Stormwater Pollution Prevention Plan

For

Farm Products Plant

At

124 Leahey Road

Amsterdam, NY 12010

Prepared For:

Hutchison Harvest Inc.

124 Leahey Road

Amsterdam, NY 12010

Prepared By:

Empire Engineering, PLLC

1900 Duanesburg Road

Duanesburg, NY 12056

June 20, 2022

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1.0 Site Information & Evaluation

1.1 Project/Site Information

The subject project is the construction of a Farm Products Plant (Slaughter House) comprising one (1) structure, loading dock, driveway, and associated parking. The subject site is located at 124 Leahey Road in the Town of Florida, NY. and approximately 7.13± acres. The property is identified by Tax Map # 88.00-1-13.

Anticipated Construction Start Date: October 2022

Anticipated Completion Date: September 2023

1.2 Contact Information

Owner/Operator:

Hutchison Harvest Inc.
124 Leahey Road
Amsterdam, NY 12010
Contact: Katelynn Myers (518) 775-0321

Engineer:

Empire Engineering, PLLC
1900 Duanesburg Road
Duanesburg, NY 12056
Contact: Christopher Longo, PE

Contractor:

Owner/Operator

1.3 Drainage Patterns & Topography

The site is vacant land predominantly a cultivated field, existing runoff is directed to the Northeast to a drainage ditch which conveys runoff collection to the Northwest to a tributary of the Mohawk River. The topography of the site can be generally described as flat to slightly sloped.

Soils on the site are silt loam as identified by the USDA Natural Resource Conservation Service web soil survey and an on-site soils investigation. The on-site soils investigation confirmed the soils to be silt loam over bedrock. Infiltration tests were performed in the intermediate layer indicating permeability at a rate of 5 minutes per inch. All test pit logs and infiltration results are indicated on the site plan.

Mapped Soils (Per USDA NRCS Mapping)				
Symbol	**Soil Name**	**Soil Description**	**Percentage of Site**	**Hydrologic Soil Group**
ApB	Appleton	Silt loam, 3-8% slope	100%	B/D

1.4 Potential Sources of Pollution

The primary sources of pollution from an active construction site are erosion, siltation, debris transport, accidental spills or leakage of oils from equipment.

1.5 Implementation Schedule

The construction sequence outlined below should be followed or amended as necessary to minimize the susceptibility of the site to erosion and sediment transport during construction. Proper construction of the following Erosion & Sediment Controls is detailed on Sheet C504, E&SC Detail.

a. Establish perimeter protections and stabilized construction entrances within work area.
b. Construct temporary sediment traps in the location of permanent stormwater controls.
c. Once all erosion and sediment control measures are constructed and functional, disturbance may begin within that subject area.
d. Rough grade the project area, establish any swales and/or temporary check dams to divert runoff to storage areas.
e. Stabilize cut/fill slopes and stabilize internal roadway areas with subbase course as necessary.
f. If the project is occurring in multiple phases repeat steps a-d in any new drainage area.
g. Upon completion of grading, final seeding and full vegetative cover shall be established.
h. Prior to finalizing connection to the storm sewer system, all catch basins and drainage lines shall be cleaned of all silt and sediment.
i. Once final stabilization is achieved remove all temporary erosion and sediment control measures including silt fence, storm structure protections and temporary sediment basin components.

1.6 Notice of Intent

The owner shall submit a Notice of Intent (NOI) to the New York State Department of Environmental Conservation and obtain authorization of construction activities before commencing work. A copy of this NOI is included within Appendix A.

1.7 Historic Preservation

The Office of Parks, Recreation & Historic Preservation database was reviewed for potential Historic or Cultural significant data at or near the project site. The OPRHP database revealed that the project site, nor any portion of it is in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office archaeological site inventory. Based upon the negative results of the survey, the proposed development will have no adverse impact to any historic properties in the vicinity.

1.8 Endangered Species

The NYSDEC Environmental Resource Mapper was reviewed for potential records of state or federally listed threatened or endangered species. The site does lie within nor adjacent to any area designated as a “significant natural community” for the Northern Long Eared Bat endangered species. This project is not expected to have any potential impact to any federally listed threatened or endangered species as forested areas are not being affected as part of the project. The database results are included within Appendix C.

1.9 Maps & Figures

Additional Maps indicating the site are included within Appendix D such as:

General Location Map

USDA Soils Map

2.0 Best Management Practices

2.1 Objectives

The primary objective of the Stormwater Pollution Prevention Plan is protecting adjacent areas from erosion and sediment transport and ensuring the quality of discharge water is acceptable. This is done by minimizing disturbed areas, protecting natural features and soil, phasing construction, stabilizing soils, and protecting storm inlets.

2.2 Phasing

Construction of the subject site is intended to be conducted in a single phase. Within the phase, attention should be paid to the required sequencing to ensure minimal sediment transport.

2.3 Good Housekeeping

The owner/operator shall implement the following for the duration of construction:

a. All stored materials shall be in a neat, orderly manner and under cover.
b. Products shall be kept in original containers with a legible original manufacturer's label.
c. Substances shall not be mixed with one another unless recommended by the manufacturer.
d. Original labels and safety data sheets (SDS) shall be procured and used for each material.
e. Whenever possible, the entire product shall be used up before disposing of a container.
f. If surplus product must be disposed of, manufacturers or local/state/federal recommended methods for proper disposal shall be followed.
g. Manufacturer's recommendations for proper use and disposal shall be followed.
h. The job site superintendent shall be responsible for daily inspections to ensure proper use and disposal of materials.

2.4 Spill Prevention Controls

The following spill prevention controls shall be implemented for the duration of construction:

a. The job site superintendent shall be the spill prevention and cleanup coordinator. He/she shall designate the individuals who will receive spill prevention and cleanup training. These individuals shall each become responsible for a phase of prevention and cleanup. The names of these personnel shall be posted in the material storage area and in the office trailer onsite.
b. Manufacturer's recommended methods for spill cleanup shall be clearly posted and site personnel shall be trained regarding these procedures as well as the location of the information and cleanup supplies.
c. Materials and equipment necessary for spill cleanup shall be kept in the material storage area onsite in spill control and containment kit (containing, for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.).
d. All spills shall be cleaned up immediately after discovery.
e. The spill area shall be kept well ventilated, and personnel shall wear appropriate protective clothing to prevent injury from contact with the hazardous substances.
f. Spills of toxic or hazardous materials shall be reported to the appropriate federal, state, and/or local government agency, regardless of the size of the spill. Spills of amounts that exceed Reportable Quantities of certain substances specifically mentioned in federal regulations (40 CFR 302 list and oil) shall be immediately reported to:
    - EPA National Response Center, telephone 1-800-424-8802
    - N.Y.S.D.E.C. 24-hour Spill Hotline, telephone 1-800-457-7362

2.5 Temporary Erosion & Sediment Controls

Temporary stormwater control measures shall be installed prior to active construction within each tributary area. Such temporary controls include but are not limited to:

2.51 Control:

a. Silt fencing.
b. Stabilized construction entrances.
c. Dust shall be controlled with water on site and adjacent roadways.
d. Designate a protected area to stockpile topsoil or other material stripped during excavation.
e. Any refuse storage onsite shall be only in designated areas where runoff will not directly discharge through.
f. See Sheet C504 - E&SC Detail for further detail on installation and implementation of control practices

2.52 Maintenance:

a. Once no longer active, disturbed areas shall be mulched to prevent sediment transport. Areas that are at or near finish grade shall be finally stabilized.
b. Stockpiles of soil materials shall be stabilized with geotextile or seeding and be surrounded by silt fencing or berms.
c. No area shall be left un-stabilized more than 14 days after completion of construction activities within that area.
d. Erosion control devices should be cleaned and repaired as necessary.

e. Litter and construction debris shall be collected daily by the contractor, and properly disposed of.

2.6 Winter Shutdown

The site may be considered within 'winter shutdown' if the following conditions are met. During winter shutdown, the site inspection frequency may be reduced to once per 30-days. All disturbed areas shall be temporarily stabilized, and sediment basins shall be cleaned of silt and debris. During shutdown, access road shall be kept clear of snow and snow shall not be stockpiled in a location which inhibits runoff to sediment basin areas.

2.7 Final Stabilization

Prior to the site being operational the following measures shall be implemented:

a. All disturbed areas other than structures or pavement shall receive final seeding and vegetative growth.
b. Ponds and swales shall be finally shaped in accordance with the sizing details and shall be vegetated accordingly.
c. Maintenance of ponds, swales and vegetative areas shall continue into operation of the site.
d. All disturbed areas which will be vegetated shall be de-compacted, aerated and 6" of topsoil applied prior to vegetating. Additional soil restoration may be required for heavy trafficked areas. Additional restoration shall be conducted in accordance with the NYSDEC Stormwater Design Manual Table 5.3.
e. Upon achieving greater than 80% vegetative growth on the disturbed site, temporary erosion and sediment controls may be removed.

2.8 Ownership & Maintenance

The proposed stormwater management facilities indicated on the site are intended to be privately owned and maintained. The owner/operator shall adhere to the Ownership and Maintenance Manual within Appendix E. In accordance with the Notice of Termination requirements, a deed covenant shall be filed identifying the long-term maintenance responsibility of the Owner to ensure long term operation and maintenance of the post-construction stormwater management facilities.

3.0 Inspections & Recordkeeping

3.1 Inspection Requirements

a. The owner/operation shall perform routine inspections and either correct or direct the contractor to correct deficiencies as they arise in a timely manner. The contractor shall familiarize themselves with this document and its required components prior to commencing work. Each day that the contractor is performing work on-site there shall be a 'trained individual' who is responsible for implementation of the SWPPP components.
b. The owner shall have a qualified inspector conduct a site inspection at least one per seven calendar days while disturbance activities are on-going. The inspector shall at a minimum, inspect erosion & 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.

c. The qualified inspector shall prepare an inspection report in accordance with the General Permit and distribute to the owner and appropriate contractor within 24 hours.

3.2 Certifications

The SWPPP preparer, owner and contractor shall sign the applicable certification forms included within Appendix F.

3.3 Documents Required On-Site

The owner or operator shall maintain a copy of the current General Permit, NOI, NOI Acknowledgment Letter, SWPPP, 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.

4.0 Drainage Analysis

4.1 Existing Runoff Condition

The existing site drainage characteristics include existing runoff that is directed to the North and South with a central ridge running East to West down the middle of the subject site. Stormwater runoff from the site was analyzed utilizing software applying the TR-55 hydrologic analysis method. The channel protection volume was determined utilizing the peak discharge from the TR-55 method and the Hydrologic Analysis tolls in Appendix B of the New York State Stormwater Management Design Manual. A summary of these peak flow rates is included below as well as the full drainage map & analysis within Appendix G.

Channel Protection Volume (acre-feet)	
	1-Year (Cpv)
Analysis Point A	0.131
Total	**0.131**

Peak Flow Rates (CFS)		
	10-Year Storm (Qp)	100-Year Storm (Qf)
Analysis Point A	6.28	13.43
Total	**6.28**	**13.43**

4.2 Proposed Development Condition

The proposed site drainage characteristics were analyzed in relation to the existing baseline to determine required storage volumes for the site. Changes in impervious cover, sub-catchment area and times of concentration were all considered in conducting the analysis. A summary of these peak flow rates is included below as well as the full drainage map & analysis within Appendix H.

Channel Protection Volume (acre-feet)		
	EX 1-Year Storm (Cpv)	PR 1-Year Storm (Cpv)
Analysis Point A	0.131	0.178
Total	**0.131**	**0.178**

In addition to the channel protection volume indicated above, the proposed conditions provide 24-hour extended detention of the 1-year, 24-hour storm event in accordance with the NYS DEC General Permit 0-20-001 Section I.C.2.a.ii. This is indicated on the hydrograph storage plot provided in Appendix H.

Peak Flow Rates (CFS)				
	EX 10-Year Storm (Qp)	PR 10-Year Storm (Qp)	EX 100-Year Storm (Qf)	PR 100-Year Storm (Qf)
Analysis Point A	6.28	1.74	13.43	7.32
Total	**6.28**	**1.74**	**13.43**	**7.32**

5.0 Water Quality & Quantity Controls

5.1 Selecting Post-Construction Practices

Post-construction stormwater management practices were carefully selected considering the matrices provided by the NYS DEC Stormwater Management Design Manual. Screening factors included 1. Land Use 2. Physical Feasibility 3. Watershed/Regional Factors 4. Stormwater Management Capability 5. Community & Environmental Factors.

Part of the consideration in selecting stormwater practices was the runoff reduction capacity of the practice. In accordance with the NYSDEC General Permit and Stormwater Design Manual each site must meet the minimum runoff reduction requirement through a combination of Green Infrastructure Practices and SMP's with runoff reduction capacity.

