)= NP	
S-2	2	1.3	5-11-17-18	28					302		
						4		**Clayey SILT**, Some f.m. Sand, brown, v. stiff, moist **(ML)**			
S-3	2	0.9	3-10-9-9	19					300		
						6		**f.m. SAND**, Some Silt, trace f. gravel, brown, m. compact, moist **(SM)**			
S-4	2	1.2	11-13-11-12	24					298		
						8		**f.m.c. SAND**, Some f. Gravel, little silt, brown, m. compact, moist **(SM)**		Sample S-5 Laboratory Results: Gravel= 25.8% Sand= 57.2% Fines= 17.0% MC= 8.5%	
S-5	2	1.3	4-10-8-8	18					296		
						10		**Similar Soil (SM)**		Sample S-6 Laboratory Results: Gravel= 23.9% Sand= 63.3% Fines= 12.8% MC= 8.2%	
S-6	2	1	7-7-17-8	24					294		
						12				rig chatter during augering	
									292		
						14					
								f.m. SAND, Some f. Gravel, little silt, brown, loose, moist **(SM)**	290		
S-7	2	1.1	4-3-7-12	10		16					
									288		
						18					
									286		

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PROJECT NUMBER: 30181.2000.32000 6/26/2015

HVCC Outdoor Athletic Field
SUBSURFACE LOG
HOLE NUMBER B-2

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
								f. SAND, Some Silt, brown, v. compact, moist **(SM)**			
S-8	1.6	0.8	16-20-32-50/.1	52	■			**f.m.c. SAND**, Some f. Gravel, little silt, brown, v. compact, moist **(SM)**	284	Cobble or boulder fragments in tip of spoon	
						22			282		
						24					
								f.m.c. SAND, trace silt, trace f. gravel, brown, m. compact, moist **(SP)**	280		
S-9	2	1.5	11-12-12-14	24	■	26					
									278		
								End of Boring at 27 ft			
						28			276		
						30			274		
						32			272		
						34			270		
						36			268		
						38			266		
						40			264		
						42			262		
						44					

PROJECT NUMBER: 30181.2000.32000 6/26/2015

HVCC Outdoor Athletic Field
SUBSURFACE LOG
HOLE NUMBER B-3

Page 1 of 1

LOCATION: Troy, NY

CLIENT: HVCC

CONTRACTOR: Aquifer Drilling & Testing, Inc.

DRILLER: R. Baley INSPECTOR: A. Bryant

START DATE and TIME: 6/24/2015 9:35:00 AM

FINISH DATE and TIME: 6/24/2015 10:20:00 AM

SURFACE ELEV: 306.00 (ft; Estimated) CHECKED BY: S. Doehla

DRILL FLUID: None

DRILLING METHOD: HSA

WATER LEVEL OBSERVATIONS

DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
6-24-15	10:20 AM		none		

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
								TOPSOIL			
S-1	2	1.1	2-6-18-20	24				**f. SAND**, some organics, little silt, little f.c. gravel, brown, m. compact, moist **(SM)**			
						2		**f. SAND**, Some Clayey Silt, brown, m. compact, moist **(SM)**	304		
S-2	2	1	20-16-12-9	28							
						4		**f.m.c. SAND**, Some Silt, trace f. gravel, brown, m. compact, moist **(SM)**	302	Sample S-3 Laboratory Results: Gravel= 2.4% Sand= 76.3% Fines= 21.3% MC= 10.9%	
S-3	2	1.5	4-8-7-5	15							
						6		**f. SAND**, little silt, little f.c. gravel, m. compact, brown/dark brown, moist **(SM)**	300		
S-4	2	0.6	7-9-8-3	17							
						8		**f. SAND**, little silt, little f.c. gravel, brown/dark brown, m. compact, moist **(SM)**	298		
S-5	2	1.2	4-10-11-9	21							
						10		**f.m.c. SAND**, Some Silt, brown/dark brown, compact, moist **(SM)**	296		
S-6	2	0.8	7-12-23-15	35							
						12		End of Boring at 12 ft	294		
						14			292		
						16			290		
						18			288		

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PROJECT NUMBER: 30181.2000.32000 6/26/2015

HVCC Outdoor Athletic Field

SUBSURFACE LOG

HOLE NUMBER B-4

LOCATION: Troy, NY	DRILL FLUID: None
CLIENT: HVCC	DRILLING METHOD: HSA
CONTRACTOR: Aquifer Drilling & Testing, Inc.	
DRILLER: R. Baley	INSPECTOR: A. Bryant
START DATE and TIME: 6/25/2015 10:40:00 AM	
FINISH DATE and TIME: 6/25/2015 12:00:00 PM	
SURFACE ELEV: 306.60 (ft; Estimated)	CHECKED BY: S. Doehla

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	6-25-15	12:00 PM		none		

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
								ASPHALT PAVEMENT	306	augered to depth of 1' because of asphalt and cobbles	
S-1	1	0.7	5-8			2		**f.m. SAND**, trace silt, trace f.c. gravel, brown, m. compact, moist **(SP-SM)** grades to no f.c. gravel **(SP-SM)**			
S-2	2	1.3	4-6-7-10	13		4			304		
S-3	2	1.5	2-9-8-9	17		6		grades to little silt **(SM)**	302		
S-4	2	1.6	10-8-10-9	18		8		grades to trace silt **(SP-SM)**	300		
S-5	2	1.3	3-8-9-10	17		10		**Similar Soil** **(SP-SM)**	298	Sample S-5 Laboratory Results: Gravel= .9% Sand= 90.7% Fines= 8.4% MC= 9.2%	
S-6	2	1.4	11-9-9-9	18		12		**Similar Soil** **(SP-SM)**	296		
						14			294		
									292		
S-7	2	1.8	7-11-10-10	21		16		**f. SAND**, Some Silt, brown, m. compact, moist **(SM)**	290		
						18			288		

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PROJECT NUMBER: 30181.2000.32000 6/26/2015

HVCC Outdoor Athletic Field

SUBSURFACE LOG

HOLE NUMBER B-4

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-8	2	1.3	3-12-16-13	28	■	22	░	**f.m. SAND**, trace silt, brown, m. compact, moist **(SP)**	286 284		
						24	░		282		
S-9	1.6	1.1	12-18-34-50/.1	52	■	26	░	**f. SAND**, trace silt, brown, v. compact, moist **(SP)**	280		
						28 30 32 34 36 38 40 42 44		End of Boring at 26.6 ft	278 276 274 272 270 268 266 264		

PROJECT NUMBER: 30181.2000.32000 6/26/2015

HVCC Outdoor Athletic Field
SUBSURFACE LOG
HOLE NUMBER B-5

LOCATION: Troy, NY

CLIENT: HVCC

CONTRACTOR: Aquifer Drilling & Testing, Inc.

DRILLER: R. Baley INSPECTOR: A. Bryant

START DATE and TIME: 6/24/2015 12:45:00 PM

FINISH DATE and TIME: 6/24/2015 2:40:00 PM

SURFACE ELEV: 305.50 (ft; Estimated) CHECKED BY: S. Doehla

DRILL FLUID: None

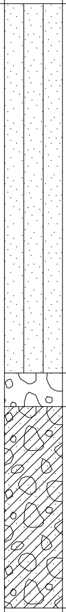
DRILLING METHOD: HSA

	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
WATER LEVEL OBSERVATIONS	6-24-15	2:40 PM		none		

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
								TOPSOIL			
								f. SAND, little f.c. gravel, little organics, trace silt, brown, m. compact, moist **(SP)**			
S-1	2	1.3	2-11-10-12	21					304		
						2		**f. SAND**, trace silt, brown, m. compact, moist **(SP)**			
S-2	2	0.9	6-10-10-9	20					302		
						4		**f.m.c. SAND**, little silt, trace f. gravel, brown, m. compact, moist **(SP-SM)**		Sample S-5 Laboratory Results: Gravel= 2.1% Sand= 86.3% Fines= 11.6% MC= 8.4%	
S-3	2	1.5	3-6-8-10	14					300		
						6		**f.m.c. SAND**, little silt, brown, m. compact, moist **(SM)**			
S-4	2	1.2	9-9-8-8	17					298		
						8		**Similar Soil (SM)**			
S-5	2	1.4	3-6-6-7	12					296		
						10		grades to trace silt **(SP-SM)**			
S-6	2	1.2	6-6-7-8	13					294		
						12					
						14			292		
								f.m. SAND, trace silt, dark brown/gray, m. compact, moist **(SP-SM)**	290		
S-7	2	1.3	2-5-6-5	11		16					
								Clayey SILT, Some f. Sand, brown, stiff, moist **(ML)**	288	soil appearing wet probably due to perched water	
						18					
									286		

PROJECT NUMBER: 30181.2000.32000 6/26/2015

HVCC Outdoor Athletic Field
SUBSURFACE LOG
HOLE NUMBER B-5

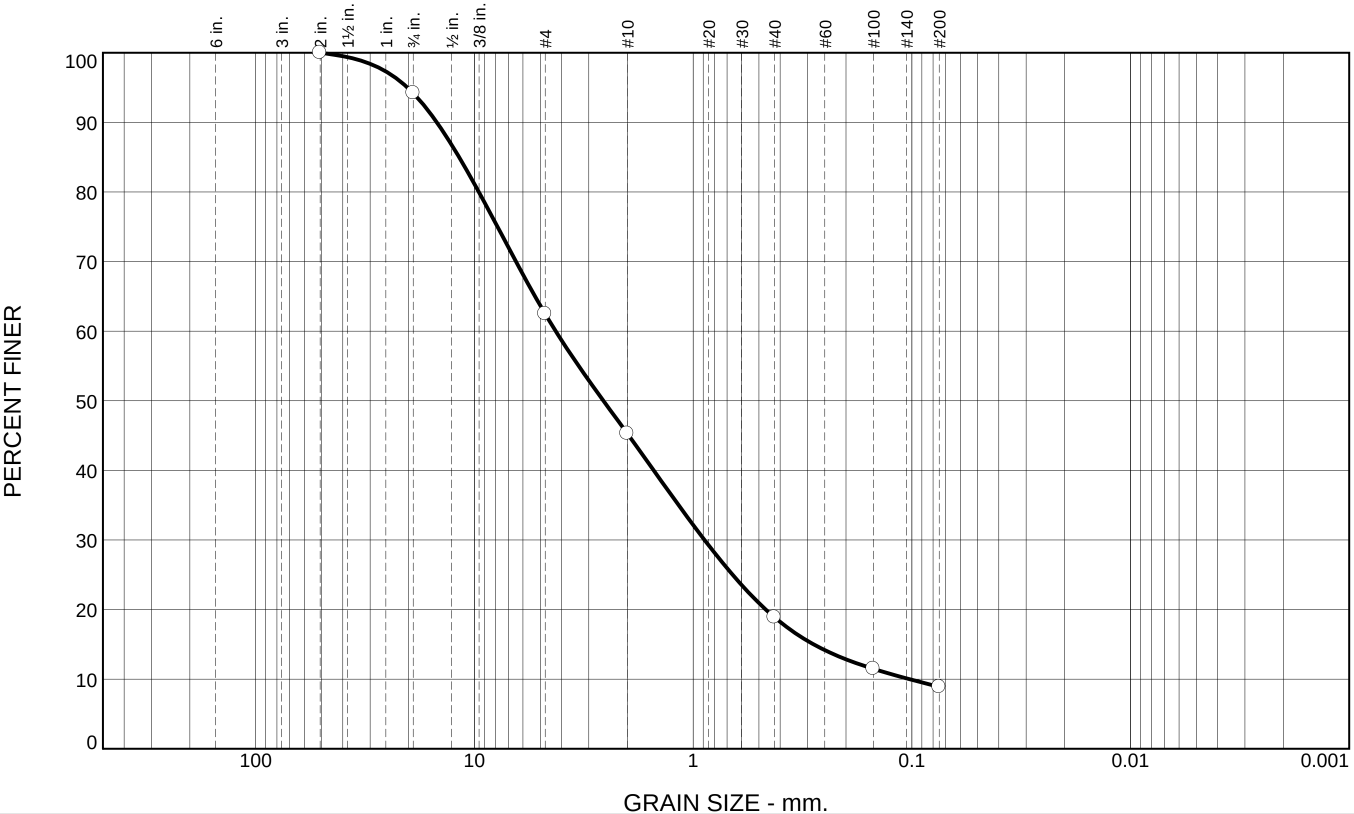


SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
								f.m. SAND, Some Silt, brown/gray, m. compact, moist **(SM)**			
S-8	2	1.6	6-9-8-9	17					284		
						22					
									282		
						24					
								f.m. SAND, Some Silt, brown, v. compact, moist **(SM)**	280		
S-9	2	0.7	10-17-39-54	56		26		**c. GRAVEL**, gray/white, v. compact, moist **(GP)**			
								f.m.c. SAND, Some Clayey Silt, little f. gravel, gray, v. compact, moist **(SM-TILL)**			
								Similar Soil **(SM-TILL)**	278		
S-10	2	1.2	7-31-37-43	68		28					
								End of Boring at 29 ft	276		
						30					
									274		
						32					
									272		
						34					
									270		
						36					
									268		
						38					
									266		
						40					
									264		
						42					
									262		
						44					

APPENDIX D

Laboratory Test Results

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.8	31.7	17.2	26.4	10.0	8.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
.75	94.2		
#4	62.5		
#10	45.3		
#40	18.9		
#100	11.5		
#200	8.9		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 14.8567 D_{85}= 11.7544 D_{60}= 4.2479
D_{50}= 2.5710 D_{30}= 0.8867 D_{15}= 0.2808
D_{10}= 0.1023 C_u= 41.52 C_c= 1.81

Classification

USCS= AASHTO=

Remarks

Water Content: 7.6 %

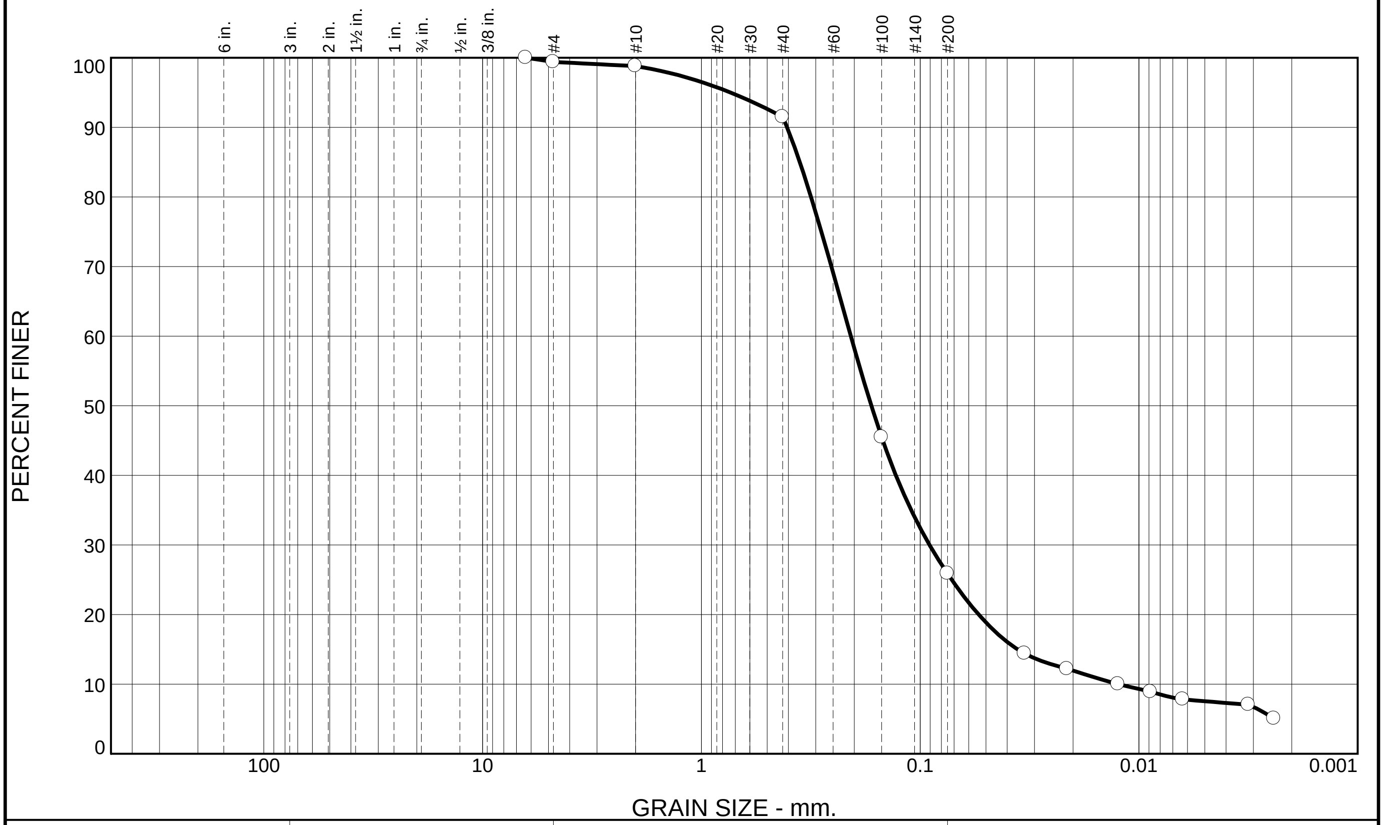
Location: B-1
Sample Number: S-2 **Depth:** 2 - 4' **Date:** 7/13/15

QCQA Laboratories, Inc.

Schuylerville, NY

Client: CHA Companies
Project: HVCC Outdoor Athletic Field Complex
CHA No. 30181.2000.42000
Project No: ST15-056 **Figure** 15-238

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.6	0.6	7.3	65.6	18.3	7.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.25	100.0		
#4	99.4		
#10	98.8		
#40	91.5		
#100	45.5		
#200	25.9		
0.0333 mm.	14.4		
0.0213 mm.	12.2		
0.0124 mm.	10.0		
0.0089 mm.	8.9		
0.0063 mm.	7.8		
0.0032 mm.	7.0		
0.0024 mm.	5.1		

* (no specification provided)

Soil Description

silty sand

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 0.4059 D_{85}= 0.3548 D_{60}= 0.2074
D_{50}= 0.1671 D_{30}= 0.0905 D_{15}= 0.0358
D_{10}= 0.0124 C_u= 16.71 C_c= 3.18

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Water Content: 14.9 %

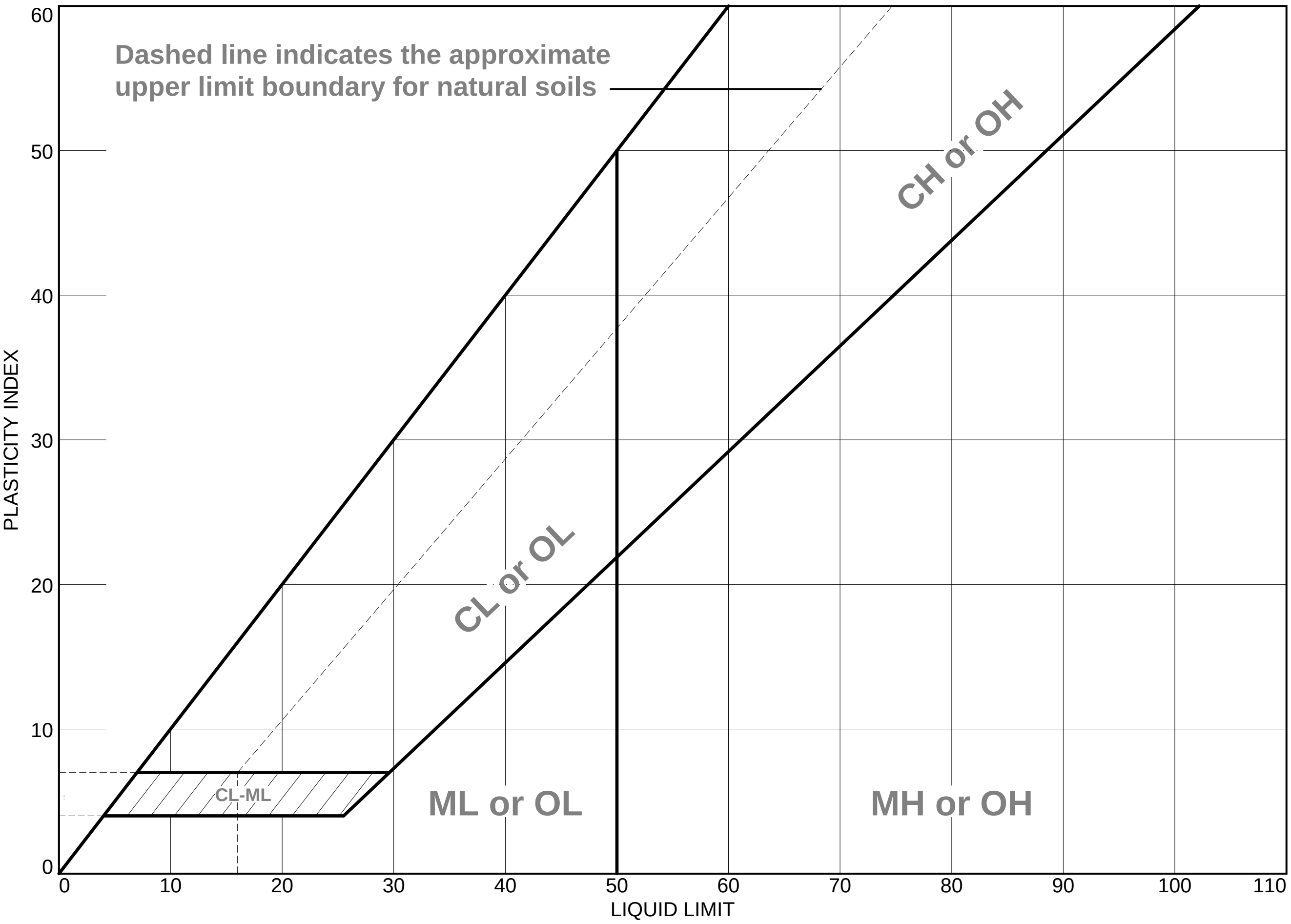
Location: B-2
Sample Number: S-2 **Depth:** 2 - 4' **Date:** 7/13/15

QCQA Laboratories, Inc.

Schuylerville, NY

Client: CHA Companies
Project: HVCC Outdoor Athletic Field Complex
CHA No. 30181.2000.42000
Project No: ST15-056 **Figure** 15-239

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	silty sand	NV	NP	NP	91.5	25.9	SM

Project No. ST15-056 **Client:** CHA Companies

Project: HVCC Outdoor Athletic Field Complex

CHA No. 30181.2000.42000

●**Location:** B-2 **Depth:** 2 - 4' **Sample Number:** S-2

Remarks:

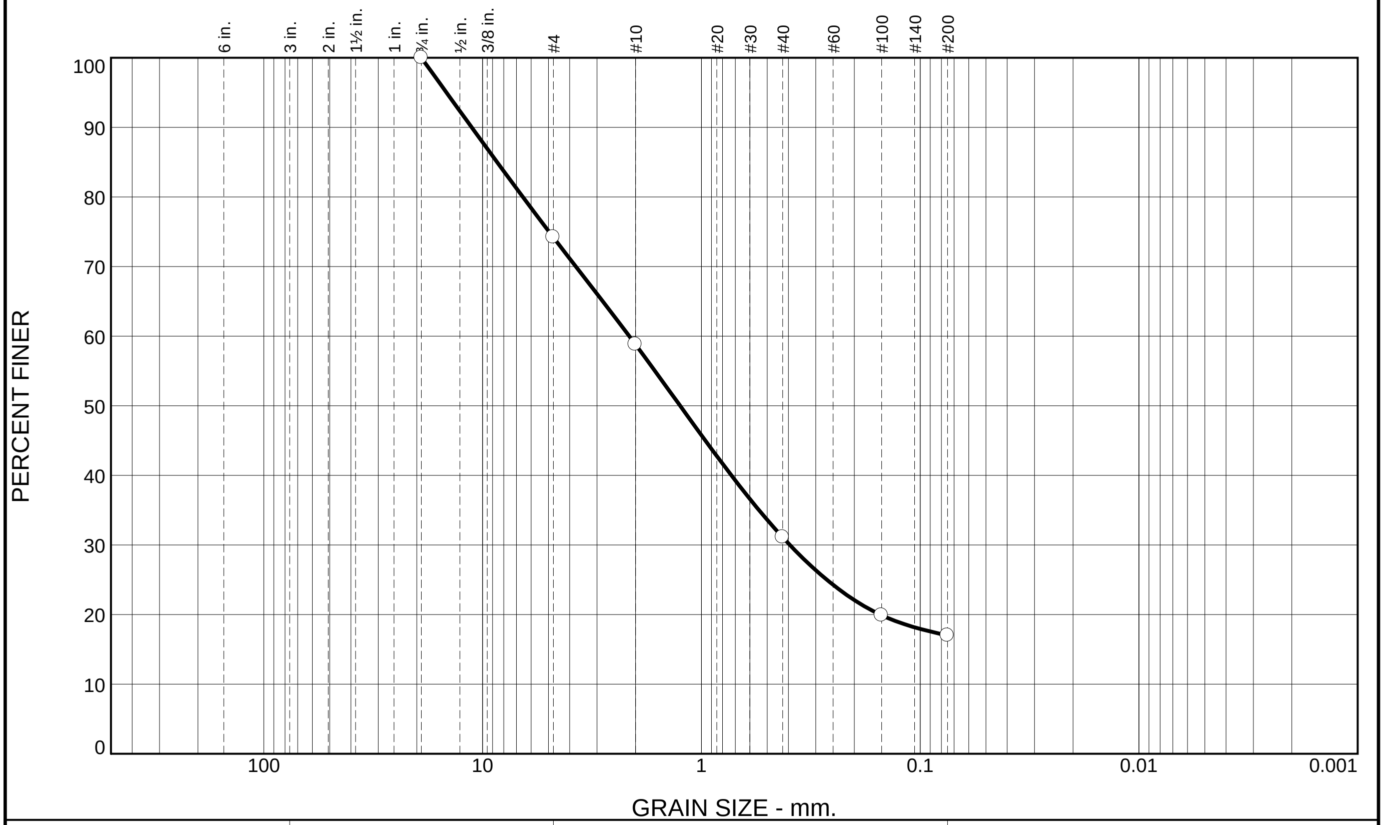
●Water Content: 14.9 %

QCQA Laboratories, Inc.

Schuylerville, NY

Figure 15-239

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	25.8	15.4	27.7	14.1	17.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
#4	74.2		
#10	58.8		
#40	31.1		
#100	19.9		
#200	17.0		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 11.2170 D_{85}= 8.5835 D_{60}= 2.1358
D_{50}= 1.2510 D_{30}= 0.3941 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Water Content: 8.5 %

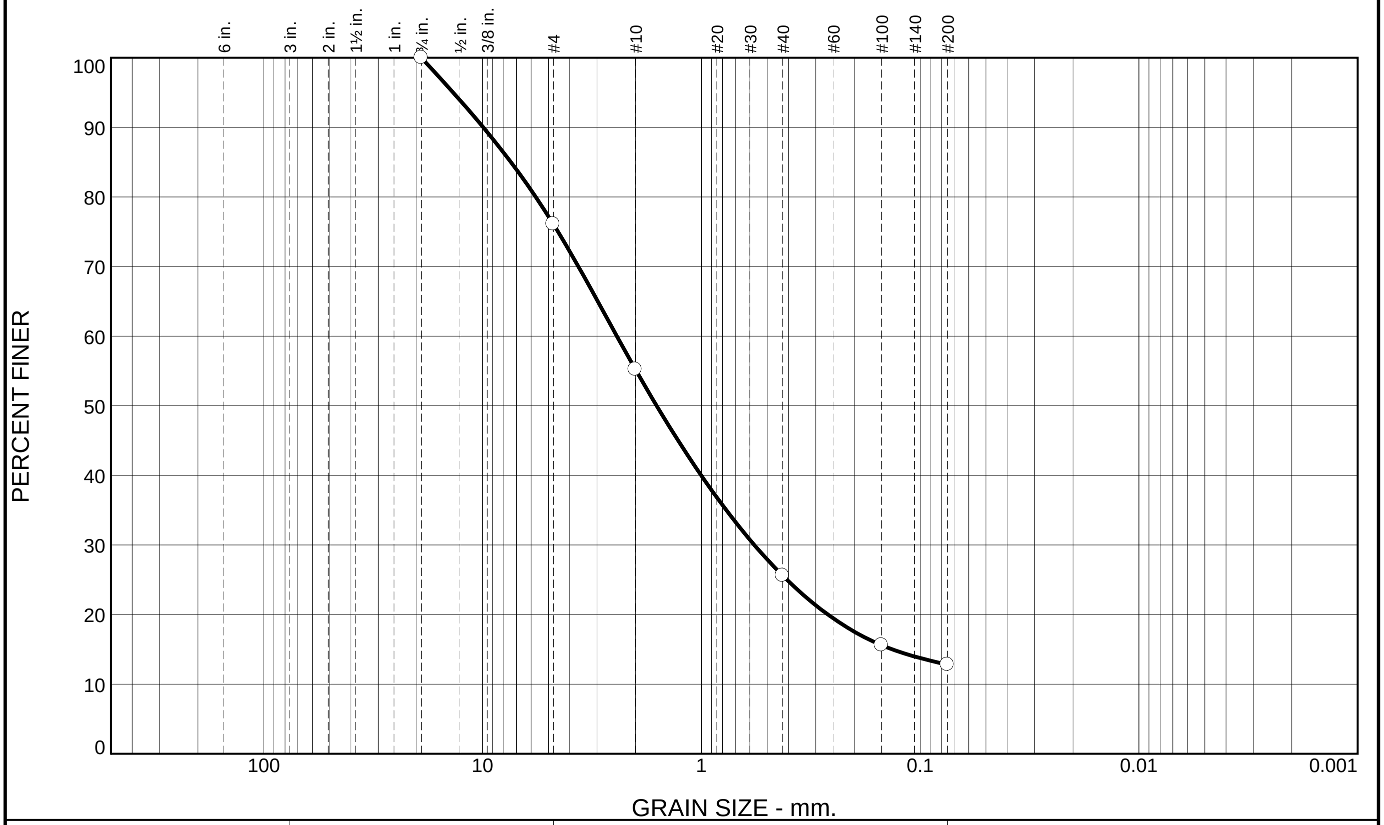
Location: B-2
Sample Number: S-5 **Depth:** 8 - 10' **Date:** 7/13/15

QCQA Laboratories, Inc.

Schuylerville, NY

Client: CHA Companies
Project: HVCC Outdoor Athletic Field Complex
CHA No. 30181.2000.42000
Project No: ST15-056 **Figure** 15-240

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	23.9	20.9	29.6	12.8	12.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
#4	76.1		
#10	55.2		
#40	25.6		
#100	15.6		
#200	12.8		

* (no specification provided)

Soil Description

Atterberg Limits

PL=
LL=
PI=

Coefficients

D_{90}= 9.9274
D_{85}= 7.4237
D_{60}= 2.4335
D_{50}= 1.6015
D_{30}= 0.5727
D_{15}= 0.1340
D_{10}=
C_u=
C_c=

Classification

USCS=
AASHTO=

Remarks

Water Content: 8.2 %

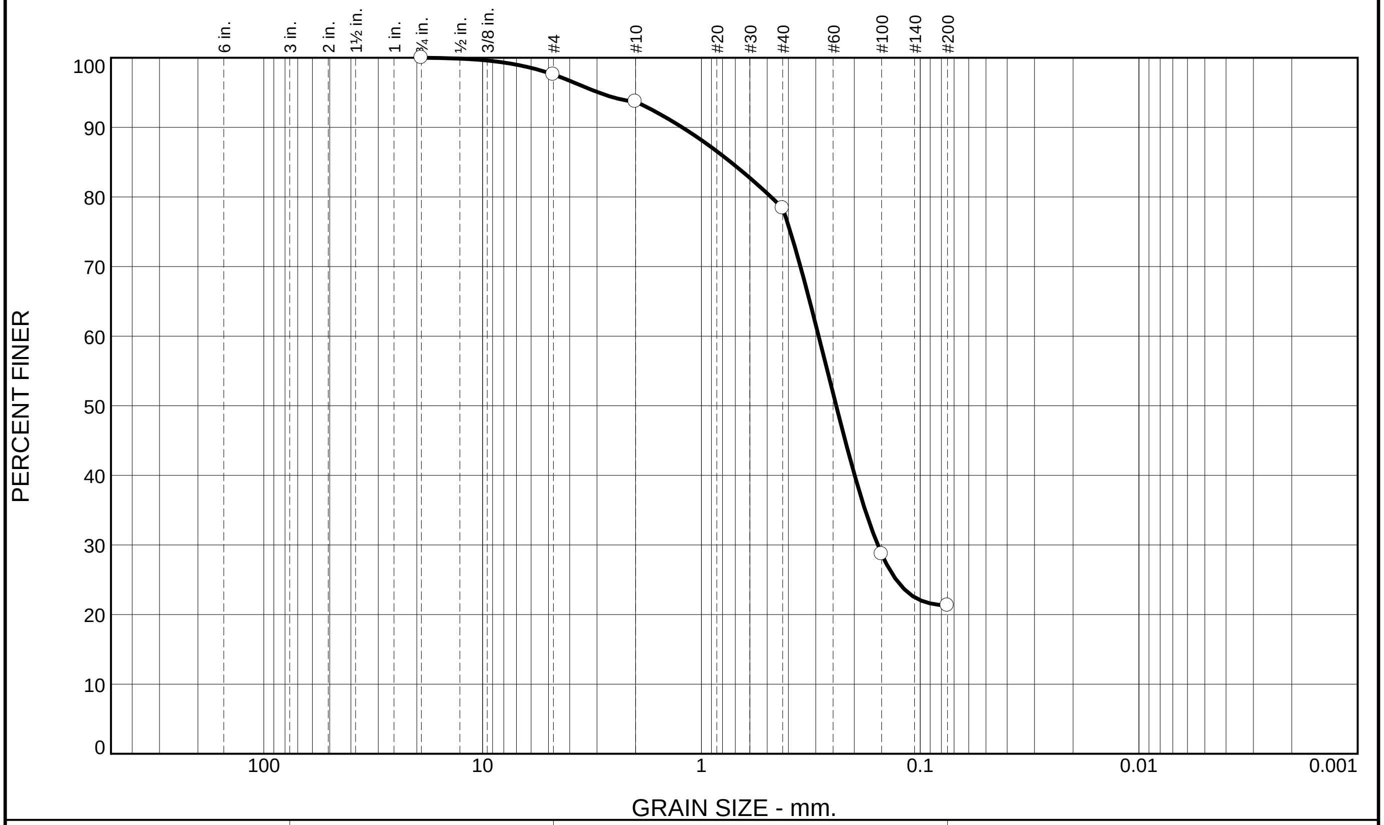
Location: B-2
Sample Number: S-6 **Depth:** 10 - 12'
Date: 7/13/15

QCQA Laboratories, Inc.

Schuylerville, NY

Client: CHA Companies
Project: HVCC Outdoor Athletic Field Complex
CHA No. 30181.2000.42000
Project No: ST15-056 **Figure** 15-241

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.4	3.9	15.3	57.1	21.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
#4	97.6		
#10	93.7		
#40	78.4		
#100	28.7		
#200	21.3		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.2233 D_{85}= 0.7329 D_{60}= 0.2909
D_{50}= 0.2419 D_{30}= 0.1563 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Water Content: 10.9 %

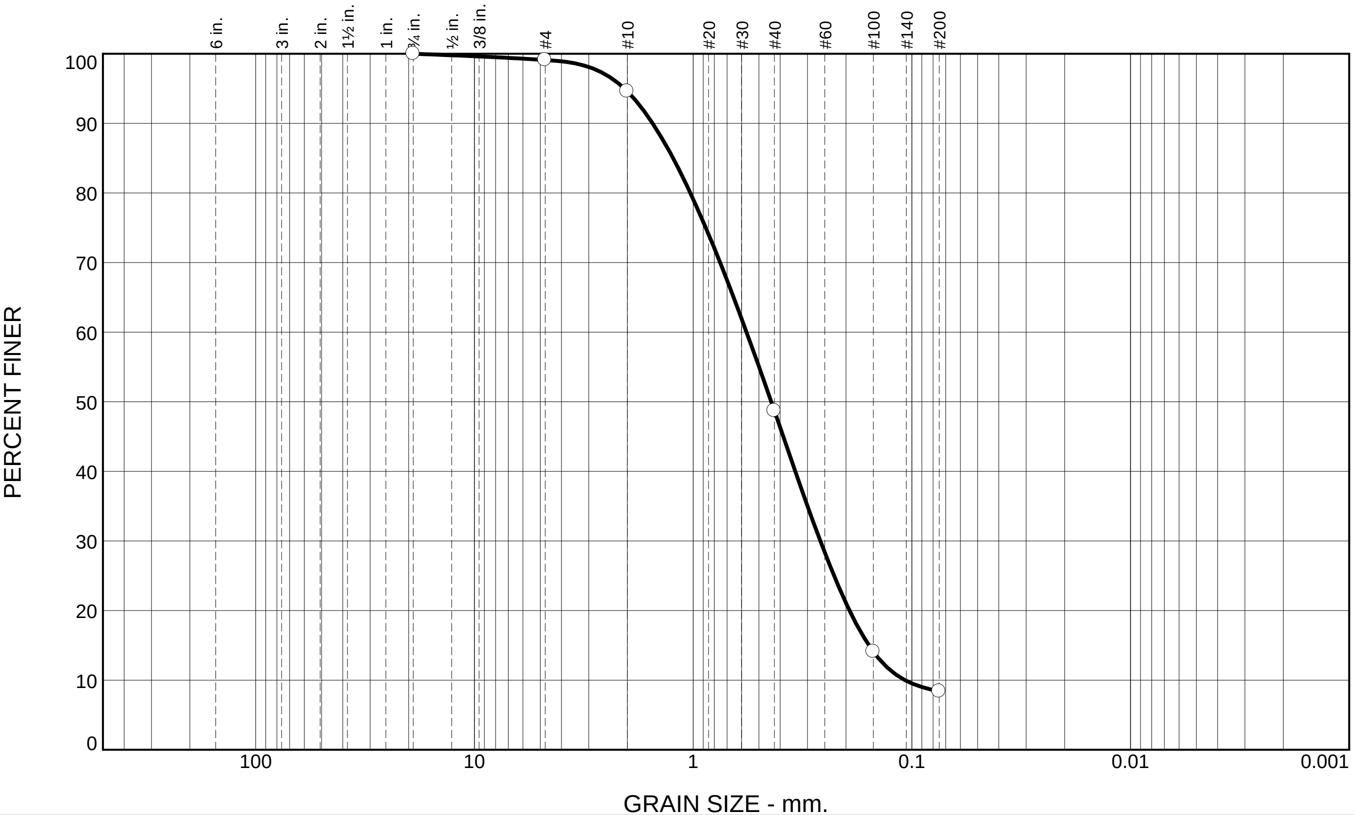
Location: B-3
Sample Number: S-3 **Depth:** 4 - 6' **Date:** 7/13/15

QCQA Laboratories, Inc.

Schuylerville, NY

Client: CHA Companies
Project: HVCC Outdoor Athletic Field Complex
CHA No. 30181.2000.42000
Project No: ST15-056 **Figure** 15-242

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.9	4.5	45.9	40.3	8.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
#4	99.1		
#10	94.6		
#40	48.7		
#100	14.1		
#200	8.4		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.5318 D_{85}= 1.2354 D_{60}= 0.5699
D_{50}= 0.4393 D_{30}= 0.2620 D_{15}= 0.1571
D_{10}= 0.1074 C_u= 5.31 C_c= 1.12

Classification

USCS= AASHTO=

Remarks

Water Content: 9.2 %

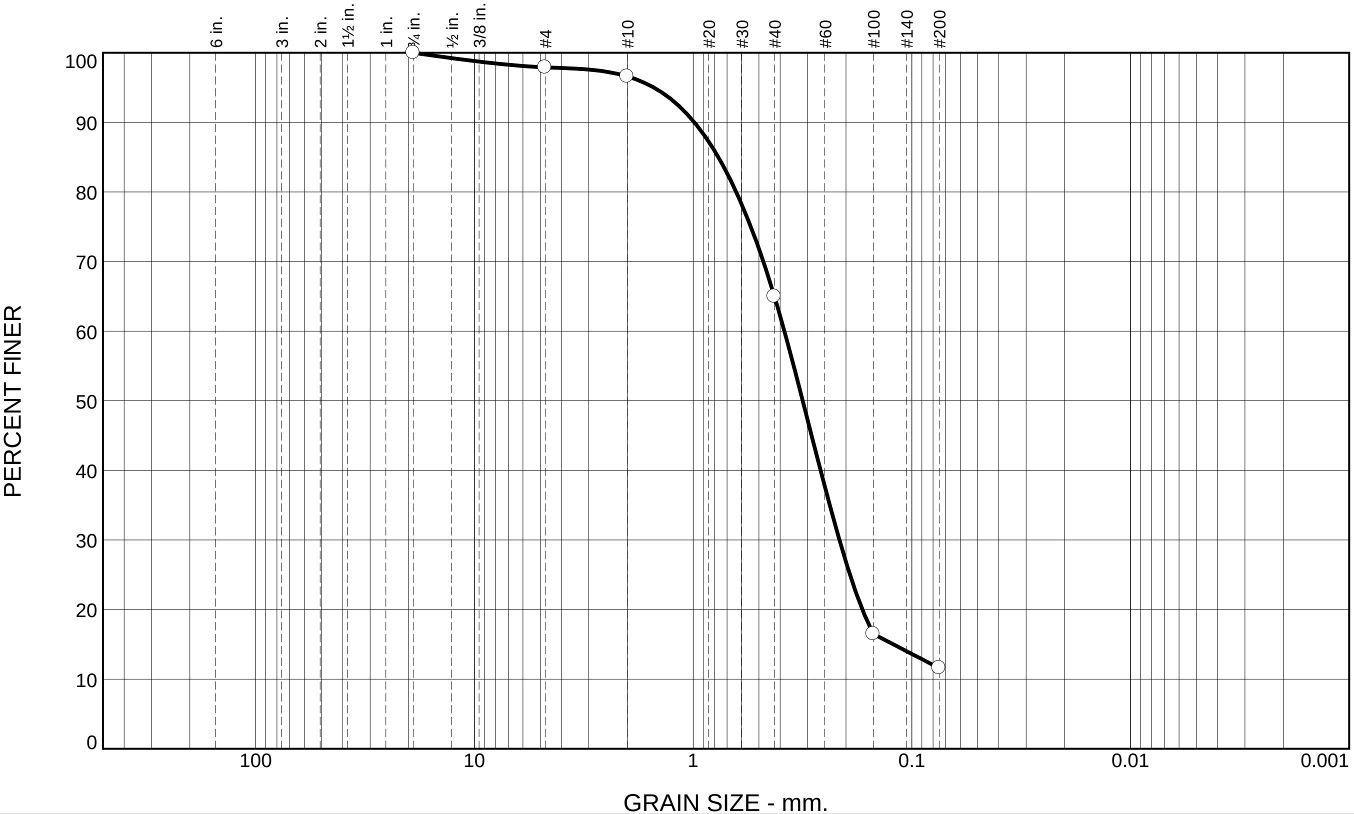
Location: B-4
Sample Number: S-5 **Depth:** 8 - 10' **Date:** 7/13/15

QCQA Laboratories, Inc.

Schuylerville, NY

Client: CHA Companies
Project: HVCC Outdoor Athletic Field Complex
CHA No. 30181.2000.42000
Project No: ST15-056 **Figure** 15-243

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.1	1.3	31.6	53.4	11.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
#4	97.9		
#10	96.6		
#40	65.0		
#100	16.5		
#200	11.6		

* (no specification provided)

Soil Description

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.9865 D_{85}= 0.7670 D_{60}= 0.3826
D_{50}= 0.3153 D_{30}= 0.2143 D_{15}= 0.1213
D_{10}= C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Water Content: 8.4 %

Location: B-5
Sample Number: S-3 **Depth:** 4 - 6' **Date:** 7/13/15

QCQA Laboratories, Inc.

Schuylerville, NY

Client: CHA Companies
Project: HVCC Outdoor Athletic Field Complex
CHA No. 30181.2000.42000
Project No: ST15-056 **Figure** 15-244

Archaeology Preservation History

Collamer & Associates, Inc.
Archaeological Services & Historic Research

PHASE 1A
CULTURAL RESOURCE INVESTIGATION For The HUDSON VALLEY COMMUNITY COLLEGE PROPOSED BASEBALL STADIUM

Town of North Greenbush & City of Troy
Rensselaer County, N.Y.

Submitted to: The Chazen Companies
110 Glen Street
Glens Falls, N.Y. 12801

Prepared by: J. Collamer & Associates, Inc.
73 Dove Street
Albany, N.Y. 12210

Date: October 31, 2000

73 Dove Street, Albany, NY 12210 • Office/fax (518) 426-9624

TABLE OF CONTENTS

MANAGEMENT SUMMARY

DATE: October 31, 2000

SUMBITED TO:
Chazen Engineering and Land Surveying, Inc.
110 Glen Street
Glens Falls, New York 12801

SUBMITTED BY:
Jeanette Collamer, Principal Investigator (RPA)
J. Collamer & Associates, Inc.
73 Dove Street
Albany, New York 12210

LOCATION:

COUNTY	LOCATION	SIZE
Rensselaer	Town of North Greenbush	24.18 Acres
Rensselaer	City of Troy	

PROPOSED PROJECT

Construction of a baseball stadium and athletic fields.

PHASE 1A SENSITIVITY EVALUATION

The project location and terrain, along with the early historic growth of the region, and the number of recorded sites in the area initially suggested a high potential for identifying evidence of both prehistoric and historic occupation. The Office of Parks, Recreation and Historic Preservation (OPRHP) Site Inventory Files indicate at least four prehistoric sites and one historic site are located within approximately one mile of the project. In addition, a Map of Rensselaerwick shows settlement in this general region prior to 1767. However, extensive development and modern land use, which includes the cutting and filling for the Hudson Valley Community College parking lots and playing fields, along with the filling of the banks along the ravine, has reduced the potential for the recovery of intact, significant cultural resources. Based upon the present field conditions, this area is judged to have a low archaeological potential.

RECOMMONDATIONS:

Although construction plans have not been finalized, the existing field conditions suggest a low potential for the recovery of cultural resources within the project area. Phase 1B field investigations are not recommended, unless the project development will affect any undisturbed portions of the surrounding lands. However, it is recommended that a professional archaeologist remain on call during the initial grading and excavation period. If deeply buried cultural remains are located, they can be examined, documented, and evaluated without a loss of cultural resources or a significant delay in the construction schedule.

1.0 INTRODUCTION

J. Collamer & Associates, Inc. was retained by The Chazen Companies to conduct a Phase 1A Cultural Resource Investigation for the proposed baseball stadium and athletic fields to be constructed on the Hudson Valley Community College campus in Rensselaer County, New York. The Phase 1A investigation was designed to provide sufficient background information to determine the archaeological potential of the project area, the need, and the extent of any Phase 1B field investigations required.

This report presents the results of the Phase 1A study completed by Ms. Jeanette Collamer, an accredited Registered Professional Archaeologist. Ms. Collamer meets the state and federal government requirements, (according to the Secretary of the Interior's Standards for Archaeology and Historic Preservation 36 CFR 61 Guidelines) to conduct cultural resource investigations. All cultural resource investigations conducted by J. Collamer & Associates are designed to follow the intent and instruction of the federal guidelines as established in Chapter 36 CFR 800, including Section 14.09 regulations. This cultural resource investigation was conducted according to the guidelines presented in the "Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State and the Curation of Archaeological Collections in New York State" written by the New York Archaeological Council (NYAC), and adopted by the OPRHP in 1994. This study addresses cultural resources only. It does not address the potential for any hazardous wastes to be identified within or adjacent to the project area.

2.0 PROJECT LOCATION & DESCRIPTION

The project area is located near the center of the Hudson Valley Community College campus, east of New York State Route 4 (Vandenburgh Avenue) and north of Williams Road. The majority of the campus consists of modern buildings (post 1960), parking lots, and landscaped lawns with trees or shrubs. The surrounding region represents a mixture of rural lands, wood lots, residential buildings, and modern commercial structures, which cater to the needs of the growing student population. On the west side of Route 4 is the Hudson Valley Plaza Shopping Center. A cemetery is situated on the east side of Route 4, adjacent to a college entrance road. The main college buildings front NYS Route 4, with parking areas both north and south of these structures. This area will not be affected by the proposed construction

The proposed Baseball Stadium will be constructed near the center of the campus property, north of Williams Road, and north of, and behind the Williams Building and Cogan Hall (see Appendix A – General Photographs). This area presently consists of parking lots, a baseball field, softball field, tennis courts, and a track and field compound. Directly north and east of the project area are the Central Services Building and the Physical Plant. These structures will not be affected by the project construction. The southwest corner of the project area abuts lands of the LaSalle Institute. The majority of the north and east project boundary will abut a forested area. Tax maps designate these lots and the present or former landowners as follows: John & Virginia Berry, Maria Kasianchuk, George T. & H. Butler, Fred & Michael L. Ciccarelli, Tonimarie Morini, Fred Ciccarelli, Vito A. Ciccarelli, Rose Ciccarelli, and Michael F. & Carmen Ciccarelli. To the east of the project are the lands of the County of Rensselaer & Faculty Student Association of the Hudson Valley Community College, with the southeastern boundary of the college lands adjacent to the lands now or formerly of: the City of Troy Land Fill, Frank J. & Anne Morgan, Leo S. Pusatere, Mark A. & Donna M. Wilde, John E. & Barbara R. Wood, George W. & Cecile Petit, John N. Turchin, Gordon J. & Irene Penecost, Mary Fitzgerald, Jon D. Rainville, Jack & Delores Perry, and Harry & Helen Doakmajian.

The Baseball Stadium will be constructed entirely within the Hudson Valley Community College campus grounds (Figure 1). The surrounding college buildings have all been constructed since the mid 1960's when the college was founded.

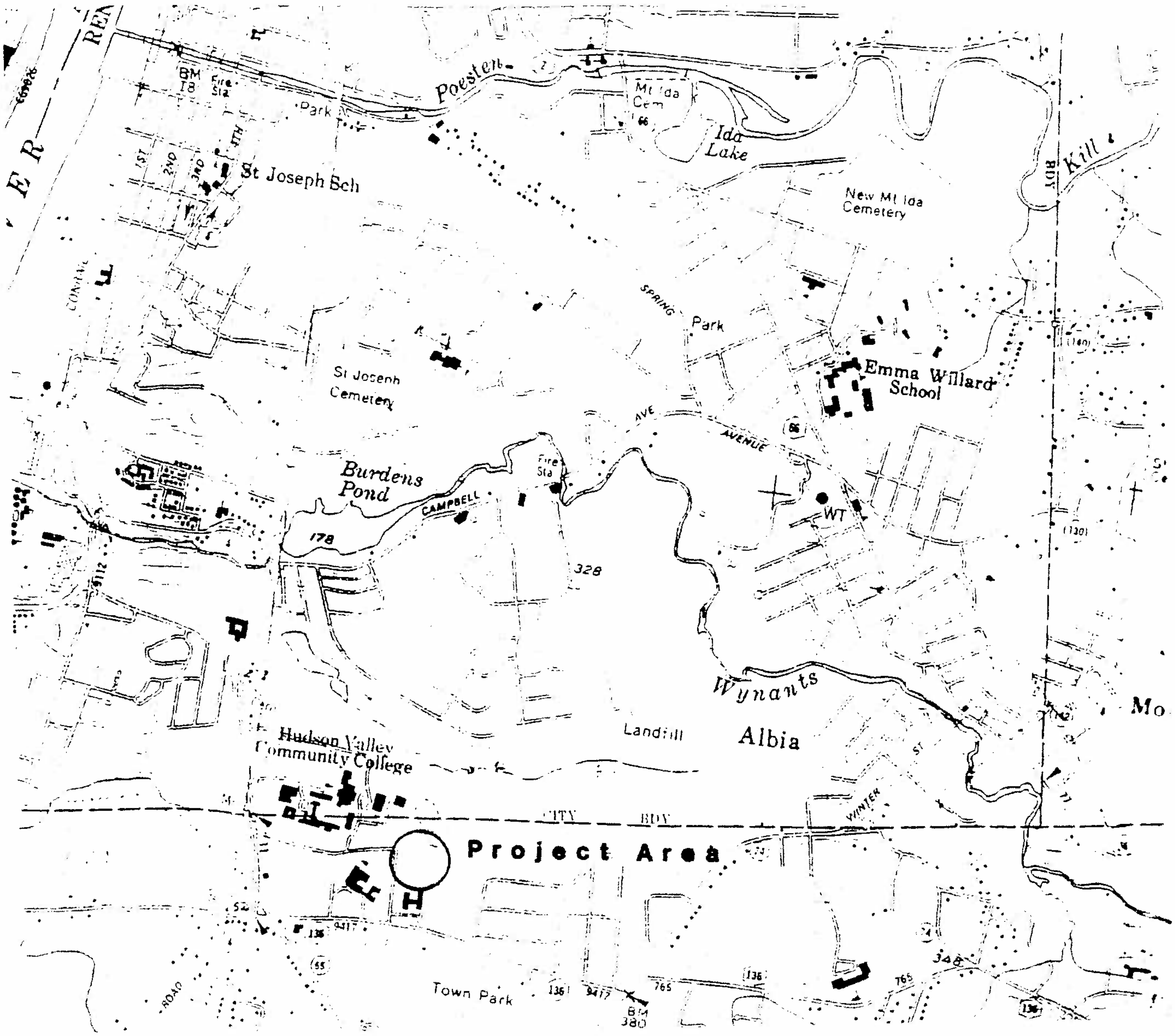


Figure 1 1983 USGS Topographic Map, South Troy Quadrangle, NY
Scale: 1 in. = 2,000 ft.

3.0 ENVIRONMENTAL INFORMATION

A review of the current environmental conditions, including the topography, bedrock geology, soils, drainage, existing field conditions, and the extent of man-made alterations, aids in evaluating the archaeological potential of the project area. In addition, 35 mm. color photographs document the present field conditions, to assist OPRHP in their review of the project. These photographs are provided in Appendix A.