As part of the post construction practice selection, green infrastructure techniques were considered and either applied or not utilized. Appendix I includes a table of the planning and practice selection process in accordance with the NYSDEC Stormwater Design Manual Sections 5.2 & 5.3. Many of the planning techniques are intrinsically apparent within the development of the Concept Site Plan. The following Green Infrastructure practices suggested by NYSDEC in Section 5.3 of the SWMDM have not been applied:

Conservation of Natural Areas – Not a large enough area for conservation

Disconnection of Rooftops – All rooftops treated by other runoff reduction means

Stream Daylighting – No streams available to daylight

Rain Gardens – All impervious treated by other runoff reduction means

Green Roofs – All rooftops treated by other runoff reduction means

Stormwater Planters – All rooftops treated by other runoff reduction means

Rain Barrels – All rooftops treated by other runoff reduction means

Porous Pavement – All impervious treated by other runoff reduction means

5.2 Water Quality

Practices selected for treatment of water quality include:

Dry Swale (O-1)

Micropool Extended Detention Pond (P-1)

All water quality practices have been designed to treat the calculated water quality volume as well as safely convey the 10-year storm event. Worksheets showing sizing criteria and calculations for each practice are included within Appendix I.

5.3 Water Quantity

Stormwater controls for water quantity include:

Micropool Extended Detention Pond (P-1)

Water quantity practices have been designed to attenuate flows from both the Overbank Flood (10-year) and the Extreme Flood (100-year) storm events. The proposed stormwater detention areas do not meet the requirements for consideration as a "dam" as prescribed by NYSDEC. It can be assumed that in the unlikely event for a failure or misoperation losses would be limited to the owner's property. Pond storage elevation and sizing information is included in the post development drainage calculations within Appendix H.

6.0 Conclusion

The subject activity is listed within Appendix B Table 2 of the NYSDEC General Permit 0-20-001 for stormwater discharges from construction activities. This project type requires preparation of a SWPPP that includes Erosion & Sediment Control measures as well as post-construction stormwater management practices. This Stormwater Pollution Prevention Plan has been developed in accordance with the NYSDEC General Permit 0-20-001 as well as the 2015 NYS DEC Stormwater Design Manual. It is not anticipated that the drainage from the subject property will have any adverse effect on adjacent downstream properties.

Appendix A

Notice of Intent

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.35

(Submission #: HPJ-FRB8-4ZMBR, version 1)

Details

Originally Started By	William Benosky
Alternate Identifier	Hutchison Harvest Inc.
Submission ID	HPJ-FRB8-4ZMBR
Submission Reason	New
Status	Draft

Form Input

Owner/Operator Information

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

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

Owner/Operator Contact Person First Name
Krystle

Owner/Operator Mailing Address
124 Leahey Road

City
Amsterdam

State
New York

Zip
12010

Phone
518-775-0321

Email
kb.hutchisonfarm@gmail.com

Federal Tax ID
NONE PROVIDED

Project Location

Project/Site Name
Hutchison Harvest Inc.

Street Address (Not P.O. Box)
124 Leahey Road

Side of Street
North

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Florida

State
NY

Zip
12010

DEC Region
4

County
MONTGOMERY

Name of Nearest Cross Street
Mohr Road

Distance to Nearest Cross Street (Feet)
1000

Project In Relation to Cross Street
East

Tax Map Numbers Section-Block-Parcel
88.-1-13

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
42.89360870288756,-74.14145121099291

Project Details

2. What is the nature of this project?
New Construction

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

Pre-Development Existing Landuse
Pasture/Open Land

Post-Development Future Land Use
Commercial

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)
7.1

Total Area to be Disturbed (acres)
2.6

Existing Impervious Area to be Disturbed (acres)
2.6

Future Impervious Area Within Disturbed Area (acres)
1.2

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

---

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

A (%)
0

B (%)
0

C (%)
0

D (%)
100

7. Is this a phased project?
No

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

Start Date
10/1/2022

End Date
9/30/2023

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

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-0-20-001?
No

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

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

If No, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as D (provided the map unit name is inclusive of slopes greater than 25%), E or F on the USDA Soil Survey?
NONE PROVIDED

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

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

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

16. What is the name of the municipality/entity that owns the separate storm sewer system?
NONE PROVIDED

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
Empire Engineering, PLLC

Contact Name (Last, Space, First)
Longo, Christopher

Mailing Address
1900 Duanesburg Road

City
Duanesburg

State
NY

Zip
12056

Phone
518-858-4117

Email
clongo@empireeng.net

Download SWPPP Preparer Certification Form
Please take the following steps to prepare and upload your preparer certification form:

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

3) Scan the signed form
4) Upload the scanned document
Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification

> SWPPP Preparer Certification Form - Signed.pdf - 06/20/2022 03:52 PM
> **Comment**
> NONE PROVIDED

Erosion & Sediment Control Criteria

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

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

Temporary Structural
Check Dams
Sediment Traps
Silt Fence
Stabilized Construction Entrance
Construction Road Stabilization

Biotechnical
None

Vegetative Measures
Mulching
Seeding
Temporary Swale
Topsoiling

Permanent Structural
Rock Outlet Protection

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

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).
All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
0.111

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

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

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

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)
0.028

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)
0.021

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 projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question #29. (acre-feet)
0.083

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).
0.111

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)
0.131

CPv Provided (acre-feet)
0.178

36a. The need to provide channel protection has been waived because:
NONE PROVIDED

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

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
6.28

Post-Development (CFS)
1.74

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
13.43

Post-Development (CFS)
7.32

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

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

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

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

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)
NONE PROVIDED

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

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

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

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

RR Techniques (Volume Reduction)

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

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

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

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

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

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

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

Standard SMPs with RRv Capacity

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

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

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

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

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

Total Contributing Impervious Acres for Dry Swale (O-1)
1.2

Standard SMPs

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Total Contributing Impervious Area for Hydrodynamic
NONE PROVIDED

Total Contributing Impervious Area for Wet Vault
NONE PROVIDED

Total Contributing Impervious Area for Media Filter
NONE PROVIDED

"Other" Alternative SMP?
NONE PROVIDED

Total Contributing Impervious Area for "Other"
NONE PROVIDED

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

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

Manufacturer of Alternative SMP
NONE PROVIDED

Name of Alternative SMP
NONE PROVIDED

Other Permits

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

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

If Other, then identify
NONE PROVIDED

41. Does this project require a US Army Corps of Engineers Wetland Permit?
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?
NONE PROVIDED

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

MS4 Acceptance Form Upload
NONE PROVIDED
Comment
NONE PROVIDED

Owner/Operator Certification

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

Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form

NONE PROVIDED

Comment

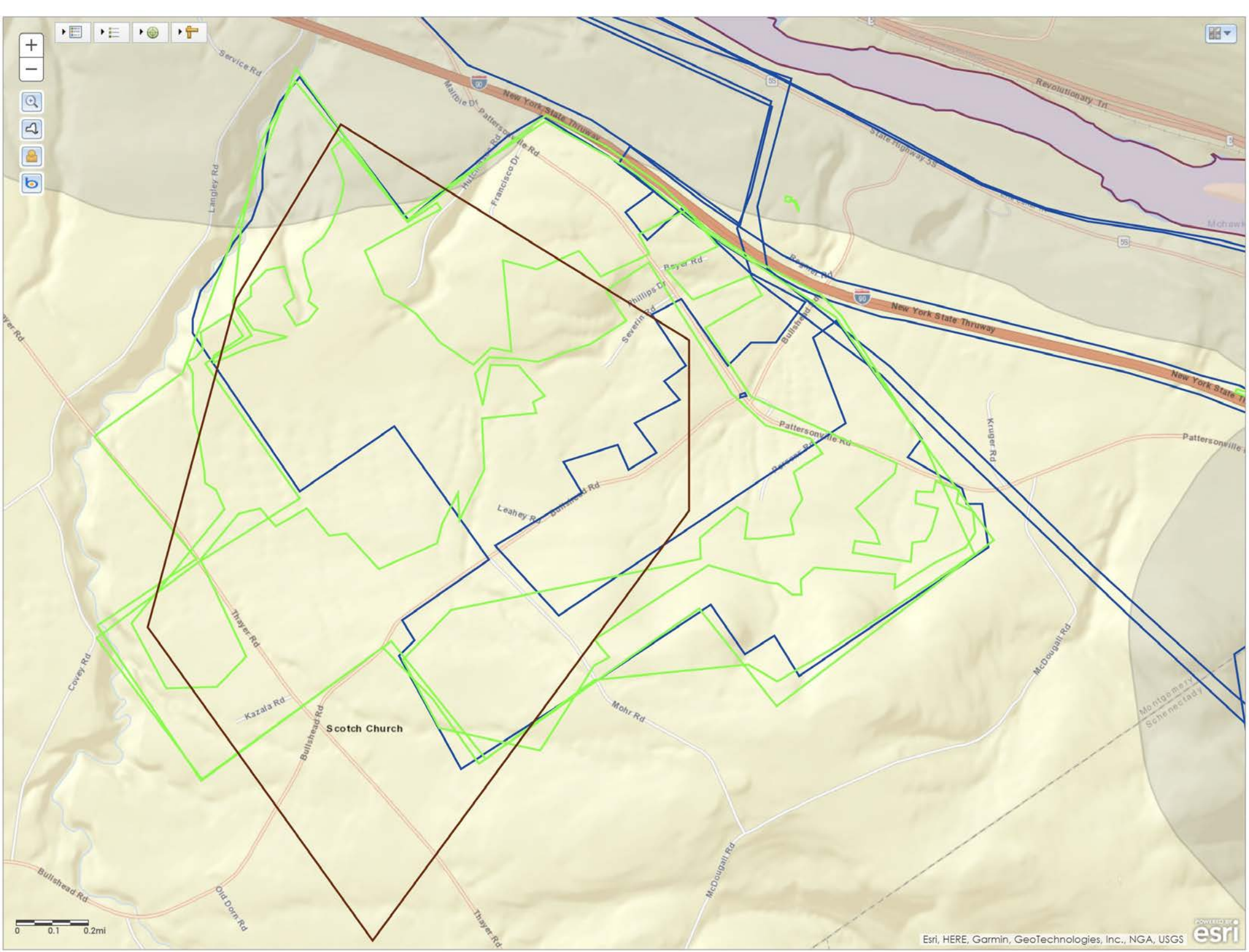
NONE PROVIDED

Attachments

Date	Attachment Name	Context	User
6/20/2022 3:52 PM	SWPPP Preparer Certification Form - Signed.pdf	Attachment	CHRISTOPHER LONGO

Appendix B

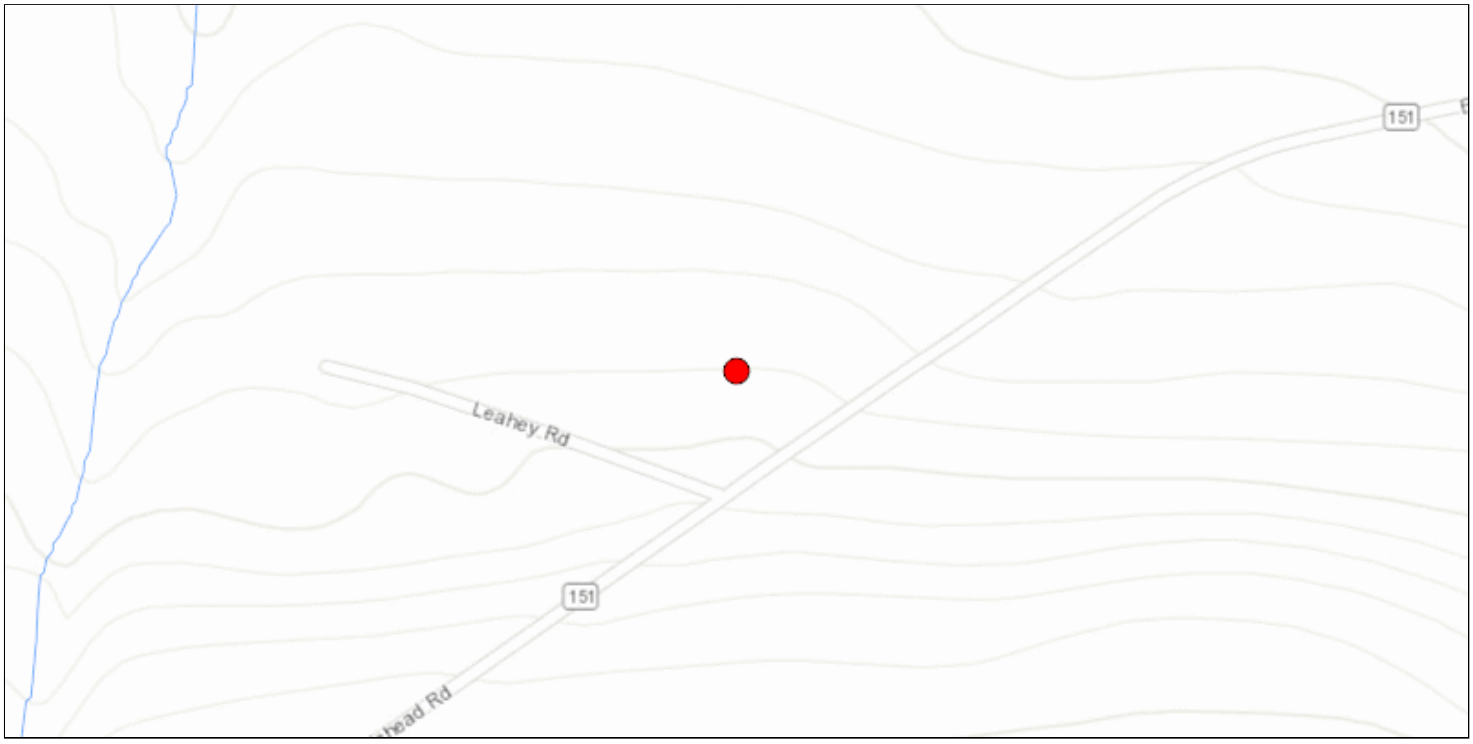
OPRHP Correspondence


Service Rd
New York State Thruway
Revolutionary Trl
State Highway 55
Langley Rd
Francisco Dr
Reyer Rd
Phillips Dr
Severin Rd
Bullshead Rd
Pattersonville Rd
Kruger Rd
Leahey Rd
Bonfield Rd
Thayer Rd
Covey Rd
Kazala Rd
Scotch Church
Mohr Rd
McDougall Rd
Old Dorn Rd
0
0.1
0.2mi
Esri, HERE, Garmin, GeoTechnologies, Inc., NGA, USGS