Topography and Bedrock Geology

The project area is located within the Hudson Transitional Region. This portion of the Hudson Valley receives an abundance of heat energy in comparison to the nearby upland regions. The bedrock landscape of this region was formed before the Pleistocene glaciations, under strong , complex structural control exerted by folded and thrustfaulted Cambrian and Ordovician sedimentary rocks (USDA, 1977:2) All bedrock in this area is strongly folded and fractured (Ibid.). While repeated continental glaciations quarried and smoothed the rock landscape, the most obvious result is the wide variety of overburdens which now cover the county (Ibid.). This Slate belt region within the Hudson-Champlain lowlands received an abundant deposit of overburden during the last glaciation, which obscures the north-south bedrock structural trend except where large outcrops occur (Ibid.). Bedrock outcrops are clearly seen along the southeastern project boundary.

The topography within the project areas has been altered to meet the current needs of the campus. An extensive amount of cutting, grading, filling and paving has created an artificially flat surface, which varies slightly throughout the developed campus lands. Current elevations are approximately 289' +/- MSL at the western boundary, along the lands nor or formerly of LaSalle Institute of Troy. The adjacent parking lot slopes slightly with elevations ranging from 294" +/- MSL at the northwest corner to approximately 306' +/- MSL at southeast corner, adjacent to Williams Hall. Elevations across the softball field are approximately 306' +/- MSL, and 307' +/- MSL across the baseball field, directly north. According to the "Geotechnical Engineering Report" (Erdman Anthony, 2000:2), the existing track and football field elevation is approximately six feet lower than the adjacent soccer and baseball field. In the wooded area along the eastern property boundary, the elevation is approximately 320' +/- MSL. A steep ravine extends along the northern boundary. Here, the land drops approximately 50 feet to a tributary of the Wynant's Kill, which flows along the bottom of the ravine.

Soils

The "Soil Survey of Rensselaer County, New York" indicates that the predominant soil in this region consists of Hudson silt loam, 3 to 8 percent slopes. These gently sloping, deep soils formed in silt and clay deposits (USDA, 1980:38). The typical surface layer consists of a dark brown silt loam of approximately 5 inches, underlain by a friable brown silt loam approximately 3 inches thick, beneath which is a firm subsoil extending 28 inches (Ibid., 28). This subsoil consists of a yellowish brown silty clay which grades to a plastic, mottled, brown silty clay. The substratum is a light olive brown and grayish brown silty clay, which extends to a depth of 60 inches or more (Ibid.).

However, the integrity of the natural soils has been altered with the construction of the playing fields and parking lots. Relatively thin layers of fill, consisting of fine to coarse sand and gravel have been identified in areas where the playing fields were leveled (Erdman Anthony, 2000:2). In addition, records from a total of 8 soil bores, ranging in depth from 17 to 32 feet, provides further information relating to the subsurface soils conditions within the project area. Soil bores (B-1, B-2, B-3) within the parking lot identified 4 inches of asphalt, over 8 inches of subbase gravel, beneath which was a geotextile fabric (Ibid., 3), while soil bores B-2 (northwest parking lot area), B-4 (northwest track area), and B-5 (east of track area) identified levels of fill consisting of loose and dense, fine to medium, brown sand and gravel ranging in depth from 2 to 7 feet. Soil Bore-5, situated east of the track and field compound also identified trace clay and brick fill at a depth of 5 to 7 feet. These bores document the extent of disturbed levels in various locations of the project area.

Drainage

The drainage characteristics are relevant to an assessment of the probability for the location of cultural resources in the region, and the identification of prehistoric and historic patterns of interaction Rensselaer County lies within the Hudson River drainage basin The Hudson River is situated less than a mile west of the project area, with the Wynants Kill and Burdens Pond approximately 2,500 feet to the north. A small tributary of the Wynants Kill is also located directly north of the project, at the bottom of a steep ravine.

The sandy and silty soils within the project area are considered moderately well drained. Originally, drainage was probably toward the north, toward the existing waterway. However, the natural drainage system has been altered to accommodate the campus use of this region and to conduct surface water away from the paved parking lots and/or roads, and the playing fields.

Vegetation and Existing Field Conditions

The climate, temperature and amount of precipitation an area receives influences the soils and vegetation. While Rensselaer County is located within the Oak Northern Hardwood Forest Zone, this region has been cleared and timbered several times. The region is currently far from uniform and includes white pine, red cedar, white ash, hawthorn and locust (Thompson, 1977:95)

The project area, which has been extensively affected by modern development, represents an artificially flat surface landscaped with lawns, trees and shrubs. The majority of the project area consists of paved parking lots and playing fields. The current vegetation consists of grass, with second and third growth mixed hard and softwoods along the north and eastern project boundaries. Photographs provided in Appendix A document the field conditions at the time of the Phase 1A study.

Climatic Zone

In Rensselaer County, the climate is characterized by cold, snowy winters and moderately warm summers, with occasional hot spells (Ibid.,4). The precipitation is fairly well distributed throughout the year and is generally adequate for agricultural needs. The winter average temperature is 24 degrees Fahrenheit., with an average daily minimum of 15 degrees, and a summer average temperature is 69 degrees, and an average daily maximum of 81 degrees (Ibid., 5). The sun shines 60 percent of the possible time during the summer months and 40 percent in winter, with a prevailing wind from the south. This temperate climate was conducive to both prehistoric and early historic settlement.

Manmade Features and Alterations

Man often influences the topography, drainage and vegetation of the region, and thereby the potential for the identification of cultural resources. Construction of the existing parking lots and playing fields has altered the natural soils in these areas to varying degrees. This prior work has resulted in cutting and filling and grading to create level fields and parking lots, with paving to provide an all weather surface. Drainage ditches have been excavated to direct the water away from the road and parking lot surface and electric lines have been buried. Existing utilities and services also include hydrants, light poles, manholes, catchbasins, and gas pumps. Other manmade features include asphalt parking lots, gravel and dirt roads, concrete pads, bleechers, dugouts, and sheds. Evidence of filling, with wood, broken brick and concrete block, appears along the banks of the ravine to the north of the project (see Appendix A - General Photographs).

4.0 BACKGROUND RESEARCH

The background research included a review of the types and locations of recorded sites within approximately one mile of the project area, the results of prior cultural resource investigations, and a review of the prehistory and local history. This research was conducted at the OPRHP, the N.Y.S. Library and the N.Y.S. Archives.

Recorded Sites

On October 25, 2000, Ms. Jeanette Collamer reviewed the archaeological site file inventories at the OPRHP. The following sites, summarized in Table 1, are recorded within approximately one mile of the project area:

TABLE 1

Site #	**Name**	**Comments**
NYSM 4567	In Information	Prehistoric site?
NYSM 7060	Site 6	Late Archaic, collection at RPI
NYSM 7372	ACP Rens.	Camp site, no information
A083-07-0024	Site 6	Glenmore Road Site, Late Archaic, narrow stemmed tradition
A083-07-0025	Site 5 (NYSM7078)	Haydock House Foundation cellar hole with walls. This house is shown on the 19th century maps.

Prior projects in this region include the following:

- #15 A Cultural Resource Survey Report for New York State Department of Transportation, PIN 1751.20, Winter Street Over Wynantskill Creek, BIN 2024650, City of Troy, Albia, Rensselaer County, N.Y., 1983. No sites were identified.
- #17 A Cultural Resource Survey Report for New York State Department of Transportation, BIN 1-03854, Brookview Bridge over Amtrak, Town of Schodack, Rensselaer County, NY by M. Santangelo, P. Stevens, and K. Youngs, 1983. No sites were identified.
- #35 A Cultural Resource Survey Report of PIN 1528.35.111, I-90/North Greenbush Access Study, Reconnaissance to North of North Greenbush, Rensselaer County, NY by D. Vallancourt, 1985. One prehistoric site (A083-07-0020) was identified.
- #36 Stage 1 Cultural Resource Survey for the Wyantskill Hydroelelctric Power Project, Troy, Rensselaer County, NY by D. Allstadt, K. Hartgen, & C. Blakemore, 1985. No sites were identified.
- #71 PIN 1089.48.109 Rte. 4/Vandenburg Avenue and Morrison Avenue, City of Troy, Town of North Greenbush, Rensselaer County, NY by the New York State Museum, 1992. No sites were identified, although photographs of the structures were submitted to OPRHP for review and evaluation.

OPRHP files do not indicate any sites or structures within or adjacent to the proposed project which are listed on the State or National Register of Historic Places.

Interviews

In order to address local concerns for cultural resources and sites not listed in state agency files, Mr. Eric Bryant, Community Relations at Hudson Valley Community College was consulted. According to the college records, the campus was constructed during the 1960's. None of their buildings are over 50 years old, with the exception of the Administration Building, formerly the Franciscan Seminary, located on the west side of Route 4. This main structure was constructed c. 1934, and has been altered over the years for new use. It was purchased by Hudson Valley Community College in 1980 and will not be affected by the project development. Although Mr. Bryant did not have the exact dates of all of the ground disturbing activities taking place on the campus over the years, he was able to supply some general background information, with a time line indicating the growth and development of the campus facilities.

Mr. Bryant was not aware of any evidence of early historic materials, or prehistoric artifacts recovered on campus grounds during the years of construction or landscaping. Mr. Bryant generously offered to consult other college offices and examine their early files relating to the initial construction of the campus facilities.

Mr. Stuart Mesinger, Director, The Chazen Companies, has stated that over 30 feet of fill has been deposited over the banks along the ravine and throughout the wooded area along the north and eastern project boundaries. Hudson Valley Community College will provide documentation regarding the extent of this fill.

Prehistoric Overview

Rensselaer County is located on the eastside of the Hudson River, which once formed the main natural transportation corridor from the Atlantic coast to the interior lands of New York. Numerous prehistoric sites have been recorded along these riverbanks. This brief overview summarizes the regional prehistory and identifies significant or relevant sites in the vicinity of the project.

In 1937, Dr. William Ritchie, former N.Y.S. Archaeologist, provided one of the first descriptions of prehistoric development in New York State. Although the stages he described have expanded and changed over the years, they reference arbitrarily delimited economic and technological boundaries, based upon the associated artifacts.

The initial prehistoric development in the northeast is identified as the Paleo-Indian Stage. Paleo-Indians, the first human inhabitants, probably entered the Northeast as the glaciers were retreating during the Late Wisconsin, 10,000 to 8,000 B.C. Travelling in small bands, these hunters followed the migrating herds of mammals along the retreating ice fronts (Ritchie and Funk, 1973:6). Subsistence patterns during this stage revolved primarily around hunting activities as they moved seasonally along the major river valleys, keeping to the elevated terraces since water levels were higher at that time (Ibid. 1973:6). Habitation sites representative of this hunting-gathering phase consisted mainly of small seasonal open-air camps, specialized procurement sites, and kill sites. Artifacts associated with Paleo-Indian sites include Clovis points, bifaces, unifaces, end scrapers, side scrapers, retouched knives, hammer stones, anvil stones and abraidingstones. Although a basic pattern of culture prevailed throughout this span of occupation, temporal and regional variations of artifact typology occurred (Fitting in Ritchie and Funk, 1973:7).

Very few Paleo-Indian sites have been located in New York and New England. Some have been isolated finds by local relic collectors, while others are the result of intensive testing or were located as a part of a larger study. Although Dr. Ritchie did not record the location of any Paleo sites in Rensselaer County, he did identify two loci of fluted points across the Hudson in Albany County.

Indications of the Archaic Stage, (8,000 B.C. to 1,500 B.C.) have been found throughout New York State. During this simple, nonagricultural, non-ceramic stage of economic development, territoriality and seasonal rounds were probably important. The economy at this time was based upon hunting, fishing and the gathering of wild plant foods (Ritchie and Funk, 1973:37). With the establishment of a mixed deciduous forest and a higher carrying capacity after 4,000 B.C., the population density appears to have increased (Ibid. 1973:46).

The various topographic and environmental settings of Archaic sites suggest the ability of these people to adapt and to harvest a variety of natural resources. Archaic assemblages may include soapstone vessels, oval or trianguloid knives, drills, broad side notched and corner notched points, narrow side notched points, pitted stones, anvil stones, abraidingstones, hammer stones, net sinkers, bannnerstones, ground stones, adzes, mortars, pestles and choppers. Archaic sties have frequently been reported along small lakes, or the shallow portions of large lakes, rivers, streams, or marshes. The size of these open air or seasonal camps suggests occupation by small groups of individuals or hunting parties.

Fish were an important food source along with the white tail deer, black bear, elk, raccoon, woodchuck, turkey, passenger pigeon and wild plants including acorns, hickory nuts and butternuts, all of which were available in the Rensselaer County region. During the Archaic Stage, the dead were often buried in a random fashion (Ibid. 1973:41). Accumulating data indicates widespread intensive occupation of Late Archaic groups throughout New York and New England. This stage of development is best known in the upper Hudson Valley as a result of excavations conducted on the Snook Hill site located on the Snook Kill in Saratoga County. The Archaic Phase in the northern subarea of New York has been subdivided into major sequences included in the Laurentian Tradition; these are the Vergennes, the Brewerton and the Glacial Kame (Ritchie, 1980:xxxi).

The Transitional Stage dates from 1,500 B.C. to 1,000 B.C. This stage appears to have its roots in the Susquehanna drainage basin. To date, only a limited few upland camps, suggesting seasonal movements such as fall-winter hunting sites, have been identified as Transitional (Ibid. 1973:71). Their general assemblage includes choppers, notched net sinkers, anvilstones, bone and antler objects and atlatl weights (Funk, 1971:23). Refuse remains indicate a dependence upon deer, turkey, and other wildlife, which were native to Rensselaer County. According to Dr. Funk (1971:308), there is evidence of seasonal rounds as a part of the economic cycle, utilizing aquatic and terrestrial resources along the major rivers. Dr. Ritchie (1969:157) believes the Transitional Stage has a wide distribution along the Susquehanna River and its tributaries in New York. To date, only a limited number of upland camps, suggesting seasonal movements, such as fall-winter hunting sites have been identified as Transitional (Ritchie and Funk, 1973:71).

The Woodland Stage, 1,000 B.C. to 1,600 A.D., is best understood in reference to the preceding developments. This stage has been divided into periods referred to as Early, Middle and Late Woodland (Ritchie, 1980:179). The first significant use of pottery has been attributed to the Early Woodland Period, although settlement and subsistence patterns remained unchanged (Ritchie, 1973:96). During the Late Woodland period, large villages dependent upon a horticultural economy became evident. Artifact inventories and food refuse for sites of this stage indicates a hunting-fishing-gathering economy with a predilection for large lakes and streams. Artifacts commonly associated with this phase of development include tubular smoking pipes, distinctive gorgets, bird stones, boat stones, copper ornaments, and bar amulets. Burial ceremonialism also appears to have been a major feature of the Early Woodland periods. Burial artifacts were often made of exotic materials such as Ohio chalcedony, Ohio banded slate, and Harrison County, Indiana flint (Ibid. 1973:96).

During the Late Woodland Period, the Mohawks, one of the Five Nations of the Iroquois Confederacy, drove the Algonquins from the upper Hudson Valley. By 1575, the Algonquin and the Iroquois tribes were locked in conflict for control of the northern regions of the state (Bellico, 1992:8). However, Dr. Beauchamp (1900:138), indicates the region encompassing present day Rensselaer County was generally considered Algonquin territory. His "1899 Map of Territorial Divisions", shows the west side of the Hudson as Mahikan land. Dr. Beauchamp also recorded the location of 9 Native American sites in Rensselaer County. Those located nearest the project area are listed below:

#6 An early site and cemetery at South Troy.
#7 Vandenburgh's Hill which provided evidence of "varied and successive occupation over five acres, with (the) finest articles found near the surface."
#8 East Troy (Albia) where a group of small sites extends over a hundred acres of land. No projectiles, knives or pottery was recovered.

In 1920, Dr. Parker, then New York State Archaeologist, expanded the list of known prehistoric sites in Rensselaer County to a total of 32 (Parker, 1920:672-674). Dr. Parker's list includes many of the sites previously identified by Dr. Beauchamp, but does not record any sites within the project area.

Historic Overview

Rensselaer County was formed from Albany on February 7, 1791, it's name taken from the Rensselaer family whose lands extended along both sides of the Hudson River, 24 miles north and south, and 48 miles east and west, including most of present day Albany and Rensselaer Counties (French, 1860:157). The patroon system, established under the Dutch West India Company, required Van Rensselaer to bring emigrants to New Netherlands to farm and settle the lands. The 1776 Map of Rensselaerwick (Figure 2) shows the approximate locations of many of the early settlers. Those nearest the project area include residences: #62 Philip Deferest, #63 unidentified, #64 Philip Wendell, #65 Rutger Van Den Bergh and #66 Cornelus M. Van Buren.

Figure 2 1767 Map of Rensselaerwick by C.J. Sauthier
Scale: 1 inch = 10.5 miles

As shown on the 1829 Map of the County of Rensselaer (Figure 3), there were few established roads within the region at this time. The majority of the farms and populations centers were located along the Hudson River.

Figure 3 1829 Map of the County of Rensselaer by D.Burr
Scale: 1 inch = 2.5 miles

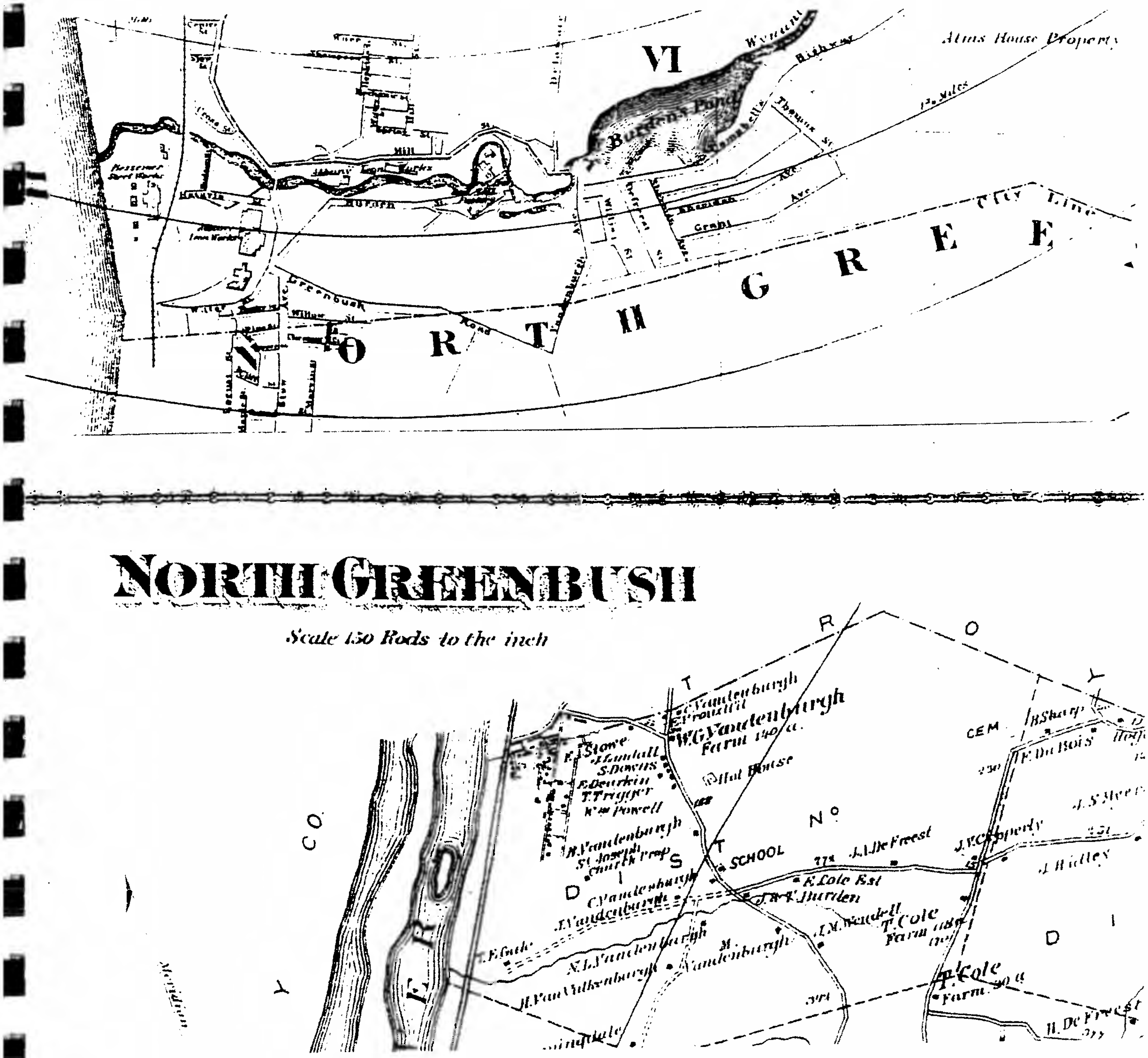
By 1854 (Figure 4), Williams Road had been established. Two structures are shown on the north side of the road: the J. DeFreest house, located southeast of the project, and an unidentified structure further east at the road intersection. Two Vandenburgh farms and a school house are shown on the west side of present day New York State Route 4 (Vandenburgh Avenue). The project area was probably uses as agricultural fields at this time.

Figure 4 1854 Landownership Map of Rensselaer County

The 1861 map (Figure 5) clearly shows the roadways and identifies the residents in the area. Although new structures are indicated to the east of Vandenburgh Avenue, there does not appear to be any changes within the project area. As shown on this map, the project area probably continued to be used for agriculture.

Figure 5 1861 Map of Rensselaer County by DJ Lake and S.N.Beers
Scale: 1 ½ in. = 1 mi.

In 1876 (Figures 6 & 7), the project area is shown within the North Greenbush Township. Although a hothouse and school have been constructed on the east side of Route 4, they are clearly situated west of the project area. This map also suggests the continued use of the project area as farmland.



Figures 6 & 7 1876 Map of North Greenbush by S.N. Beers
Scale 150 rods = 1 inch

The 1955 Sanborn Fire Insurance map (Figure 8) does not show any further development in this region. By 1961, the Sanborn Company issued a statement that there would be no new catalog map entries, but revisions and updating of existing maps would be provided on a custom basis for non-insurance clientele.

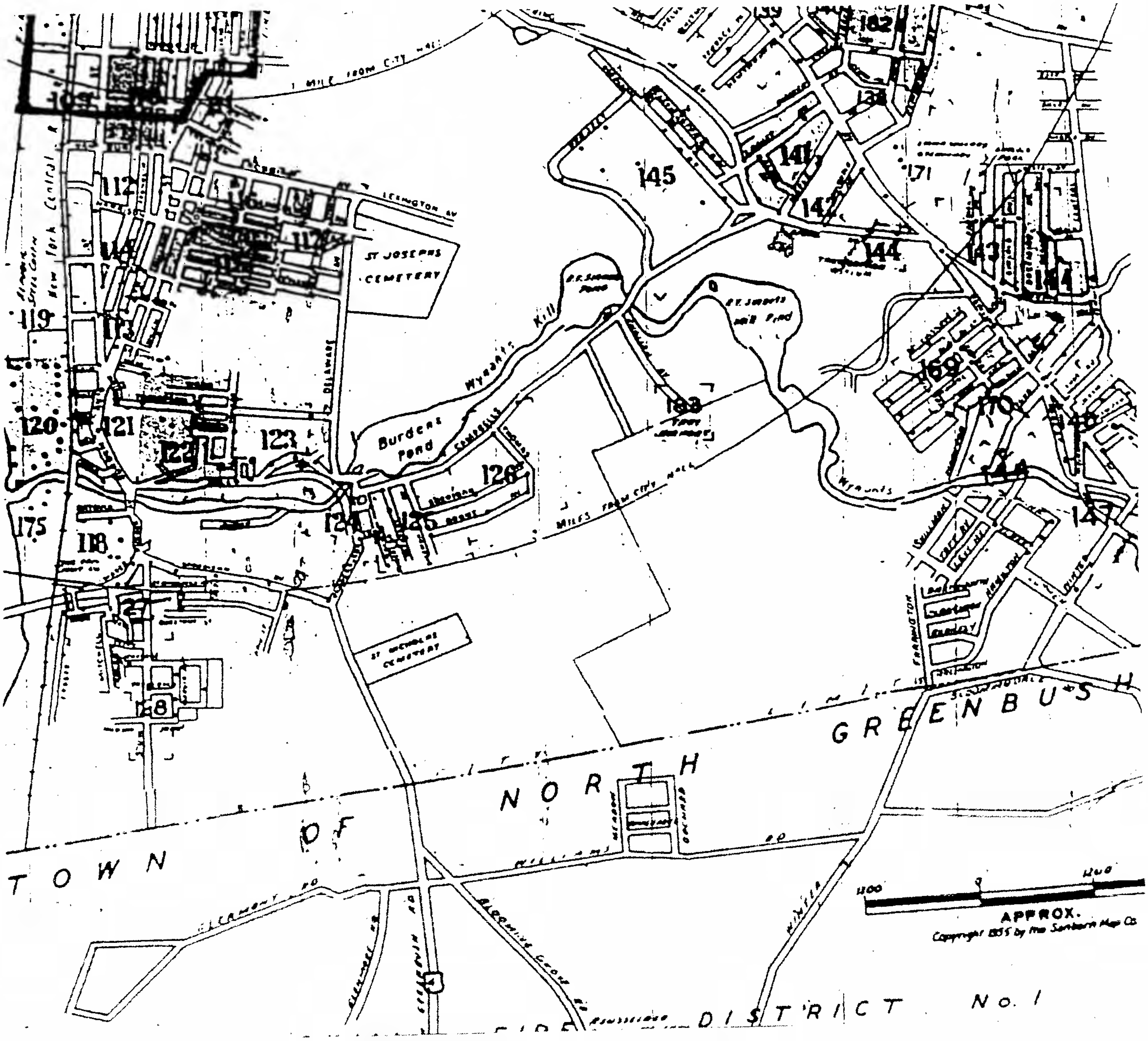


Figure 8 1955 Sanborn Fire Insurance Map Town of North Greenbush and City of Troy

According to research by the New York State Museum (1992:6), "the area on the east of Rte. 4 continued to be farmed and used as a hay field until the mid 20th century when the land was purchased by New York State for the construction of Hudson Valley Community College. At this time the boundary line between the Town of North Greenbush and the City of Troy was moved to the south so the college could utilize the City of Troy's water and sewer systems."

The Hudson Valley Community College grew from the Troy Technical Institute, which was first established in 1953 at the corner of Seventh Street and Broadway, in Troy, New York. By 1957, due to its rapid growth, the Williams farmland was acquired for the construction of the new campus (Hudson Valley Community College, 1993). By 1959, the name had been changed to Hudson Valley Community College, with the new Vandenburgh Avenue campus opening in 1960. Complete occupation of the new, 70 acre, campus occurred by 1961 (Ibid.). The cost of the new campus designed by architect Robert Green included buildings A, B, C, D, and E, (later dedicated as Guenther Hall, Amstuz Hall, Lang Hall, Higbee Hall and Hudson Hall, totaled $3,460,000, with landscaping, roads and drainage (Ibid., 37). By this time student enrollment had increased from 88 students to 1,160 full time students, and 700 evening students (Ibid.). During the next five years, four new structures were added to the growing campus (Brahan Hall, 1965, Williams Hall, 1967, the Field House, 1968, Dwight Marvin Library, 1970), and the size increased to 125 acres of land. In 1973, the tenth building, the Raymond H. Siek Campus Center was dedicated. In 1982, the Fitzgibbons Health Science Building was constructed, followed by the John T. Cogan Hall in 1984. Due to the increasing number of students and the classes offered, in 1983, the college acquired the former Franciscan Seminary on the west side of Route 4, for their administrative offices. Continued growth resulted in the opening of the Viking Child Care Center on Williams Road, south of the project area, in 1987. In 1991, the Edward F. McDonough Health, Physical Education, and Recreation Complex was added to the campus, which now numbered 15 structures. By 1992, the student enrollment exceeded 10,000 students per semester (Ibid.).

5.0 ARCHAEOLOGICAL SENSITIVITY

The preliminary evaluation of the archaeological potential of this area was determined through a review of the recorded sites in the region, the historic maps, and local histories to determine prior land use. This background research enables one to assess the archaeological potential of the project area. A comparison of the physiographic characteristics of known habitation sites has shown that certain environmental factors are important criteria in the choice of settlement locations, procurement sites, and seasonal occupation areas. Both prehistoric and historic sites exhibit environmental factors which can easily be recognized by an examination and comparison of relevant characteristics. Physical elements likely to exert the greatest influence on site locations include the geology, the topography, the soils, the drainage, the vegetation and the climate.

The initial review of the site characteristics suggests this region is potentially sensitive for the location of prehistoric resources. Archaeological site inventory files indicate prehistoric sites are frequently located within 500 feet of a viable waterway or wetland. Prehistoric site types anticipated in this region encompass all phases of cultural development, however, since hunting and gathering populations occupied the northeast for an extended period of time prior to the development of agriculture, a proportionately larger number of small seasonal camps or kill sites may be expected. Archaeological evidence of these occupations would consist of artifacts and features related to seasonal open air camps or inland procurement sites. The locations of these sites would most likely be situated in areas with less than a 10% slope, oriented for a southern exposure, and within 500 feet of a lake, river, stream, or wetland. Thus, the initial research suggests a high archaeological potential for the project area. However, modern development and prior disturbance has significantly reduced the potential for this area to produce evidence of prehistoric habitation or land use.

The historic sensitivity is primarily derived from a review of the local history and historic maps of the area. This review suggests early settlement depended upon the existing transportation systems, water power and the available natural resources. Therefore, the majority of historic sites are anticipated along the early roadways, major streams, and regions providing valuable natural resources. The project area, which is located over 600 feet north of Williams Road and 12,000 east of New York State Route 4, appears to have remained as undeveloped farmland, until it was purchased by the college.

Although OPRHP site inventory files show the locations of three prehistoric sites and one historic site foundation located within approximately one mile of the project, there has been no evidence of cultural materials found during the extensive construction and landscaping within the campus grounds. The extensive land modification, along with cutting and filling to create the parking lots and playing fields, has significantly reduced the archaeological potential of the project area. At present, there appears to be a low probability for the recovery of intact, significant archaeological resources.

6.0 RECOMMENDATIONS AND CONCLUSIONS

Since the project area has suffered extensive, prior disturbance during the construction of the existing facilities, there is a low potential for archaeological remains to occur in this area. Therefore, a Phase 1B field investigation is not recommended, unless the project will affect any undisturbed areas along the north and eastern project boundaries. This region is relatively steep and has been covered with several feet of fill over the past 30 years. As outlined in the "Standards" (1994:3), areas characterized by more than 12-15 per cent slope can be eliminated from testing, except for terraces and areas of possible rock shelter sites.

Nevertheless, a qualified archaeologist should remain on call during the initial construction activities. If deeply buried resources or human remains are identified, they can be evaluated and documented without significant delays to construction or the loss of important background history.

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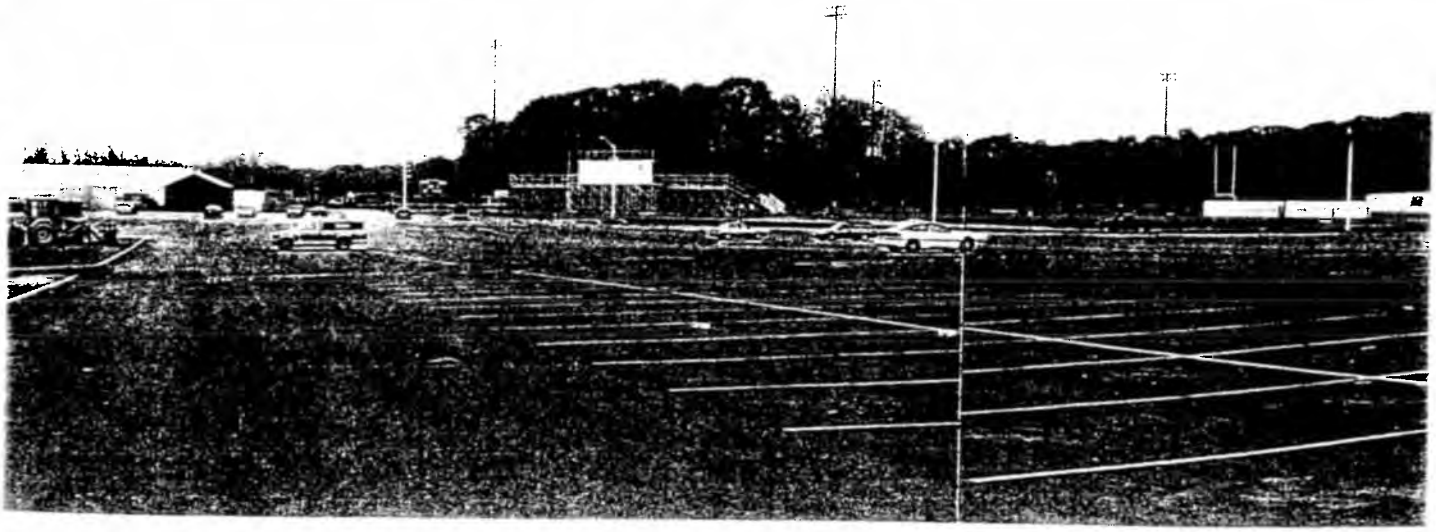
APPENDIX A

General Photographs

GENERAL PHOTOGRAPHS

Rensselaer County, New York
October, 2000

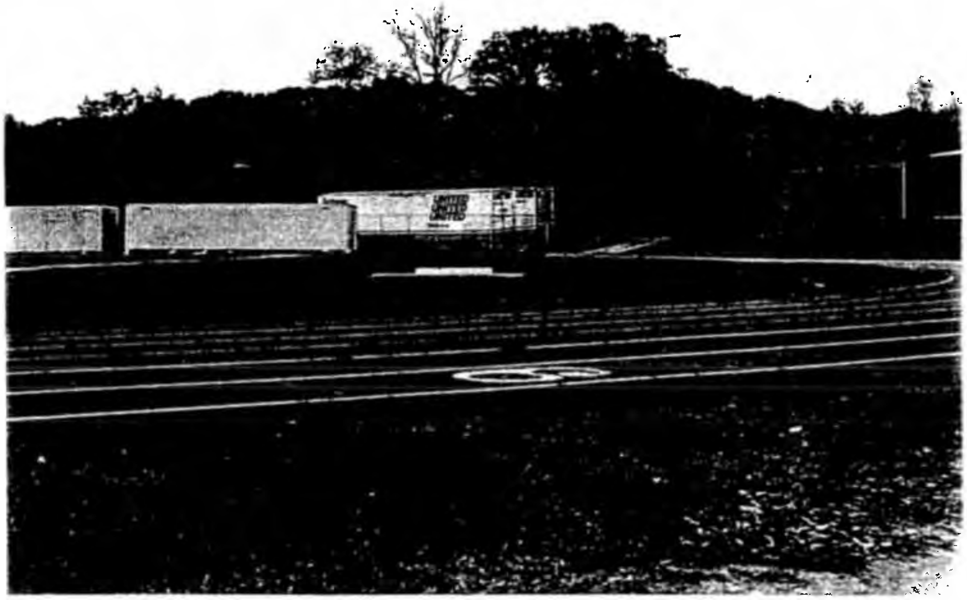
Photograph 1 (Roll 1, Neg. 1 & 2) View north from Williams Road showing the Williams Building and Cogan Hall, adjacent to the south project boundary.



Photograph 2 (Roll 1, Neg. 3 & 4) View northeast across the project area

GENERAL PHOTOGRAPHS
Rensselaer County, New York
October, 2000

Photograph 3 (Roll 1, Neg. 9) View northeast from the Physical Plant, showing the cut and filled area of the track field.



Photograph 4 (Roll 1, Neg. 10) View northeast from the track field, showing the cut bank near the north project boundary.

GENERAL PHOTOGRAPHS
Rensselaer County, New York
October, 2000

Photograph 5 (Roll 1, Neg. 11) View north from the soccer field, showing the cut and graded area along the northeast project boundary.

Photograph 6 (Roll 1, Neg. 8) View north from the parking area, showing the cut, filled, and graded parking lot and baseball field.

GENERAL PHOTOGRAPHS
Rensselaer County, New York
October, 2000

Photograph 7 (Roll 1, Neg. 17) View north showing the graded and stockpiles soils along the northern project boundary.

Photograph 8 (Roll 1, Neg. 24) View west from the project area toward the Central Services Building, showing the filled area along the northern project boundary.

NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

June 05, 2015

Ms. Jean Loewenstein
Senior Planner
CHA
3 Winners Circle
Albany, NY 12205

Re: DEC
Hudson Valley Community College Outdoor Athletic Field Complex
HVCC Athletic fields
80 Vandenburgh way, troy, NY
15PR02820

Dear Ms. Loewenstein:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the New York State Office of Parks, Recreation and Historic Preservation's opinion that your project will have no impact on archaeological and/or historic resources listed in or eligible for the New York State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

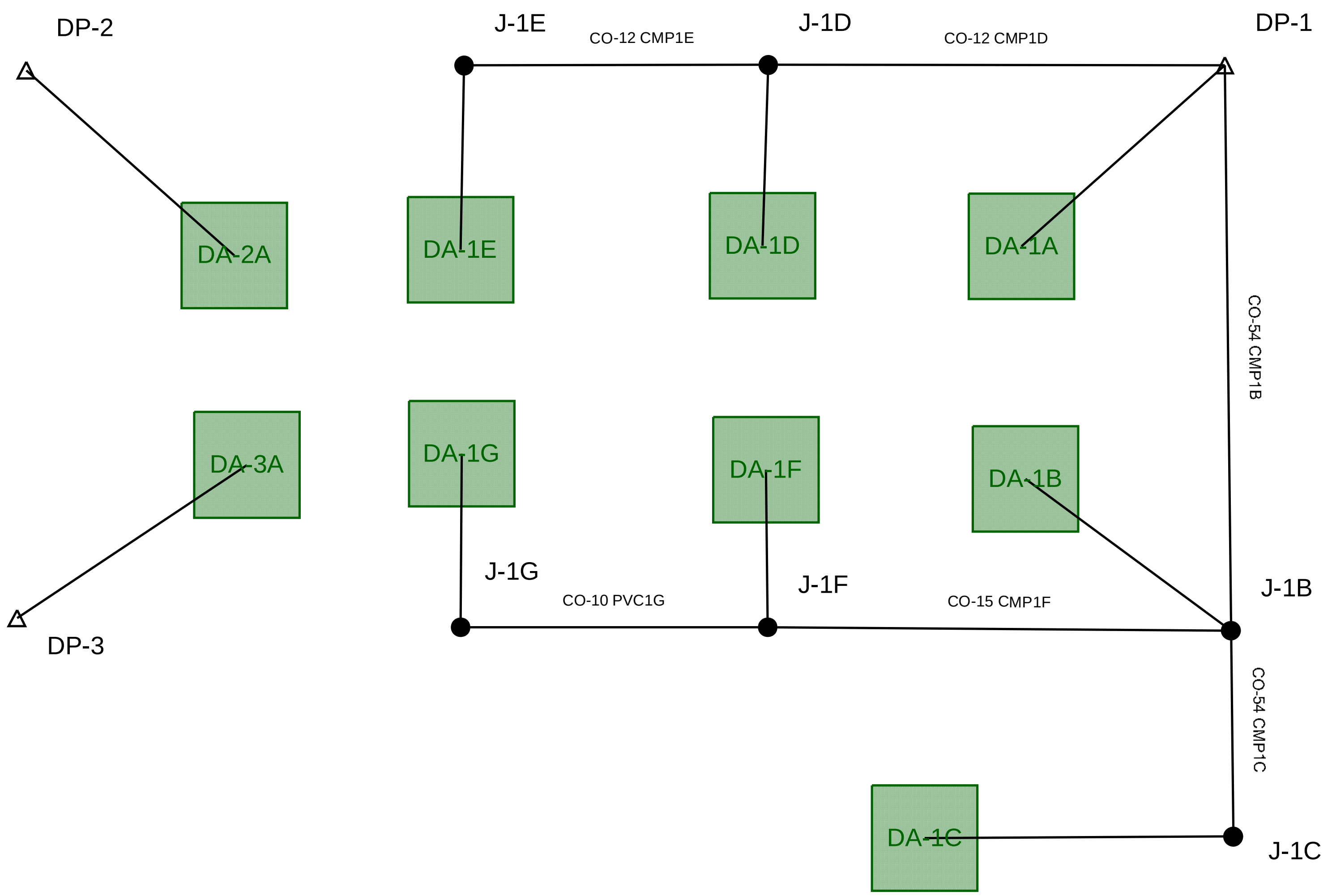
Ruth L. Pierpont

Deputy Commissioner for Historic Preservation

Appendix C

Existing Condition Pondpack Output

Scenario: BASE



Project Summary

Title	Hudson Valley Community College -Track Facility and Practice Field
Engineer	RKW
Company	CHA
Date	8/24/2015

Notes	Hudson Valley Community College -Track Facility and Practice Field Existing Conditions

Table of Contents

Table of Contents

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DA-1A	1 YR	1	0.000	0.000	0.00
DA-1A	10 YR	10	0.015	12.440	0.04
DA-1A	100 YR	100	0.090	12.140	0.84
DA-1B	1 YR	1	0.000	0.000	0.00
DA-1B	10 YR	10	0.018	12.510	0.04
DA-1B	100 YR	100	0.111	12.180	0.95
DA-1C	1 YR	1	0.097	11.920	1.84
DA-1C	10 YR	10	0.207	11.920	3.85
DA-1C	100 YR	100	0.407	11.920	7.29
DA-1D	1 YR	1	0.001	23.970	0.00
DA-1D	10 YR	10	0.028	12.190	0.15
DA-1D	100 YR	100	0.133	12.110	1.52
DA-1E	1 YR	1	0.000	23.980	0.00
DA-1E	10 YR	10	0.008	12.140	0.04
DA-1E	100 YR	100	0.041	12.050	0.53
DA-1F	1 YR	1	0.001	23.990	0.00
DA-1F	10 YR	10	0.035	12.190	0.16
DA-1F	100 YR	100	0.176	12.110	1.91
DA-1G	1 YR	1	0.000	23.980	0.00
DA-1G	10 YR	10	0.011	12.150	0.06
DA-1G	100 YR	100	0.053	12.080	0.65
DA-2A	1 YR	1	0.138	11.930	2.60
DA-2A	10 YR	10	0.314	11.920	5.90
DA-2A	100 YR	100	0.642	11.920	11.72
DA-3A	1 YR	1	0.107	11.920	1.88
DA-3A	10 YR	10	0.193	11.920	3.28
DA-3A	100 YR	100	0.341	11.920	5.63

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DP-1	1 YR	1	0.099	11.950	1.82
DP-1	10 YR	10	0.321	11.940	3.80
DP-1	100 YR	100	1.009	12.040	10.04
J-1B	1 YR	1	0.098	11.930	1.84
J-1B	10 YR	10	0.271	11.920	3.83
J-1B	100 YR	100	0.747	11.930	8.18
J-1C	1 YR	1	0.097	11.920	1.84
J-1C	10 YR	10	0.207	11.920	3.85
J-1C	100 YR	100	0.407	11.920	7.29
J-1D	1 YR	1	0.001	24.000	0.00
J-1D	10 YR	10	0.036	12.190	0.19
J-1D	100 YR	100	0.174	12.110	2.02

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
J-1E	1 YR	1	0.000	23.980	0.00
J-1E	10 YR	10	0.008	12.140	0.04
J-1E	100 YR	100	0.041	12.050	0.53
J-1F	1 YR	1	0.001	23.990	0.00
J-1F	10 YR	10	0.046	12.190	0.22
J-1F	100 YR	100	0.229	12.110	2.55
J-1G	1 YR	1	0.000	23.980	0.00
J-1G	10 YR	10	0.011	12.150	0.06
J-1G	100 YR	100	0.053	12.080	0.65
DP-2	1 YR	1	0.138	11.930	2.60
DP-2	10 YR	10	0.314	11.920	5.90
DP-2	100 YR	100	0.642	11.920	11.72
DP-3	1 YR	1	0.107	11.920	1.88
DP-3	10 YR	10	0.193	11.920	3.28
DP-3	100 YR	100	0.341	11.920	5.63

Subsection: Time-Depth Curve
Label: Time-Depth - 1

Return Event: 1 years
Storm Event: 1 Year

Time-Depth Curve: 1 Year	
Label	1 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	1 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0
1.500	0.0	0.0	0.0	0.0	0.0
2.000	0.0	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.1
4.000	0.1	0.1	0.1	0.1	0.1
4.500	0.1	0.1	0.1	0.1	0.1
5.000	0.1	0.1	0.1	0.2	0.2
5.500	0.2	0.2	0.2	0.2	0.2
6.000	0.2	0.2	0.2	0.2	0.2
6.500	0.2	0.2	0.2	0.2	0.2
7.000	0.2	0.2	0.2	0.2	0.2
7.500	0.2	0.3	0.3	0.3	0.3
8.000	0.3	0.3	0.3	0.3	0.3
8.500	0.3	0.3	0.3	0.3	0.3
9.000	0.3	0.3	0.3	0.4	0.4
9.500	0.4	0.4	0.4	0.4	0.4
10.000	0.4	0.4	0.4	0.4	0.4
10.500	0.5	0.5	0.5	0.5	0.5
11.000	0.5	0.5	0.6	0.6	0.6
11.500	0.6	0.7	0.8	1.0	1.3
12.000	1.5	1.5	1.6	1.6	1.6
12.500	1.7	1.7	1.7	1.7	1.7
13.000	1.7	1.8	1.8	1.8	1.8
13.500	1.8	1.8	1.8	1.8	1.8
14.000	1.8	1.9	1.9	1.9	1.9
14.500	1.9	1.9	1.9	1.9	1.9
15.000	1.9	1.9	1.9	1.9	1.9
15.500	2.0	2.0	2.0	2.0	2.0
16.000	2.0	2.0	2.0	2.0	2.0
16.500	2.0	2.0	2.0	2.0	2.0
17.000	2.0	2.0	2.0	2.0	2.0
17.500	2.1	2.1	2.1	2.1	2.1

Subsection: Time-Depth Curve Return Event: 1 years
Label: Time-Depth - 1 Storm Event: 1 Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
18.000	2.1	2.1	2.1	2.1	2.1
18.500	2.1	2.1	2.1	2.1	2.1
19.000	2.1	2.1	2.1	2.1	2.1
19.500	2.1	2.1	2.1	2.1	2.1
20.000	2.1	2.1	2.1	2.2	2.2
20.500	2.2	2.2	2.2	2.2	2.2
21.000	2.2	2.2	2.2	2.2	2.2
21.500	2.2	2.2	2.2	2.2	2.2
22.000	2.2	2.2	2.2	2.2	2.2
22.500	2.2	2.2	2.2	2.2	2.2
23.000	2.2	2.2	2.2	2.2	2.2
23.500	2.2	2.2	2.2	2.2	2.2
24.000	2.3	(N/A)	(N/A)	(N/A)	(N/A)

Time-Depth Curve: 10 Year	
Label	10 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.2
3.500	0.2	0.2	0.2	0.2	0.2
4.000	0.2	0.2	0.2	0.2	0.2
4.500	0.2	0.2	0.2	0.2	0.2
5.000	0.2	0.2	0.3	0.3	0.3
5.500	0.3	0.3	0.3	0.3	0.3
6.000	0.3	0.3	0.3	0.3	0.3
6.500	0.3	0.3	0.4	0.4	0.4
7.000	0.4	0.4	0.4	0.4	0.4
7.500	0.4	0.4	0.4	0.4	0.4
8.000	0.5	0.5	0.5	0.5	0.5
8.500	0.5	0.5	0.5	0.5	0.5
9.000	0.6	0.6	0.6	0.6	0.6
9.500	0.6	0.6	0.6	0.7	0.7
10.000	0.7	0.7	0.7	0.7	0.8
10.500	0.8	0.8	0.8	0.8	0.9
11.000	0.9	0.9	1.0	1.0	1.0
11.500	1.1	1.2	1.3	1.6	2.2
12.000	2.5	2.6	2.7	2.7	2.8
12.500	2.8	2.8	2.9	2.9	2.9
13.000	2.9	3.0	3.0	3.0	3.0
13.500	3.0	3.1	3.1	3.1	3.1
14.000	3.1	3.1	3.1	3.2	3.2
14.500	3.2	3.2	3.2	3.2	3.2
15.000	3.2	3.3	3.3	3.3	3.3
15.500	3.3	3.3	3.3	3.3	3.3
16.000	3.3	3.4	3.4	3.4	3.4
16.500	3.4	3.4	3.4	3.4	3.4
17.000	3.4	3.4	3.4	3.4	3.5
17.500	3.5	3.5	3.5	3.5	3.5

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
18.000	3.5	3.5	3.5	3.5	3.5
18.500	3.5	3.5	3.5	3.6	3.6
19.000	3.6	3.6	3.6	3.6	3.6
19.500	3.6	3.6	3.6	3.6	3.6
20.000	3.6	3.6	3.6	3.6	3.6
20.500	3.6	3.6	3.7	3.7	3.7
21.000	3.7	3.7	3.7	3.7	3.7
21.500	3.7	3.7	3.7	3.7	3.7
22.000	3.7	3.7	3.7	3.7	3.7
22.500	3.7	3.7	3.7	3.7	3.8
23.000	3.8	3.8	3.8	3.8	3.8
23.500	3.8	3.8	3.8	3.8	3.8
24.000	3.8	(N/A)	(N/A)	(N/A)	(N/A)

Time-Depth Curve: 100 Year	
Label	100 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.1	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.2	0.2	0.2
2.500	0.2	0.2	0.2	0.2	0.2
3.000	0.2	0.2	0.2	0.2	0.3
3.500	0.3	0.3	0.3	0.3	0.3
4.000	0.3	0.3	0.3	0.3	0.3
4.500	0.4	0.4	0.4	0.4	0.4
5.000	0.4	0.4	0.4	0.4	0.4
5.500	0.5	0.5	0.5	0.5	0.5
6.000	0.5	0.5	0.5	0.6	0.6
6.500	0.6	0.6	0.6	0.6	0.6
7.000	0.6	0.7	0.7	0.7	0.7
7.500	0.7	0.7	0.7	0.7	0.8
8.000	0.8	0.8	0.8	0.8	0.8
8.500	0.9	0.9	0.9	0.9	0.9
9.000	0.9	1.0	1.0	1.0	1.0
9.500	1.1	1.1	1.1	1.1	1.1
10.000	1.2	1.2	1.2	1.3	1.3
10.500	1.3	1.4	1.4	1.4	1.5
11.000	1.5	1.6	1.6	1.7	1.8
11.500	1.8	2.0	2.3	2.8	3.7
12.000	4.3	4.4	4.5	4.6	4.7
12.500	4.7	4.8	4.8	4.9	4.9
13.000	5.0	5.0	5.1	5.1	5.1
13.500	5.2	5.2	5.2	5.2	5.3
14.000	5.3	5.3	5.3	5.4	5.4
14.500	5.4	5.4	5.4	5.5	5.5
15.000	5.5	5.5	5.5	5.6	5.6
15.500	5.6	5.6	5.6	5.6	5.7
16.000	5.7	5.7	5.7	5.7	5.7
16.500	5.7	5.8	5.8	5.8	5.8
17.000	5.8	5.8	5.8	5.9	5.9
17.500	5.9	5.9	5.9	5.9	5.9

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
18.000	5.9	6.0	6.0	6.0	6.0
18.500	6.0	6.0	6.0	6.0	6.0
19.000	6.0	6.1	6.1	6.1	6.1
19.500	6.1	6.1	6.1	6.1	6.1
20.000	6.1	6.1	6.2	6.2	6.2
20.500	6.2	6.2	6.2	6.2	6.2
21.000	6.2	6.2	6.2	6.2	6.3
21.500	6.3	6.3	6.3	6.3	6.3
22.000	6.3	6.3	6.3	6.3	6.3
22.500	6.3	6.3	6.4	6.4	6.4
23.000	6.4	6.4	6.4	6.4	6.4
23.500	6.4	6.4	6.4	6.4	6.4
24.000	6.5	(N/A)	(N/A)	(N/A)	(N/A)

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	150.00 ft
Manning's n	0.150
Slope	0.009 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.12 ft/s
Segment Time of Concentration	0.338 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	140.00 ft
Is Paved?	False
Slope	0.009 ft/ft
Average Velocity	1.49 ft/s
Segment Time of Concentration	0.026 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	43.00 ft
Is Paved?	False
Slope	0.026 ft/ft
Average Velocity	2.58 ft/s
Segment Time of Concentration	0.005 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.369 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	150.00 ft
Manning's n	0.150
Slope	0.007 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.11 ft/s
Segment Time of Concentration	0.379 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	150.00 ft
Is Paved?	False
Slope	0.010 ft/ft
Average Velocity	1.64 ft/s
Segment Time of Concentration	0.025 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	82.00 ft
Is Paved?	False
Slope	0.006 ft/ft
Average Velocity	1.26 ft/s
Segment Time of Concentration	0.018 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.423 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	50.00 ft
Manning's n	0.011
Slope	0.020 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	1.09 ft/s
Segment Time of Concentration	0.013 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	175.00 ft
Is Paved?	True
Slope	0.009 ft/ft
Average Velocity	1.88 ft/s
Segment Time of Concentration	0.026 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	125.00 ft
Manning's n	0.150
Slope	0.010 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.12 ft/s
Segment Time of Concentration	0.289 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	100.00 ft
Is Paved?	False
Slope	0.014 ft/ft
Average Velocity	1.91 ft/s
Segment Time of Concentration	0.015 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	90.00 ft
Is Paved?	False
Slope	0.009 ft/ft
Average Velocity	1.52 ft/s
Segment Time of Concentration	0.016 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.320 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n (Lf / V) / 3600
Where:	R= Hydraulic radius Aq= Flow area, square feet Wp= Wetted perimeter, feet V= Velocity, ft/sec Sf= Slope, ft/ft n= Manning's n Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =	Unpaved surface: V = 16.1345 * (Sf**0.5) Paved Surface: V = 20.3282 * (Sf**0.5) (Lf / V) / 3600
Where:	V= Velocity, ft/sec Sf= Slope, ft/ft Tc= Time of concentration, hours Lf= Flow length, feet

Time of Concentration Results

Segment #1: TR-55 Sheet Flow

Hydraulic Length	60.00 ft
Manning's n	0.150
Slope	0.008 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.10 ft/s
Segment Time of Concentration	0.170 hours

Segment #2: TR-55 Shallow Concentrated Flow

Hydraulic Length	150.00 ft
Is Paved?	False
Slope	0.002 ft/ft
Average Velocity	0.72 ft/s
Segment Time of Concentration	0.058 hours

Time of Concentration (Composite)

Time of Concentration (Composite)	0.228 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	140.00 ft
Manning's n	0.150
Slope	0.013 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.14 ft/s
Segment Time of Concentration	0.281 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	175.00 ft
Is Paved?	False
Slope	0.005 ft/ft
Average Velocity	1.09 ft/s
Segment Time of Concentration	0.045 hours