Appendix C

T&E Correspondence

Environmental Resource Mapper



The coordinates of the point you clicked on are:

UTM 18	**Easting:**	570103.8935183244	**Northing:**	4749369.042330708
Longitude/Latitude	**Longitude:**	-74.14140021777989	**Latitude:**	42.89371801252464

The approximate address of the point you clicked on is:
1001-1001 Bullshead Rd, Amsterdam, New York, 12010

County: Montgomery
Town: Florida
USGS Quad: AMSTERDAM

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

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

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

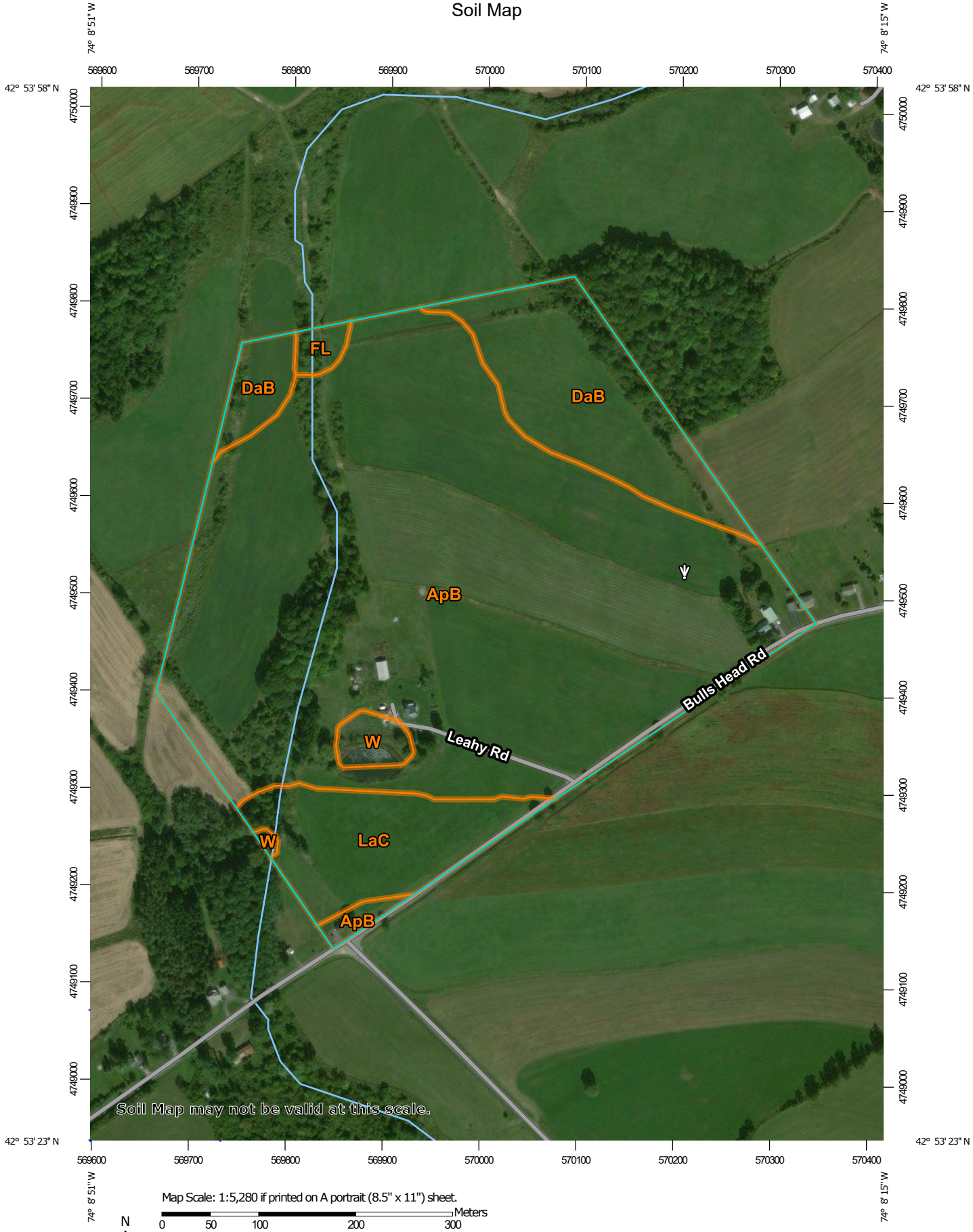
Please refer to the "Need a Permit?" tab for permit information or other authorizations regarding these natural resources.

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

Appendix D

Maps & Figures

Custom Soil Resource Report
Soil Map



Map Scale: 1:5,280 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

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

MAP LEGEND

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

Soils
- Soil 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 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Montgomery County, New York
Survey Area Data: Version 19, Aug 29, 2021

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

Date(s) aerial images were photographed: Oct 7, 2013—Nov 9, 2016

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
ApB	Appleton silt loam, 3 to 8 percent slopes	53.0	74.9%
DaB	Darien silt loam, 3 to 8 percent slopes	9.9	14.0%
FL	Fluvaquents, loamy	0.6	0.8%
LaC	Lansing silt loam, 8 to 15 percent slopes	6.3	8.8%
W	Water	1.0	1.4%
Totals for Area of Interest		**70.8**	**100.0%**

Map Unit Descriptions

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

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

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Montgomery County, New York

ApB—Appleton silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w5ht
Elevation: 260 to 1,740 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Appleton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Appleton

Setting

Landform: Drumlins, ridges, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 8 inches: silt loam
E - 8 to 16 inches: loam
Bt - 16 to 30 inches: gravelly silt loam
C1 - 30 to 54 inches: gravelly loam
C2 - 54 to 79 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F101XY013NY - Moist Till
Hydric soil rating: No

Minor Components

Conesus

Percent of map unit: 7 percent
Landform: Drumlins, hills, till plains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Lyons

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Darien

Percent of map unit: 4 percent
Landform: Till plains, drainageways
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Churchville

Percent of map unit: 4 percent
Landform: Lake plains, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope, rise, talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

DaB—Darien silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9tph
Elevation: 300 to 1,250 feet
Mean annual precipitation: 38 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 170 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Darien and similar soils: 75 percent

Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Darien

Setting

Landform: Drumlinoid ridges, hills, till plains
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived predominantly from calcareous gray shale

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 10 inches: silt loam
H3 - 10 to 31 inches: channery silty clay loam
H4 - 31 to 60 inches: channery silty clay loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F101XY013NY - Moist Till
Hydric soil rating: No

Minor Components

Rhinebeck

Percent of map unit: 5 percent
Hydric soil rating: No

Churchville

Percent of map unit: 5 percent
Hydric soil rating: No

Ilion

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Madalin

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Burdett

Percent of map unit: 5 percent
Hydric soil rating: No

FL—Fluvaquents, loamy

Map Unit Setting

National map unit symbol: 9tpl
Elevation: 300 to 1,800 feet
Mean annual precipitation: 38 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Fluvaquents and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fluvaquents

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium with highly variable texture

Typical profile

H1 - 0 to 5 inches: gravelly silt loam
H2 - 5 to 70 inches: very gravelly silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.06 to 19.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: NoneFrequent
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Wayland
Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Teel
Percent of map unit: 5 percent
Hydric soil rating: No

Granby
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Hamlin
Percent of map unit: 5 percent
Hydric soil rating: No

Saprists
Percent of map unit: 3 percent
Landform: Marshes, swamps
Hydric soil rating: Yes

Aquents
Percent of map unit: 2 percent
Landform: Flood plains
Hydric soil rating: Yes

LaC—Lansing silt loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 2w3mh
Elevation: 330 to 2,130 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Lansing and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lansing

Setting
Landform: Drumlins, hills, till plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest

Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 8 inches: silt loam
E - 8 to 13 inches: gravelly silt loam
Bt/E - 13 to 21 inches: gravelly silt loam
Bt1 - 21 to 28 inches: gravelly silt loam
Bt2 - 28 to 39 inches: gravelly silt loam
C - 39 to 79 inches: gravelly loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F101XY012NY - Till Upland
Hydric soil rating: No

Minor Components

Conesus

Percent of map unit: 8 percent
Landform: Drumlins, hills, till plains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Kendaia

Percent of map unit: 3 percent
Landform: Drumlins, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Appleton

Percent of map unit: 2 percent
Landform: Drumlins, till plains
Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Danley

Percent of map unit: 1 percent
Landform: Drumlinoid ridges, hills, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Wassaic

Percent of map unit: 1 percent
Landform: Benches, ridges, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: 9tsc
Mean annual precipitation: 38 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Appendix E

O & M Manual

Operation & Maintenance Manual

For

Hutchison Harvest

Stormwater Management Facilities

At

124 Leahey Road

Amsterdam, NY 12010

Site Information

The subject project is the construction of a Farm Products Plant (Slaughter House) comprising one (1) structure, loading dock, driveway, and associated parking. The subject site is located at 124 Leahey Road in the Town of Florida, NY. and approximately 7.13± acres. The property is identified by Tax Map # 88.00-1-13.

Engineer of Record

Empire Engineering, PLLC
1900 Duanesburg Road
Duanesburg, NY 12056
Contact: Christopher Longo, PE
Phone: (518) 858-4117

Construction Phase

Submittals

The shop drawing design plans for all structures shall be reviewed by a NYS Licensed Professional Engineer. Specification sheets for all pipe materials and particle analyses for all aggregate to be used on site shall also be approved by the Engineer. Shop drawing and/or submittal approvals will be distributed to the owner and the contractor. No unit shall be constructed without having the Engineer's approval.

Inspections

The Engineer shall inspect and document the installation of any structure, pipe, controlled fill and stormwater management feature. Inspections shall include documentation of the subsurface conditions and/or the soil profile including material thickness. It is the owner's responsibility to contact the engineer to witness construction. Failure to do so may result in the facility not being certified. Additional lab or field geotechnical tests may be specified by the inspecting Engineer to verify conformance with the plans. Such test would be at the owner's expense.

Certifications

The inspecting Engineer shall issue a daily work report to the owner for each occurrence that construction is witnessed. The Engineer shall issue a letter of approval certifying stormwater components which they have witnessed and found to be in conformance with the plans, shop drawings, and any supplemental documents. If any modifications are made to the plans or stormwater facilities the Engineer shall document such in their certification.

Operation & Maintenance

Recordkeeping

The owner/operation shall keep and maintain all Plans, SWPPP documents, inspection reports, and certifications generated during design and construction. These plans and reports shall be readily accessible for use by any interested party.

Inspections

The owner should check the condition of all devices after each rainfall event for the first 30 days. Issues should be identified such as blockages or obstructions within the inlet or outlet. The owner should also inspect for accumulating sediment and conditions of slopes and embankments.

A comprehensive inspection should be completed at the end of construction in accordance with the enclosed inspection form. During operation, the owner should continue to routinely inspect all stormwater devices weekly during the rainy season. Each devise should be thoroughly inspection annually. A frequency of cleaning should be determined based on the inspection findings.

Maintenance

The owner shall maintain all stormwater devices in perpetuity. Routine maintenance should be scheduled at least annually and should address any issues identified during inspection. The enclosed maintenance checklists should be utilized for each device.

Emergency Action Plan

In the event of an emergency condition resulting from extreme weather or a structural failure, the owner shall be contacted immediately. The local Town officials and emergency response authorities should be contacted if there is immediate danger. If the failure does not pose an immediate threat to the health or welfare of the subject adjacent properties, the engineer of record should be contacted to determine potential remedies.