Segment #3: TR-55 Shallow Concentrated Flow	
Hydraulic Length	33.00 ft
Is Paved?	False
Slope	0.018 ft/ft
Average Velocity	2.18 ft/s
Segment Time of Concentration	0.004 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.330 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	60.00 ft
Manning's n	0.150
Slope	0.008 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.10 ft/s
Segment Time of Concentration	0.170 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	195.00 ft
Is Paved?	False
Slope	0.001 ft/ft
Average Velocity	0.52 ft/s
Segment Time of Concentration	0.105 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.275 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Time of Concentration Results

Segment #1: TR-55 Sheet Flow

Hydraulic Length	50.00 ft
Manning's n	0.011
Slope	0.003 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.48 ft/s
Segment Time of Concentration	0.029 hours

Segment #2: TR-55 Shallow Concentrated Flow

Hydraulic Length	211.00 ft
Is Paved?	True
Slope	0.027 ft/ft
Average Velocity	3.37 ft/s
Segment Time of Concentration	0.017 hours

Segment #3: TR-55 Channel Flow

Flow Area	0.8 ft²
Hydraulic Length	147.00 ft
Manning's n	0.014
Slope	0.020 ft/ft
Wetted Perimeter	3.14 ft
Average Velocity	6.03 ft/s
Segment Time of Concentration	0.007 hours

Time of Concentration (Composite)

Time of Concentration (Composite)	0.083 hours

==== SCS Channel Flow

Tc =
R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =
Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:
V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =
(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow

Hydraulic Length	50.00 ft
Manning's n	0.011
Slope	0.004 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.57 ft/s
Segment Time of Concentration	0.024 hours

Segment #2: TR-55 Shallow Concentrated Flow

Hydraulic Length	142.00 ft
Is Paved?	True
Slope	0.003 ft/ft
Average Velocity	1.08 ft/s
Segment Time of Concentration	0.037 hours

Time of Concentration (Composite)

Time of Concentration (Composite)	0.083 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
grass - fair (HSG A)	49.000	0.804	0.0	0.0	49.000
woods - fair (HSG A)	36.000	0.149	0.0	0.0	36.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.953	(N/A)	(N/A)	46.967

Subsection: Runoff CN-Area
Label: DA-1B

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.011	0.0	0.0	98.000
grass - fair (HSG A)	49.000	0.955	0.0	0.0	49.000
woods - fair (HSG A)	36.000	0.217	0.0	0.0	36.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.183	(N/A)	(N/A)	47.071

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.709	0.0	0.0	98.000
grass - fair	49.000	0.022	0.0	0.0	49.005
woods - fair	36.000	0.043	0.0	0.0	36.013
grass - steep/poor	68.000	0.171	0.0	0.0	68.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.945	(N/A)	(N/A)	88.610

Subsection: Runoff CN-Area
Label: DA-1D

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.047	0.0	0.0	98.000
grass - fair (HSG A)	49.000	1.061	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.108	(N/A)	(N/A)	51.079

Subsection: Runoff CN-Area
Label: DA-1E

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
grass - fair (HSG A)	49.000	0.382	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.382	(N/A)	(N/A)	49.000

Subsection: Runoff CN-Area
Label: DA-1F

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.031	0.0	0.0	98.000
grass - fair (HSG A)	49.000	1.518	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.549	(N/A)	(N/A)	49.981

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.009	0.0	0.0	98.000
grass - fair (HSG A)	49.000	0.462	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.471	(N/A)	(N/A)	49.936

Subsection: Runoff CN-Area
Label: DA-2A

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	1.194	0.0	0.0	98.000
grass - fair (HSG A)	49.000	0.399	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.593	(N/A)	(N/A)	85.727

Subsection: Runoff CN-Area
Label: DA-3A

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.663	0.0	0.0	98.000
grass - fair (HSG A)	49.000	0.010	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.673	(N/A)	(N/A)	97.272

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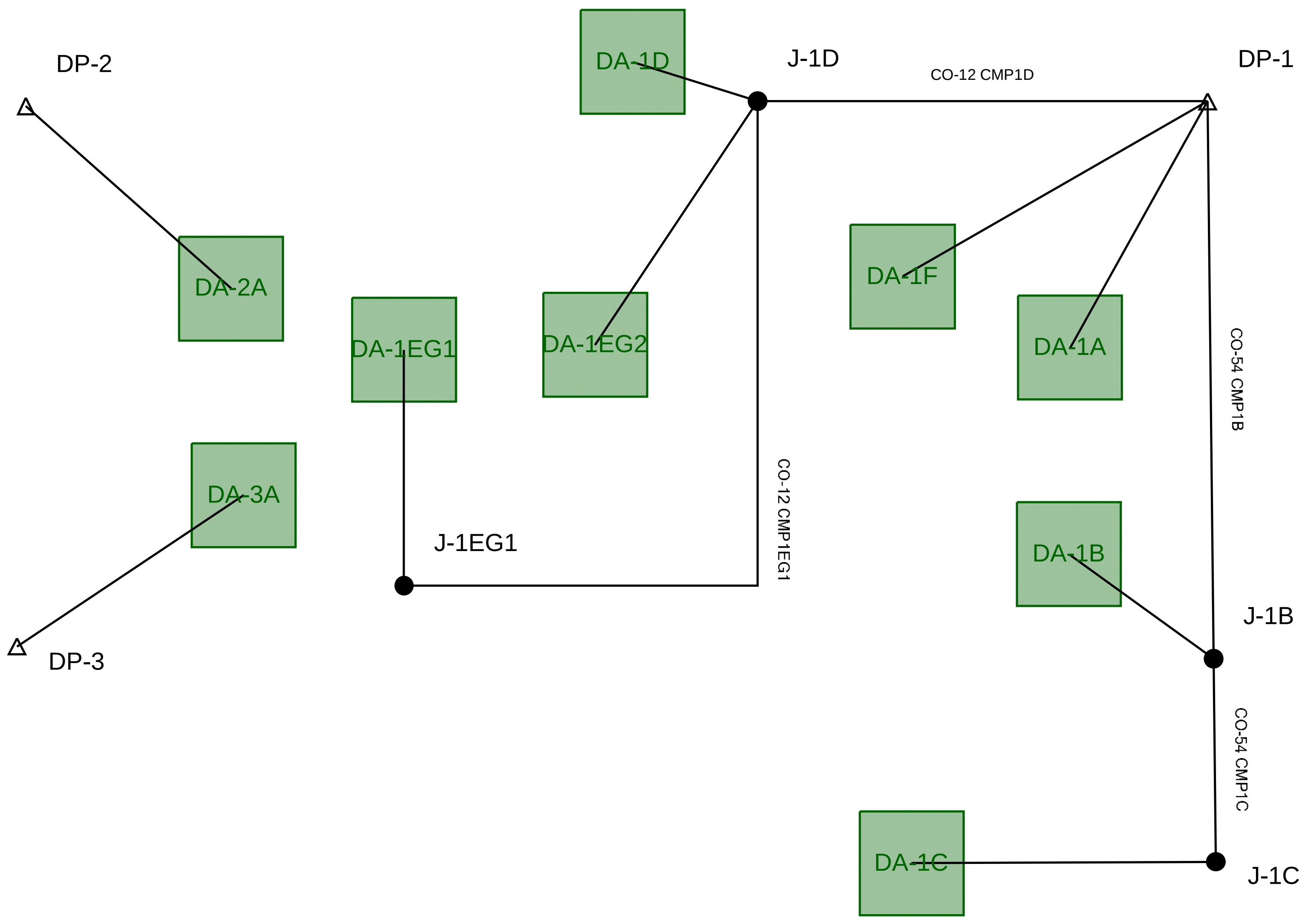
Appendix D

Proposed Condition Pondpack Output

Scenario: BASE



Project Summary

Title	Hudson Valley Community College -Track Facility and Practice Field
Engineer	RKW
Company	CHA
Date	8/24/2015

Notes	Hudson Valley Community College -Track Facility and Practice Field Unmitigated Proposed Conditions

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Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DA-1A	1 YR	1	0.000	0.000	0.00
DA-1A	10 YR	10	0.004	12.930	0.01
DA-1A	100 YR	100	0.033	12.020	0.49
DA-1B	1 YR	1	0.000	0.000	0.00
DA-1B	10 YR	10	0.002	15.130	0.00
DA-1B	100 YR	100	0.021	12.020	0.29
DA-1C	1 YR	1	0.023	12.010	0.38
DA-1C	10 YR	10	0.071	11.930	1.32
DA-1C	100 YR	100	0.174	11.920	3.29
DA-1D	1 YR	1	0.000	15.130	0.00
DA-1D	10 YR	10	0.003	12.040	0.04
DA-1D	100 YR	100	0.012	12.010	0.19
DA-1EG1	1 YR	1	0.000	24.000	0.00
DA-1EG1	10 YR	10	0.009	12.160	0.05
DA-1EG1	100 YR	100	0.045	12.090	0.56
DA-1F	1 YR	1	0.620	12.590	3.23
DA-1F	10 YR	10	1.094	12.590	5.56
DA-1F	100 YR	100	1.906	12.590	9.52
DA-2A	1 YR	1	0.000	23.990	0.00
DA-2A	10 YR	10	0.022	12.220	0.10
DA-2A	100 YR	100	0.111	12.130	1.20
DA-3A	1 YR	1	0.066	11.920	1.25
DA-3A	10 YR	10	0.138	11.920	2.54
DA-3A	100 YR	100	0.267	11.920	4.75
DA-1EG2	1 YR	1	0.016	12.290	0.04
DA-1EG2	10 YR	10	0.095	12.120	0.98
DA-1EG2	100 YR	100	0.316	12.080	4.04

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DP-1	1 YR	1	0.659	12.590	3.32
DP-1	10 YR	10	1.277	12.580	6.03
DP-1	100 YR	100	2.507	12.310	11.82
J-1B	1 YR	1	0.023	12.010	0.38
J-1B	10 YR	10	0.073	11.930	1.32
J-1B	100 YR	100	0.195	11.930	3.47
J-1C	1 YR	1	0.023	12.010	0.38
J-1C	10 YR	10	0.071	11.930	1.32
J-1C	100 YR	100	0.174	11.920	3.29
J-1D	1 YR	1	0.016	12.290	0.04
J-1D	10 YR	10	0.107	12.120	1.01
J-1D	100 YR	100	0.374	12.080	4.67

Subsection: Master Network Summary

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DP-2	1 YR	1	0.000	23.990	0.00
DP-2	10 YR	10	0.022	12.220	0.10
DP-2	100 YR	100	0.111	12.130	1.20
DP-3	1 YR	1	0.066	11.920	1.25
DP-3	10 YR	10	0.138	11.920	2.54
DP-3	100 YR	100	0.267	11.920	4.75
J-1EG1	1 YR	1	0.000	24.000	0.00
J-1EG1	10 YR	10	0.009	12.160	0.05
J-1EG1	100 YR	100	0.045	12.090	0.56

Time-Depth Curve: 1 Year	
Label	1 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	1 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0
1.500	0.0	0.0	0.0	0.0	0.0
2.000	0.0	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.1
4.000	0.1	0.1	0.1	0.1	0.1
4.500	0.1	0.1	0.1	0.1	0.1
5.000	0.1	0.1	0.1	0.2	0.2
5.500	0.2	0.2	0.2	0.2	0.2
6.000	0.2	0.2	0.2	0.2	0.2
6.500	0.2	0.2	0.2	0.2	0.2
7.000	0.2	0.2	0.2	0.2	0.2
7.500	0.2	0.3	0.3	0.3	0.3
8.000	0.3	0.3	0.3	0.3	0.3
8.500	0.3	0.3	0.3	0.3	0.3
9.000	0.3	0.3	0.3	0.4	0.4
9.500	0.4	0.4	0.4	0.4	0.4
10.000	0.4	0.4	0.4	0.4	0.4
10.500	0.5	0.5	0.5	0.5	0.5
11.000	0.5	0.5	0.6	0.6	0.6
11.500	0.6	0.7	0.8	1.0	1.3
12.000	1.5	1.5	1.6	1.6	1.6
12.500	1.7	1.7	1.7	1.7	1.7
13.000	1.7	1.8	1.8	1.8	1.8
13.500	1.8	1.8	1.8	1.8	1.8
14.000	1.8	1.9	1.9	1.9	1.9
14.500	1.9	1.9	1.9	1.9	1.9
15.000	1.9	1.9	1.9	1.9	1.9
15.500	2.0	2.0	2.0	2.0	2.0
16.000	2.0	2.0	2.0	2.0	2.0
16.500	2.0	2.0	2.0	2.0	2.0
17.000	2.0	2.0	2.0	2.0	2.0
17.500	2.1	2.1	2.1	2.1	2.1

Subsection: Time-Depth Curve
Label: Time-Depth - 1

Return Event: 1 years
Storm Event: 1 Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
18.000	2.1	2.1	2.1	2.1	2.1
18.500	2.1	2.1	2.1	2.1	2.1
19.000	2.1	2.1	2.1	2.1	2.1
19.500	2.1	2.1	2.1	2.1	2.1
20.000	2.1	2.1	2.1	2.2	2.2
20.500	2.2	2.2	2.2	2.2	2.2
21.000	2.2	2.2	2.2	2.2	2.2
21.500	2.2	2.2	2.2	2.2	2.2
22.000	2.2	2.2	2.2	2.2	2.2
22.500	2.2	2.2	2.2	2.2	2.2
23.000	2.2	2.2	2.2	2.2	2.2
23.500	2.2	2.2	2.2	2.2	2.2
24.000	2.3	(N/A)	(N/A)	(N/A)	(N/A)

Time-Depth Curve: 10 Year	
Label	10 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.2
3.500	0.2	0.2	0.2	0.2	0.2
4.000	0.2	0.2	0.2	0.2	0.2
4.500	0.2	0.2	0.2	0.2	0.2
5.000	0.2	0.2	0.3	0.3	0.3
5.500	0.3	0.3	0.3	0.3	0.3
6.000	0.3	0.3	0.3	0.3	0.3
6.500	0.3	0.3	0.4	0.4	0.4
7.000	0.4	0.4	0.4	0.4	0.4
7.500	0.4	0.4	0.4	0.4	0.4
8.000	0.5	0.5	0.5	0.5	0.5
8.500	0.5	0.5	0.5	0.5	0.5
9.000	0.6	0.6	0.6	0.6	0.6
9.500	0.6	0.6	0.6	0.7	0.7
10.000	0.7	0.7	0.7	0.7	0.8
10.500	0.8	0.8	0.8	0.8	0.9
11.000	0.9	0.9	1.0	1.0	1.0
11.500	1.1	1.2	1.3	1.6	2.2
12.000	2.5	2.6	2.7	2.7	2.8
12.500	2.8	2.8	2.9	2.9	2.9
13.000	2.9	3.0	3.0	3.0	3.0
13.500	3.0	3.1	3.1	3.1	3.1
14.000	3.1	3.1	3.1	3.2	3.2
14.500	3.2	3.2	3.2	3.2	3.2
15.000	3.2	3.3	3.3	3.3	3.3
15.500	3.3	3.3	3.3	3.3	3.3
16.000	3.3	3.4	3.4	3.4	3.4
16.500	3.4	3.4	3.4	3.4	3.4
17.000	3.4	3.4	3.4	3.4	3.5
17.500	3.5	3.5	3.5	3.5	3.5

Subsection: Time-Depth Curve Return Event: 10 years
Label: Time-Depth - 1 Storm Event: 10 Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
18.000	3.5	3.5	3.5	3.5	3.5
18.500	3.5	3.5	3.5	3.6	3.6
19.000	3.6	3.6	3.6	3.6	3.6
19.500	3.6	3.6	3.6	3.6	3.6
20.000	3.6	3.6	3.6	3.6	3.6
20.500	3.6	3.6	3.7	3.7	3.7
21.000	3.7	3.7	3.7	3.7	3.7
21.500	3.7	3.7	3.7	3.7	3.7
22.000	3.7	3.7	3.7	3.7	3.7
22.500	3.7	3.7	3.7	3.7	3.8
23.000	3.8	3.8	3.8	3.8	3.8
23.500	3.8	3.8	3.8	3.8	3.8
24.000	3.8	(N/A)	(N/A)	(N/A)	(N/A)

Time-Depth Curve: 100 Year

Label	100 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.1	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.2	0.2	0.2
2.500	0.2	0.2	0.2	0.2	0.2
3.000	0.2	0.2	0.2	0.2	0.3
3.500	0.3	0.3	0.3	0.3	0.3
4.000	0.3	0.3	0.3	0.3	0.3
4.500	0.4	0.4	0.4	0.4	0.4
5.000	0.4	0.4	0.4	0.4	0.4
5.500	0.5	0.5	0.5	0.5	0.5
6.000	0.5	0.5	0.5	0.6	0.6
6.500	0.6	0.6	0.6	0.6	0.6
7.000	0.6	0.7	0.7	0.7	0.7
7.500	0.7	0.7	0.7	0.7	0.8
8.000	0.8	0.8	0.8	0.8	0.8
8.500	0.9	0.9	0.9	0.9	0.9
9.000	0.9	1.0	1.0	1.0	1.0
9.500	1.1	1.1	1.1	1.1	1.1
10.000	1.2	1.2	1.2	1.3	1.3
10.500	1.3	1.4	1.4	1.4	1.5
11.000	1.5	1.6	1.6	1.7	1.8
11.500	1.8	2.0	2.3	2.8	3.7
12.000	4.3	4.4	4.5	4.6	4.7
12.500	4.7	4.8	4.8	4.9	4.9
13.000	5.0	5.0	5.1	5.1	5.1
13.500	5.2	5.2	5.2	5.2	5.3
14.000	5.3	5.3	5.3	5.4	5.4
14.500	5.4	5.4	5.4	5.5	5.5
15.000	5.5	5.5	5.5	5.6	5.6
15.500	5.6	5.6	5.6	5.6	5.7
16.000	5.7	5.7	5.7	5.7	5.7
16.500	5.7	5.8	5.8	5.8	5.8
17.000	5.8	5.8	5.8	5.9	5.9
17.500	5.9	5.9	5.9	5.9	5.9

Subsection: Time-Depth Curve | Return Event: 100 years
Label: Time-Depth - 1 | Storm Event: 100 Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
18.000	5.9	6.0	6.0	6.0	6.0
18.500	6.0	6.0	6.0	6.0	6.0
19.000	6.0	6.1	6.1	6.1	6.1
19.500	6.1	6.1	6.1	6.1	6.1
20.000	6.1	6.1	6.2	6.2	6.2
20.500	6.2	6.2	6.2	6.2	6.2
21.000	6.2	6.2	6.2	6.2	6.3
21.500	6.3	6.3	6.3	6.3	6.3
22.000	6.3	6.3	6.3	6.3	6.3
22.500	6.3	6.3	6.4	6.4	6.4
23.000	6.4	6.4	6.4	6.4	6.4
23.500	6.4	6.4	6.4	6.4	6.4
24.000	6.5	(N/A)	(N/A)	(N/A)	(N/A)

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	35.00 ft
Manning's n	0.400
Slope	0.231 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.15 ft/s
Segment Time of Concentration	0.064 hours

Segment #2: TR-55 Channel Flow	
Flow Area	1.3 ft²
Hydraulic Length	172.00 ft
Manning's n	0.040
Slope	0.012 ft/ft
Wetted Perimeter	6.55 ft
Average Velocity	1.37 ft/s
Segment Time of Concentration	0.035 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.099 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:

Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	30.00 ft
Manning's n	0.400
Slope	0.260 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.15 ft/s
Segment Time of Concentration	0.054 hours

Segment #2: TR-55 Channel Flow	
Flow Area	1.7 ft²
Hydraulic Length	218.00 ft
Manning's n	0.040
Slope	0.008 ft/ft
Wetted Perimeter	7.06 ft
Average Velocity	1.25 ft/s
Segment Time of Concentration	0.049 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.103 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:

Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	60.00 ft
Manning's n	0.011
Slope	0.018 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	1.09 ft/s
Segment Time of Concentration	0.015 hours

Segment #2: TR-55 Channel Flow	
Flow Area	0.8 ft²
Hydraulic Length	117.00 ft
Manning's n	0.014
Slope	0.013 ft/ft
Wetted Perimeter	3.14 ft
Average Velocity	4.80 ft/s
Segment Time of Concentration	0.007 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:

Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	50.00 ft
Manning's n	0.150
Slope	0.011 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.11 ft/s
Segment Time of Concentration	0.131 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	95.00 ft
Is Paved?	False
Slope	0.011 ft/ft
Average Velocity	1.66 ft/s
Segment Time of Concentration	0.016 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.147 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	117.00 ft
Manning's n	0.150
Slope	0.010 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.12 ft/s
Segment Time of Concentration	0.267 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.267 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n (Lf / V) / 3600
Where:	R= Hydraulic radius Aq= Flow area, square feet Wp= Wetted perimeter, feet V= Velocity, ft/sec Sf= Slope, ft/ft n= Manning's n Tc= Time of concentration, hours Lf= Flow length, feet

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	117.00 ft
Manning's n	0.150
Slope	0.010 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.12 ft/s
Segment Time of Concentration	0.267 hours

Segment #2: TR-55 Channel Flow	
Flow Area	0.8 ft²
Hydraulic Length	493.00 ft
Manning's n	0.014
Slope	0.005 ft/ft
Wetted Perimeter	3.14 ft
Average Velocity	3.01 ft/s
Segment Time of Concentration	0.046 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.312 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:

Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: User Defined Tc	
Time of Concentration	1.242 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	1.242 hours

==== User Defined

Tc = Value entered by user
Where: Tc= Time of concentration, hours

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	117.00 ft
Manning's n	0.150
Slope	0.010 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.12 ft/s
Segment Time of Concentration	0.267 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	65.00 ft
Is Paved?	False
Slope	0.020 ft/ft
Average Velocity	2.28 ft/s
Segment Time of Concentration	0.008 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.0 ft²
Hydraulic Length	213.00 ft
Manning's n	0.050
Slope	0.027 ft/ft
Wetted Perimeter	11.01 ft
Average Velocity	0.97 ft/s
Segment Time of Concentration	0.061 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.336 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:

Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	50.00 ft
Manning's n	0.011
Slope	0.004 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.57 ft/s
Segment Time of Concentration	0.024 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	125.00 ft
Is Paved?	True
Slope	0.003 ft/ft
Average Velocity	1.15 ft/s
Segment Time of Concentration	0.030 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Subsection: Runoff CN-Area
Label: DA-1A

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
grass - fair (HSG A)	49.000	0.281	0.0	0.0	49.000
woods - fair (HSG A)	36.000	0.149	0.0	0.0	36.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.430	(N/A)	(N/A)	44.495

Subsection: Runoff CN-Area
Label: DA-1B

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.008	0.0	0.0	98.000
grass - fair (HSG A)	49.000	0.107	0.0	0.0	49.000
woods - fair (HSG A)	36.000	0.217	0.0	0.0	36.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.332	(N/A)	(N/A)	41.684

Subsection: Runoff CN-Area Return Event: 100 years
Label: DA-1C Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.266	0.0	0.0	98.000
grass - fair	49.000	0.153	0.0	0.0	49.005
woods - fair	36.000	0.043	0.0	0.0	36.013
grass - steep/poor	68.000	0.124	0.0	0.0	68.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.586	(N/A)	(N/A)	74.311

Subsection: Runoff CN-Area
Label: DA-1D

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.010	0.0	0.0	98.000
grass - fair (HSG A)	49.000	0.071	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.081	(N/A)	(N/A)	55.049

Subsection: Runoff CN-Area
Label: DA-1EG1

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.010	0.0	0.0	98.000
grass - fair (HSG A)	49.000	0.389	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.399	(N/A)	(N/A)	50.227

Subsection: Runoff CN-Area
Label: DA-1EG2

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.400	0.0	0.0	98.000
grass - fair (HSG A)	49.000	1.318	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.718	(N/A)	(N/A)	60.412

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	3.725	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	3.725	(N/A)	(N/A)	98.000

Subsection: Runoff CN-Area
Label: DA-2A

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.011	0.0	0.0	98.000
grass - fair (HSG A)	49.000	0.965	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.976	(N/A)	(N/A)	49.552

Subsection: Runoff CN-Area
Label: DA-3A

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.506	0.0	0.0	98.000
grass - fair (HSG A)	49.000	0.101	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.607	(N/A)	(N/A)	89.847

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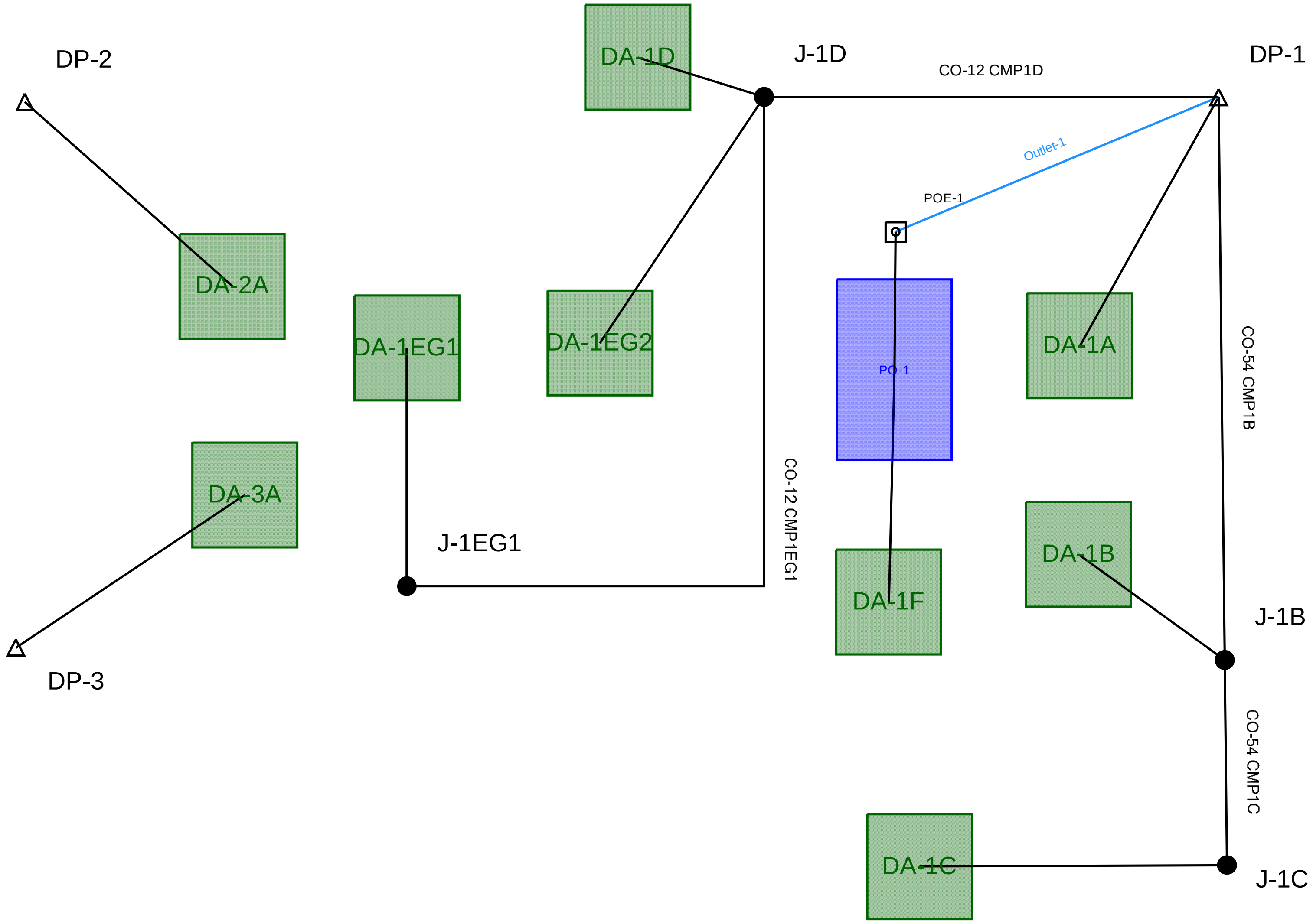
Proposed Mitigated
Condition Pondpack Output

Appendix E

Scenario: BASE



30181_ProposedCond2.ppc
8/26/2015

Project Summary

Title	Hudson Valley Community College -Track Facility and Practice Field
Engineer	RKW
Company	CHA
Date	8/24/2015

Notes	Hudson Valley Community College -Track Facility and Practice Field Proposed Conditions PO-1 is the subgrade stone fill storage below the artificial turf. Opportunity for an infiltration rate is 0.5 inches per hour is modeled, which is conservative for Type A sandy silts despite some of the history of previously disturbed layers in the existing fields that are redeveloped. A rate close to this value has been verified based on an infiltration test performed at one of the borings performed onsite.