Construction Inspection Checklists

Stormwater/Wetland Pond Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
Pre-Construction/Materials and Equipment		
Pre-construction meeting		
Pipe and appurtenances on-site prior to construction and dimensions checked		
1. Material (including protective coating, if specified)		
2. Diameter		
3. Dimensions of metal riser or pre-cast concrete outlet structure		
4. Required dimensions between water control structures (orifices, weirs, etc.) are in accordance with approved plans		
5. Barrel stub for prefabricated pipe structures at proper angle for design barrel slope		
6. Number and dimensions of prefabricated anti-seep collars		
7. Watertight connectors and gaskets		
8. Outlet drain valve		
Project benchmark near pond site		
Equipment for temporary de-watering		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
2. Subgrade Preparation		
Area beneath embankment stripped of all vegetation, topsoil, and organic matter		
3. Pipe Spillway Installation		
Method of installation detailed on plans		
A. Bed preparation		
Installation trench excavated with specified side slopes		
Stable, uniform, dry subgrade of relatively impervious material (If subgrade is wet, contractor shall have defined steps before proceeding with installation)		
Invert at proper elevation and grade		
B. Pipe placement		
Metal / plastic pipe		
1. Watertight connectors and gaskets properly installed		
2. Anti-seep collars properly spaced and having watertight connections to pipe		
3. Backfill placed and tamped by hand under “haunches” of pipe		
4. Remaining backfill placed in max. 8 inch lifts using small power tamping equipment until 2 feet cover over pipe is reached		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
3. Pipe Spillway Installation		
Concrete pipe		
1. Pipe set on blocks or concrete slab for pouring of low cradle		
2. Pipe installed with rubber gasket joints with no spalling in gasket interface area		
3. Excavation for lower half of anti-seep collar(s) with reinforcing steel set		
4. Entire area where anti-seep collar(s) will come in contact with pipe coated with mastic or other approved waterproof sealant		
5. Low cradle and bottom half of anti-seep collar installed as monolithic pour and of an approved mix		
6. Upper half of anti-seep collar(s) formed with reinforcing steel set		
7. Concrete for collar of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
8. Forms stripped and collar inspected for honeycomb prior to backfilling. Parge if necessary.		
C. Backfilling		
Fill placed in maximum 8 inch lifts		
Backfill taken minimum 2 feet above top of anti-seep collar elevation before traversing with heavy equipment		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
4. Riser / Outlet Structure Installation		
Riser located within embankment		
A. Metal riser		
Riser base excavated or formed on stable subgrade to design dimensions		
Set on blocks to design elevations and plumbed		
Reinforcing bars placed at right angles and projecting into sides of riser		
Concrete poured so as to fill inside of riser to invert of barrel		
B. Pre-cast concrete structure		
Dry and stable subgrade		
Riser base set to design elevation		
If more than one section, no spalling in gasket interface area; gasket or approved caulking material placed securely		
Watertight and structurally sound collar or gasket joint where structure connects to pipe spillway		
C. Poured concrete structure		
Footing excavated or formed on stable subgrade, to design dimensions with reinforcing steel set		
Structure formed to design dimensions, with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
Forms stripped & inspected for “honeycomb” prior to backfilling; parge if necessary		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Embankment Construction		
Fill material		
Compaction		
Embankment		
1. Fill placed in specified lifts and compacted with appropriate equipment		
2. Constructed to design cross-section, side slopes and top width		
3. Constructed to design elevation plus allowance for settlement		
6. Impounded Area Construction		
Excavated / graded to design contours and side slopes		
Inlet pipes have adequate outfall protection		
Forebay(s)		
Pond benches		
7. Earth Emergency Spillway Construction		
Spillway located in cut or structurally stabilized with riprap, gabions, concrete, etc.		
Excavated to proper cross-section, side slopes and bottom width		
Entrance channel, crest, and exit channel constructed to design grades and elevations		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
8. Outlet Protection		
A. End section		
Securely in place and properly backfilled		
B. Endwall		
Footing excavated or formed on stable subgrade, to design dimensions and reinforcing steel set, if specified		
Endwall formed to design dimensions with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing, if necessary)		
Forms stripped and structure inspected for “honeycomb” prior to backfilling; parge if necessary		
C. Riprap apron / channel		
Apron / channel excavated to design cross-section with proper transition to existing ground		
Filter fabric in place		
Stone sized as per plan and uniformly place at the thickness specified		
9. Vegetative Stabilization		
Approved seed mixture or sod		
Proper surface preparation and required soil amendments		
Excelsior mat or other stabilization, as per plan		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
10. Miscellaneous		
Drain for ponds having a permanent pool		
Trash rack / anti-vortex device secured to outlet structure		
Trash protection for low flow pipes, orifices, etc.		
Fencing (when required)		
Access road		
Set aside for clean-out maintenance		
11. Stormwater Wetlands		
Adequate water balance		
Variety of depth zones present		
Approved pondscaping plan in place Reinforcement budget for additional plantings		
Plants and materials ordered 6 months prior to construction		
Construction planned to allow for adequate planting and establishment of plant community (April-June planting window)		
Wetland buffer area preserved to maximum extent possible		

Comments:

Actions to be Taken:

Open Channel System Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

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

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

Comments:

Actions to be Taken:

Maintenance Inspection Checklists

Stormwater Pond/Wetland Operation, Maintenance and Management Inspection Checklist

Project _____
Location: _____
Site Status: _____

Date: _____
Time: _____

Inspector: _____

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Embankment and emergency spillway (Annual, After Major Storms)		
1. Vegetation and ground cover adequate		
2. Embankment erosion		
3. Animal burrows		
4. Unauthorized planting		
5. Cracking, bulging, or sliding of dam		
a. Upstream face		
b. Downstream face		
c. At or beyond toe		
downstream		
upstream		
d. Emergency spillway		
6.Pond, toe & chimney drains clear and functioning		
7.Seeps/leaks on downstream face		
8.Slope protection or riprap failure		
9. Vertical/horizontal alignment of top of dam “As-Built”		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
10. Emergency spillway clear of obstructions and debris		
11. Other (specify)		
2. Riser and principal spillway (Annual)		
Type: Reinforced concrete _____ Corrugated pipe _____ Masonry _____ 1. Low flow orifice obstructed		
2. Low flow trash rack. a. Debris removal necessary		
b. Corrosion control		
3. Weir trash rack maintenance a. Debris removal necessary		
b. corrosion control		
4. Excessive sediment accumulation insider riser		
5. Concrete/masonry condition riser and barrels a. cracks or displacement		
b. Minor spalling (<1")		
c. Major spalling (rebars exposed)		
d. Joint failures		
e. Water tightness		
6. Metal pipe condition		
7. Control valve a. Operational/exercised		
b. Chained and locked		
8. Pond drain valve a. Operational/exercised		
b. Chained and locked		
9. Outfall channels functioning		
10. Other (specify)		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
3. Permanent Pool (Wet Ponds) (monthly)		
1. Undesirable vegetative growth		
2. Floating or floatable debris removal required		
3. Visible pollution		
4. Shoreline problem		
5. Other (specify)		
4. Sediment Forebays		
1.Sedimentation noted		
2. Sediment cleanout when depth < 50% design depth		
5. Dry Pond Areas		
1. Vegetation adequate		
2. Undesirable vegetative growth		
3. Undesirable woody vegetation		
4. Low flow channels clear of obstructions		
5. Standing water or wet spots		
6. Sediment and / or trash accumulation		
7. Other (specify)		
6. Condition of Outfalls (Annual , After Major Storms)		
1. Riprap failures		
2. Slope erosion		
3. Storm drain pipes		
4.Endwalls / Headwalls		
5. Other (specify)		
7. Other (Monthly)		
1. Encroachment on pond, wetland or easement area		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
2. Complaints from residents		
3.Aesthetics a. Grass growing required		
b. Graffiti removal needed		
c. Other (specify)		
4. Conditions of maintenance access routes.		
5. Signs of hydrocarbon build-up		
6. Any public hazards (specify)		
8. Wetland Vegetation (Annual)		
1. Vegetation healthy and growing Wetland maintaining 50% surface area coverage of wetland plants after the second growing season. (If unsatisfactory, reinforcement plantings needed)		
2. Dominant wetland plants: Survival of desired wetland plant species Distribution according to landscaping plan?		
3. Evidence of invasive species		
4. Maintenance of adequate water depths for desired wetland plant species		
5. Harvesting of emergent plantings needed		
6. Have sediment accumulations reduced pool volume significantly or are plants “choked” with sediment		
7. Eutrophication level of the wetland.		
8. Other (specify)		

Comments:

Actions to be Taken:

Open Channel Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

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

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

Comments:

Actions to be Taken:

Appendix F

Certifications

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

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

Project Site Information

Project/Site Name

Hutchison Harvest - Farm Products Plant

Owner/Operator Information

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

Hutchison Harvest Inc.

Certification Statement – SWPPP Preparer

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

Christopher	D	Longo
First name	MI	Last Name

Signature

6/20/22

Date

Revised: January 2020

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

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

Project/Site Name: Hutchison Harvest - Farm Products Plant

eNOI Submission Number: HPJ-FRB8-4ZMBR

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

Certification Statement - Owner/Operator

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

Owner/Operator First Name M.I. Last Name

_____

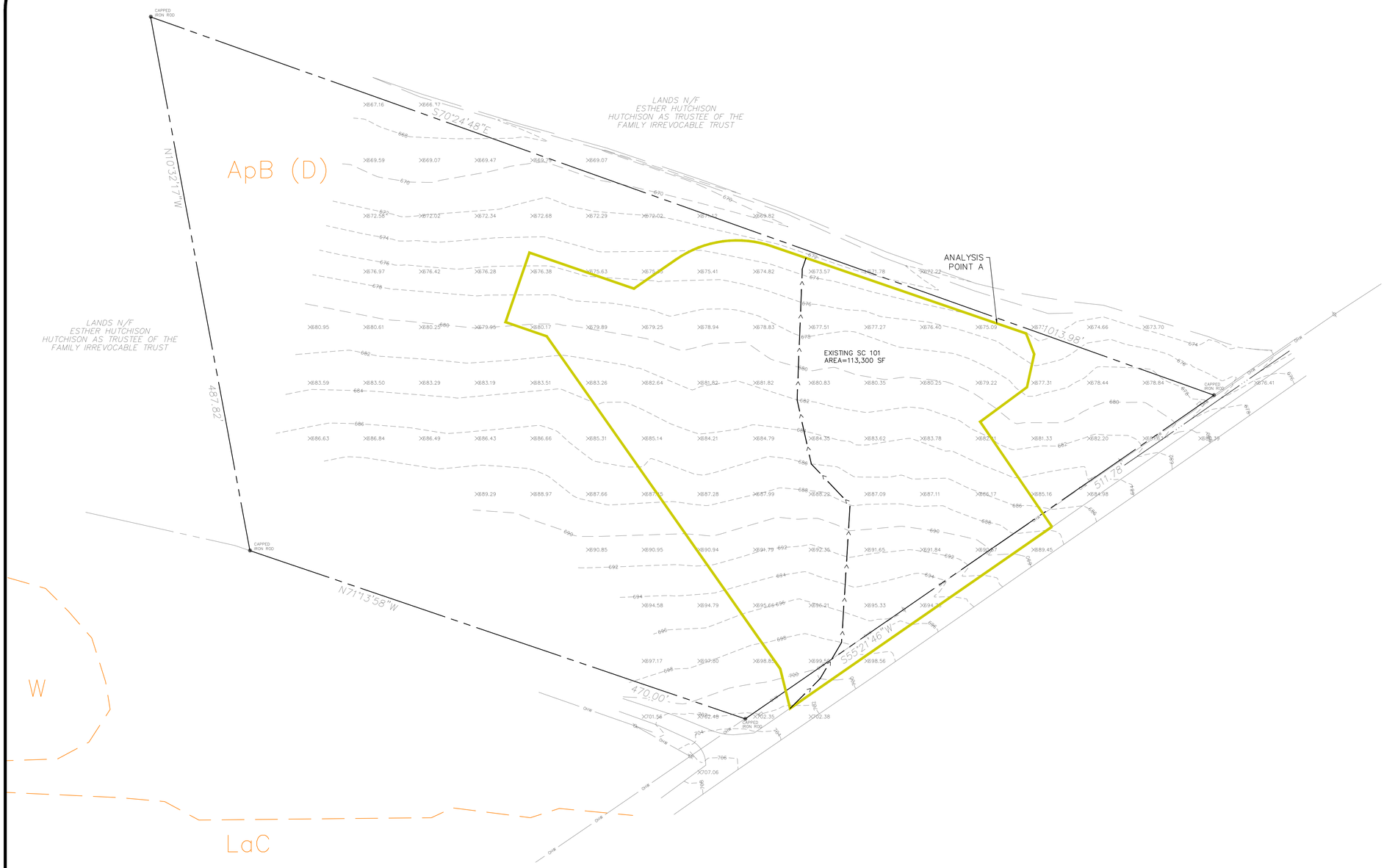
Signature

_____

Date

Appendix G

Existing Drainage Map & Analysis



PROJECT INFORMATION:

OWNER/APPLICANT:
HUTCHISON HARVEST INC..
190 HUTCHISON ROAD
AMSTERDAM, NY 12010

PROPERTY TAX MAP NUMBER
88.-1-13

PARCEL AREA:
7.13± AC
310,476± SF

MUNICIPALITY:
TOWN OF FLORIDA
MONTGOMERY COUNTY

SCHOOL DISTRICT:
AMSTERDAM

FIRE DISTRICT:
FLORIDA FIRE PROTECTION

ZONING:
AGRICULTURE

LEGEND

EXISTING PROPERTY LINE

USDA SOIL DESIGNATION TvB

GENERAL NOTES:

1) MAP ENTITLED "MINOR TWO LOT SUBDIVISION, LANDS NOW OR FORMERLY OF ESTHER HUTCHISON AS TRUSTEE OF THE HUTCHISON FAMILY IRREVOCABLE TRUST, PREPARED FOR HUTCHISON FARM LLC" AS PREPARED BY C.T.MALE ASSOCIATES DATED DECEMBER 28, 2021.