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Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DA-1A	1 YR	1	0.000	0.000	0.00
DA-1A	10 YR	10	0.004	12.930	0.01
DA-1A	100 YR	100	0.033	12.020	0.49
DA-1B	1 YR	1	0.000	0.000	0.00
DA-1B	10 YR	10	0.002	15.130	0.00
DA-1B	100 YR	100	0.021	12.020	0.29
DA-1C	1 YR	1	0.023	12.010	0.38
DA-1C	10 YR	10	0.071	11.930	1.32
DA-1C	100 YR	100	0.174	11.920	3.29
DA-1D	1 YR	1	0.000	15.130	0.00
DA-1D	10 YR	10	0.003	12.040	0.04
DA-1D	100 YR	100	0.012	12.010	0.19
DA-1EG1	1 YR	1	0.000	24.000	0.00
DA-1EG1	10 YR	10	0.009	12.160	0.05
DA-1EG1	100 YR	100	0.045	12.090	0.56
DA-1F	1 YR	1	0.620	12.590	3.23
DA-1F	10 YR	10	1.094	12.590	5.56
DA-1F	100 YR	100	1.906	12.590	9.52
DA-2A	1 YR	1	0.000	23.990	0.00
DA-2A	10 YR	10	0.022	12.220	0.10
DA-2A	100 YR	100	0.111	12.130	1.20
DA-3A	1 YR	1	0.066	11.920	1.25
DA-3A	10 YR	10	0.138	11.920	2.54
DA-3A	100 YR	100	0.267	11.920	4.75
DA-1EG2	1 YR	1	0.016	12.290	0.04
DA-1EG2	10 YR	10	0.095	12.120	0.98
DA-1EG2	100 YR	100	0.316	12.080	4.04

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DP-1	1 YR	1	0.324	13.300	1.58
DP-1	10 YR	10	0.823	12.470	2.32
DP-1	100 YR	100	1.823	12.030	8.21
J-1B	1 YR	1	0.023	12.010	0.38
J-1B	10 YR	10	0.073	11.930	1.32
J-1B	100 YR	100	0.195	11.930	3.47
J-1C	1 YR	1	0.023	12.010	0.38
J-1C	10 YR	10	0.071	11.930	1.32
J-1C	100 YR	100	0.174	11.920	3.29
J-1D	1 YR	1	0.016	12.290	0.04
J-1D	10 YR	10	0.107	12.120	1.01
J-1D	100 YR	100	0.374	12.080	4.67

Subsection: Master Network Summary

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DP-2	1 YR	1	0.000	23.990	0.00
DP-2	10 YR	10	0.022	12.220	0.10
DP-2	100 YR	100	0.111	12.130	1.20
DP-3	1 YR	1	0.066	11.920	1.25
DP-3	10 YR	10	0.138	11.920	2.54
DP-3	100 YR	100	0.267	11.920	4.75
J-1EG1	1 YR	1	0.000	24.000	0.00
J-1EG1	10 YR	10	0.009	12.160	0.05
J-1EG1	100 YR	100	0.045	12.090	0.56

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
PO-1 (IN)	1 YR	1	0.620	12.590	3.23	(N/A)	(N/A)
PO-1 (OUT)	1 YR	1	0.285	13.300	1.53	303.93	0.271
PO-1 (IN)	10 YR	10	1.094	12.590	5.56	(N/A)	(N/A)
PO-1 (OUT)	10 YR	10	0.640	13.360	2.05	304.42	0.434
PO-1 (IN)	100 YR	100	1.906	12.590	9.52	(N/A)	(N/A)
PO-1 (OUT)	100 YR	100	1.222	13.590	2.43	304.91	0.773

Time-Depth Curve: 1 Year	
Label	1 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	1 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0
1.500	0.0	0.0	0.0	0.0	0.0
2.000	0.0	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.1
4.000	0.1	0.1	0.1	0.1	0.1
4.500	0.1	0.1	0.1	0.1	0.1
5.000	0.1	0.1	0.1	0.2	0.2
5.500	0.2	0.2	0.2	0.2	0.2
6.000	0.2	0.2	0.2	0.2	0.2
6.500	0.2	0.2	0.2	0.2	0.2
7.000	0.2	0.2	0.2	0.2	0.2
7.500	0.2	0.3	0.3	0.3	0.3
8.000	0.3	0.3	0.3	0.3	0.3
8.500	0.3	0.3	0.3	0.3	0.3
9.000	0.3	0.3	0.3	0.4	0.4
9.500	0.4	0.4	0.4	0.4	0.4
10.000	0.4	0.4	0.4	0.4	0.4
10.500	0.5	0.5	0.5	0.5	0.5
11.000	0.5	0.5	0.6	0.6	0.6
11.500	0.6	0.7	0.8	1.0	1.3
12.000	1.5	1.5	1.6	1.6	1.6
12.500	1.7	1.7	1.7	1.7	1.7
13.000	1.7	1.8	1.8	1.8	1.8
13.500	1.8	1.8	1.8	1.8	1.8
14.000	1.8	1.9	1.9	1.9	1.9
14.500	1.9	1.9	1.9	1.9	1.9
15.000	1.9	1.9	1.9	1.9	1.9
15.500	2.0	2.0	2.0	2.0	2.0
16.000	2.0	2.0	2.0	2.0	2.0
16.500	2.0	2.0	2.0	2.0	2.0
17.000	2.0	2.0	2.0	2.0	2.0
17.500	2.1	2.1	2.1	2.1	2.1

Subsection: Time-Depth Curve
Label: Time-Depth - 1

Return Event: 1 years
Storm Event: 1 Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
18.000	2.1	2.1	2.1	2.1	2.1
18.500	2.1	2.1	2.1	2.1	2.1
19.000	2.1	2.1	2.1	2.1	2.1
19.500	2.1	2.1	2.1	2.1	2.1
20.000	2.1	2.1	2.1	2.2	2.2
20.500	2.2	2.2	2.2	2.2	2.2
21.000	2.2	2.2	2.2	2.2	2.2
21.500	2.2	2.2	2.2	2.2	2.2
22.000	2.2	2.2	2.2	2.2	2.2
22.500	2.2	2.2	2.2	2.2	2.2
23.000	2.2	2.2	2.2	2.2	2.2
23.500	2.2	2.2	2.2	2.2	2.2
24.000	2.3	(N/A)	(N/A)	(N/A)	(N/A)

Time-Depth Curve: 10 Year	
Label	10 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.2
3.500	0.2	0.2	0.2	0.2	0.2
4.000	0.2	0.2	0.2	0.2	0.2
4.500	0.2	0.2	0.2	0.2	0.2
5.000	0.2	0.2	0.3	0.3	0.3
5.500	0.3	0.3	0.3	0.3	0.3
6.000	0.3	0.3	0.3	0.3	0.3
6.500	0.3	0.3	0.4	0.4	0.4
7.000	0.4	0.4	0.4	0.4	0.4
7.500	0.4	0.4	0.4	0.4	0.4
8.000	0.5	0.5	0.5	0.5	0.5
8.500	0.5	0.5	0.5	0.5	0.5
9.000	0.6	0.6	0.6	0.6	0.6
9.500	0.6	0.6	0.6	0.7	0.7
10.000	0.7	0.7	0.7	0.7	0.8
10.500	0.8	0.8	0.8	0.8	0.9
11.000	0.9	0.9	1.0	1.0	1.0
11.500	1.1	1.2	1.3	1.6	2.2
12.000	2.5	2.6	2.7	2.7	2.8
12.500	2.8	2.8	2.9	2.9	2.9
13.000	2.9	3.0	3.0	3.0	3.0
13.500	3.0	3.1	3.1	3.1	3.1
14.000	3.1	3.1	3.1	3.2	3.2
14.500	3.2	3.2	3.2	3.2	3.2
15.000	3.2	3.3	3.3	3.3	3.3
15.500	3.3	3.3	3.3	3.3	3.3
16.000	3.3	3.4	3.4	3.4	3.4
16.500	3.4	3.4	3.4	3.4	3.4
17.000	3.4	3.4	3.4	3.4	3.5
17.500	3.5	3.5	3.5	3.5	3.5

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
18.000	3.5	3.5	3.5	3.5	3.5
18.500	3.5	3.5	3.5	3.6	3.6
19.000	3.6	3.6	3.6	3.6	3.6
19.500	3.6	3.6	3.6	3.6	3.6
20.000	3.6	3.6	3.6	3.6	3.6
20.500	3.6	3.6	3.7	3.7	3.7
21.000	3.7	3.7	3.7	3.7	3.7
21.500	3.7	3.7	3.7	3.7	3.7
22.000	3.7	3.7	3.7	3.7	3.7
22.500	3.7	3.7	3.7	3.7	3.8
23.000	3.8	3.8	3.8	3.8	3.8
23.500	3.8	3.8	3.8	3.8	3.8
24.000	3.8	(N/A)	(N/A)	(N/A)	(N/A)

Time-Depth Curve: 100 Year	
Label	100 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.1	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.2	0.2	0.2
2.500	0.2	0.2	0.2	0.2	0.2
3.000	0.2	0.2	0.2	0.2	0.3
3.500	0.3	0.3	0.3	0.3	0.3
4.000	0.3	0.3	0.3	0.3	0.3
4.500	0.4	0.4	0.4	0.4	0.4
5.000	0.4	0.4	0.4	0.4	0.4
5.500	0.5	0.5	0.5	0.5	0.5
6.000	0.5	0.5	0.5	0.6	0.6
6.500	0.6	0.6	0.6	0.6	0.6
7.000	0.6	0.7	0.7	0.7	0.7
7.500	0.7	0.7	0.7	0.7	0.8
8.000	0.8	0.8	0.8	0.8	0.8
8.500	0.9	0.9	0.9	0.9	0.9
9.000	0.9	1.0	1.0	1.0	1.0
9.500	1.1	1.1	1.1	1.1	1.1
10.000	1.2	1.2	1.2	1.3	1.3
10.500	1.3	1.4	1.4	1.4	1.5
11.000	1.5	1.6	1.6	1.7	1.8
11.500	1.8	2.0	2.3	2.8	3.7
12.000	4.3	4.4	4.5	4.6	4.7
12.500	4.7	4.8	4.8	4.9	4.9
13.000	5.0	5.0	5.1	5.1	5.1
13.500	5.2	5.2	5.2	5.2	5.3
14.000	5.3	5.3	5.3	5.4	5.4
14.500	5.4	5.4	5.4	5.5	5.5
15.000	5.5	5.5	5.5	5.6	5.6
15.500	5.6	5.6	5.6	5.6	5.7
16.000	5.7	5.7	5.7	5.7	5.7
16.500	5.7	5.8	5.8	5.8	5.8
17.000	5.8	5.8	5.8	5.9	5.9
17.500	5.9	5.9	5.9	5.9	5.9

Subsection: Time-Depth Curve
Label: Time-Depth - 1

Return Event: 100 years
Storm Event: 100 Year

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
18.000	5.9	6.0	6.0	6.0	6.0
18.500	6.0	6.0	6.0	6.0	6.0
19.000	6.0	6.1	6.1	6.1	6.1
19.500	6.1	6.1	6.1	6.1	6.1
20.000	6.1	6.1	6.2	6.2	6.2
20.500	6.2	6.2	6.2	6.2	6.2
21.000	6.2	6.2	6.2	6.2	6.3
21.500	6.3	6.3	6.3	6.3	6.3
22.000	6.3	6.3	6.3	6.3	6.3
22.500	6.3	6.3	6.4	6.4	6.4
23.000	6.4	6.4	6.4	6.4	6.4
23.500	6.4	6.4	6.4	6.4	6.4
24.000	6.5	(N/A)	(N/A)	(N/A)	(N/A)

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	35.00 ft
Manning's n	0.400
Slope	0.231 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.15 ft/s
Segment Time of Concentration	0.064 hours

Segment #2: TR-55 Channel Flow	
Flow Area	1.3 ft²
Hydraulic Length	172.00 ft
Manning's n	0.040
Slope	0.012 ft/ft
Wetted Perimeter	6.55 ft
Average Velocity	1.37 ft/s
Segment Time of Concentration	0.035 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.099 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:

Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	30.00 ft
Manning's n	0.400
Slope	0.260 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.15 ft/s
Segment Time of Concentration	0.054 hours

Segment #2: TR-55 Channel Flow	
Flow Area	1.7 ft²
Hydraulic Length	218.00 ft
Manning's n	0.040
Slope	0.008 ft/ft
Wetted Perimeter	7.06 ft
Average Velocity	1.25 ft/s
Segment Time of Concentration	0.049 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.103 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:

Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	60.00 ft
Manning's n	0.011
Slope	0.018 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	1.09 ft/s
Segment Time of Concentration	0.015 hours

Segment #2: TR-55 Channel Flow	
Flow Area	0.8 ft²
Hydraulic Length	117.00 ft
Manning's n	0.014
Slope	0.013 ft/ft
Wetted Perimeter	3.14 ft
Average Velocity	4.80 ft/s
Segment Time of Concentration	0.007 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:

Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	50.00 ft
Manning's n	0.150
Slope	0.011 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.11 ft/s
Segment Time of Concentration	0.131 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	95.00 ft
Is Paved?	False
Slope	0.011 ft/ft
Average Velocity	1.66 ft/s
Segment Time of Concentration	0.016 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.147 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n (Lf / V) / 3600
Where:	R= Hydraulic radius Aq= Flow area, square feet Wp= Wetted perimeter, feet V= Velocity, ft/sec Sf= Slope, ft/ft n= Manning's n Tc= Time of concentration, hours Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =	Unpaved surface: V = 16.1345 * (Sf**0.5) Paved Surface: V = 20.3282 * (Sf**0.5) (Lf / V) / 3600
Where:	V= Velocity, ft/sec Sf= Slope, ft/ft Tc= Time of concentration, hours Lf= Flow length, feet

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	117.00 ft
Manning's n	0.150
Slope	0.010 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.12 ft/s
Segment Time of Concentration	0.267 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.267 hours

==== SCS Channel Flow

Tc =	R = Qa / Wp V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n (Lf / V) / 3600
Where:	R= Hydraulic radius Aq= Flow area, square feet Wp= Wetted perimeter, feet V= Velocity, ft/sec Sf= Slope, ft/ft n= Manning's n Tc= Time of concentration, hours Lf= Flow length, feet

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	117.00 ft
Manning's n	0.150
Slope	0.010 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.12 ft/s
Segment Time of Concentration	0.267 hours

Segment #2: TR-55 Channel Flow	
Flow Area	0.8 ft²
Hydraulic Length	493.00 ft
Manning's n	0.014
Slope	0.005 ft/ft
Wetted Perimeter	3.14 ft
Average Velocity	3.01 ft/s
Segment Time of Concentration	0.046 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.312 hours

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:

Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: User Defined Tc	
Time of Concentration	1.242 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	1.242 hours

==== User Defined

Tc =	Value entered by user
Where:	Tc= Time of concentration, hours

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	117.00 ft
Manning's n	0.150
Slope	0.010 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.12 ft/s
Segment Time of Concentration	0.267 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	65.00 ft
Is Paved?	False
Slope	0.020 ft/ft
Average Velocity	2.28 ft/s
Segment Time of Concentration	0.008 hours

Segment #3: TR-55 Channel Flow	
Flow Area	1.0 ft²
Hydraulic Length	213.00 ft
Manning's n	0.050
Slope	0.027 ft/ft
Wetted Perimeter	11.01 ft
Average Velocity	0.97 ft/s
Segment Time of Concentration	0.061 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.336 hours

Subsection: Time of Concentration Calculations
Label: DA-2A

Return Event: 100 years
Storm Event: 1 Year

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc =

(0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:

Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Time of Concentration Results

Segment #1: TR-55 Sheet Flow

Hydraulic Length	50.00 ft
Manning's n	0.011
Slope	0.004 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.57 ft/s
Segment Time of Concentration	0.024 hours

Segment #2: TR-55 Shallow Concentrated Flow

Hydraulic Length	125.00 ft
Is Paved?	True
Slope	0.003 ft/ft
Average Velocity	1.15 ft/s
Segment Time of Concentration	0.030 hours

Time of Concentration (Composite)

Time of Concentration (Composite)	0.083 hours

Subsection: Time of Concentration Calculations
Label: DA-3A

Return Event: 100 years
Storm Event: 1 Year

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Subsection: Runoff CN-Area
Label: DA-1A

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
grass - fair (HSG A)	49.000	0.281	0.0	0.0	49.000
woods - fair (HSG A)	36.000	0.149	0.0	0.0	36.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.430	(N/A)	(N/A)	44.495

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.008	0.0	0.0	98.000
grass - fair (HSG A)	49.000	0.107	0.0	0.0	49.000
woods - fair (HSG A)	36.000	0.217	0.0	0.0	36.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.332	(N/A)	(N/A)	41.684

Subsection: Runoff CN-Area
Label: DA-1C

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.266	0.0	0.0	98.000
grass - fair	49.000	0.153	0.0	0.0	49.005
woods - fair	36.000	0.043	0.0	0.0	36.013
grass - steep/poor	68.000	0.124	0.0	0.0	68.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.586	(N/A)	(N/A)	74.311

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.010	0.0	0.0	98.000
grass - fair (HSG A)	49.000	0.071	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.081	(N/A)	(N/A)	55.049

Subsection: Runoff CN-Area
Label: DA-1EG1

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.010	0.0	0.0	98.000
grass - fair (HSG A)	49.000	0.389	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.399	(N/A)	(N/A)	50.227

Subsection: Runoff CN-Area
Label: DA-1EG2

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.400	0.0	0.0	98.000
grass - fair (HSG A)	49.000	1.318	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.718	(N/A)	(N/A)	60.412

Subsection: Runoff CN-Area
Label: DA-1F

Return Event: 100 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	3.725	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	3.725	(N/A)	(N/A)	98.000

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.011	0.0	0.0	98.000
grass - fair (HSG A)	49.000	0.965	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.976	(N/A)	(N/A)	49.552

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	0.506	0.0	0.0	98.000
grass - fair (HSG A)	49.000	0.101	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.607	(N/A)	(N/A)	89.847

Elevation (ft)	Planimeter (ft²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
300.55	0.0	0.080	0.000	0.000	0.000
301.00	0.0	0.104	0.274	0.041	0.016
301.50	0.0	0.130	0.350	0.058	0.040
302.00	0.0	0.157	0.429	0.072	0.068
302.50	0.0	0.218	0.559	0.093	0.106
303.00	0.0	0.271	0.732	0.122	0.154
303.50	0.0	0.329	0.898	0.150	0.214
303.97	0.0	0.341	1.004	0.157	0.277
304.00	0.0	0.417	1.135	0.011	0.282
304.10	0.0	0.663	1.606	0.054	0.303
304.20	0.0	0.893	2.325	0.078	0.334
304.30	0.0	1.105	2.990	0.100	0.374
304.40	0.0	1.302	3.605	0.120	0.422
304.50	0.0	1.478	4.167	0.139	0.478
304.55	0.0	1.560	4.556	0.076	0.508
304.60	0.0	1.638	4.796	0.080	0.540
304.70	0.0	1.782	5.128	0.171	0.608
304.78	0.0	1.887	5.503	0.147	0.667
304.80	0.0	1.909	5.694	0.038	0.682
304.85	0.0	2.062	5.956	0.099	0.722
304.90	0.0	2.107	6.254	0.104	0.764
304.95	0.0	2.177	6.427	0.107	0.807

Subsection: Volume Void Adjustments Return Event: 100 years
Label: PO-1 Storm Event: 1 Year

Volume Complete Filled With Material
(Adjust Volumes for Voids)

Void Space = 40.0 %

Elevation (Headwater) (ft)	Volume (Total) (ac-ft)	Volume (Adjusted) (ac-ft)
300.55	0.000	0.000
301.00	0.041	0.016
301.50	0.099	0.040
302.00	0.171	0.068
302.50	0.264	0.106
303.00	0.386	0.154
303.50	0.536	0.214
303.97	0.693	0.277
304.00	0.704	0.282
304.10	0.758	0.303
304.20	0.835	0.334
304.30	0.935	0.374
304.40	1.055	0.422
304.50	1.194	0.478
304.55	1.270	0.508
304.60	1.350	0.540
304.70	1.521	0.608
304.78	1.668	0.667
304.80	1.706	0.682
304.85	1.805	0.722
304.90	1.909	0.764
304.95	2.016	0.807

Requested Pond Water Surface Elevations	
Minimum (Headwater)	300.55 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	304.95 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Culvert-Circular	Culvert - 1	Forward	TW	303.00	304.95
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Culvert - 1
Structure Type: Culvert-Circular

Number of Barrels	1
Diameter	10.0 in
Length	88.00 ft
Length (Computed Barrel)	88.00 ft
Slope (Computed)	0.005 ft/ft

Outlet Control Data

Manning's n	0.013
Ke	0.500
Kb	0.040
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data

Equation Form	Form 1
K	0.0098
M	2.0000
C	0.0398
Y	0.6700
T1 ratio (HW/D)	1.158
T2 ratio (HW/D)	1.305
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	303.97 ft	T1 Flow	1.74 ft³/s
T2 Elevation	304.09 ft	T2 Flow	1.99 ft³/s

Structure ID: TW
Structure Type: TW Setup, DS Channel

Tailwater Type	Free Outfall

Convergence Tolerances

Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
300.55	0.00	(N/A)	0.00
300.65	0.00	(N/A)	0.00
300.75	0.00	(N/A)	0.00
300.85	0.00	(N/A)	0.00
300.95	0.00	(N/A)	0.00
301.05	0.00	(N/A)	0.00
301.15	0.00	(N/A)	0.00
301.25	0.00	(N/A)	0.00
301.35	0.00	(N/A)	0.00
301.45	0.00	(N/A)	0.00
301.55	0.00	(N/A)	0.00
301.65	0.00	(N/A)	0.00
301.75	0.00	(N/A)	0.00
301.85	0.00	(N/A)	0.00
301.95	0.00	(N/A)	0.00
302.05	0.00	(N/A)	0.00
302.15	0.00	(N/A)	0.00
302.25	0.00	(N/A)	0.00
302.35	0.00	(N/A)	0.00
302.45	0.00	(N/A)	0.00
302.55	0.00	(N/A)	0.00
302.65	0.00	(N/A)	0.00
302.75	0.00	(N/A)	0.00
302.85	0.00	(N/A)	0.00
302.95	0.00	(N/A)	0.00
303.00	0.00	(N/A)	0.00
303.05	0.01	(N/A)	0.00
303.15	0.06	(N/A)	0.00
303.25	0.15	(N/A)	0.00
303.35	0.29	(N/A)	0.00
303.45	0.46	(N/A)	0.00
303.55	0.66	(N/A)	0.00
303.65	0.88	(N/A)	0.00
303.75	1.12	(N/A)	0.00
303.85	1.36	(N/A)	0.00
303.95	1.57	(N/A)	0.00
304.05	1.73	(N/A)	0.00
304.15	1.82	(N/A)	0.00
304.25	1.90	(N/A)	0.00
304.35	1.99	(N/A)	0.00
304.45	2.07	(N/A)	0.00
304.55	2.15	(N/A)	0.00
304.65	2.23	(N/A)	0.00
304.75	2.30	(N/A)	0.00

Subsection: Composite Rating Curve
Label: Composite Outlet Structure - 1

Return Event: 100 years
Storm Event: 1 Year

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
304.85	2.39	(N/A)	0.00
304.95	2.46	(N/A)	0.00

Contributing Structures
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
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None Contributing
None Contributing
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Composite Outflow Summary

Contributing Structures
Culvert - 1
Culvert - 1
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Culvert - 1

Infiltration	
Infiltration Method (Computed)	Average Infiltration Rate
Infiltration Rate (Average)	0.5000 in/h

Initial Conditions	
Elevation (Water Surface, Initial)	300.55 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.010 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (acres)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
300.55	0.00	0.000	0.080	0.00	0.00	0.00
300.65	0.00	0.003	0.085	0.04	0.04	7.99
300.75	0.00	0.007	0.090	0.05	0.05	16.44
300.85	0.00	0.010	0.095	0.05	0.05	25.40
300.95	0.00	0.014	0.101	0.05	0.05	34.88
301.05	0.00	0.019	0.106	0.05	0.05	44.90
301.15	0.00	0.023	0.111	0.06	0.06	55.41
301.25	0.00	0.027	0.116	0.06	0.06	66.42
301.35	0.00	0.032	0.122	0.06	0.06	77.95
301.45	0.00	0.037	0.127	0.06	0.06	90.01
301.55	0.00	0.042	0.133	0.07	0.07	102.59
301.65	0.00	0.048	0.138	0.07	0.07	115.68
301.75	0.00	0.053	0.143	0.07	0.07	129.27
301.85	0.00	0.059	0.148	0.07	0.07	143.38
301.95	0.00	0.065	0.154	0.08	0.08	158.00
302.05	0.00	0.072	0.162	0.08	0.08	173.24
302.15	0.00	0.078	0.174	0.09	0.09	189.51
302.25	0.00	0.085	0.186	0.09	0.09	206.94
302.35	0.00	0.093	0.199	0.10	0.10	225.56
302.45	0.00	0.101	0.211	0.11	0.11	245.40
302.55	0.00	0.110	0.223	0.11	0.11	266.48
302.65	0.00	0.119	0.233	0.12	0.12	288.57
302.75	0.00	0.129	0.244	0.12	0.12	311.66
302.85	0.00	0.139	0.254	0.13	0.13	335.77
302.95	0.00	0.149	0.265	0.13	0.13	360.93
303.00	0.00	0.154	0.271	0.14	0.14	373.91
303.05	0.01	0.160	0.276	0.14	0.15	387.16
303.15	0.06	0.171	0.288	0.15	0.20	414.51
303.25	0.15	0.183	0.299	0.15	0.30	443.01
303.35	0.29	0.195	0.311	0.16	0.44	472.66