2) NORTH IS REFERENCED TO NAD 83 NEW YORK STATE PLANES EAST ZONE. ELEVATIONS ARE BASED UPON NAVD 88 DATUM.

3) SUBJECT TO ALL RIGHTS, EASEMENTS, COVENANTS OR RESTRICTION; RECORDED OR UNRECORDED.

4) SUBJECT TO ANY STATEMENT OF FACT CONTAINED IN AN UP TO DATE ABSTRACT OF TITLE OR TITLE REPORT.

No.	Revision Description	Date

PRIOR TO ANY EARTH DISTURBANCE THE CONTRACTOR SHALL CALL IN A TICKET TO DIG SAFE NY AND OBTAIN A CLEAR TO DIG

IT IS A VIOLATION OF SECTION 7209 OF THE NYS EDUCATION LAW FOR ANY PERSON TO ALTER ANY ITEM ON THIS PLAN IN ANY WAY UNLESS HE/SHE IS ACTING UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER.

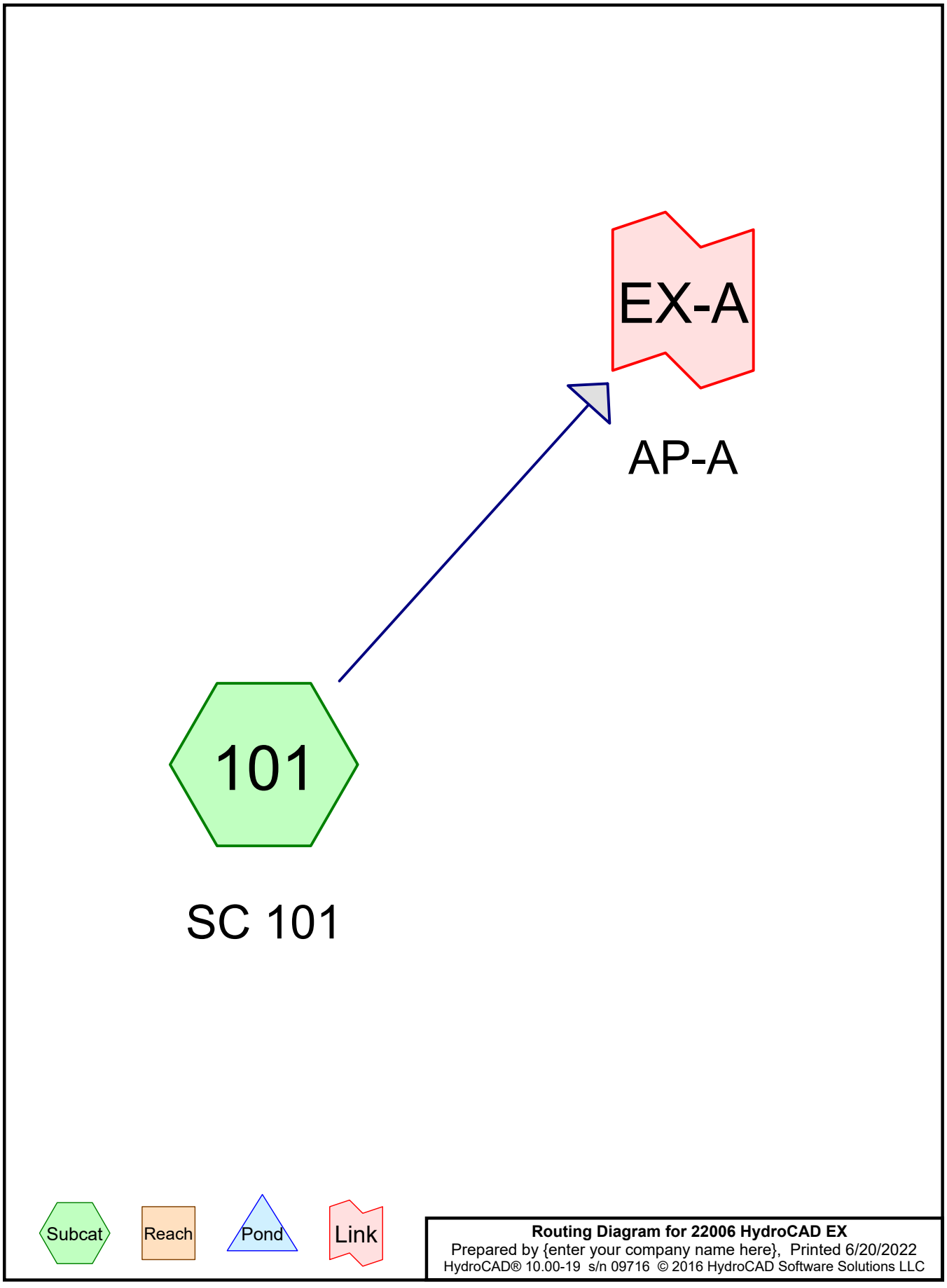
CHRISTOPHER D. LONGO, PE
N.Y.S. LIC. # 095840

EMPIRE ENGINEERING, PLLC
1900 DUANESBURG ROAD
DUANESBURG, NY 12056
PH: (518) 858-4117
EMAIL: CLONGO@EMPIREENG.NET

PROJECT
HUTCHISON HARVEST INC.
124 LEAHEY ROAD
TOWN OF FLORIDA
AMSTERDAM, NY 12010

Title: EXISTING DRAINAGE MAP

Date	Sheet
06/20/2022	DR-1
Scale: 1"=50'	1 OF 2
Job#: 22006	



Routing Diagram for 22006 HydroCAD EX
Prepared by {enter your company name here}, Printed 6/20/2022

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

Subcatchment 101: SC 101 Runoff Area=113,300 sf 0.00% Impervious Runoff Depth>0.61"
Flow Length=437' Slope=0.0690 '/' Tc=11.1 min CN=80 Runoff=2.48 cfs 0.131 af

Link EX-A: AP-A Inflow=2.48 cfs 0.131 af
Primary=2.48 cfs 0.131 af

Total Runoff Area = 2.601 ac Runoff Volume = 0.131 af Average Runoff Depth = 0.61"
100.00% Pervious = 2.601 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 101: SC 101

Runoff = 2.48 cfs @ 12.04 hrs, Volume= 0.131 af, Depth> 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Yr Rainfall=2.18"

Area (sf)	CN	Description
113,300	80	>75% Grass cover, Good, HSG D
113,300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0690	0.17		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 2.50"
1.3	337	0.0690	4.23		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
11.1	437	Total			

Summary for Link EX-A: AP-A

Inflow Area = 2.601 ac, 0.00% Impervious, Inflow Depth > 0.61" for 1-Yr event
Inflow = 2.48 cfs @ 12.04 hrs, Volume= 0.131 af
Primary = 2.48 cfs @ 12.04 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min

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

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

Subcatchment 101: SC 101 Runoff Area=113,300 sf 0.00% Impervious Runoff Depth>1.51"
Flow Length=437' Slope=0.0690 '/' Tc=11.1 min CN=80 Runoff=6.28 cfs 0.328 af

Link EX-A: AP-A Inflow=6.28 cfs 0.328 af
Primary=6.28 cfs 0.328 af

Total Runoff Area = 2.601 ac Runoff Volume = 0.328 af Average Runoff Depth = 1.51"
100.00% Pervious = 2.601 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 101: SC 101

Runoff = 6.28 cfs @ 12.03 hrs, Volume= 0.328 af, Depth> 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Yr Rainfall=3.52"

Area (sf)	CN	Description
113,300	80	>75% Grass cover, Good, HSG D
113,300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0690	0.17		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 2.50"
1.3	337	0.0690	4.23		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
11.1	437	Total			

Summary for Link EX-A: AP-A

Inflow Area = 2.601 ac, 0.00% Impervious, Inflow Depth > 1.51" for 10-Yr event
Inflow = 6.28 cfs @ 12.03 hrs, Volume= 0.328 af
Primary = 6.28 cfs @ 12.03 hrs, Volume= 0.328 af, Atten= 0%, Lag= 0.0 min

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

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

Subcatchment 101: SC 101 Runoff Area=113,300 sf 0.00% Impervious Runoff Depth>3.32"
Flow Length=437' Slope=0.0690 '/' Tc=11.1 min CN=80 Runoff=13.43 cfs 0.719 af

Link EX-A: AP-A Inflow=13.43 cfs 0.719 af
Primary=13.43 cfs 0.719 af

Total Runoff Area = 2.601 ac Runoff Volume = 0.719 af Average Runoff Depth = 3.32"
100.00% Pervious = 2.601 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 101: SC 101

Runoff = 13.43 cfs @ 12.03 hrs, Volume= 0.719 af, Depth> 3.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Yr Rainfall=5.77"

Area (sf)	CN	Description
113,300	80	>75% Grass cover, Good, HSG D
113,300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0690	0.17		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 2.50"
1.3	337	0.0690	4.23		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
11.1	437	Total			

Summary for Link EX-A: AP-A

Inflow Area = 2.601 ac, 0.00% Impervious, Inflow Depth > 3.32" for 100-Yr event
Inflow = 13.43 cfs @ 12.03 hrs, Volume= 0.719 af
Primary = 13.43 cfs @ 12.03 hrs, Volume= 0.719 af, Atten= 0%, Lag= 0.0 min

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

Appendix H

Proposed Drainage Map & Analysis

LEGEND

EXISTING PROPERTY LINE

USDA SOIL DESIGNATION TvB

PROJECT INFORMATION:

OWNER/APPLICANT:
HUTCHISON HARVEST INC..
190 HUTCHISON ROAD
AMSTERDAM, NY 12010

PROPERTY TAX MAP NUMBER
88.-1-13

PARCEL AREA:
7.13± AC
310,476± SF

MUNICIPALITY:
TOWN OF FLORIDA
MONTGOMERY COUNTY

SCHOOL DISTRICT:
AMSTERDAM

FIRE DISTRICT:
FLORIDA FIRE PROTECTION

ZONING:
AGRICULTURE

GENERAL NOTES:

1) MAP ENTITLED "MINOR TWO LOT SUBDIVISION, LANDS NOW OR FORMERLY OF ESTHER HUTCHISON AS TRUSTEE OF THE HUTCHISON FAMILY IRREVOCABLE TRUST, PREPARED FOR HUTCHISON FARM LLC" AS PREPARED BY C.T.MALE ASSOCIATES DATED DECEMBER 28, 2021.