Subsection: Elevation-Volume-Flow Table (Pond)
Label: PO-1

Return Event: 1 years
Storm Event: 1 Year

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (acres)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
303.45	0.46	0.208	0.323	0.16	0.62	503.49
303.55	0.66	0.221	0.330	0.17	0.82	535.39
303.65	0.88	0.234	0.333	0.17	1.05	567.68
303.75	1.12	0.247	0.335	0.17	1.29	600.23
303.85	1.36	0.261	0.338	0.17	1.53	633.03
303.95	1.57	0.275	0.340	0.17	1.75	666.06
304.05	1.73	0.291	0.533	0.27	2.00	706.85
304.15	1.82	0.318	0.773	0.39	2.21	770.66
304.25	1.90	0.353	0.996	0.50	2.41	856.82
304.35	1.99	0.397	1.201	0.61	2.59	963.60
304.45	2.07	0.449	1.388	0.70	2.77	1,089.41
304.55	2.15	0.508	1.560	0.79	2.94	1,232.44
304.65	2.23	0.573	1.709	0.86	3.09	1,390.95
304.75	2.30	0.645	1.847	0.93	3.24	1,563.41
304.85	2.39	0.722	2.062	1.04	3.43	1,750.65
304.95	2.46	0.807	2.177	1.10	3.56	1,955.37

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Appendix F

Water Quality and Storage Volume Computations

New York Stormwater Sizing Criteria
Redevelopment Water Quality Volume Computations

Water Quality Volume (WQ_v) Equation Based on the 90% Rule

$$WQ_V = \frac{(P)(R_V)(A)}{12}$$

Where:

WQ_v = Water Quality Volume (Ac-Ft)
P = 90% Rainfall Event (In)
R_v = 0.05 + 0.009(I), where I is % Impervious Cover
A = Site Area (Ac)

Saratoga County Data:

P = 1.2 in

Site Specific Data:

Design Point	Drainage Basin	Site Area (Ac)	Site Impervious Area (Ac)	% Impervious	R_v	Adjusted Rv	WQv (Ac-Ft)	Adjusted WQv Standard Practice* (Ac-Ft)	Adjusted WQv Alternative Practice** (Ac-Ft)
DP-1,2,3	OTHER	7.6000	2.000	26.3	0.29	0.29	0.218	0.055	0.164
		0.0000	0.000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

*=(0.25(% of existing imp to total prop imp)+(% of new imp to total prop imp))(WQv)
**=(0.75(% of existing imp to total prop imp)+(% of new imp to total prop imp))(WQv)

Project: HVCC Synthetic Turf Field

Location: Rensselaer County, NY

Job No. 30181 RKW

Date 8/31/2015

Date

Synthetic Turf Field Storage - HVCC

DP-1

Volume calculation using the conic method

AC FT INCR = 1 / 3 (X1 - X2)[(A1 + A2 + SQRT(A1 x A2)]

STORAGE LEVEL DESCRIPTION	ELEV Z	AC SQ FT UG	AC A	AC FT INCR (VOID) X 0.4	ACFT CUMM	CUFT CUMM	NOTES
INVERT MEDIA IN HEADER TRENCH	300.55	3468.4	0.07962	0.00000	0.0000	0.000	
	301.00	4508.9	0.10351	0.01644	0.0164	715.909	
	301.50	5665.0	0.13005	0.02331	0.0397	1731.101	
	302.00	6821.1	0.15659	0.02862	0.0684	2977.924	
	302.50	9497.9	0.21804	0.03729	0.1057	4602.458	
8" HDPE OUTLET INVERT	303.00	11798.5	0.27086	0.04879	**0.1545**	6727.946	WQ STORAGE
	303.50	14316.0	0.32865	0.05986	0.2143	9335.346	
TOP HEADER TRENCH STONE MEDIA STORAGE	303.97	14844.7	0.34079	0.06292	0.2772	12076.300	
BEGIN FIELD STONE MEDIA STORAGE	304.00	18183.8	0.41744	0.00454	0.2818	12274.132	
	304.10	28874.9	0.66288	0.02142	0.3032	13207.102	
	304.20	38882.9	0.89263	0.03100	0.3342	14557.303	
	304.30	48119.0	1.10466	0.03987	0.3741	16294.064	
	304.40	56693.7	1.30151	0.04807	0.4221	18387.975	
	304.50	64388.6	1.47816	0.05556	0.4777	20807.988	
	304.55	67941.9	1.55973	0.03038	0.5081	22131.134	
	304.60	71336.6	1.63766	0.03197	0.5400	23523.782	
	304.70	77633.4	1.78222	0.06838	0.6084	26502.292	
INSIDE TRACK SURFACE DRAIN INVERT	304.78	82188.8	1.88679	0.05870	0.6671	29059.099	
	304.80	83160.7	1.90911	0.01518	0.6823	29720.494	
	304.85	89842.0	2.06249	0.03971	0.7220	31450.091	
	304.90	91789.7	2.10720	0.04170	0.7637	33266.373	
MAXIMUM TRACK/FIELD STORAGE	304.95	94849.4	2.17744	0.04284	0.8065	35132.681	

Area 1F (Track and Synthetic Turf Area)

1 Year Storm Pondpack Run

CPv Calculation

Project Summary

Title	Hudson Valley Community College -Track Facility and Practice Field
Engineer	RKW
Company	CHA
Date	8/24/2015

Notes	Hudson Valley Community College -Track Facility and Practice Field Unmitigated Proposed Conditions Area 1F Track area is considered as impervious Sythetic Turf coverage is open. used for pert of the CPv volume calculation @ DP-1.

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Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DA-1F	1 YR	1	0.094	12.910	0.34

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
DP-1	1 YR	1	0.094	12.910	0.34

Time-Depth Curve: 1 Year	
Label	1 Year
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	1 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.0
1.500	0.0	0.0	0.0	0.0	0.0
2.000	0.0	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.1
4.000	0.1	0.1	0.1	0.1	0.1
4.500	0.1	0.1	0.1	0.1	0.1
5.000	0.1	0.1	0.1	0.2	0.2
5.500	0.2	0.2	0.2	0.2	0.2
6.000	0.2	0.2	0.2	0.2	0.2
6.500	0.2	0.2	0.2	0.2	0.2
7.000	0.2	0.2	0.2	0.2	0.2
7.500	0.2	0.3	0.3	0.3	0.3
8.000	0.3	0.3	0.3	0.3	0.3
8.500	0.3	0.3	0.3	0.3	0.3
9.000	0.3	0.3	0.3	0.4	0.4
9.500	0.4	0.4	0.4	0.4	0.4
10.000	0.4	0.4	0.4	0.4	0.4
10.500	0.5	0.5	0.5	0.5	0.5
11.000	0.5	0.5	0.6	0.6	0.6
11.500	0.6	0.7	0.8	1.0	1.3
12.000	1.5	1.5	1.6	1.6	1.6
12.500	1.7	1.7	1.7	1.7	1.7
13.000	1.7	1.8	1.8	1.8	1.8
13.500	1.8	1.8	1.8	1.8	1.8
14.000	1.8	1.9	1.9	1.9	1.9
14.500	1.9	1.9	1.9	1.9	1.9
15.000	1.9	1.9	1.9	1.9	1.9
15.500	2.0	2.0	2.0	2.0	2.0
16.000	2.0	2.0	2.0	2.0	2.0
16.500	2.0	2.0	2.0	2.0	2.0
17.000	2.0	2.0	2.0	2.0	2.0
17.500	2.1	2.1	2.1	2.1	2.1

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
18.000	2.1	2.1	2.1	2.1	2.1
18.500	2.1	2.1	2.1	2.1	2.1
19.000	2.1	2.1	2.1	2.1	2.1
19.500	2.1	2.1	2.1	2.1	2.1
20.000	2.1	2.1	2.1	2.2	2.2
20.500	2.2	2.2	2.2	2.2	2.2
21.000	2.2	2.2	2.2	2.2	2.2
21.500	2.2	2.2	2.2	2.2	2.2
22.000	2.2	2.2	2.2	2.2	2.2
22.500	2.2	2.2	2.2	2.2	2.2
23.000	2.2	2.2	2.2	2.2	2.2
23.500	2.2	2.2	2.2	2.2	2.2
24.000	2.3	(N/A)	(N/A)	(N/A)	(N/A)

Time of Concentration Results

Segment #1: User Defined Tc	
Time of Concentration	1.242 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	1.242 hours

==== User Defined

Tc =	Value entered by user
Where:	Tc= Time of concentration, hours

Subsection: Runoff CN-Area
Label: DA-1F

Return Event: 1 years
Storm Event: 1 Year

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
asphalt	98.000	1.495	0.0	0.0	98.000
grass - fair	49.000	2.230	0.0	0.0	49.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	3.725	(N/A)	(N/A)	68.666

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Appendix G

Grading and Drainage Plan and ESC Plan and Details

CHA

Appendix H

Inspection Forms / Post Construction Operation and Maintenance

CHA

PERMIT NUMBER: NYR- **INSPECTION REPORT # :**

Location **Date and Time of Inspection**

Qualified Inspector (name and title) **Qualified Inspector Signature**

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

☐ **Weekly Inspection**

Current Phase of Construction (if applicable): of

Estimated Current Total Disturbed Area: acres

IMMEDIATE ACTION ITEMS / INSPECTION SUMMARY:

It is the responsibility of the Qualified Inspector to notify the owner/operator and appropriate contractor of any corrective actions that need to be taken within one (1) business day of the completion of an inspection. It is the responsibility of the contractor (subcontractor) to begin implementing the corrective actions within one (1) business day of this notification and complete the corrective action within a reasonable time frame. If there are action items from the previous inspection which have not been addressed, so note.

Per the GP-0-15-002, Digital photographs with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions shall be included with each inspection report. 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. Paper color copies of these digital photographs shall be attached to the inspection report, documenting the completion of the corrective action work within seven (7) calendar days of that inspection.

1. GENERAL HOUSEKEEPING

Includes description of the weather and soil conditions (e.g. dry, wet, saturated) during the time of the inspection, a description of the condition of the runoff at all points of discharge from the construction site (including identification of any discharges of sediments from construction site), inspection for stream/pond turbidity, oil and floating substances, visible oil film, or globules or grease, contractor preparedness for implementation of erosion and sediment control, impact on adjacent property, and dust control.

Yes **No**
☐ ☐ Is there immediate action required regarding General Housekeeping?

Notes:

2. NATURAL SURFACE WATERBODIES

Includes 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.

Yes **No**
☐ ☐ Is there immediate action required regarding General Housekeeping?

Notes:

3. EXCAVATION DEWATERING

Includes inspection ensuring that clean water from upstream pool is being pumped to the downstream pool, that sediment laden water from work area is being discharged to a silt-trapping device, and that constructed upstream berm has one-foot minimum freeboard.

Yes **No**
☐ ☐ Is there immediate action required regarding Excavation Dewatering?

Notes:

4. INTERCEPTOR DIKES AND SWALES

Includes inspection ensuring that dikes and swales are installed per plan with minimum side slopes 2H:1V or flatter, are stabilized by geotextile fabric, seed, or mulch with no erosion occurring, and that sediment-laden runoff is directed to sediment trapping structure.

Yes **No**
☐ ☐ Is there immediate action required regarding an Interceptor Dike or Swale?

Notes:

5. EROSION & SEDIMENT CONTROL

Includes inspection ensuring that erosion and sediment control practices are located and installed correctly, BMPs are maintained per specifications, stockpiles are stabilized and contained, de-watering operations prevent direct discharges to sensitive features, and that clearing and grading operations are divided into stages for large areas. Identification of all erosion and sediment control practices that need repair or maintenance.

Yes **No**
☐ ☐ Is there immediate action required regarding Erosion & Sediment Control?

Notes:

6. AREAS OF DISTURBANCE

Includes description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since last inspection.

Yes **No**
☐ ☐ Is there immediate action required regarding stabilizing disturbed areas?

Notes:

7. OFFSITE IMPACTS AND OFFSITE DEGRADATION

Includes inspection ensuring that work is within the limits of the approved plans, including clearing and blasting, and that ponds, streams, wetlands and sinkholes are free of sediment the from site and that sediment is kept out of roadways, adjacent property, storm sewers, or air (dust).

Yes **No**
☐ ☐ Is there immediate action required regarding Offsite Impacts or Offsite Degradation?

Notes:

8. STABILIZED CONSTRUCTION ENTRANCE

Includes inspection ensuring that stone is clean enough to effectively remove mud from vehicles, is installed per standards and specifications, that all traffic use the stabilized entrance to enter and leave site, and that adequate drainage is provided to prevent ponding at entrance.

Yes **No**
☐ ☐ Is there immediate action required regarding a Stabilized Construction Entrance?

Notes:

9. REINFORCED SILT FENCE

Includes inspection ensuring that silt fence is installed on contour, 10 feet from toe of slope, joints are constructed by wrapping the two ends together for continuous support, steel posts installed (if applicable), installed on downstream side of slope, maximum 6' intervals with 6 x 6 inch 14 gage wire, fabric is buried minimum of 6 inches, posts are stable, fabric is tight and without rips or frayed areas, and that sediment accumulation is less than 1/3 the height of the silt fence.

Yes **No**
☐ ☐ Is there immediate action required regarding Silt Fence?

Notes:

10. STONE CHECK DAM

Includes inspection ensuring that stone check dam channels are without erosion (i.e., flow is not eroding soil underneath or around the structure), that check dam is in good condition (i.e., rocks have not been displaced and no permanent pools behind the structure), and that sediment accumulation is less than design capacity.

Yes **No**
☐ ☐ Is there immediate action required regarding a Stone Check Dam?

Notes:

11. FILTER FABRIC (DROP) INLET PROTECTION

Includes inspection ensuring that protection is installed with 2-inch x 4-inch wood frame and wood posts, with maximum 3-foot spacing, is buried a minimum of 8 inches and secured to frame/posts with staples at max 8-inch spacing, has posts with 3-foot maximum spacing between posts, has posts that are stable, fabric is tight and without rips or frayed areas, and that sediment accumulation is within design capacity.

Yes **No**
☐ ☐ Is there immediate action required regarding Filter Fabric (Drop) Inlet Protection?

Notes:

12. TEMPORARY SEDIMENT TRAP

Includes inspection ensuring that outlet structure is constructed per the approved plan or drawing, that geotextile fabric has been placed beneath rock fill, and that sediment accumulation is within design capacity.

Yes **No**
☐ ☐ Is there immediate action required regarding Temporary Sediment Traps?

Notes:

13. STORMWATER BASIN

Includes inspection ensuring that Permanent Stormwater Basins are installed per plans and specifications.

Yes **No**

☐ ☐ Is there immediate action required regarding Stormwater Basins?

Notes:

14. CURRENT PHASE OF POST-CONSTRUCTION STORMWATER PRACTICES

Includes inspection of current phase of all post-construction stormwater management practices, identification of all construction that is not in conformance with the SWPPP and technical standards, identify corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices, and to correct deficiencies identified with the construction of post-construction stormwater management practice(s).

Yes **No**

☐ ☐ Is there immediate action required regarding the current phase of post-construction stormwater management practices?

Notes:

ADDITIONAL NOTES / MODIFICATIONS

PERMIT NUMBER:

PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name Hudson Valley Community College Track Facility and Practice Field

GP-0-15-002 Permit No. ______________________ **Date of Authorization** ____________

Name of Owner/Operator Hudson Valley Community College

General Contractor ______________________

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

Site Assessment and Inspections -

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

b. 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 owner or operator can stop conducting inspections. The owner or operator shall resume inspections as soon as soil disturbance activities are reinitiated.

c. For construction sites where soil disturbance activities have been shut down with partial project completion, the owner or operator 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.

d. Following the commencement of construction, site inspections shall be conducted by the Qualified Inspector to ensure that erosion and sediment controls are being maintained in effective operating condition at all times. Inspections shall occur at least: (i) once every 7 calendar days for construction sites where soil disturbance activities are occurring; (ii) twice every 7 calendar days for construction sites where soil disturbance activities are occurring and the Owner/Operator has received authorization to disturb greater than five (5) acres of soil at any one time; (iii) once every thirty (30) calendar days for construction sites where soil disturbance activities have been temporarily suspended and temporary stabilization measures have been applied to all disturbed areas; and (iv) 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 for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

e. The owner or operator shall notify the Regional Office stormwater contact person in writing prior to reducing the frequency of any inspections.

f. The Owner/Operator shall maintain a record of all inspection reports in the site log book. The site log book shall be maintained on site and be made available to the permitting authorities upon request. Prior to the commencement of construction,[2] the Owner/Operator shall certify in the site log book that the SWPPP is prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

g. Prior to filing of the Notice of Termination or the end of permit term, the Owner/Operator shall have the Qualified Inspector perform a final site inspection. The Qualified Inspector shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed.

[1] "Qualified Inspector" means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed Professional Engineer (PE), licensed Landscape Architect, or other Department endorsed individual(s). It may also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), or soil scientist provided that person has training in the principles and practices of erosion and sediment control. Training means that person has received four (4) hours of training endorsed by the Department and shall receive four (4) hours of training every three (3) years after the initial training session.

[2] "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

[3] "Final stabilization" means that all soil disturbance activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established, or equivalent stabilization measures (such as the use of mulches or geotextiles, rock rip-rap or washed/crushed stone) have been employed on all disturbed areas that are not covered by permanent structures, concrete or pavement.

PRE-CONSTRUCTION SITE ASSESSMENT FORM

Inspector Name and Title	**Date and Time of Inspection**
Qualified Inspector	**Qualified Inspector Signature**

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

a. Notice of Intent, SWPPP, and Contractors' Certification:

Yes	No	NA	
☐	☐	☐	Has a Notice of Intent been filed with the NYS Department of Conservation?
☐	☐	☐	Is the SWPPP on-site? Where? ______________________________
☐	☐	☐	Is the Plan current? What is the latest revision date? ____________________
☐	☐	☐	Have all contractors involved with implementing the erosion and sediment control portions of the SWPPP signed the contractor's certification?

b. Resource Protection

Yes	No	NA	
☐	☐	☐	Are construction limits clearly flagged or fenced?
☐	☐	☐	Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, etc. have been flagged for protection.
☐	☐	☐	Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

c. Surface Water Protection

Yes	No	NA	
☐	☐	☐	Clean stormwater runoff has been diverted away from areas to be disturbed.
☐	☐	☐	Bodies of water located either on site or in the vicinity of the site have been identified and protected.
☐	☐	☐	Appropriate practices to protect on-site or downstream surface waters are installed.

d. Stabilized Construction Entrance

Yes	No	NA	
☐	☐	☐	A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
☐	☐	☐	Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
☐	☐	☐	Sediment tracked onto public streets is removed or cleaned on a regular basis.

e. Perimeter Sediment Controls

Yes	No	NA	
☐	☐	☐	Silt fence material and installation comply with the standard drawing and specifications.
☐	☐	☐	Silt fences are installed at appropriate spacing intervals
☐	☐	☐	Sediment/detention basin was installed
☐	☐	☐	Sediment traps and barriers are installed.

Appendix I

Notice of Intent (NOI)

Notice of Termination (NOT)

MS4 Acceptance

SPDES Permit (GP-0-15-002)

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.17

Submission_Version_View_Page

(Submission #: 2DH-YMJK-7T7Y, version 1)

PRINTED ON 2/22/2016

Summary

Submission #:	2DH-YMJK-7T7Y	**Date Submitted:**	2/22/2016 3:03 PM
Form:	NOI for coverage under Stormwater General Permit for Construction Activity version 1.17 (HVCC Track Facility)	**Status:**	Submitted
Applicant:	Julia Chan	**Active Steps:**	Deemed Complete
Reference #:			
Description:	NOI for coverage under Stormwater General Permit for Construction Activity		

Notes

There are currently no Submission Notes.

Details

Owner/Operator Information

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

Hudson Valley Community College

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Edwards

Owner/Operator Contact Person First Name

Richard

Owner/Operator Mailing Address

80 Vanderburgh Avenue

City

Troy

State

New York

Zip

12180

Phone

518-629-7427

Email

r.edwards@hvcc.com

Federal Tax ID

14-6009464

Project Location

Project/Site Name

HVCC Track Facility and Practice Field

Street Address (Not P.O. Box)

80 Vanderburgh Avenue

Side of Street

East

City/Town/Village (THAT ISSUES BUILDING PERMIT)

Troy

State

NY

Zip

12180

County

RENSSELAER

DEC Region

4

Name of Nearest Cross Street

Williams Road

Distance to Nearest Cross Street (Feet)

2300

Project In Relation to Cross Street

East

Tax Map Numbers Section-Block-Parcel

NONE PROVIDED

Tax Map Numbers

NONE PROVIDED

1. Coordinates

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

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

42.694636731494064,-73.67881440685426

Project Details

2. What is the nature of this project?

Redevelopment with no
increase in impervious area

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

Pre-Development Existing Landuse

Recreational/Sports Field

Post-Development Future Land Use

Recreational/Sports Field

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)

7.6

Total Area to be Disturbed (acres)

7.6

Existing Impervious Area to be Disturbed (acres)

2.0

Future Impervious Area Within Disturbed Area (acres)

2.0

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 (%)

100

B (%)

0

C (%)

0

D (%)

0

7. Is this a phased project?

Yes

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

Start Date

02/29/2016

End Date

12/30/2016

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

Tributary of Wynants Kill

9a. Type of waterbody identified in question 9?

Stream/Creek 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-0-15-002?

No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-15-002?

No

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

No

If No, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey?

No

If Yes, what is the acreage to be disturbed?

NONE PROVIDED

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

No

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

Yes

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

Hudson Valley Community College

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 current NYS Stormwater Management Design Manual?

Yes

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

Professional Engineer (P.E.)

SWPPP Preparer

CHA

Contact Name (Last, Space, First)

Hollowood, Michael

Mailing Address

III Winners Circle, PO Box 5269

City

Albany

State

NY

Zip

12205-0269

Phone

518-453-3930

Email

mhollowood@chacompanies.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 doc

Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification - Attachment

SWPPP_Preparer_Cert signed.pdf
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

Silt
Fence
Stabilized Construction Entrance
Storm Drain Inlet
Protection

Biotechnical
None

Vegetative Measures

Seeding

Permanent Structural
Retaining
Wall

Other

NONE PROVIDED

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.

Sidewalk Reduction

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

All disturbed areas will be restored in accordance with the Soil Restoration
requirements in Table 5.3 of the Design Manual (see page 5-22).

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

0.055

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 SM

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)

0.0

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

No

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

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

0.0

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

Yes

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 proje

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)

0.155

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).

0.155

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

Yes

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

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

CPv Required (acre-feet)

0.133

CPv Provided (acre-feet)

0.155

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

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)

12.98

Post-Development (CFS)

4.96

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)

27.39

Post-Development (CFS)

14.16

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

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

Hudson Valley Community College

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.

Although runoff reduction is not required for
redevelopment sites, storage volume for infiltration in the artificial turf
system is sufficient to meet the runoff reduction and water quality
requirements. Channel Protection volume (0.133 acre-feet) in Question 36 is
calculated as the volume of the 1-year hydrograph for areas reaching DP-1. (The
impervious area in area 1F is computed from the track impervious area only.)
Flows and volumes are reduced to DP-2 and DP-3.

Post-Construction SMP Identification

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

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

RR Techniques (Area Reduction)

Round to the nearest tenth

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

0

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

0

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

0

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

0

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

0

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

0

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

0

RR Techniques (Volume Reduction)

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

0

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

0

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

0

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

0

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

0

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

0

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

0

Standard SMPs with RRv Capacity

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

0

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

0

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

0

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

2.0

Total Contributing Impervious Acres for Bioretention (F-5)

0

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

0

Standard SMPs

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

0

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

0

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

0

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

0

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

0

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

0

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

0

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

0

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

0

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

0

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

0

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

0

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

0

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

0

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

Total Contributing Impervious Area for Hydrodynamic

0

Total Contributing Impervious Area for Wet Vault

0

Total Contributing Impervious Area for Media Filter

0

"Other" Alternative SMP?

0

Total Contributing Impervious Area for "Other"

0

Provide the name and 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?

No

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

NONE PROVIDED

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

NONE PROVIDED

MS4 SWPPP Acceptance

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

No

If No, skip question 44

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

No

MS4 Acceptance Form Download

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

MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload - Attachment

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 * - Attachment

SPDES permit application.pdf

Comment: NONE PROVIDED

Attachments

Date	Attachment Name	Context	
02/22/2016 01:21 PM	SWPPP_Preparer_Cert signed.pdf	v1 - Required SWPPP Components	☐
02/22/2016 02:42 PM	SPDES permit application.pdf	v1 - Owner/Operator Certification	☐

Status History

Date	User	Processing Status
2/22/2016	Julia Chan	Submitted

Processing Steps

Step Name	Assigned To/Completed By	Date Completed
Form Submitted	Julia Chan	02/22/2016 03:03 PM
Deemed Complete	Toni Cioffi	

NEW YORK
STATE OF
OPPORTUNITY

Department of
Environmental
Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges
From Construction Activity (GP-0-15-002)

Project Site Information

Project/Site Name

HVCC Track Facility and Practice Field

Owner/Operator Information

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

Hundson Valley Community College

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-0-15-002. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Michael	E.	Hollowood, PE
First name	MI	Last Name

2/22/16

Signature

Date

Revised: April 2015

NEW YORK
STATE OF
OPPORTUNITY

Department of
Environmental
Conservation

Owner/Operator Certification Form

SPDES General Permit For Stormwater Discharges From Construction Activity
(GP-0-15-002)

Project/Site Name: HVCC Track Facility & Practice Field

eNOI Submission Number: 2DH-YMJK-7T7Y

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 Richard M.I. L Last Name Edwards

Signature

2/22/16
Date

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

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

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

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person:

4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

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

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

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

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

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

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

____

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

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

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

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

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

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

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

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

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

(If Yes, complete section VI - “MS4 Acceptance” statement

V. Additional Information/Explanation:

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

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

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

Printed Name:

Title/Position:

Signature:

Date:

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

VII. Qualified Inspector Certification - Final Stabilization:

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

Printed Name:

Title/Position:

Signature:	Date:

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

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

Printed Name:

Title/Position:

Signature:	Date:

IX. Owner or Operator Certification

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

Printed Name:

Title/Position:

Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

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-0-15-002

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

Effective Date: January 29, 2015 Expiration Date: January 28, 2020

John J. Ferguson
Chief Permit Administrator

1 / 12 / 15

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’s *State Pollutant Discharge Elimination System (“SPDES”)* is a NPDES-approved program with permits issued in accordance with the *Environmental Conservation Law (“ECL”).*

This general permit (“permit”) is issued pursuant to Article 17, Titles 7, 8 and Article 70 of the ECL. An *owner or operator* may obtain coverage under this permit by submitting a Notice of Intent ("NOI") to the Department. Copies of this permit and the NOI for New York are available by calling (518) 402-8109 or at any New York State Department of Environmental Conservation (“the Department”) regional office (see Appendix G).They are also available on the Department’s website at:
http://www.dec.ny.gov/

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 Article 17-0505 of the ECL, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. They 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

Part I. 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 August 2005, 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 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 buffers 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; and

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

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 and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

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

e. **Prohibited *Discharges*.** The following *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 *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.

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 from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater *discharges* may be authorized by this permit: *discharge*s from firefighting activities; fire hydrant flushings; waters to which cleansers or other components have not been added that are used to wash vehicles or control dust in accordance with the SWPPP, routine external building washdown which does not use detergents; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated *groundwater* or spring water; uncontaminated *discharge*s from construction site de-watering operations; and foundation or footing drains where flows are not contaminated with process materials such as solvents. For those entities required to obtain coverage under this permit, and who *discharge* as noted in this paragraph, and with the exception of flows from firefighting activities, these *discharge*s 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.C.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 disturb one or more acres of land with no existing *impervious cover*; and

   c. Which are undertaken on land with a Soil Slope Phase that is identified as an E or F, or the map unit name is inclusive of 25% or greater slope, on the United States Department of Agriculture (“USDA”) Soil Survey for the County where the disturbance will occur.

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 disturb two or more acres of land with no existing *impervious cover*; and

   c. Which are undertaken on land with a Soil Slope Phase that is identified as an E or F, or the map unit name is inclusive of 25% or greater slope, on the USDA Soil Survey for the County where the disturbance will occur.

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.C.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

(Part I.F.8.c.iii)

   (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.

II. Part II. OBTAINING PERMIT COVERAGE

A. Notice of Intent (NOI) Submittal

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 NOI form to the Department in order to be authorized to *discharge* under this permit. 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. 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 its 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. An *owner or operator* shall use either the electronic (eNOI) or paper version of the NOI.

   The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the address in Part II.A.1.

The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *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.E. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4*.

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.

B. Permit Authorization

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

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

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

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act (“UPA”)* (see 6 NYCRR Part 621) 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.B.2 above

will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

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

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

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

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

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

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

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

4. The Department may suspend or deny an *owner's or operator's* coverage

under this permit if the Department determines that the SWPPP does not meet the permit requirements. In accordance with statute, regulation, and the terms and conditions of this permit, the Department may deny coverage under this permit and require submittal of an application for an individual SPDES permit based on a review of the NOI or other information pursuant to Part II.

5. 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.B. of this permit.

C. 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-0-15-002), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, 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 August 2005.

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. 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*.

5. 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

D. Permit Coverage for Discharges Authorized Under GP-0-10-001

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-10-001), an *owner or operator* of *a construction activity* with coverage under GP-0-10-001, as of the effective date of GP-0-15-002, shall be authorized to *discharge* in accordance with GP-0-15-002, 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-0-15-002.

E. Change of *Owner or Operator*

2. 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. 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.A.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.

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:

   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*; and

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

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.C.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 August 2005. 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 August 2005, 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 August 2005;

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 August 2005. 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.

IV. 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* <u>and</u> 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),
- 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, <u>with the exception of</u>:

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

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

   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.C.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* <u>and</u> 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,* <u>and</u> 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.A.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;

(Part IV.C.4.i)

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.C.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

V. 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.A.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; <u>and</u> all areas of disturbance have achieved *final stabilization*; <u>and</u> all temporary, structural erosion and sediment control measures have been removed; <u>and</u> 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; <u>and</u> all areas disturbed as of the project shutdown date have achieved *final stabilization*; <u>and</u> all temporary, structural erosion and sediment control measures have been removed; <u>and</u> 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.E. 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.

VI. Part VI. REPORTING AND RETENTION OF 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.A.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.

VII. 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 *discharge*r authorized by a general permit to apply for an individual SPDES permit, it shall notify the *discharge*r 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.

VIII. APPENDIX A

Definitions

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.

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.

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).

New Development – means any land disturbance that does meet the definition of Redevelopment Activity included in this appendix.

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*.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; and/or an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications.

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.

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, 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 required to gain coverage under New York State DEC's SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s).

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,
- Stream bank restoration projects (does not include the placement of spoil material),
- 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 makes 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 with a Soil Slope Phase that is identified as an E or F, or the map unit name is inclusive of 25% or greater slope, on the United States Department of Agriculture ("USDA") Soil Survey for the County where the disturbance will occur.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for point source discharges, load allocations (LAs) for nonpoint sources, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, 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.

IX. 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 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
- Bike paths and trails
- Sidewalk construction projects that are not part of a road/ highway construction or reconstruction project
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics
- Spoil areas that will be covered with vegetation
- Land clearing and grading for the purposes of creating vegetated open space (i.e. recreational parks, lawns, meadows, fields), 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 less than five acres and construction activities that include the construction or reconstruction of impervious area

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.

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 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 townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- 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, includes hospitals, prisons, schools and colleges
- Industrial facilities, includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW’s and water treatment plants
- Office complexes
- Sports complexes
- Racetracks, includes racetracks with earthen (dirt) surface
- Road construction or reconstruction
- Parking lot construction or reconstruction
- 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
- All other construction activities that include the construction or reconstruction of *impervious area* <u>or</u> *alter the hydrology from pre to post development* conditions, <u>and</u> are not listed in Table 1

X. APPENDIX C

Watersheds Where Enhanced Phosphorus Removal Standards Are Required

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

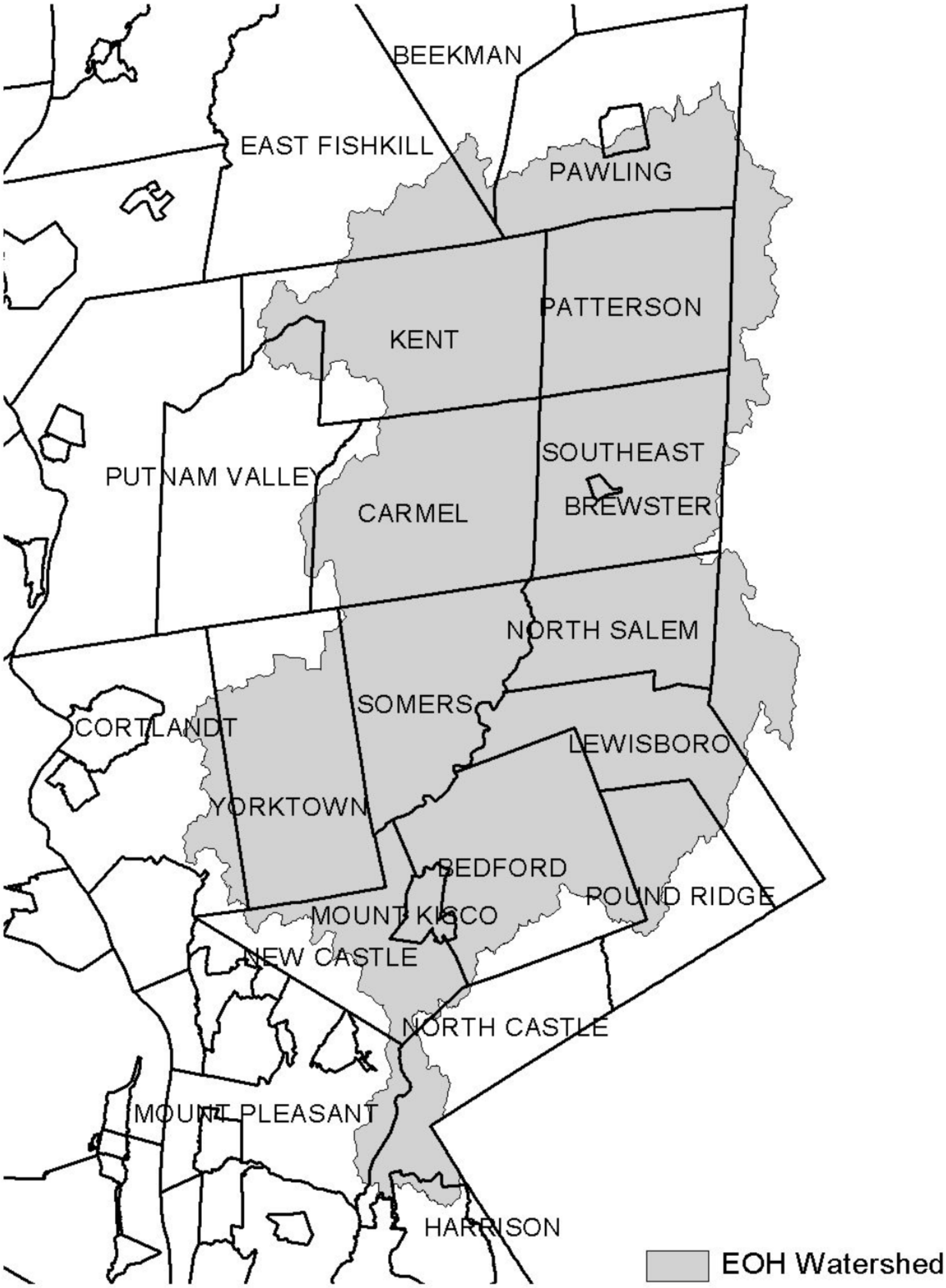


Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

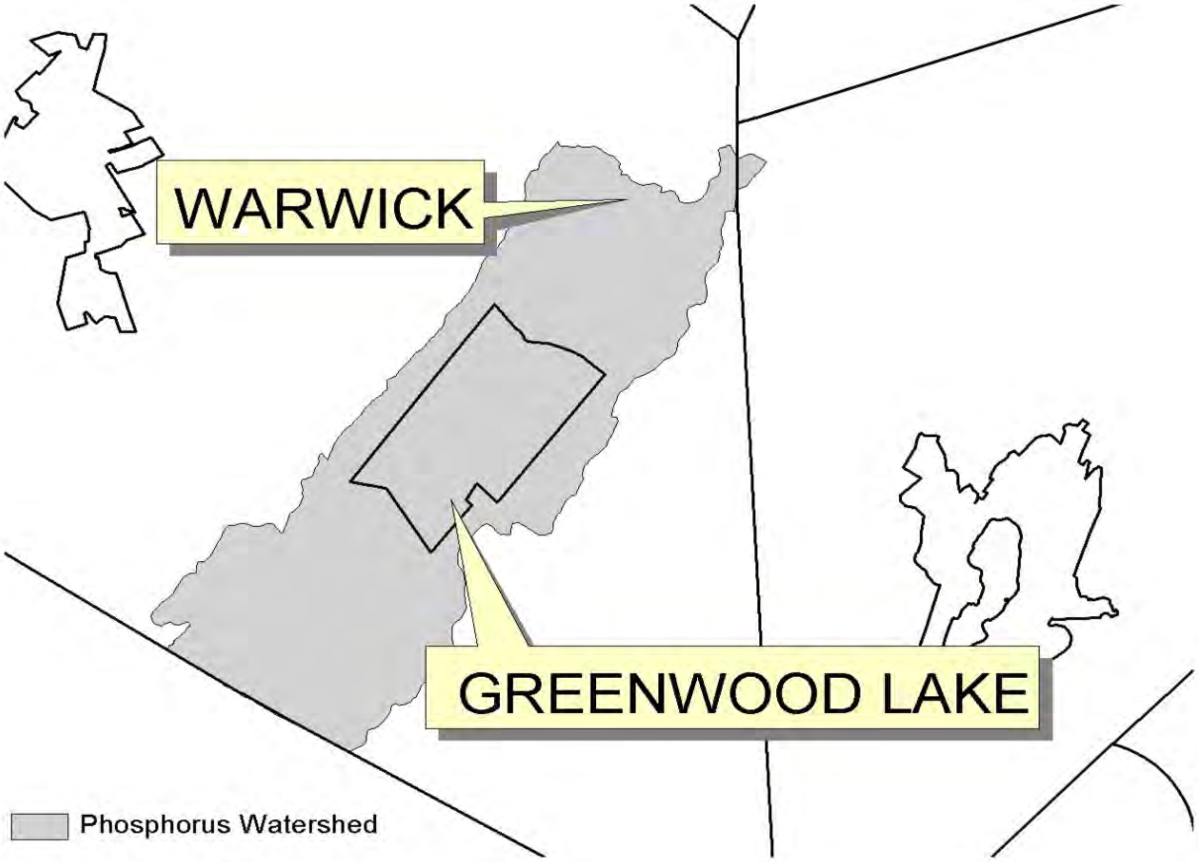


Figure 4 - Oscawana Lake Watershed

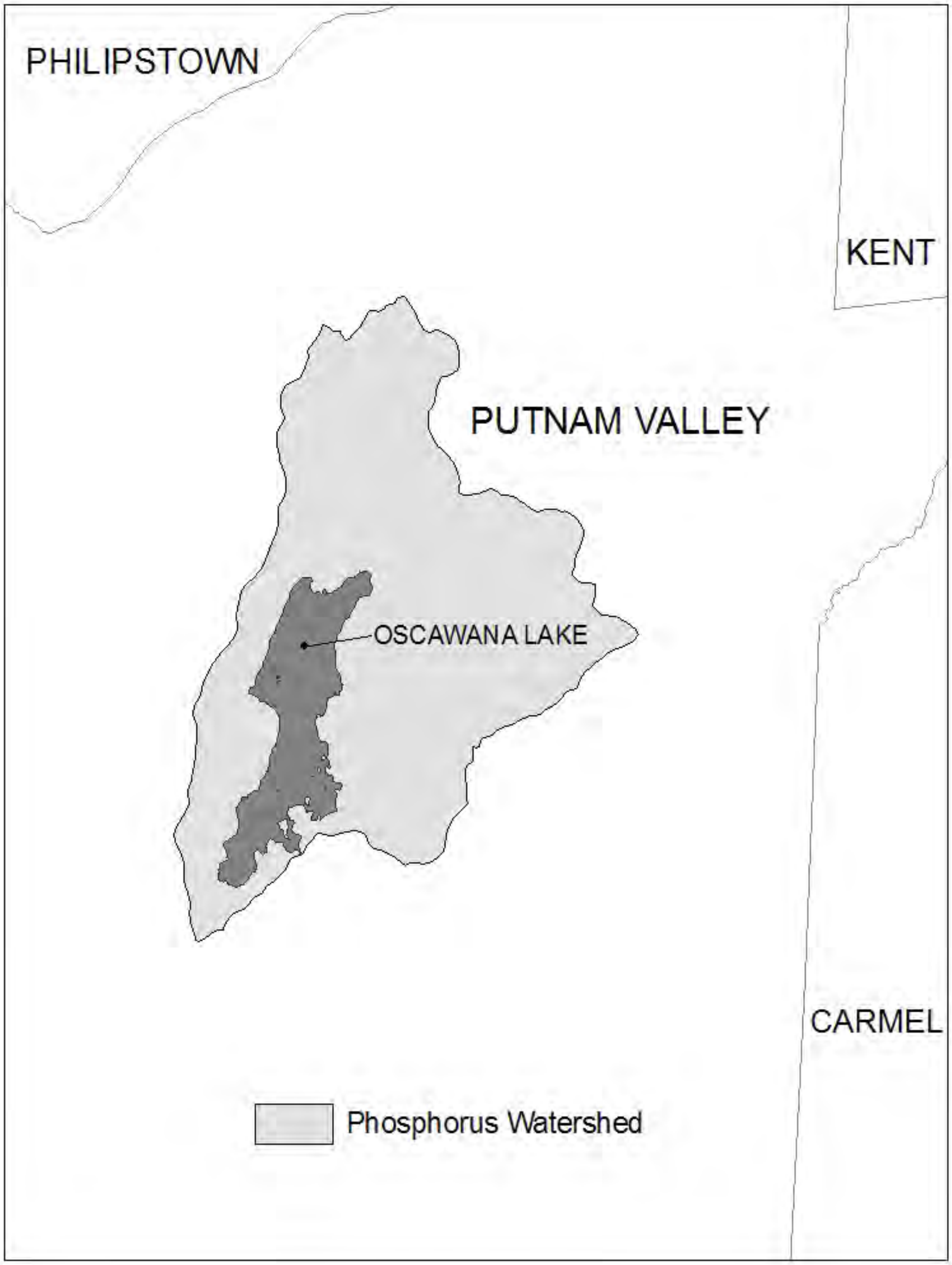
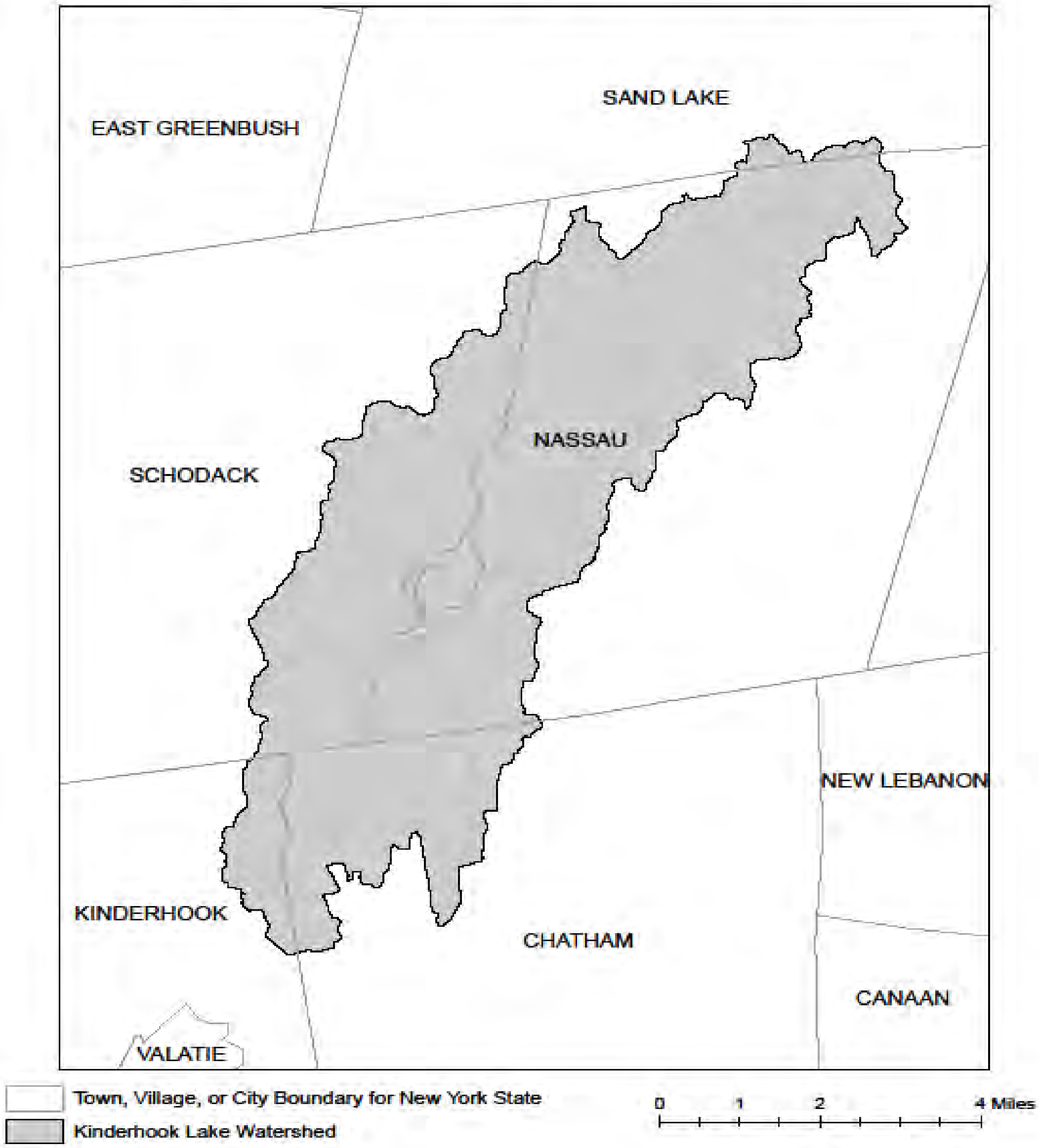


Figure 5: Kinderhook Lake Watershed



XI. APPENDIX D

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

XII. APPENDIX E

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). *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
Albany	Ann Lee (Shakers) Pond, Stump Pond
Albany	Basic Creek Reservoir
Allegheny	Amity Lake, Saunders Pond
Bronx	Van Cortlandt Lake
Broome	Whitney Point Lake/Reservoir
Broome	Fly Pond, Deer Lake
Broome	Minor Tribs to Lower Susquehanna (north)
Cattaraugus	Allegheny River/Reservoir
Cattaraugus	Case Lake
Cattaraugus	Linlyco/Club Pond
Cayuga	Duck Lake
Chautauqua	Chautauqua Lake, North
Chautauqua	Chautauqua Lake, South
Chautauqua	Bear Lake
Chautauqua	Chadakoin River and tribs
Chautauqua	Lower Cassadaga Lake
Chautauqua	Middle Cassadaga Lake
Chautauqua	Findley Lake
Clinton	Great Chazy River, Lower, Main Stem
Columbia	Kinderhook Lake
Columbia	Robinson Pond
Dutchess	Hillside Lake
Dutchess	Wappinger Lakes
Dutchess	Fall Kill and tribs
Erie	Green Lake
Erie	Scajaquada Creek, Lower, and tribs
Erie	Scajaquada Creek, Middle, and tribs
Erie	Scajaquada Creek, Upper, and tribs
Erie	Rush Creek and tribs
Erie	Ellicott Creek, Lower, and tribs
Erie	Beeman Creek and tribs
Erie	Murder Creek, Lower, and tribs
Erie	South Branch Smoke Cr, Lower, and tribs
Erie	Little Sister Creek, Lower, and tribs
Essex	Lake George (primary county: Warren)
Genesee	Black Creek, Upper, and minor tribs
Genesee	Tonawanda Creek, Middle, Main Stem
Genesee	Oak Orchard Creek, Upper, and tribs
Genesee	Bowen Brook and tribs
Genesee	Bigelow Creek and tribs
Genesee	Black Creek, Middle, and minor tribs
Genesee	LeRoy Reservoir
Greene	Schoharie Reservoir
Greene	Sleepy Hollow Lake
Herkimer	Steele Creek tribs
Kings	Hendrix Creek
Lewis	Mill Creek/South Branch and tribs
Livingston	Conesus Lake
Livingston	Jaycox Creek and tribs
Livingston	Mill Creek and minor tribs
Livingston	Bradner Creek and tribs
Livingston	Christie Creek and tribs
Monroe	Lake Ontario Shoreline, Western
Monroe	Mill Creek/Blue Pond Outlet and tribs
Monroe	Rochester Embayment - East
Monroe	Rochester Embayment - West
Monroe	Unnamed Trib to Honeoye Creek
Monroe	Genesee River, Lower, Main Stem
Monroe	Genesee River, Middle, Main Stem
Monroe	Black Creek, Lower, and minor tribs
Monroe	Buck Pond
Monroe	Long Pond
Monroe	Cranberry Pond
Monroe	Mill Creek and tribs
Monroe	Shipbuilders Creek and tribs
Monroe	Minor tribs to Irondequoit Bay
Monroe	Thomas Creek/White Brook and tribs
Nassau	Glen Cove Creek, Lower, and tribs
Nassau	LI Tribs (fresh) to East Bay
Nassau	East Meadow Brook, Upper, and tribs
Nassau	Hempstead Bay
Nassau	Hempstead Lake
Nassau	Grant Park Pond
Nassau	Beaver Lake
Nassau	Camaans Pond
Nassau	Halls Pond
Nassau	LI Tidal Tribs to Hempstead Bay
Nassau	Massapequa Creek and tribs
Nassau	Reynolds Channel, east
Nassau	Reynolds Channel, west
Nassau	Silver Lake, Lofts Pond
Nassau	Woodmere Channel
Niagara	Hyde Park Lake
Niagara	Lake Ontario Shoreline, Western
Niagara	Bergholtz Creek and tribs
Oneida	Ballou, Nail Creeks
Onondaga	Ley Creek and tribs
Onondaga	Onondaga Creek, Lower and tribs

APPENDIX E

List of 303(d) segments impaired by pollutants related to construction activity, cont'd.

COUNTY	WATERBODY	COUNTY	WATERBODY
Onondaga	Onondaga Creek, Middle and tribs	Suffolk	Great South Bay, West
Onondaga	Onondaga Creek, Upp, and minor tribs	Suffolk	Mill and Seven Ponds
Onondaga	Harbor Brook, Lower, and tribs	Suffolk	Moriches Bay, East
Onondaga	Ninemile Creek, Lower, and tribs	Suffolk	Moriches Bay, West
Onondaga	Minor tribs to Onondaga Lake	Suffolk	Quantuck Bay
Onondaga	Onondaga Creek, Lower, and tribs	Suffolk	Shinnecock Bay (and Inlet)
Ontario	Honeoye Lake	Sullivan	Bodine, Montgomery Lakes
Ontario	Hemlock Lake Outlet and minor tribs	Sullivan	Davies Lake
Ontario	Great Brook and minor tribs	Sullivan	Pleasure Lake
Orange	Monhagen Brook and tribs	Sullivan	Swan Lake
Orange	Orange Lake	Tompkins	Cayuga Lake, Southern End
Orleans	Lake Ontario Shoreline, Western	Tompkins	Owasco Inlet, Upper, and tribs
Oswego	Pleasant Lake	Ulster	Ashokan Reservoir
Oswego	Lake Neatahwanta	Ulster	Esopus Creek, Upper, and minor tribs
Putnam	Oscawana Lake		
Putnam	Palmer Lake	Ulster	Esopus Creek, Lower, Main Stem
Putnam	Lake Carmel	Ulster	Esopus Creek, Middle, and minor tribs
Queens	Jamaica Bay, Eastern, and tribs (Queens)		
Queens	Bergen Basin	Warren	Lake George
Queens	Shellbank Basin	Warren	Tribs to L.George, Village of L George
Rensselaer	Nassau Lake		
Rensselaer	Snyders Lake	Warren	Huddle/Finkle Brooks and tribs
Richmond	Grasmere, Arbutus and Wolfes Lakes	Warren	Indian Brook and tribs
Rockland	Congers Lake, Swartout Lake	Warren	Hague Brook and tribs
Rockland	Rockland Lake	Washington	Tribs to L.George, East Shr Lk George
Saratoga	Ballston Lake		
Saratoga	Round Lake	Washington	Cossayuna Lake
Saratoga	Dwaas Kill and tribs	Washington	Wood Cr/Champlain Canal, minor tribs
Saratoga	Tribs to Lake Lonely		
Saratoga	Lake Lonely	Wayne	Port Bay
Schenectady	Collins Lake	Wayne	Marbletown Creek and tribs
Schenectady	Duane Lake	Westchester	Lake Katonah
Schenectady	Mariaville Lake	Westchester	Lake Mohegan
Schoharie	Engleville Pond	Westchester	Lake Shenorock
Schoharie	Summit Lake	Westchester	Reservoir No.1 (Lake Isle)
Schuyler	Cayuta Lake	Westchester	Saw Mill River, Middle, and tribs
St. Lawrence	Fish Creek and minor tribs	Westchester	Silver Lake
St. Lawrence	Black Lake Outlet/Black Lake	Westchester	Teatown Lake
Steuben	Lake Salubria	Westchester	Truesdale Lake
Steuben	Smith Pond	Westchester	Wallace Pond
Suffolk	Millers Pond	Westchester	Peach Lake
Suffolk	Mattituck (Marratooka) Pond	Westchester	Mamaroneck River, Lower
Suffolk	Tidal tribs to West Moriches Bay	Westchester	Mamaroneck River, Upp, and tribs
Suffolk	Canaan Lake	Westchester	Sheldrake River and tribs
Suffolk	Lake Ronkonkoma	Westchester	Blind Brook, Lower
Suffolk	Beaverdam Creek and tribs	Westchester	Blind Brook, Upper, and tribs
Suffolk	Big/Little Fresh Ponds	Westchester	Lake Lincolndale
Suffolk	Fresh Pond	Westchester	Lake Meahaugh
Suffolk	Great South Bay, East	Wyoming	Java Lake
Suffolk	Great South Bay, Middle	Wyoming	Silver Lake

Note: The list above identifies those waters from the final New York State "2014 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy", dated January 2015, that are impaired by silt, sediment or nutrients.

XIII. 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 ROAD AVON, 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 AVE. BUFFALO, NY 14203-2999 TEL. (716) 851-7070