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No.	Revision Description	Date

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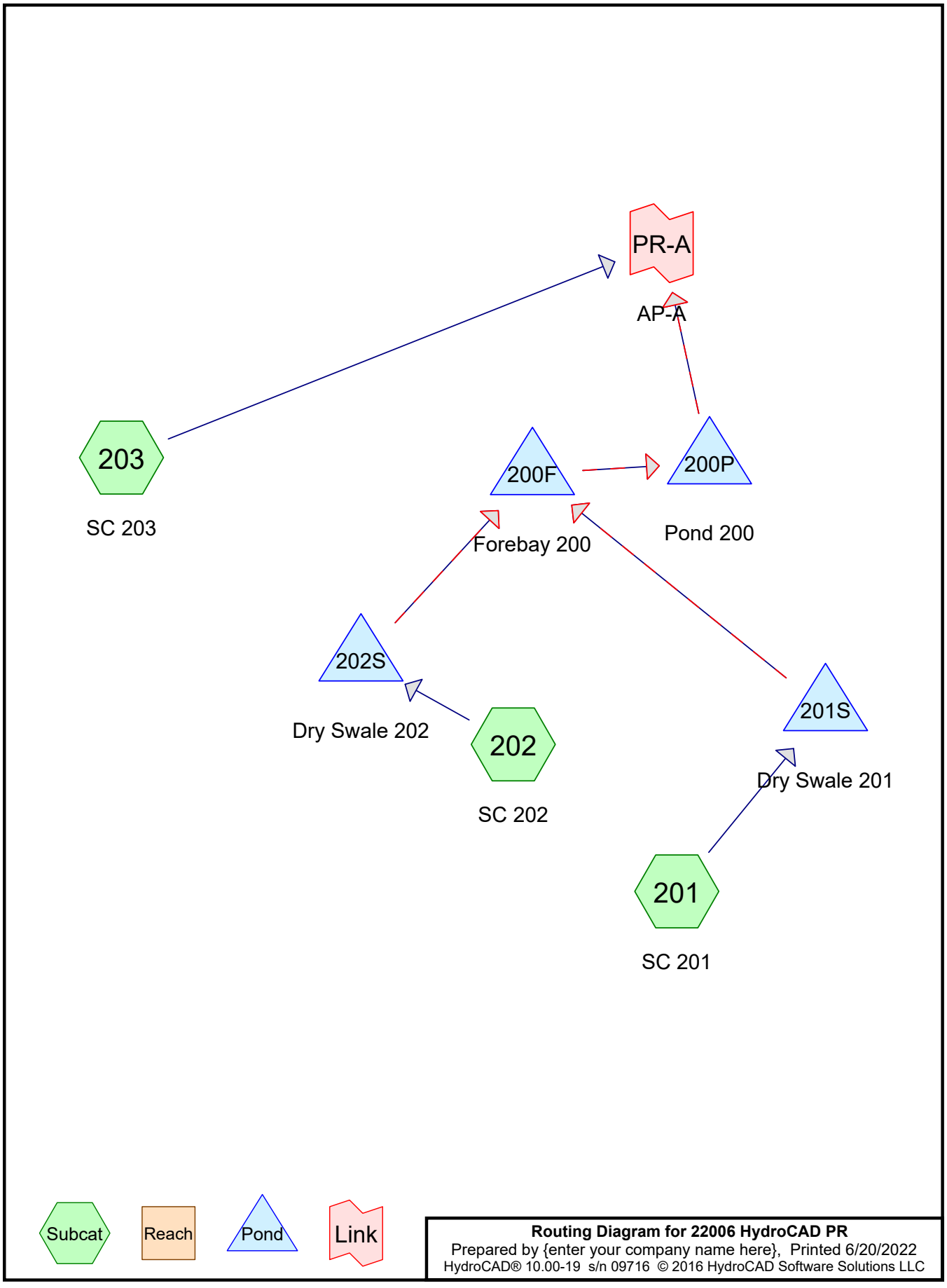
CHRISTOPHER D. LONGO, PE
N.Y.S. LIC. # 095840

EMPIRE ENGINEERING, PLLC
1900 DUANESBURG ROAD
DUANESBURG, NY 12056
PH: (518) 858-4117
EMAIL: CLONGO@EMPIREENG.NET

PROJECT
HUTCHISON HARVEST INC.
124 LEAHEY ROAD
TOWN OF FLORIDA
AMSTERDAM, NY 12010

Title: PROPOSED DRAINAGE PLAN

Date: 06/20/2022	Sheet: DR-2
Scale: 1"=50'	2 OF 2
Job#: 22006	



Routing Diagram for 22006 HydroCAD PR
Prepared by {enter your company name here}, Printed 6/20/2022

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

Subcatchment 201: SC 201 Runoff Area=40,400 sf 41.46% Impervious Runoff Depth>0.96"
Tc=6.0 min CN=87 Runoff=1.68 cfs 0.074 af

Subcatchment 202: SC 202 Runoff Area=55,050 sf 65.12% Impervious Runoff Depth>1.30"
Flow Length=200' Tc=6.0 min CN=92 Runoff=2.98 cfs 0.137 af

Subcatchment 203: SC 203 Runoff Area=17,850 sf 0.00% Impervious Runoff Depth>0.61"
Flow Length=400' Slope=0.0690 '/' Tc=11.0 min CN=80 Runoff=0.39 cfs 0.021 af

Pond 200F: Forebay 200 Peak Elev=678.34' Storage=1,185 cf Inflow=1.57 cfs 0.208 af
Primary=1.57 cfs 0.185 af Secondary=0.00 cfs 0.000 af Outflow=1.57 cfs 0.185 af

Pond 200P: Pond 200 Peak Elev=677.43' Storage=2,939 cf Inflow=1.57 cfs 0.185 af
Primary=0.61 cfs 0.157 af Secondary=0.00 cfs 0.000 af Outflow=0.61 cfs 0.157 af

Pond 201S: Dry Swale 201 Peak Elev=679.69' Storage=752 cf Inflow=1.68 cfs 0.074 af
Primary=0.80 cfs 0.074 af Secondary=0.00 cfs 0.000 af Outflow=0.80 cfs 0.074 af

Pond 202S: Dry Swale 202 Peak Elev=679.15' Storage=2,167 cf Inflow=2.98 cfs 0.137 af
Primary=0.78 cfs 0.134 af Secondary=0.00 cfs 0.000 af Outflow=0.78 cfs 0.134 af

Link PR-A: AP-A Inflow=0.65 cfs 0.178 af
Primary=0.65 cfs 0.178 af

Total Runoff Area = 2.601 ac Runoff Volume = 0.232 af Average Runoff Depth = 1.07"
53.57% Pervious = 1.393 ac 46.43% Impervious = 1.208 ac

Summary for Subcatchment 201: SC 201

Runoff = 1.68 cfs @ 11.97 hrs, Volume= 0.074 af, Depth> 0.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Yr Rainfall=2.18"

Area (sf)	CN	Description
16,750	98	Paved parking, HSG D
23,650	80	>75% Grass cover, Good, HSG D
40,400	87	Weighted Average
23,650		58.54% Pervious Area
16,750		41.46% Impervious Area

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

Summary for Subcatchment 202: SC 202

Runoff = 2.98 cfs @ 11.97 hrs, Volume= 0.137 af, Depth> 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Yr Rainfall=2.18"

Area (sf)	CN	Description
35,850	98	Paved parking, HSG D
19,200	80	>75% Grass cover, Good, HSG D
55,050	92	Weighted Average
19,200		34.88% Pervious Area
35,850		65.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	200		0.56		**Direct Entry, Direct Entry**

Summary for Subcatchment 203: SC 203

Runoff = 0.39 cfs @ 12.04 hrs, Volume= 0.021 af, Depth> 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Yr Rainfall=2.18"

Area (sf)	CN	Description
17,850	80	>75% Grass cover, Good, HSG D
17,850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0690	0.17		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 2.50"
1.2	300	0.0690	4.23		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
11.0	400	Total			

Summary for Pond 200F: Forebay 200

Inflow Area = 2.191 ac, 55.11% Impervious, Inflow Depth > 1.14" for 1-Yr event
Inflow = 1.57 cfs @ 12.09 hrs, Volume= 0.208 af
Outflow = 1.57 cfs @ 12.12 hrs, Volume= 0.185 af, Atten= 0%, Lag= 1.7 min
Primary = 1.57 cfs @ 12.12 hrs, Volume= 0.185 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 678.34' @ 12.12 hrs Surf.Area= 701 sf Storage= 1,185 cf

Plug-Flow detention time= 52.7 min calculated for 0.185 af (89% of inflow)
Center-of-Mass det. time= 18.3 min (819.7 - 801.4)

Volume	Invert	Avail.Storage	Storage Description
#1	675.00'	6,250 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
675.00	100	0	0
678.00	550	975	975
679.00	1,000	775	1,750
680.00	2,000	1,500	3,250
681.00	4,000	3,000	6,250

Device	Routing	Invert	Outlet Devices
#1	Primary	678.00'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir X 0.40** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#2	Secondary	679.50'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=1.55 cfs @ 12.12 hrs HW=678.33' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 1.55 cfs @ 0.58 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=675.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 200P: Pond 200

Inflow Area = 2.191 ac, 55.11% Impervious, Inflow Depth > 1.01" for 1-Yr event
Inflow = 1.57 cfs @ 12.12 hrs, Volume= 0.185 af
Outflow = 0.61 cfs @ 13.04 hrs, Volume= 0.157 af, Atten= 61%, Lag= 55.4 min
Primary = 0.61 cfs @ 13.04 hrs, Volume= 0.157 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 677.43' @ 13.04 hrs Surf.Area= 2,470 sf Storage= 2,939 cf

Plug-Flow detention time= 94.2 min calculated for 0.156 af (84% of inflow)
Center-of-Mass det. time= 50.7 min (870.4 - 819.7)

Volume	Invert	Avail.Storage	Storage Description
#1	676.00'	17,450 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
676.00	1,650	0	0
678.00	2,800	4,450	4,450
680.00	4,300	7,100	11,550
681.00	7,500	5,900	17,450

Device	Routing	Invert	Outlet Devices
#1	Primary	676.50'	**6.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 676.50' / 676.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Primary	678.00'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir X 0.40** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Secondary	679.50'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.61 cfs @ 13.04 hrs HW=677.43' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.61 cfs @ 3.13 fps)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=676.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 201S: Dry Swale 201

Inflow Area = 0.927 ac, 41.46% Impervious, Inflow Depth > 0.96" for 1-Yr event
Inflow = 1.68 cfs @ 11.97 hrs, Volume= 0.074 af
Outflow = 0.80 cfs @ 12.07 hrs, Volume= 0.074 af, Atten= 52%, Lag= 6.1 min
Primary = 0.80 cfs @ 12.07 hrs, Volume= 0.074 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 679.69' @ 12.07 hrs Surf.Area= 1,910 sf Storage= 752 cf

Plug-Flow detention time= 14.3 min calculated for 0.073 af (99% of inflow)
Center-of-Mass det. time= 10.5 min (800.5 - 790.0)

Volume	Invert	Avail.Storage	Storage Description
#1	678.30'	1,280 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 3,200 cf Overall x 40.0% Voids
#2	680.30'	14,400 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		15,680 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
678.30	800	0	0
680.30	2,400	3,200	3,200

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
680.30	2,400	0	0
682.30	3,600	6,000	6,000
684.30	4,800	8,400	14,400

Device	Routing	Invert	Outlet Devices
#1	Primary	678.30'	**6.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 678.30' / 678.20' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	680.30'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir X 0.40** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Secondary	682.30'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.79 cfs @ 12.07 hrs HW=679.67' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.79 cfs @ 4.02 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=678.30' (Free Discharge)
├**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 202S: Dry Swale 202

Inflow Area = 1.264 ac, 65.12% Impervious, Inflow Depth > 1.30" for 1-Yr event
Inflow = 2.98 cfs @ 11.97 hrs, Volume= 0.137 af
Outflow = 0.78 cfs @ 12.12 hrs, Volume= 0.134 af, Atten= 74%, Lag= 9.2 min
Primary = 0.78 cfs @ 12.12 hrs, Volume= 0.134 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 679.15' @ 12.12 hrs Surf.Area= 5,636 sf Storage= 2,167 cf

Plug-Flow detention time= 39.0 min calculated for 0.134 af (98% of inflow)
Center-of-Mass det. time= 30.4 min (801.9 - 771.5)

Volume	Invert	Avail.Storage	Storage Description
#1	677.80'	3,840 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 9,600 cf Overall x 40.0% Voids
#2	679.80'	43,200 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		47,040 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
677.80	2,400	0	0
679.80	7,200	9,600	9,600

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
679.80	7,200	0	0
681.80	10,800	18,000	18,000
683.80	14,400	25,200	43,200

Device	Routing	Invert	Outlet Devices
#1	Primary	677.80'	**6.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 677.80' / 677.70' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	679.80'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir X 0.40** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Secondary	681.80'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50

Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88
2.85 3.07 3.20 3.32

Primary OutFlow Max=0.78 cfs @ 12.12 hrs HW=679.14' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.78 cfs @ 3.97 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=677.80' (Free Discharge)
├**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link PR-A: AP-A

Inflow Area = 2.601 ac, 46.43% Impervious, Inflow Depth > 0.82" for 1-Yr event
Inflow = 0.65 cfs @ 12.98 hrs, Volume= 0.178 af
Primary = 0.65 cfs @ 12.98 hrs, Volume= 0.178 af, Atten= 0%, Lag= 0.0 min

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

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

Subcatchment 201: SC 201 Runoff Area=40,400 sf 41.46% Impervious Runoff Depth>2.05"
Tc=6.0 min CN=87 Runoff=3.45 cfs 0.158 af

Subcatchment 202: SC 202 Runoff Area=55,050 sf 65.12% Impervious Runoff Depth>2.49"
Flow Length=200' Tc=6.0 min CN=92 Runoff=5.46 cfs 0.262 af

Subcatchment 203: SC 203 Runoff Area=17,850 sf 0.00% Impervious Runoff Depth>1.51"
Flow Length=400' Slope=0.0690 '/' Tc=11.0 min CN=80 Runoff=0.99 cfs 0.052 af

Pond 200F: Forebay 200 Peak Elev=678.49' Storage=1,299 cf Inflow=2.90 cfs 0.415 af
Primary=2.88 cfs 0.392 af Secondary=0.00 cfs 0.000 af Outflow=2.88 cfs 0.392 af

Pond 200P: Pond 200 Peak Elev=678.21' Storage=5,049 cf Inflow=2.88 cfs 0.392 af
Primary=1.64 cfs 0.361 af Secondary=0.00 cfs 0.000 af Outflow=1.64 cfs 0.361 af

Pond 201S: Dry Swale 201 Peak Elev=680.51' Storage=1,791 cf Inflow=3.45 cfs 0.158 af
Primary=1.04 cfs 0.147 af Secondary=0.77 cfs 0.010 af Outflow=1.82 cfs 0.157 af

Pond 202S: Dry Swale 202 Peak Elev=679.87' Storage=4,372 cf Inflow=5.46 cfs 0.262 af
Primary=1.01 cfs 0.255 af Secondary=0.17 cfs 0.004 af Outflow=1.18 cfs 0.258 af

Link PR-A: AP-A Inflow=1.74 cfs 0.413 af
Primary=1.74 cfs 0.413 af

Total Runoff Area = 2.601 ac Runoff Volume = 0.472 af Average Runoff Depth = 2.18"
53.57% Pervious = 1.393 ac 46.43% Impervious = 1.208 ac

Summary for Subcatchment 201: SC 201

Runoff = 3.45 cfs @ 11.97 hrs, Volume= 0.158 af, Depth> 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Yr Rainfall=3.52"

Area (sf)	CN	Description
16,750	98	Paved parking, HSG D
23,650	80	>75% Grass cover, Good, HSG D
40,400	87	Weighted Average
23,650		58.54% Pervious Area
16,750		41.46% Impervious Area

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

Summary for Subcatchment 202: SC 202

Runoff = 5.46 cfs @ 11.96 hrs, Volume= 0.262 af, Depth> 2.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Yr Rainfall=3.52"

Area (sf)	CN	Description
35,850	98	Paved parking, HSG D
19,200	80	>75% Grass cover, Good, HSG D
55,050	92	Weighted Average
19,200		34.88% Pervious Area
35,850		65.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	200		0.56		**Direct Entry, Direct Entry**

Summary for Subcatchment 203: SC 203

Runoff = 0.99 cfs @ 12.03 hrs, Volume= 0.052 af, Depth> 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Yr Rainfall=3.52"

Area (sf)	CN	Description
17,850	80	>75% Grass cover, Good, HSG D
17,850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0690	0.17		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 2.50"
1.2	300	0.0690	4.23		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
11.0	400	Total			

Summary for Pond 200F: Forebay 200

Inflow Area = 2.191 ac, 55.11% Impervious, Inflow Depth > 2.27" for 10-Yr event
Inflow = 2.90 cfs @ 12.08 hrs, Volume= 0.415 af
Outflow = 2.88 cfs @ 12.11 hrs, Volume= 0.392 af, Atten= 1%, Lag= 1.7 min
Primary = 2.88 cfs @ 12.11 hrs, Volume= 0.392 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 678.49' @ 12.11 hrs Surf.Area= 771 sf Storage= 1,299 cf

Plug-Flow detention time= 35.3 min calculated for 0.392 af (94% of inflow)
Center-of-Mass det. time= 15.4 min (808.0 - 792.5)

Volume	Invert	Avail.Storage	Storage Description
#1	675.00'	6,250 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
675.00	100	0	0
678.00	550	975	975
679.00	1,000	775	1,750
680.00	2,000	1,500	3,250
681.00	4,000	3,000	6,250

Device	Routing	Invert	Outlet Devices
#1	Primary	678.00'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir X 0.40** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#2	Secondary	679.50'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=2.85 cfs @ 12.11 hrs HW=678.49' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 2.85 cfs @ 0.73 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=675.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 200P: Pond 200

Inflow Area = 2.191 ac, 55.11% Impervious, Inflow Depth > 2.15" for 10-Yr event
Inflow = 2.88 cfs @ 12.11 hrs, Volume= 0.392 af
Outflow = 1.64 cfs @ 12.70 hrs, Volume= 0.361 af, Atten= 43%, Lag= 35.4 min
Primary = 1.64 cfs @ 12.70 hrs, Volume= 0.361 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 678.21' @ 12.70 hrs Surf.Area= 2,956 sf Storage= 5,049 cf

Plug-Flow detention time= 78.0 min calculated for 0.360 af (92% of inflow)
Center-of-Mass det. time= 52.5 min (860.4 - 808.0)

Volume	Invert	Avail.Storage	Storage Description
#1	676.00'	17,450 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
676.00	1,650	0	0
678.00	2,800	4,450	4,450
680.00	4,300	7,100	11,550
681.00	7,500	5,900	17,450

Device	Routing	Invert	Outlet Devices
#1	Primary	676.50'	**6.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 676.50' / 676.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Primary	678.00'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir X 0.40** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Secondary	679.50'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=1.64 cfs @ 12.70 hrs HW=678.21' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.90 cfs @ 4.59 fps)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.74 cfs @ 0.44 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=676.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 201S: Dry Swale 201

Inflow Area = 0.927 ac, 41.46% Impervious, Inflow Depth > 2.05" for 10-Yr event
Inflow = 3.45 cfs @ 11.97 hrs, Volume= 0.158 af
Outflow = 1.82 cfs @ 12.07 hrs, Volume= 0.157 af, Atten= 47%, Lag= 5.9 min
Primary = 1.04 cfs @ 12.07 hrs, Volume= 0.147 af
Secondary = 0.77 cfs @ 12.07 hrs, Volume= 0.010 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 680.51' @ 12.07 hrs Surf.Area= 4,925 sf Storage= 1,791 cf

Plug-Flow detention time= 15.5 min calculated for 0.157 af (99% of inflow)
Center-of-Mass det. time= 12.8 min (786.3 - 773.5)

Volume	Invert	Avail.Storage	Storage Description
#1	678.30'	1,280 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 3,200 cf Overall x 40.0% Voids
#2	680.30'	14,400 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		15,680 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
678.30	800	0	0
680.30	2,400	3,200	3,200

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
680.30	2,400	0	0
682.30	3,600	6,000	6,000
684.30	4,800	8,400	14,400

Device	Routing	Invert	Outlet Devices
#1	Primary	678.30'	**6.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 678.30' / 678.20' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	680.30'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir X 0.40** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Secondary	682.30'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=1.04 cfs @ 12.07 hrs HW=680.50' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.04 cfs @ 5.30 fps)

Secondary OutFlow Max=0.71 cfs @ 12.07 hrs HW=680.50' (Free Discharge)
├**2=Broad-Crested Rectangular Weir** (Weir Controls 0.71 cfs @ 0.45 fps)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 202S: Dry Swale 202

Inflow Area = 1.264 ac, 65.12% Impervious, Inflow Depth > 2.49" for 10-Yr event
Inflow = 5.46 cfs @ 11.96 hrs, Volume= 0.262 af
Outflow = 1.18 cfs @ 12.14 hrs, Volume= 0.258 af, Atten= 78%, Lag= 10.6 min
Primary = 1.01 cfs @ 12.14 hrs, Volume= 0.255 af
Secondary = 0.17 cfs @ 12.14 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 679.87' @ 12.14 hrs Surf.Area= 14,532 sf Storage= 4,372 cf

Plug-Flow detention time= 46.1 min calculated for 0.257 af (98% of inflow)
Center-of-Mass det. time= 39.7 min (796.3 - 756.6)

Volume	Invert	Avail.Storage	Storage Description
#1	677.80'	3,840 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 9,600 cf Overall x 40.0% Voids
#2	679.80'	43,200 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		47,040 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
677.80	2,400	0	0
679.80	7,200	9,600	9,600

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
679.80	7,200	0	0
681.80	10,800	18,000	18,000
683.80	14,400	25,200	43,200

Device	Routing	Invert	Outlet Devices
#1	Primary	677.80'	**6.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 677.80' / 677.70' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	679.80'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir X 0.40** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Secondary	681.80'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50

Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88
2.85 3.07 3.20 3.32

Primary OutFlow Max=1.01 cfs @ 12.14 hrs HW=679.87' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.01 cfs @ 5.13 fps)

Secondary OutFlow Max=0.16 cfs @ 12.14 hrs HW=679.87' (Free Discharge)
├**2=Broad-Crested Rectangular Weir** (Weir Controls 0.16 cfs @ 0.27 fps)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link PR-A: AP-A

Inflow Area = 2.601 ac, 46.43% Impervious, Inflow Depth > 1.90" for 10-Yr event
Inflow = 1.74 cfs @ 12.68 hrs, Volume= 0.413 af
Primary = 1.74 cfs @ 12.68 hrs, Volume= 0.413 af, Atten= 0%, Lag= 0.0 min

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

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

Subcatchment 201: SC 201 Runoff Area=40,400 sf 41.46% Impervious Runoff Depth>4.03"
Tc=6.0 min CN=87 Runoff=6.51 cfs 0.311 af

Subcatchment 202: SC 202 Runoff Area=55,050 sf 65.12% Impervious Runoff Depth>4.54"
Flow Length=200' Tc=6.0 min CN=92 Runoff=9.59 cfs 0.478 af

Subcatchment 203: SC 203 Runoff Area=17,850 sf 0.00% Impervious Runoff Depth>3.32"
Flow Length=400' Slope=0.0690 '/' Tc=11.0 min CN=80 Runoff=2.12 cfs 0.113 af

Pond 200F: Forebay 200 Peak Elev=678.98' Storage=1,730 cf Inflow=8.47 cfs 0.782 af
Primary=8.31 cfs 0.759 af Secondary=0.00 cfs 0.000 af Outflow=8.31 cfs 0.759 af

Pond 200P: Pond 200 Peak Elev=678.72' Storage=6,658 cf Inflow=8.31 cfs 0.759 af
Primary=6.31 cfs 0.723 af Secondary=0.00 cfs 0.000 af Outflow=6.31 cfs 0.723 af

Pond 201S: Dry Swale 201 Peak Elev=680.89' Storage=2,811 cf Inflow=6.51 cfs 0.311 af
Primary=1.14 cfs 0.236 af Secondary=3.82 cfs 0.073 af Outflow=4.96 cfs 0.310 af

Pond 202S: Dry Swale 202 Peak Elev=680.26' Storage=7,336 cf Inflow=9.59 cfs 0.478 af
Primary=1.11 cfs 0.382 af Secondary=2.60 cfs 0.090 af Outflow=3.71 cfs 0.472 af

Link PR-A: AP-A Inflow=7.32 cfs 0.837 af
Primary=7.32 cfs 0.837 af

Total Runoff Area = 2.601 ac Runoff Volume = 0.902 af Average Runoff Depth = 4.16"
53.57% Pervious = 1.393 ac 46.43% Impervious = 1.208 ac

Summary for Subcatchment 201: SC 201

Runoff = 6.51 cfs @ 11.97 hrs, Volume= 0.311 af, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Yr Rainfall=5.77"

Area (sf)	CN	Description
16,750	98	Paved parking, HSG D
23,650	80	>75% Grass cover, Good, HSG D
40,400	87	Weighted Average
23,650		58.54% Pervious Area
16,750		41.46% Impervious Area

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

Summary for Subcatchment 202: SC 202

Runoff = 9.59 cfs @ 11.96 hrs, Volume= 0.478 af, Depth> 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Yr Rainfall=5.77"

Area (sf)	CN	Description
35,850	98	Paved parking, HSG D
19,200	80	>75% Grass cover, Good, HSG D
55,050	92	Weighted Average
19,200		34.88% Pervious Area
35,850		65.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	200		0.56		**Direct Entry, Direct Entry**

Summary for Subcatchment 203: SC 203

Runoff = 2.12 cfs @ 12.03 hrs, Volume= 0.113 af, Depth> 3.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Yr Rainfall=5.77"

Area (sf)	CN	Description
17,850	80	>75% Grass cover, Good, HSG D
17,850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0690	0.17		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 2.50"
1.2	300	0.0690	4.23		**Shallow Concentrated Flow, Shallow Conc Flow** Unpaved Kv= 16.1 fps
11.0	400	Total			

Summary for Pond 200F: Forebay 200

Inflow Area = 2.191 ac, 55.11% Impervious, Inflow Depth > 4.28" for 100-Yr event
Inflow = 8.47 cfs @ 12.05 hrs, Volume= 0.782 af
Outflow = 8.31 cfs @ 12.07 hrs, Volume= 0.759 af, Atten= 2%, Lag= 1.3 min
Primary = 8.31 cfs @ 12.07 hrs, Volume= 0.759 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 678.98' @ 12.07 hrs Surf.Area= 991 sf Storage= 1,730 cf

Plug-Flow detention time= 23.3 min calculated for 0.756 af (97% of inflow)
Center-of-Mass det. time= 11.8 min (788.7 - 776.9)

Volume	Invert	Avail.Storage	Storage Description
#1	675.00'	6,250 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
675.00	100	0	0
678.00	550	975	975
679.00	1,000	775	1,750
680.00	2,000	1,500	3,250
681.00	4,000	3,000	6,250

Device	Routing	Invert	Outlet Devices
#1	Primary	678.00'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir X 0.40** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#2	Secondary	679.50'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=8.10 cfs @ 12.07 hrs HW=678.96' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 8.10 cfs @ 1.05 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=675.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 200P: Pond 200

Inflow Area = 2.191 ac, 55.11% Impervious, Inflow Depth > 4.16" for 100-Yr event
Inflow = 8.31 cfs @ 12.07 hrs, Volume= 0.759 af
Outflow = 6.31 cfs @ 12.18 hrs, Volume= 0.723 af, Atten= 24%, Lag= 6.5 min
Primary = 6.31 cfs @ 12.18 hrs, Volume= 0.723 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 678.72' @ 12.18 hrs Surf.Area= 3,339 sf Storage= 6,658 cf

Plug-Flow detention time= 56.8 min calculated for 0.721 af (95% of inflow)
Center-of-Mass det. time= 40.2 min (828.9 - 788.7)

Volume	Invert	Avail.Storage	Storage Description
#1	676.00'	17,450 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
676.00	1,650	0	0
678.00	2,800	4,450	4,450
680.00	4,300	7,100	11,550
681.00	7,500	5,900	17,450

Device	Routing	Invert	Outlet Devices
#1	Primary	676.50'	**6.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 676.50' / 676.40' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Primary	678.00'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir X 0.40** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#3	Secondary	679.50'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=6.25 cfs @ 12.18 hrs HW=678.71' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 1.05 cfs @ 5.33 fps)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 5.20 cfs @ 0.91 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=676.00' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 201S: Dry Swale 201

Inflow Area = 0.927 ac, 41.46% Impervious, Inflow Depth > 4.03" for 100-Yr event
Inflow = 6.51 cfs @ 11.97 hrs, Volume= 0.311 af
Outflow = 4.96 cfs @ 12.03 hrs, Volume= 0.310 af, Atten= 24%, Lag= 3.8 min
Primary = 1.14 cfs @ 12.03 hrs, Volume= 0.236 af
Secondary = 3.82 cfs @ 12.03 hrs, Volume= 0.073 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 680.89' @ 12.03 hrs Surf.Area= 5,156 sf Storage= 2,811 cf

Plug-Flow detention time= 13.2 min calculated for 0.309 af (99% of inflow)
Center-of-Mass det. time= 11.2 min (769.1 - 757.9)

Volume	Invert	Avail.Storage	Storage Description
#1	678.30'	1,280 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 3,200 cf Overall x 40.0% Voids
#2	680.30'	14,400 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		15,680 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
678.30	800	0	0
680.30	2,400	3,200	3,200

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
680.30	2,400	0	0
682.30	3,600	6,000	6,000
684.30	4,800	8,400	14,400

Device	Routing	Invert	Outlet Devices
#1	Primary	678.30'	**6.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 678.30' / 678.20' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	680.30'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir X 0.40** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Secondary	682.30'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=1.14 cfs @ 12.03 hrs HW=680.88' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.14 cfs @ 5.80 fps)

Secondary OutFlow Max=3.70 cfs @ 12.03 hrs HW=680.88' (Free Discharge)
├**2=Broad-Crested Rectangular Weir** (Weir Controls 3.70 cfs @ 0.80 fps)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 202S: Dry Swale 202

Inflow Area = 1.264 ac, 65.12% Impervious, Inflow Depth > 4.54" for 100-Yr event
Inflow = 9.59 cfs @ 11.96 hrs, Volume= 0.478 af
Outflow = 3.71 cfs @ 12.09 hrs, Volume= 0.472 af, Atten= 61%, Lag= 7.6 min
Primary = 1.11 cfs @ 12.09 hrs, Volume= 0.382 af
Secondary = 2.60 cfs @ 12.09 hrs, Volume= 0.090 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 680.26' @ 12.09 hrs Surf.Area= 15,226 sf Storage= 7,336 cf

Plug-Flow detention time= 42.0 min calculated for 0.471 af (99% of inflow)
Center-of-Mass det. time= 36.9 min (782.0 - 745.1)

Volume	Invert	Avail.Storage	Storage Description
#1	677.80'	3,840 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc) 9,600 cf Overall x 40.0% Voids
#2	679.80'	43,200 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		47,040 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
677.80	2,400	0	0
679.80	7,200	9,600	9,600

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
679.80	7,200	0	0
681.80	10,800	18,000	18,000
683.80	14,400	25,200	43,200

Device	Routing	Invert	Outlet Devices
#1	Primary	677.80'	**6.0" Round Culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 677.80' / 677.70' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Secondary	679.80'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir X 0.40** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Secondary	681.80'	**8.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50

Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88
2.85 3.07 3.20 3.32

Primary OutFlow Max=1.11 cfs @ 12.09 hrs HW=680.26' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.11 cfs @ 5.65 fps)

Secondary OutFlow Max=2.57 cfs @ 12.09 hrs HW=680.26' (Free Discharge)
├**2=Broad-Crested Rectangular Weir** (Weir Controls 2.57 cfs @ 0.70 fps)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link PR-A: AP-A

Inflow Area = 2.601 ac, 46.43% Impervious, Inflow Depth > 3.86" for 100-Yr event
Inflow = 7.32 cfs @ 12.16 hrs, Volume= 0.837 af
Primary = 7.32 cfs @ 12.16 hrs, Volume= 0.837 af, Atten= 0%, Lag= 0.0 min

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

Appendix I

Water Quality Worksheets

Planning

Practice	Description	Application
Preservation of Undisturbed Areas	Delineate and place into permanent conservation undisturbed forests, native vegetated areas, riparian corridors, wetlands, and natural terrain.	Considered & Applied
Preservation of Buffers	Define, delineate and preserve naturally vegetated buffers along perennial streams, rivers, shorelines and wetlands.	Considered & Applied
Reduction of Clearing and Grading	Limit clearing and grading to the minimum amount needed for roads, driveways, foundations, utilities and stormwater management facilities.	Considered & Applied
Locating Development in Less Sensitive Areas	Avoid sensitive resource areas such as floodplains, steep slopes, erodible soils, wetlands, mature forests and critical habitats by locating development to fit the terrain in areas that will create the least impact.	Considered & Applied
Open Space Design	Use clustering, conservation design or open space design to reduce impervious cover, preserve more open space and protect water resources.	Considered & Applied
Soil Restoration	Restore the original properties and porosity of the soil by deep till and amendment with compost to reduce the generation of runoff and enhance the runoff reduction performance of post construction practices.	N/A
Roadway Reduction	Minimize roadway widths and lengths to reduce site impervious area	Considered & Applied
Sidewalk Reduction	Minimize sidewalk lengths and widths to reduce site impervious area	Considered & Applied
Driveway Reduction	Minimize driveway lengths and widths to reduce site impervious area	Considered & Applied
Cul-de-sac Reduction	Minimize the number of cul-de-sacs and incorporate landscaped areas to reduce their impervious cover.	N/A
Building Footprint Reduction	Reduce the impervious footprint of residences and commercial buildings by using alternate or taller buildings while maintaining the same floor to area ratio.	Considered & Applied
Parking Reduction	Reduce imperviousness on parking lots by eliminating unneeded spaces, providing compact car spaces and efficient parking lanes, minimizing stall dimensions, using porous pavement surfaces in overflow parking areas, and using multi-storied parking decks where	Considered & Applied

Version 1.8
Last Updated: 11/09/2015

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	No

Design Point:	1	
P=	1.10	*inch*

Manually enter P, Total Area and Impervious Cover.

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	0.93	0.38	41%	0.42	1,551	Dry Swale
2	1.26	0.82	65%	0.64	3,198	Dry Swale
3	0.41	0.00	0%	0.05	82	No Impervious
4						
5						
6						
7						
8						
9						
10						
Subtotal (1-30)	2.60	1.20	46%	0.47	**4,832**	**Subtotal 1**
Total	2.60	1.20	46%	0.47	**4,832**	**Initial WQv**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	0.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**0.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	2.60	1.20	46%	0.47	4,832
Subtract Area	0.00	0.00			
WQv adjusted after Area Reductions	**2.60**	**1.20**	46%	0.47	4,832
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	2.60	1.20	46%	0.47	**4,832**
WQv reduced by Area Reduction techniques					0

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		**Total Contributing Area**	**Total Contributing Impervious Area**	**WQv Reduced (RRv)**	**WQv Treated**
			(acres)	**(acres)**	**cf**	**cf**
Area/Volume Reduction	Conservation of Natural Areas	RR-1	0.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4				
	Bioretention & Infiltration Bioretention	F-5	0.00	0.00	0	0
	Dry swale	O-1	2.19	1.20	1215	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1	0.41	0.00		3617.000
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5				
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction →			0.00	0.00	0	
Totals by Volume Reduction →			0.00	0.00	0	
Totals by Standard SMP w/RRV →			2.19	1.20	1215	0
Totals by Standard SMP →			0.41	0.00		3617
Totals (Area + Volume + all SMPs) →			2.60	1.20	1,215	3,617

Minimum RRv

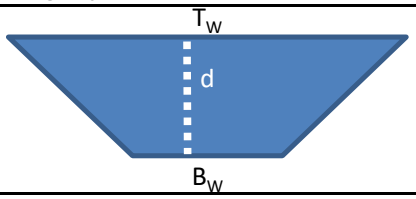
Enter the Soils Data for the site		
Soil Group	Acres	S
A		55%
B		40%
C		30%
D	**2.60**	20%
Total Area	2.6	
Calculate the Minimum RRv		
S =	**0.20**	
Impervious =	1.20	*acre*
Precipitation	1.1	*in*
Rv	0.95	
Minimum RRv	**910**	***ft3***
	0.02	af

Dry Swale Worksheet

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	0.93	0.38	0.41	0.42	1551.28	1.10	Dry Swale
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	41%	0.42	1,551	<<WQv after adjusting for Disconnected Rooftops	

Pretreatment Provided			Pretreatment Technique
Pretreatment (10% of WQv)	155	ft^3	Check Dam

Calculate Available Storage Capacity			
Bottom Width	4	*ft*	Design with a bottom width no greater than eight feet to avoid potential gullying and channel braiding, but no less than two feet
Side Slope (X:1)	3	*Okay*	Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope
Longitudinal Slope	3%	*Okay*	*Maximum longitudinal slope shall be 4%*
Flow Depth	1	*ft*	*Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Top Width	10	*ft*	
Area	7.00	*sf*	
Minimum Length	199	*ft*	
Actual Length	200	*ft*	
End Point Depth check	1.50	*Okay*	*A maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Storage Capacity	1,555	ft^3	
Soil Group (HSG)		D	

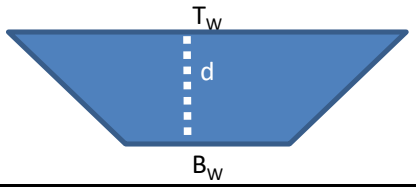
Runoff Reduction				
Is the Dry Swale contributing flow to another practice?		Yes	Select Practice	Other/Standard SMP
RRv	**311**	ft^3	**Runnoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQv**	
Volume Treated	0	ft^3	This is the difference between the WQv calculated and the runoff reduction achieved in the swale	
Volume Directed	1,240	ft^3	This volume is directed another practice	

Dry Swale Worksheet

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
2	1.26	0.82	0.65	0.64	3198.39	1.10	Dry Swale
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	65%	0.64	3,198	<<WQv after adjusting for Disconnected Rooftops	

Pretreatment Provided			Pretreatment Technique
Pretreatment (10% of WQv)	320	ft^3	Check Dam

Calculate Available Storage Capacity			
Bottom Width	4	*ft*	Design with a bottom width no greater than eight feet to avoid potential gullying and channel braiding, but no less than two feet
Side Slope (X:1)	3	*Okay*	Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope
Longitudinal Slope	3%	*Okay*	*Maximum longitudinal slope shall be 4%*
Flow Depth	1	*ft*	*Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Top Width	10	*ft*	
Area	7.00	*sf*	
Minimum Length	411	*ft*	
Actual Length	600	*ft*	
End Point Depth check	1.50	*Okay*	*A maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Storage Capacity	4,520	ft^3	
Soil Group (HSG)		D	

Runoff Reduction					
Is the Dry Swale contributing flow to another practice?			Yes	Select Practice	Other/Standard SMP
RRv	**904**	**ft^3**	**Runnoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQv**		
Volume Treated	0	ft^3	This is the difference between the WQv calculated and the runoff reduction achieved in the swale		
Volume Directed	2,294	ft^3	This volume is directed another practice		

Appendix J

Project Plan Sheets

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(See Site Plan Set)